WHO recommendations

Optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting

Annex 6

Frameworks related to the other cadres (auxiliary nurses, auxiliary nurse midwives, midwives, nurses, associate clinicians, advanced level associate clinicians, non-specialist doctors)

World Health Organization

2.1. RECOMMENDATION:

Should AUXILIARY NURSES administer oxytocin to prevent postpartum haemorrhage, using a standard syringe?

***Problem**:* Poor access to prevention of PPH
***Option**:* Auxiliary nurses administering oxytocin to prevent PPH, using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option only in the context of rigorous research*	***We recommend the option***
	☐	☐	☑
	We recommend the use of auxiliary nurses to administer oxytocin to prevent postpartum haemorrhage, using a standard syringe. We suggest using this intervention where auxiliary nurses are already an established cadre.		
Justification	There is insufficient evidence on the effectiveness of using auxiliary nurses to administer oxytocin to prevent postpartum haemorrhage using a standard syringe. Possible undesirable effects include use that is not timely for prevention of haemorrhage; failure to diagnose a second foetus prior to administration; and inappropriate use for other purposes. However, the panel feels that the benefits probably outweigh the harms; that minimal clinical decision making is required; and that the intervention is probably acceptable and feasible. In addition, the intervention may reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurses to administer oxytocin: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities (e.g. delivery kits) need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	-		
Research priorities	- Studies assessing the effects and the acceptability of using auxiliary nurses to administer oxytocin are needed		

2.1. EVIDENCE BASE:

Should AUXILIARY NURSES administer oxytocin to <u>prevent</u> postpartum haemorrhage, using a standard syringe?

***Problem**:* Poor access to prevention of PPH
***Option**:* Auxiliary nurses administering oxytocin to prevent PPH, using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A review of <u>lay health worker</u> programmes (Lewin 2012) examined the effects of packages of care, including one trial in which lay health workers injected sick neonates with antibiotics using a standard syringe. The trial did not report any adverse effects. Overall, the review suggests that these packages of care may lead to a reduction in neonatal (moderate certainty evidence) and child mortality (low certainty evidence). **Annex:** Page 10 (Lewin 2012 – Table 2)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements*** **Resource** — **Settings in which auxiliary nurses already provide other care** *Training* — 1 week of practice-based training in injection techniques, safe delivery and in diagnosing and managing postpartum haemorrhage. *Supervision and monitoring* — Regular supervision by midwife or nurse *Supplies* — Oxytocin, syringes, sterile solution, robust supply chain *Referral* — Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available	

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012) • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012) • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012) • There may be a number of challenges with referral of women in labour, including logistics and poor treatment of women at facilities (moderate certainty evidence) (Glenton, Colvin 2012) **Annex:** page 43 (Rashidian 2012); page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	Significant additional work may be needed to add this intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; and significant changes to drug supplies and training. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex:** page 43 (Rashidian 2012); page 20 (Colvin 2012); page 26 (Glenton, Colvin 2012)	

2.2. RECOMMENDATION:

Should AUXILIARY NURSES administer oxytocin to <u>treat</u> postpartum haemorrhage, using a standard syringe?

***Problem**:* Poor access to treatment of PPH
***Option**:* Auxiliary nurses administering oxytocin to treat PPH, using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option With targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest using this intervention only where auxiliary nurses are already an established cadre and where a where a well-functioning referral system is in place or can be put in place		
Justification	There is insufficient evidence on the effectiveness of using auxiliary nurses to administer oxytocin to <u>treat</u> postpartum haemorrhage using a standard syringe. Possible undesirable effects include inappropriate use for other purposes. However, the panel feels that the benefits probably outweigh the harms; that minimal clinical decision making is required; and that the intervention is probably acceptable and feasible. In addition, the intervention may reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurses to administer oxytocin: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities (e.g. delivery kits) need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	-		
Research priorities	- Studies assessing the effects and the acceptability of using auxiliary nurses to administer oxytocin are needed		

2.2. EVIDENCE BASE:

Should AUXILIARY NURSES administer oxytocin to <u>treat</u> postpartum haemorrhage, using a standard syringe?

***Problem**:* Poor access to treatment of PPH
***Option**:* Auxiliary nurses administering oxytocin to treat PPH, using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A review of lay health worker programmes **(Lewin 2012)** examined the effects of packages of care, including one trial in which lay health workers injected sick neonates with antibiotics using a standard syringe. The trial did not report any adverse effects. Overall, the review suggests that these packages of care may lead to a reduction in neonatal (moderate certainty evidence) and child mortality (low certainty evidence). **Annex:** Page 10 (Lewin 2012 – Table 2)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 weeks of practice-based training in injection techniques, safe delivery and in diagnosing and managing postpartum haemorrhage.
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Oxytocin, syringes, sterile solution, robust supply chain
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012) • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012) • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012) • There may be a number of challenges with referral of women in labour, including logistics and poor treatment of women at facilities (moderate certainty evidence) (Glenton, Colvin 2012) **Annex: p**age 43 (Rashidian 2012); page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	Significant additional work may be needed to add this intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; and significant changes to drug supplies and training. Also, where oxytocin is being used to treat PPH, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex:** page 43 (Rashidian 2012); page 20 (Colvin 2012); page 26 (Glenton, Colvin 2012)	

2.3. RECOMMENDATION:

Should AUXILIARY NURSES administer oxytocin to prevent postpartum haemorrhage, using a compact, autodisable, prefilled injection device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for prevention of PPH
***Option**:* Auxiliary nurses administering oxytocin using a CPAD to prevent PPH
***Comparison**:* Care delivered by other cadre or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option only in the context of rigorous research*	***We recommend the option***
	☐	☐	☑
	We recommend this option. We suggest using this where auxiliary nurses are already an established cadre.		

Justification

There is insufficient evidence on the effectiveness of using auxiliary nurses to administer oxytocin to prevent postpartum haemorrhage using a CPAD. Possible undesirable effects include use that is not timely for prevention of haemorrhage; failure to diagnose a second foetus prior to administration; and inappropriate use for other purposes. However, this intervention is probably acceptable and feasible. In addition, the panel feels that the benefits probably outweigh the harms; that minimal clinical decision making is required, and that the intervention may reduce inequalities by extending care to underserved populations.

Implementation considerations

The following should be considered when using auxiliary nurses to administer oxytocin:

- The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers
- The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions
- Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice
- Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out
- Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility
- Supplies of drugs and other commodities (e.g. delivery kits) need to be secure
- Responsibility for supervision needs to be clear and supervision needs to be regular and supportive
- Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training

Monitoring and evaluation

-

Research priorities

- Studies assessing the effects and the acceptability of using auxiliary nurses to administer oxytocin are needed

2.3. EVIDENCE BASE:

Should AUXILIARY NURSES administer oxytocin to <u>prevent</u> treat postpartum haemorrhage, using a compact, autodisable, prefilled device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for prevention of PPH
***Option**:* Auxiliary nurses administering oxytocin using a CPAD to prevent PPH
***Comparison**:* Care delivered by other cadre or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A review of lay health worker programmes (Lewin 2012) examined the effects of packages of care, including one trial in which lay health workers injected sick neonates with antibiotics using a standard syringe. The trial did not report any adverse effects. Overall, the review suggests that these packages of care may lead to a reduction in neonatal (moderate certainty evidence) and child mortality (low certainty evidence). Annex: page 10 (Lewin 2012 – Table 2)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☑ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1 week of practice-based training in injection techniques, safe delivery and in diagnosing and managing postpartum haemorrhage.
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Oxytocin CPAD, sterile solution, robust supply chain
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). • There may be a number of challenges with referral of women in labour, including logistics and poor treatment of women at facilities (moderate certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	While this intervention is simpler to deliver than oxytocin using a standard syringe, significant additional work may still be needed to add this intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; and significant changes to drug supplies and training. Also, where oxytocin is being used to treat PPH, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

2.4. RECOMMENDATION:

Should AUXILIARY NURSES administer oxytocin to treat postpartum haemorrhage using a compact, autodisable, prefilled injection device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for PPH
***Option**:* Auxiliary nurses administering oxytocin using a CPAD to treat PPH
***Comparison**:* Care delivered by other cadre or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest using this intervention only where auxiliary nurses are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of using auxiliary nurses to administer oxytocin to treat postpartum haemorrhage using a CPAD. . Possible undesirable effects include inappropriate use for other purposes However, this intervention is probably acceptable and feasible. In addition, the panel feels that the benefits probably outweigh the harms; that minimal clinical decision making is required, and that the intervention may reduce inequalities by extending care to underserved populations. As the assessment and diagnosis of postpartum haemorrhage requires some experience and judgement, the panel suggests that the option is considered with targeted monitoring and evaluation.		
Implementation considerations	The following should be considered when using auxiliary nurses to administer oxytocin: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities (e.g. delivery kits) need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	-		
Research priorities	- Studies assessing the effects and the acceptability of using auxiliary nurses to administer oxytocin are needed		

2.4. EVIDENCE BASE:

Should AUXILIARY NURSES administer oxytocin to <u>treat</u> postpartum haemorrhage, using a compact, autodisable, prefilled injection device (CPAD) such as Uniject?

Problem: Poor access to treatment for PPH
Option: Auxiliary nurses administering oxytocin using a CPAD to treat PPH
Comparison: Care delivered by other cadre or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A review of lay health worker programmes (Lewin 2012) examined the effects of packages of care, including one trial in which lay health workers injected sick neonates with antibiotics using a standard syringe. The trial did not report any adverse effects. Overall, the review suggests that these packages of care may lead to a reduction in neonatal (moderate certainty evidence) and child mortality (low certainty evidence). Annex: page 10 (Lewin 2012 – Table 2)	
	Are the anticipated undesirable effects small?	No ☐ / Probably No ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☑ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1 week of practice-based training in injection techniques, safe delivery and in diagnosing and managing postpartum haemorrhage.
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Oxytocin CPAD, sterile solution, robust supply chain
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). • There may be a number of challenges with referral of women in labour, including logistics and poor treatment of women at facilities (moderate certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	While this intervention is simpler to deliver than oxytocin using a standard syringe, significant additional work may still be needed to add this intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; and significant changes to drug supplies and training. Also, where oxytocin is being used to treat PPH, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

2.5 and 2.6. RECOMMENDATION:

Should AUXILIARY NURSES administer misoprostol to (a) prevent and (b) to treat postpartum haemorrhage before referral?

***Problem**:* Poor access to prevention and treatment of postpartum haemorrhage
***Option**:* Auxiliary nurses administering misoprostol
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option*	***We recommend the option***
	☐	☐	☑
	We recommend the use of auxiliary nurses to administer misoprostol to prevent and treat postpartum haemorrhage. • For prevention of postpartum haemorrhage, we suggest using this intervention where auxiliary nurses are already an established cadre • For treatment of postpartum haemorrhage, we suggest using this intervention where auxiliary nurses are already an established cadre and where a well-functioning referral system is in place or can be put in place		
Justification	There is insufficient evidence on the effectiveness of using auxiliary nurses to administer misoprostol to prevent and treat postpartum haemorrhage. However, the intervention is probably acceptable and feasible. In addition, the panel feels that the benefits probably outweigh the harms; that minimal clinical decision making is required; and that the intervention may reduce inequalities by extending care to underserved populations. A World Health Organisation guideline also recommends that where skilled birth attendants are not present and oxytocin is not available, the administration of misoprostol (600mcg PO) by community health workers and lay health workers is recommended for prevention of PPH (strong recommendation, moderate quality evidence).		
Implementation considerations	The following should be considered when using auxiliary nurses to administer misoprostol: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities (e.g. delivery kits) need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of using auxiliary nurses to administer misoprostol are needed		

2.5 and 2.6. EVIDENCE BASE:

Should AUXILIARY NURSES administer misoprostol to (a) prevent and (b) to treat postpartum haemorrhage before referral?

***Problem**:* Poor access to prevention and treatment of postpartum haemorrhage
***Option**:* Auxiliary nurses administering misoprostol
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	**Note:** A World Health Organisation guideline recommends that where skilled birth attendants are not present and oxytocin is not available, the administration of misoprostol (600mcg PO) by community health care workers and lay health workers is recommended for prevention of PPH. (Strong recommendation, moderate quality evidence).The guideline makes no recommendation regarding the use of lay health workers or auxiliary nurses to administer misoprostol at the time of delivery for the treatment of postpartum haemorrhage. The guideline also notes that, in view of the past concerns regarding community distribution of misoprostol and serious consequences of administration before birth, emphasis should be placed on the training of those providing misoprostol and monitoring of these interventions with appropriate indicators.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 weeks of practice-based training in safe delivery and in diagnosing and managing postpartum haemorrhage.
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Misoprostol tablets, robust supply chain
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). • There may be a number of challenges with referral of women in labour, including logistics and poor treatment of women at facilities (moderate certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	While this intervention is simpler to deliver than oxytocin, significant additional work may still be needed to add this intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; and significant changes to drug supplies and training. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

2.7. RECOMMENDATION:

Should AUXILIARY NURSES distribute misoprostol to women during pregnancy for self-administration after childbirth?

***Problem**:* Poor access to treatment for prevention of postpartum haemorrhage
***Option**:* Auxiliary nurses distributing misoprostol to women during pregnancy for self-ministration after childbirth
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***No recommendation has been made***	*We recommend the option*
	☐	☑	☐
	No recommendation has been made for this option.		
Justification	We need research about the effectiveness of distributing misoprostol to women during pregnancy for self-administration after childbirth before considering the cadres that can undertake distribution. The panel therefore did not make a recommendation. However, it was also noted that this may improve access to misoprostol in some settings.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of auxiliary nurses distributing misoprostol to women during pregnancy for self-administration after childbirth for prevention of postpartum haemorrhage.		

2.7. EVIDENCE BASE:

Should AUXILIARY NURSES distribute misoprostol to women during pregnancy for self-administration after childbirth?

***Problem**:* Poor access to treatment for prevention of postpartum haemorrhage
***Option**:* Auxiliary nurses distributing misoprostol to women during pregnancy for self-ministration after childbirth
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th colspan="2">CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. In addition, a systematic review assessed the effectiveness and safety of advance misoprostol provision for postpartum haemorrhage prevention and treatment in non-facility births. This review did not identify any studies (Oladapo 2012). We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Additional considerations: Although there has been general concern that providing misoprostol at home may discourage women from coming to a facility for childbirth this concern has not been substantiated by programmatic evidence.</td><td rowspan="4">Note:
A World Health Organisation guideline states that there is insufficient evidence to recommend the antenatal distribution of misoprostol to pregnant women for self-administration for prevention of PPH. The guideline also acknowledges that a number of countries have embarked on misoprostol community distribution programmes and considers that this should be performed in the context of research (where reliable data on coverage, safety and health outcomes can be collected) (WHO, 2012).</td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☐ | Yes ☑ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which auxiliary nurses already provide other care</th></tr><tr><td>Training</td><td>1-2 weeks of practice-based training in safe delivery and in communication and health promotion skills.</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by midwife or nurse</td></tr><tr><td>Supplies</td><td>Misoprostol tablets, robust supply chain, printed information for pregnant women and their families</td></tr><tr><td>Referral</td><td>Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Some LHWs voiced concerns about possible social or legal consequences if something went wrong following the administration of drugs. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention is relatively simple to deliver as all pregnant women would be eligible to receive misoprostol and the auxiliary nurse does not have to be present at the time of delivery. Some additional work would be needed to add this intervention to the existing tasks of auxiliary nurses. It is likely to require changes in regulations; and significant changes to drug supplies and training. Some training and supervision is needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). For a range of issues (no evidence on misoprostol specifically), the review of lay health workers suggests that counselling and communication was perceived as important but as a complex task for which they sometimes felt unprepared and for which they requested specific training (moderate certainty evidence). However, trainers were not necessarily competent to train them in these skills (low certainty evidence) (Glenton, Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

4.1. RECOMMENDATION:

Should AUXILIARY NURSES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for preterm PROM
***Option**:* Auxiliary nurses delivering injectable antibiotics
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurses are already an established cadre and where a well-functioning referral system is in place or can be put in place		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention is probably acceptable and feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of using auxiliary nurses to delivering an initial dose of injectable antibiotics to treat preterm PROM prior to referral.		

4.1 EVIDENCE BASE:

Should AUXILIARY NURSES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for preterm PROM
***Option**:* Auxiliary nurses delivering injectable antibiotics
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	e.g. two weeks of training for auxiliary nurses to diagnosis and manage, including diagnosis of amniotic fluid volume by ultrasound where available. This assumes proficiency in diagnosing pregnancy, assessing gestational age, and assessing leakage of amniotic fluid through observation and simple pH testing
Supervision and monitoring	Regular supervision by a midwife or doctor
Supplies	Antibiotics, equipment needed for diagnosis, e.g. litmus paper. Ultrasound equipment in some settings
Referral	Transportation, adequate referral centre

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	The intervention requires relatively few supplies (antibiotics and simple diagnostic tools). In addition, it is simple to deliver and requires only a relatively small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurses to prescribe and deliver injectable antibiotics. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

7.1 and 7.2. RECOMMENDATION:

Should AUXILIARY NURSES (a) initiate and (b) maintain kangaroo mother care for low birth weight infants?

Problem: Low utilisation of kangaroo mother care for low birth weight infants
Option: Auxiliary nurses initiating and maintaining kangaroo mother care
Comparison: Usual care
Setting: Community/primary health care settings in LMICs

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest using this intervention where auxiliary nurses are already an established cadre.		
Justification	There is insufficient evidence on the effectiveness and feasibility of auxiliary nurses initiating kangaroo mother care for low birth weight infants. However, the intervention may have important benefits and is probably feasible and acceptable. It may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurses to initiate and maintain kangaroo mother care: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - Local beliefs and practical circumstances related to the health conditions in question should be addressed within the programme design - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities (e.g. delivery kits) need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	Monitoring and evaluation should focus on different weight categories to ensure that babies with birth weight less than 1500 grams are not adversely affected.		
Research priorities			

7.1 and 7.2. EVIDENCE BASE:

Should AUXILIARY NURSES (a) initiate and (b) maintain kangaroo mother care for low birth weight infants?

Problem: Low utilisation of kangaroo mother care for low birth weight infants
Option: Auxiliary nurses initiating and maintaining kangaroo mother care
Comparison: Usual care
Setting: Community/primary health care settings in LMICs

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence** A systematic review of the effects of lay health workers (Lewin 2012) identified three trials from Bangladesh and India that assessed the effectiveness of promotion of kangaroo care or skin-to-skin care after birth, although promotion was not specifically targeted at low birth weight babies. In two of the trials, LHWs promoted the intervention as part of a package of maternal and newborn care while, in one study, LHWs taught kangaroo care to expectant mothers and their families. One trial suggests that the intervention probably leads to an increase in the use of skin-to-skin care within 24 hours after birth, compared to usual care (moderate certainty evidence). Two trials suggest that the overall package of maternal and newborn care may reduce neonatal mortality (low certainty evidence) **Annex**: page13 (Lewin 2012 – Table 4)	Although direct evidence on effects is lacking, there is some evidence that lay health workers can deliver this intervention, it is simple to implement, is likely to have benefits and is not likely to have significant undesirable effects. We have therefore judged the desirable effects as probably large relative to the undesirable effects.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements*** **Resource** — **Settings in which auxiliary nurses already provide other care** *Training* — Training in the technique is necessary and may take 1-2 weeks *Supervision and monitoring* — Regular supervision by an experienced kangaroo care practitioner *Supplies* — Minimal: promotional and demonstrational materials; carrying pouches for babies *Referral* — To a health facility if any health problems are detected	

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Although there is no direct evidence on effectiveness, the benefits are likely to be large in relation to the incremental costs	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) explored factors that influence the success of task-shifting to nurses. This review suggest that: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may prefer nurses, compared to doctors, for issues that require more attention and time (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention is relatively simple, requires no supplies and is unlikely to require changes to norms or regulations. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary. Systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

8.1. RECOMMENDATION:

Should AUXILIARY NURSES deliver injectable antibiotics for neonatal sepsis, using a standard syringe?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurses delivering injectable antibiotics for neonatal sepsis
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	- We suggest considering this option only in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurses are already an established cadre, where clear clinical guidelines are available and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurses delivering injectable antibiotics for neonatal sepsis using a standard syringe, and its feasibility is uncertain. However, this intervention may be acceptable and may reduce inequalities by extending care to underserved populations. Also, giving intramuscular and intravenous injections are generally within the standard competencies of auxiliary nurses.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects of using auxiliary nurses to make a diagnosis and deliver injectable antibiotics for neonatal sepsis		

8.1. EVIDENCE BASE:

Should AUXILIARY NURSES deliver injectable antibiotics for neonatal sepsis, using a standard syringe?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurses delivering injectable antibiotics for neonatal sepsis
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ · Probably No ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review of the effects of lay health workers (Lewin 2012) identified a number of trials from LMIC settings where packages of care were delivered by LHWs. In one trial, the package included LHWs injecting procaine penicillin and gentamicin to treat sick neonates, apparently using a standard syringe. The trial did not report any adverse effects of LHWs using injectable antibiotics. Overall, the trials suggest that these packages of care may lead to a reduction in neonatal mortality (moderate certainty evidence) and child mortality (low certainty evidence). **Annex:** page 10 (Lewin 2012 – Table 2)	
	Are the anticipated undesirable effects small?	No ☐ · Probably No ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ · Low ☐ · Moderate ☐ · High ☐ · No direct evidence ☑ · Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ · Probably No ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ · Probably no ☑ · Uncertain ☐ · Probably yes ☐ · Yes ☐ · Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 weeks of practice-based training in injection techniques, in diagnosing and managing neontal sepsis
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Antibiotics, syringes, sterile solution, robust supply chain
Referral	Transportation, adequate referral centre offering neonatal care

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012) • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines, including antibiotics for neonatal sepsis, by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012) • Activities that demand that the LHW is present at specific times may lead to changes in working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012) **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Significant additional work may be required to add the intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; significant changes to drug supplies and training; and validation of appropriate treatment algorithms. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant **training and** supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

8.2. RECOMMENDATION:

Should AUXILIARY NURSES deliver antibiotics for neonatal sepsis using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurses delivering antibiotics for neonatal sepsis using CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	- We suggest considering this option only in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurses are already an established cadre, where clear clinical protocols are available and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurses delivering antibiotics for neonatal sepsis using a CPAD, and its feasibility is uncertain. However, this intervention may be acceptable and may reduce inequalities by extending care to underserved populations. Also, giving intramuscular and intravenous injections are generally within the standard competencies of auxiliary nurses. We therefore suggest considering the option in the context of rigorous research.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects and the acceptability of using auxiliary nurses to diagnose sepsis and deliver injectable antibiotics for neonatal sepsis using a CPAD		

8.2. EVIDENCE BASE:

Should AUXILIARY NURSES deliver antibiotics for neonatal sepsis, using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurses delivering antibiotics for neonatal sepsis using CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th colspan="2">CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Indirect evidence:
A systematic review of the effects of lay health workers (Lewin 2012) identified a number of trials from LMIC settings where packages of care were delivered by LHWs. In one trial, the package included LHWs injecting procaine penicillin and gentamicin to treat sick neonates, apparently using a standard syringe. The trial did not report any adverse effects of LHWs using injectable antibiotics. Overall, the trials suggest that these packages of care may lead to a reduction in neonatal mortality (moderate certainty evidence) and child mortality (low certainty evidence).

Annex: page 10 (Lewin 2012 – Table 2)</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☑ | Uncertain ☐ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which auxiliary nurses already provide other care</th></tr><tr><td>Training</td><td>1-2 weeks of practice-based training in injection techniques and in diagnosing and managing neontal sepsis</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by midwife or nurse</td></tr><tr><td>Supplies</td><td>Antibiotic CPAD, sterile solution, robust supply chain</td></tr><tr><td>Referral</td><td>Transportation, adequate referral centre offering neonatal care</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines, including antibiotics for neonatal sepsis, by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times may lead to changes in working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Significant additional work may be required to add the intervention to the tasks of auxiliary nurses. It is likely to require changes in regulations; significant changes to drug supplies and training; and validation of appropriate treatment algorithms. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant **training and** supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

9.1. RECOMMENDATION:
Should AUXILIARY NURSES deliver neonatal resuscitation?

***Problem**:* Poor access to neonatal care
***Option**:* Auxiliary nurses delivering neonatal resuscitation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurses are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurses delivering neonatal resuscitation. However, this intervention is probably acceptable, is probably feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects and the acceptability of using auxiliary nurses to deliver neonatal resuscitation		

9.1. EVIDENCE BASE:

Should AUXILIARY NURSES deliver neonatal resuscitation?

***Problem**:* Poor access to neonatal care
***Option**:* Auxiliary nurses delivering neonatal resuscitation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 days of practice-based training in neonatal resuscitation
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Resuscitation bag and mask
Referral	Transportation, adequate referral centre offering neonatal care

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence**: Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Significant additional work may be required to add the intervention to the tasks of auxiliary nurses. It is likely to need changes in regulations; significant changes to supplies and training; and development of appropriate treatment algorithms. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.1. RECOMMENDATION:

Should AUXILIARY NURSES administer intravenous fluid for resuscitation as part of postpartum haemorrhage treatment?

***Problem**:* Poor access to treatment for post-partum haemorrhage
***Option**:* Auxiliary nurses administering intravenous fluid for resuscitation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend this option. We suggest implementing this intervention where auxiliary nurses are already an established cadre and where a well-functioning referral system is in place or can be put in place. This intervention should be operationalised in the context of the WHO PPH guidelines, which outline a comprehensive approach to managing PPH.		
Justification	There is insufficient evidence on the effectiveness and acceptability of auxiliary nurses administering intravenous fluid for resuscitation, as part of PPH treatment. However, the panel considered this intervention to be part of the core skills of auxiliary nurses. In addition, it is probably feasible and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurses to administer intravenous fluid for resuscitation: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	-		
Research priorities	-		

11.1. EVIDENCE BASE:

Should AUXILIARY NURSES administer intravenous fluid for resuscitation as part of postpartum haemorrhage treatment?

***Problem**:* Poor access to treatment for post-partum haemorrhage
***Option**:* Auxiliary nurses administering intravenous fluid for resuscitation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1 week training in emergency obstetric care
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	IV fluids and sets
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** One systematic review (Rashidian 2012) explored factors that influence the success of task-shifting to nurses. This review suggests that: • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence) • Nurses themselves may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctor acceptance appears to be influenced by level of nurse experience (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	This intervention requires some supplies. Adequate referral to a higher level of care for further management may be necessary. In addition, this intervention is likely to require changes to norms or regulations. Some training and supervision is needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.2. RECOMMENDATION:

Should AUXILIARY NURSES perform internal bimanual uterine compression for postpartum haemorrhage?

***Problem**:* Poor access to treatment for post-partum haemorrhage
***Option**:* Auxiliary nurses performing internal bimanual uterine compression for PPH
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest implementing this intervention where auxiliary nurses are already an established cadre and where a well-functioning referral system is in place or can be put in place. This intervention should be operationalised in the context of the WHO PPH guidelines, which outline a comprehensive approach to managing PPH.		
Justification	There is insufficient evidence on the effectiveness and acceptability of auxiliary nurses performing internal bimanual uterine compression for postpartum haemorrhage. However, the risk of significant harms is low, it may be acceptable, is probably feasible and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurses to perform bimanual uterine compression: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	- Any harms associated with bimanual uterine compression delivered by auxiliary nurses		
Research priorities	-		

11.2. EVIDENCE BASE:

Should AUXILIARY NURSES perform internal bimanual uterine compression for postpartum haemorrhage?

***Problem**:* Poor access to treatment for post-partum haemorrhage
***Option**:* Auxiliary nurses performing internal bimanual uterine compression for PPH
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1 week training in emergency obstetric care
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Antiseptic solution
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** One systematic review (Rashidian 2012) explored factors that influence the success of task-shifting to nurses. This review suggests that: • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence) • Nurses themselves may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctor acceptance appears to be influenced by level of nurse experience (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	This intervention requires some supplies. Adequate referral to a higher level of care for further management may be necessary. In addition, this intervention is likely to require changes to norms or regulations. Some training and supervision is needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.3. RECOMMENDATION:

Should AUXILIARY NURSES perform suturing for minor perineal / genital lacerations?

***Problem**:* Poor access to treatment for post-partum haemorrhage
***Option**:* Auxiliary nurses performing suturing for minor perineal/genital lacerations
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend this option. We suggest implementing this intervention where auxiliary nurses are already an established cadre. This intervention should be operationalised in the context of the WHO PPH guidelines, which outline a comprehensive approach to managing PPH.		
Justification	There is insufficient evidence on the effectiveness and acceptability of auxiliary nurses performing suturing for minor perineal / genital lacerations. However, the panel considered suturing to be part of the core skills of auxiliary nurses. In addition, it is probably feasible and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurses to suture genital lacerations: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	-		
Research priorities	-		

11.3. EVIDENCE BASE:

Should AUXILIARY NURSES perform suturing for minor perineal / genital lacerations?

Problem: Poor access to treatment for post-partum haemorrhage
Option: Auxiliary nurses performing suturing for minor perineal/genital lacerations
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1 week training in emergency obstetric care
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Sutures, antiseptic solution
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** One systematic review (Rashidian 2012) explored factors that influence the success of task-shifting to nurses. This review suggests that: • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence) • Nurses themselves may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctor acceptance appears to be influenced by level of nurse experience (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	This intervention requires some supplies. Adequate referral to a higher level of care for further management may be necessary. In addition, this intervention is likely to require changes to norms or regulations. Some training and supervision is needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.4. RECOMMENDATION:

Should AUXILIARY NURSES administer antihypertensives for severe high blood pressure in pregnancy?

***Problem**:* Poor access to treatment for severe high blood pressure in pregnancy
***Option**:* Auxiliary nurses administering antihypertensives for severe high blood pressure in pregnancy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurses are already an established cadre; where a well-functioning referral system is in place or can be put in place; and where care is delivered in the context of a standard protocol.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurses administering these drugs. However, this may be acceptable and feasible, and may reduce inequalities in settings where access to more highly trained providers is limited.		
Implementation considerations	Not applicable		
Monitoring and evaluation	-		
Research priorities	- Studies assessing the effects and the acceptability of using auxiliary nurses to administer (a) antihypertensives for high blood pressure and (b) corticosteroids to pregnant women are needed		

11.4. EVIDENCE BASE:

Should AUXILIARY NURSES administer antihypertensives for severe high blood pressure in pregnancy?

***Problem**:* Poor access to treatment for severe high blood pressure in pregnancy
***Option**:* Auxiliary nurses administering antihypertensives for severe high blood pressure in pregnancy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	E.g. 2 weeks of practice-based training in diagnosing and managing hypertension in pregnancy
Supervision and monitoring	Regular supervision by midwife or doctor
Supplies	Antihypertensives, blood pressure measurement device
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires some supplies (drugs and simple diagnostic tools). Also, adequate referral to a higher level of care for further management may also be necessary. While training, clinical experience and supervision are needed, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurses to prescribe and administer drugs. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.5. RECOMMENDATION:

Should AUXILIARY NURSES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

***Problem**:* Poor access to treatment in the context of preterm labour
***Option**:* Auxiliary nurses administering corticosteroids
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option***	*We suggest considering the option only in the context of rigorous research*	*We recommend the option*
	☑	☐	☐
	We recommend against the use of auxiliary nurses to administer corticosteroids to pregnant women in the context of preterm labour		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurses administering these drugs; and they do not have the necessary clinical skills for diagnosis of preterm labour. We therefore recommend against the option.		
Implementation considerations	Not applicable		
Monitoring and evaluation	-		
Research priorities	-		

11.5. EVIDENCE BASE:

Should AUXILIARY NURSES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

Problem: Poor access to treatment in the context of preterm labour
Option: Auxiliary nurses administering corticosteroids
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☑ | Yes ☐ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which auxiliary nurses already provide other care</th></tr><tr><td>Training</td><td>E.g. 2 weeks of practice-based training in diagnosing and managing pre-term labour</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by midwife or doctor</td></tr><tr><td>Supplies</td><td>Corticosteroids</td></tr><tr><td>Referral</td><td>Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available</td></tr></table></td><td></td></tr>
<tr><td></td><td>CRITERIA</td><td>JUDGEMENT</td><td>EVIDENCE</td><td>COMMENTS AND QUERIES</td></tr>
</table>

	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires some supplies (drugs and simple diagnostic tools). Also, adequate referral to a higher level of care for further management may also be necessary. While training, clinical experience and supervision are needed, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurses to prescribe and administer drugs. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.6. RECOMMENDATION:

Should AUXILIARY NURSES deliver maternal intrapartum care (including labour monitoring, e.g. using a partograph; foetal heart rate monitoring by auscultation; decision to transfer for poor progress; delivery of the baby)?

***Problem**:* Poor access to intrapartum care
***Option**:* Auxiliary nurses delivering intrapartum interventions
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option***	*We recommend the option*
	☑	☐	☐
	We recommend against auxiliary nurses delivering these maternal intrapartum interventions.		
Justification	The effects of using auxiliary nurses to deliver maternal intrapartum care are uncertain. In addition, the delivery of intra-partum interventions requires considerable training and skills which auxiliary nurses do not generally have. Delivering this training would result in a different cadre.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of using auxiliary nurses to deliver maternal intrapartum interventions are needed		

11.6. EVIDENCE BASE:

Should AUXILIARY NURSES deliver maternal intrapartum care (including labour monitoring, e.g. using a partograph; foetal heart rate monitoring by auscultation; decision to transfer for poor progress; delivery of the baby)?

***Problem**:* Poor access to intrapartum care
***Option**:* Auxiliary nurses delivering intrapartum interventions
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>QUERIES TO PANEL</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>☐ No ☐ Probably no ☑ Uncertain ☐ Probably yes ☐ Yes ☐ Varies</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurses for this intervention. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>☐ No ☐ Probably no ☑ Uncertain ☐ Probably yes ☐ Yes ☐ Varies</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>☐ Very low ☐ Low ☐ Moderate ☐ High ☑ No direct evidence ☐ Varies</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>☐ No ☐ Probably no ☑ Uncertain ☐ Probably yes ☐ Yes ☐ Varies</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>☑ No ☐ Probably no ☐ Uncertain ☐ Probably yes ☐ Yes ☐ Varies</td><td>Main resource requirements

<table><tr><th>Resource</th><th>Settings in which auxiliary nurses already provide other care</th></tr><tr><td>Training</td><td>Training needs are significant, requires learning of appropriate monitoring and care during labour</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision would be needed by a senior midwife or doctor</td></tr><tr><td>Supplies</td><td>Sterile gloves, Pinard stethoscope, partograph</td></tr><tr><td>Referral</td><td>Essential to be able to refer to facility with skilled birth attendants</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	QUERIES TO PANEL
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Two systematic reviews (Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to midwifes and nurses. This review suggests that: • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence) (Rashidian 2012) • Nurses themselves may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctor acceptance appears to be influenced by level of nurse experience (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) (Rashidian 2012) • Relationships between doulas, TBAs or other birth supporters and professional midwives may be ambivalent, and at times, directly conflictual. This may have been due to the fact that midwives disliked the involvement of others in the emotional support of the mother during labour, feeling that this shifted the relationship between mother and midwife, often in a more medical direction (moderate certainty evidence) (Colvin 2012). **Annex**: page 20 (Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Minimal supplies and equipment are required and changes to norms or regulations are unlikely to be needed. The interventions require training and supervision. Systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.1. RECOMMENDATION:

Should AUXILIARY NURSES initiate and maintain injectable contraceptives using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses initiating and maintaining injectable contraceptives using a CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***No recommendation has been made***	*We recommend the option*
	☐	☑	☐
	No recommendation was made for this option.		
Justification	We need research about the effectiveness of delivering injectable contraceptives using a compact, prefilled, autodisable device (CPAD) such as Uniject before considering the cadres that can undertake delivery. The panel therefore did not make a recommendation. It was also noted that studies on this question are underway.		
Implementation considerations	Not applicable.		
Monitoring and evaluation	Not applicable		
Research priorities	Not applicable		

12.1. EVIDENCE BASE:

Should AUXILIARY NURSES initiate and maintain injectable contraceptives using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses initiating and maintaining injectable contraceptives using a CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). Neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to deliver injectable contraceptives using a CPAD device. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** Another systematic review (Oladapo 2012) assessed the effects of LHWs delivering injectable contraceptives to women of reproductive age. This review identified one study from Uganda in which women received DMPA from LHWs using 'autodisable' syringes (it was not clear whether this was a CPAD device). It is uncertain whether LHWs delivering injectable contraceptives improves contraceptive uptake and maintains safety and patient satisfaction because the quality of the evidence from this study is very low. **Annex:** page 15 (Oladapo 2012)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	While the costs of CPAD devices are currently higher than standard syringe, these costs may decrease as production volumes increase.

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 weeks of practice-based training in injection techniques and in contraceptive methods and promotion
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Contraceptive CPAD, sterile solution, robust supply chain

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based or home-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (contraceptive CPAD, sterile solution). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Training, including in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.2. RECOMMENDATIONS:

Should AUXILIARY NURSES initiate and maintain injectable contraceptives using a standard syringe?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses initiating and maintaining injectable contraceptives using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of auxiliary nurses to deliver injectable contraceptives using a standard syringe with targeted monitoring and evaluation.		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective, acceptable and feasible approach to making injectable contraceptives available more widely. In addition, the delivery of injections is part of auxiliary nurse practice in a number of settings.		
Implementation considerations	The following should be considered when using auxiliary nurses to deliver injectable contraceptives: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Supplies need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that auxiliary nurses should avoid introducing their own criteria for determining who should receive contraception - Auxiliary nurses need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation	Implementation should include monitoring of the standard of counselling on contraceptive choices.		
Research priorities			

12.2. EVIDENCE BASE:

Should AUXILIARY NURSES initiate and maintain injectable contraceptives using a standard syringe?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses initiating and maintaining injectable contraceptives using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). Neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to deliver injectable contraceptives using a standard syringe. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** Another systematic review (Oladapo 2012) assessed the effects of LHWs delivering injectable contraceptives to women of reproductive age. This review identified one study from Uganda in which women received DMPA from LHWs using 'autodisable' syringes (these were not CPAD devices). It is uncertain whether LHWs delivering injectable contraceptives improves contraceptive uptake and maintains safety and patient satisfaction because the quality of the evidence from this study is very low. **Annex:** page 15 (Oladapo 2012)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 weeks of practice-based training in injection techniques and in contraceptive methods and promotion; universal precautions
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Injectable contraceptives, syringes, sterile solution, robust supply chain

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based or home-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (injectable contraceptives, syringes, sterile solution). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Training, including in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b) ; page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.3. RECOMMENDATION:
Should AUXILIARY NURSES insert and remove intrauterine device (IUDs)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering using use auxiliary nurses to insert and remove IUDs only in the context of rigorous research.		
Justification	There is insufficient evidence on the effectiveness of this intervention. In addition, auxiliary nurses do not have pelvic assessment competency within their scope and would require some training. However, this intervention may be a cost-effective, feasible and acceptable approach and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities			

12.3. EVIDENCE BASE:

Should AUXILIARY NURSES insert and remove intrauterine device (IUDs)

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to insert and remove IUDs. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The same systematic review (Polus 2012a) identified two studies from the Philippines and Turkey where IUD insertion by auxiliary nurse midwives was compared with IUD insertion by doctors. These studies show that the use of auxiliary nurse midwives probably leads to little or no difference in expulsion rates, removal rates, continuation rates (moderate certainty evidence). There may also be little or no difference in rates of unintended pregnancies or in referral rates before and after IUD insertion (low certainty evidence). The studies did not assess pain at insertion, insertion failure, and complications at insertion. The review also identified two studies from Brazil and Columbia where IUD insertion by nurses was compared with IUD insertion by doctors. These studies show that the use of nurses may lead to little or no difference in expulsion rates and continuation rates (low certainty evidence), and probably leads to less pain (moderate certainty evidence). We are uncertain about the differences between nurses and doctors for removal rates, rates of unintended pregnancies, and complication rates (very low certainty evidence). Other outcomes show mixed results (low certainty evidence). **Annex:** pages 58-60 (Polus 2012a – Table 1 and Table 2)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	Some training for auxiliary nurses to insert and remove an IUD
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	IUD, antiseptic solution, insertion equipment
Referral	This may be needed for a small number of women

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A review of country case studies of task shifting for family planning (Polus 2012b) identified one programme where IUDs were delivered by auxiliary nurses. Overall, the review suggests that recipients appreciate the easy access that community-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) **Annex:** page 33 (Glenton, Khanna 2012); page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (IUDs, antiseptic solution, insertion equipment). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Training in IUD insertion and removal and in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses felt that training in IUD insertion was insufficient. The auxiliary nurses also lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012) ; page 20 (Colvin 2012).	

12.4. RECOMMENDATION:
Should AUXILIARY NURSES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest using this intervention where: (1) auxiliary nurses are already an established cadre; and (2) a well-functioning referral system is in place or can be put in place		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective, feasible and acceptable approach and may reduce inequalities by extending care to underserved populations. In addition, the intervention would require minimal additional skills.		
Implementation considerations	The following should be considered when using auxiliary nurses to insert and remove contraceptive implants: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Auxiliary nurses and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that auxiliary nurses should avoid introducing their own criteria for determining who should receive contraception - Auxiliary nurses need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities			

12.4. EVIDENCE BASE:

Should AUXILIARY NURSES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to insert and remove contraceptive implants. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** Another systematic review (Oladapo 2012) assessed the effects of LHWs delivering injectable contraceptives to women of reproductive age. This review identified one study from Uganda in which women received DMPA from lay health workers using 'autodisable' syringes (it was not clear whether this was a CPAD device). It is uncertain whether lay health workers delivering injectable contraceptives improves contraceptive uptake and maintains safety and patient satisfaction because the quality of the evidence from this study is very low **Annex:** page 15 (Oladapo 2012).	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements*** **Resource** — **Settings in which auxiliary nurses already provide other care** *Training* — Some training for auxiliary nurses to insert and remove a contraceptive implant *Supervision and monitoring* — Regular supervision by senior midwife or doctor *Supplies* — Contraceptive implant, insertion equipment and local anaesthetic *Referral* — Patients may need to go to a referral centre for removal difficulties	

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based or home-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs; a fear of side effects, service fees; and a lack of support from husbands. **Annex:** page 33 (Glenton, Khanna 2012); page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (contraceptive implants, insertion equipment, local anaesthetic). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Adequate referral to a higher level of care for further management may be neccesary if removal leads to complications. Training, including in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012); page 20 (Colvin 2012).	

12.5. RECOMMENDATION:
Should AUXILIARY NURSES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option only in the context of rigorous research* ☐	*We recommend the option* ☐
	We recommend against the use of auxiliary nurses to perform tubal ligation.		
Justification	There is insufficient evidence on the effectiveness of this intervention. In addition, this procedure is beyond the skills of most auxiliary nurses and there is uncertainty regarding its cost-effectiveness, feasibility and acceptability.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities			

12.5. EVIDENCE BASE:

Should AUXILIARY NURSES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to perform tubal ligation. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** One of these reviews (Polus 2012a) identified one study from Thailand where the effects of postpartum tubal ligation performed by midwives was compared to the same intervention performed by doctors. This study shows that there is little or no difference between midwives and doctors with regard to complications during surgery or postoperative morbidity. **Annex**: page 62 (Polus 2012a – Table 3)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements*** **Resource** — **Settings in which auxiliary nurses already provide other care** *Training* — Practice-based training in tubal ligation techniques. Auxiliary nurses are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial *Supervision and monitoring* — Regular supervision by senior midwife or doctor *Supplies* — Surgical instruments, local anaesthetic, suture material, surgical facility / theatre, resuscitation equipment *Referral* — To a referral centre for failed ligations and / or complications	

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012)**;** page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires relatively well-equipped facilities, including access to surgical instruments, surgical facility / theatre and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow auxiliary nurses to perform tubal ligation. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b); page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.6. RECOMMENDATION:
Should AUXILIARY NURSES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option only in the context of rigorous research. Implementation in the context of research should be done where: - auxiliary nurses are already an established cadre - a well-functioning referral system is in place or can be put in place **Note**: Five members of the panel dissented and indicated that they would prefer to recommend against the option as they considered this procedure to exceed the typical scope of practice of auxiliary nurses		
Justification	There is insufficient evidence on the effectiveness of this intervention. In addition, there is uncertainty regarding its cost-effectiveness, feasibility and acceptability.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies to assess the effects, acceptability and feasibility of auxiliary nurses performing vasectomy are needed		

12.6. EVIDENCE BASE:

Should AUXILIARY NURSES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to perform vasectomy. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurses already provide other care
Training	Practice-based training in vasectomy technique. Auxiliary nurses are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, antiseptic solution (vasectomy), suture material, surgical facility / theatre, resuscitation equipment
Referral	To a referral centre for failed vasectomies and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, and service fees. **Annex**: page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires relatively well-equipped facilities, including access to surgical instruments, surgical facility / theatre and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow auxiliary nurses to perform vasectomy. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b); page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

2.7. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES distribute misoprostol to women during pregnancy for self-administration after childbirth?

***Problem**:* Poor access to prevention of postpartum haemorrhage
***Option**:* Auxiliary nurse midwives distributing misoprostol to women during pregnancy for self-ministration after childbirth
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***No recommendation has been made***	*We recommend the option*
	☐	☑	☐
	No recommendations have been made for this option.		
Justification	We need research about the effectiveness of distributing misoprostol to women during pregnancy for self-administration after childbirth before considering the cadres that can undertake distribution. The panel therefore did not make a recommendation. However, it was also noted that this may improve access to misoprostol in some settings.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of auxiliary nurse midwives distributing misoprostol to women during pregnancy for self-administration after childbirth for prevention of postpartum haemorrhage		

2.7. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES distribute misoprostol to women during pregnancy for self-administration after childbirth?

***Problem**:* Poor access to prevention of postpartum haemorrhage
***Option**:* Auxiliary nurse midwives distributing misoprostol to women during pregnancy for self-ministration after childbirth
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. In addition, a systematic review assessed the effectiveness and safety of advance misoprostol provision for postpartum haemorrhage prevention and treatment in non-facility births. This review did not identify any studies (Oladapo 2012). **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Additional considerations**: Although there has been general concern that providing misoprostol at home may discourage women from coming to a facility for childbirth this concern has not been substantiated by programmatic evidence.	**Note:** A World Health Organisation guideline states that there is insufficient evidence to recommend the antenatal distribution of misoprostol to pregnant women for self-administration for prevention of PPH. The guideline also acknowledges that a number of countries have embarked on misoprostol community distribution programmes and considers that this should be performed in the context of research (where reliable data on coverage, safety and health outcomes can be collected) (WHO, 2012).
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☐ / Yes ☑ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	1-2 weeks of practice-based training in safe delivery and in communication and health promotion skills.
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Misoprostol tablets, robust supply chain, printed information for pregnant women and their families
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Some LHWs voiced concerns about possible social or legal consequences if something went wrong following the administration of drugs. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention is relatively simple to deliver as all pregnant women would be eligible to receive misoprostol and the auxiliary nurse does not have to be present at the time of delivery. Some additional work would be needed to add this intervention to the existing tasks of auxiliary nurse midwives. It is likely to require changes in regulations; and significant changes to drug supplies and training. Some training and supervision is needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). For a range of issues (no evidence on misoprostol specifically), the review of lay health workers suggests that counselling and communication was perceived as important but as a complex task for which they sometimes felt unprepared and for which they requested specific training (moderate certainty evidence). However, trainers were not necessarily competent to train them in these skills (low certainty evidence) (Glenton, Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

4.1. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for preterm PROM
***Option**:* Auxiliary nurse midwives delivering injectable antibiotics
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurse midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives diagnosing preterm pre-labour rupture of membranes (PROM) and delivering initial treatment of injectable antibiotics using a standard syringe before referral. Possible harms include the overuse of antibiotics and misdiagnosis. Possible benefits include earlier access to treatment for preterm PROM, but it is unclear whether slightly earlier treatment, prior to referral, would have benefits. This intervention may be acceptable and feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of using auxiliary nurse midwives to delivering an initial dose of injectable antibiotics to treat preterm PROM prior to referral.		

4.1 EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for preterm PROM
***Option**:* Auxiliary nurse midwives delivering injectable antibiotics
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	e.g. two weeks of training for auxiliary nurse midwives to diagnosis and manage, including diagnosis of amniotic fluid volume by ultrasound where available. This assumes proficiency in diagnosing pregnancy, assessing gestational age, and assessing leakage of amniotic fluid through observation and simple pH testing
Supervision and monitoring	Regular supervision by a midwife or doctor
Supplies	Antibiotics, equipment needed for diagnosis, e.g. litmus paper. Ultrasound equipment in some settings
Referral	Transportation, adequate referral centre

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	The intervention requires relatively few supplies (antibiotics and simple diagnostic tools). In addition, it is simple to deliver and requires only a relatively small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurse midwives to prescribe and deliver injectable antibiotics. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

7.1 and 7.2. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES (a) initiate and (b) maintain kangaroo mother care for low birth weight infants?

Problem: Low utilisation of kangaroo mother care for low birth weight infants
Option: Auxiliary nurse midwives initiating and maintaining kangaroo mother care
Comparison: Usual care
Setting: Community/primary health care settings in LMICs

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation. We suggest using this intervention where auxiliary nurse midwives are already an established cadre.		
Justification	There is insufficient evidence on the effectiveness and feasibility of auxiliary nurse midwives initiating kangaroo mother care for low birth weight infants. However, the intervention may have important benefits and is probably feasible and acceptable. It may also reduce inequalities by extending care to underserved populations. We therefore suggest considering the option with targeted monitoring and evaluation, with particular attention given to different birthweight subgroups.		
Implementation considerations	The following should be considered when using auxiliary nurse midwives to initiate and maintain kangaroo mother care: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - Local beliefs and practical circumstances related to the health conditions in question should be addressed within the programme design - The distribution of roles and responsibilities between auxiliary nurse midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurse midwives' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities (e.g. delivery kits) need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurse midwives and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	Monitoring and evaluation should focus on different weight categories to ensure that babies with birth weight less than 1500 grams are not adversely affected.		
Research priorities			

7.1 and 7.2. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES (a) initiate and (b) maintain kangaroo mother care for low birth weight infants?

Problem: Low utilisation of kangaroo mother care for low birth weight infants
Option: Auxiliary nurse midwives initiating and maintaining kangaroo mother care
Comparison: Usual care
Setting: Community/primary health care settings in LMICs

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence** A systematic review of the effects of lay health workers (Lewin 2012) identified three trials from Bangladesh and India that assessed the effectiveness of promotion of kangaroo care or skin-to-skin care after birth, although promotion was not specifically targeted at low birth weight babies. In two of the trials, LHWs promoted the intervention as part of a package of maternal and newborn care while, in one study, LHWs taught kangaroo care to expectant mothers and their families. One trial suggests that the intervention probably leads to an increase in the use of skin-to-skin care within 24 hours after birth, compared to usual care (moderate certainty evidence). Two trials suggest that the overall package of maternal and newborn care may reduce neonatal mortality (low certainty evidence) **Annex**: page13 (Lewin 2012 – Table 4)	Although direct evidence on effects is lacking, there is some evidence that lay health workers can deliver this intervention, it is simple to implement, is likely to have benefits and is not likely to have significant undesirable effects. We have therefore judged the desirable effects as probably large relative to the undesirable effects.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	Training in the technique is necessary and may take 1-2 weeks
Supervision and monitoring	Regular supervision by an experienced kangaroo care practitioner
Supplies	Minimal: promotional and demonstrational materials; carrying pouches for babies
Referral	To a health facility if any health problems are detected

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Although there is no direct evidence on effectiveness, the benefits are likely to be large in relation to the incremental costs	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) explored factors that influence the success of task-shifting to nurses. This review suggest that: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may prefer nurses, compared to doctors, for issues that require more attention and time (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention is relatively simple, requires no supplies and is unlikely to require changes to norms or regulations. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary. Systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

8.1. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES deliver injectable antibiotics for neonatal sepsis, using a standard syringe?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurse midwives delivering injectable antibiotics for neonatal sepsis
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurse midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives delivering injectable antibiotics for neonatal sepsis using a standard syringe, and its feasibility is uncertain. However, this intervention may be acceptable and may reduce inequalities by extending care to underserved populations. Also, giving intramuscular and intravenous injections are generally within the standard competencies of auxiliary nurse midwives.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects of using auxiliary nurse midwives to make a diagnosis and deliver injectable antibiotics for neonatal sepsis		

8.1 EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES deliver injectable antibiotics for neonatal sepsis, using a standard syringe?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurse midwives delivering injectable antibiotics for neonatal sepsis
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably No ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Indirect evidence:
A systematic review of the effects of lay health workers (Lewin 2012) identified a number of trials from LMIC settings where packages of care were delivered by LHWs. In one trial, the package included LHWs injecting procaine penicillin and gentamicin to treat sick neonates, apparently using a standard syringe. The trial did not report any adverse effects of LHWs using injectable antibiotics. Overall, the trials suggest that these packages of care may lead to a reduction in neonatal mortality (moderate certainty evidence) and child mortality (low certainty evidence).

Annex: page 10 (Lewin 2012 – Table 2)</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably No ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably No ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☑ | Uncertain ☐ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which auxiliary nurse midwives already provide other care</th></tr><tr><td>Training</td><td>1-2 weeks of practice-based training in injection techniques, in diagnosi and managing neontal sepsis</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by midwife or nurse</td></tr><tr><td>Supplies</td><td>Antibiotics, syringes, sterile solution, robust supply chain</td></tr><tr><td>Referral</td><td>Transportation, adequate referral centre offering neonatal care</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012) • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines, including antibiotics for neonatal sepsis, by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012) • Activities that demand that the LHW is present at specific times may lead to changes in working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012) **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Significant additional work may be required to add the intervention to the tasks of auxiliary nurse midwives. It is likely to require changes in regulations; significant changes to drug supplies and training; and validation of appropriate treatment algorithms. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant **training and** supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

8.2. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES deliver antibiotics for neonatal sepsis, using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurse midwives delivering antibiotics for neonatal sepsis using CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurse midwives are already an established cadre, where clear clinical protocols are available and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives delivering antibiotics for neonatal sepsis using a CPAD and its feasibility is uncertain. However, this intervention may be acceptable and may reduce inequalities by extending care to underserved populations. Also, giving intramuscular and intravenous injections are generally within the standard competencies of auxiliary nurse midwives.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects and the acceptability of using auxiliary nurse midwives to diagnose sepsis and deliver injectable antibiotics for neonatal sepsis using a CPAD		

8.2. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES deliver antibiotics for neonatal sepsis, using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to treatment for neonatal sepsis
***Option**:* Auxiliary nurse midwives delivering antibiotics for neonatal sepsis using CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review of the effects of lay health workers (Lewin 2012) identified a number of trials from LMIC settings where packages of care were delivered by LHWs. In one trial, the package included LHWs injecting procaine penicillin and gentamicin to treat sick neonates, apparently using a standard syringe. The trial did not report any adverse effects of LHWs using injectable antibiotics. Overall, the trials suggest that these packages of care may lead to a reduction in neonatal mortality (moderate certainty evidence) and child mortality (low certainty evidence). **Annex:** page 10 (Lewin 2012 – Table 2)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☑ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	1-2 weeks of practice-based training in injection techniques and in diagnosing and managing neontal sepsis
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Antibiotic CPAD, sterile solution, robust supply chain
Referral	Transportation, adequate referral centre offering neonatal care

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines, including antibiotics for neonatal sepsis, by LHWs through compact prefilled autodisable devices (CPADs) such as Uniject to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times may lead to changes in working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Significant additional work may be required to add the intervention to the tasks of auxiliary nurse midwives. It is likely to require changes in regulations; significant changes to drug supplies and training; and validation of appropriate treatment algorithms. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant **training and** supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

9.1. RECOMMENDATION:
Should AUXILIARY NURSE MIDWIVES deliver neonatal resuscitation?

***Problem**:* Poor access to neonatal care
***Option**:* Auxiliary nurse midwives delivering neonatal resuscitation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option only in the context of rigorous research*	***We recommend the option***
	☐	☐	☑
	We recommend this option. We suggest implementing this intervention where auxiliary nurse midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives delivering neonatal resuscitation. However, this intervention is part of the core skills of skilled birth attendants, is probably acceptable, is probably feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects and the acceptability of using auxiliary nurse midwives to deliver neonatal resuscitation		

9.1. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES deliver neonatal resuscitation?

***Problem**:* Poor access to neonatal care
***Option**:* Auxiliary nurse midwives delivering neonatal resuscitation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	1-2 days of practice-based training in neonatal resuscitation
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Resuscitation bag and mask
Referral	Transportation, adequate referral centre offering neonatal care

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence**: Three systematic reviews (Glenton, Khanna 2012; Glenton, Colvin 2012, Rashidian 2012) explored factors that influence the success of task-shifting to lay health workers and nurses. These reviews suggest that the acceptability of such programmes to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) (Rashidian 2012). • Recipients, LHWs and other health workers may find the delivery of drugs and vaccines by LHWs to be acceptable, although the importance of training and supervision is emphasised (low certainty evidence). Some LHWs voiced concerns about possible social or legal consequences if something went wrong. These concerns were at least partly addressed through support and supervision (low certainty evidence) (Glenton, Khanna 2012). • Activities that demand that the LHW is present at specific times, for instance during labour and birth, lead to irregular and unpredictable working conditions. At least one study shows that this may have direct implications for LHWs' expectations regarding incentives (low certainty evidence) (Glenton, Colvin 2012). **Annex**: page 33 (Glenton, Khanna 2012); page 26 (Glenton, Colvin 2012); page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Significant additional work may be required to add the intervention to the tasks of auxiliary nurse midwives. It is likely to need changes in regulations; significant changes to supplies and training; and development of appropriate treatment algorithms. Also, implementation would require access to a referral system with trained and equipped healthcare professionals and facilities. Significant training and supervision provided by skilled health cadres would likely be needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Colvin 2012; Rashidian 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.1, 11.2 and 11.3. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES (a) administer intravenous fluid for resuscitation as part of postpartum haemorrhage treatment, (b) perform internal bimanual uterine compression for postpartum hameorrhage, and (c) perform suturing for minor perineal / genital lacerations?

***Problem**:* Poor access to treatment for post-partum haemorrhage
***Option**:* Auxiliary nurse midwives delivering a range of interventions to treat haemorrhage
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	***We recommend the option***
	☐	☐	☑
	We recommend these options. We suggest implementing these interventions where auxiliary nurse midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place. These interventions should be operationalised in the context of the WHO PPH guidelines, which outline a comprehensive approach to managing PPH.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives delivering these interventions. However, the panel considered these interventions to be part of the core skills of auxiliary nurse midwives. In addition, they may be acceptable, are probably feasible and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurse midwives to (a) administer intravenous fluid for resuscitation, (b) perform internal bimanual uterine compression, and (c) suture genital lacerations: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurse midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurse midwives' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurse midwives and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	-		
Research priorities	-		

11.1, 11.2 and 11.3. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES (a) administer intravenous fluid for resuscitation as part of postpartum haemorrhage treatment, (b) perform internal bimanual uterine compression for postpartum haemorrhage, and (c) perform suturing for minor perineal / genital lacerations?

Problem: Poor access to treatment for post-partum haemorrhage
Option: Auxiliary nurse midwives delivering a range of interventions to treat haemorrhage
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably No ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	3-4 weeks training in emergency obstetric care
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	IV fluids and sets, sutures, antiseptic solution
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** One systematic review (Rashidian 2012) explored factors that influence the success of task-shifting to nurses. This review suggests that: • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence) • Nurses themselves may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctor acceptance appears to be influenced by level of nurse experience (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably No* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	These interventions require some supplies. Adequate referral to a higher level of care for further management may be necessary. In addition, these interventions are likely to require changes to norms or regulations. Some training and supervision is needed. However, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.4. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES administer antihypertensives for severe high blood pressure in pregnancy?

***Problem**:* Poor access to treatment
***Option**:* Auxiliary nurse midwives administering antihypertensives for severe high blood pressure during pregnancy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation. We suggest evaluating this intervention where auxiliary nurse midwives are already an established cadre; in an acute context prior to referral; and where following a standard protocol.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives administering these drugs. However, this is probably acceptable, and they have the necessary clinical skills. The intervention may also reduce inequalities in settings where access to more highly trained providers is limited.		
Implementation considerations	The following should be considered when using auxiliary nurse midwives to (a) administer intravenous fluid for resuscitation, (b) perform internal bimanual uterine compression, and (c) suture genital lacerations: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurse midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurse midwives' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Auxiliary nurse midwives and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation	Monitoring and evaluation should focus on adherence to clinical protocols and potential harms of antihypertensives on the mother and the baby.		
Research priorities	- Studies assessing the effects and the acceptability of using auxiliary nurse midwives to administer (a) antihypertensives for high blood pressure and (b) corticosteroids to pregnant women are needed		

11.4. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES administer antihypertensives for severe high blood pressure in pregnancy

***Problem**:* Poor access to treatment
***Option**:* Auxiliary nurse midwives administering antihypertensives for severe high blood pressure during pregnancy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	E.g. 2 weeks of practice-based training in diagnosing and managing hypertension in pregnancy
Supervision and monitoring	Regular supervision by midwife or doctor
Supplies	Antihypertensives, blood pressure measurement device
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires some supplies (drugs and simple diagnostic tools). Also, adequate referral to a higher level of care for further management may also be necessary. While training, clinical experience and supervision are needed, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurse midwives to prescribe and administer drugs. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.5. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES administer corticosteroids to pregnant womenin the context of preterm labour to improve neonatal outcomes?

***Problem**:* Poor access to treatment
***Option**:* Auxiliary nurse midwives administering corticosteroids to pregnant women in the context of preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurse midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives administering corticosteroids to pregnant women for the foetus in the context of preterm labour. However, auxiliary nurse midwives have the necessary clinical skills for diagnosis of preterm labour and for the administration of this drug and the intervention may be acceptable and feasible.		
Implementation considerations	Not applicable		
Monitoring and evaluation	-		
Research priorities	- Studies assessing the effects and the acceptability of using auxiliary nurse midwives to administer corticosteroids to pregnant women are needed		

11.5. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

***Problem**:* Poor access to treatment
***Option**:* Auxiliary nurse midwives administering corticosteroids to pregnant women in the context of preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th colspan="2">CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using auxiliary nurse midwives for this intervention. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☑ | Yes ☐ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which auxiliary nurse midwives already provide other care</th></tr><tr><td>Training</td><td>E.g. 2 weeks of practice-based training in diagnosing and managing pre-term labour</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by midwife or doctor</td></tr><tr><td>Supplies</td><td>Corticosteroids</td></tr><tr><td>Referral</td><td>Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires some supplies (drugs and simple diagnostic tools). Also, adequate referral to a higher level of care for further management may also be necessary. While training, clinical experience and supervision are needed, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurse midwives to prescribe and administer drugs. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.12. RECOMMENDATIONS:

Should AUXILIARY NURSE MIDWIVES deliver magnesium sulphate to women in preterm labour as a neuroprotection for the foetus?

***Problem**:* Poor access to medical management of preterm birth
***Option**:* Auxiliary nurse midwives delivering magnesium sulphate for preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option in the context of rigorous research. We suggest evaluating this intervention where auxiliary nurse midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of auxiliary nurse midwives delivering magnesium sulphate to women in preterm labour as a neuroprotective for the foetus. However, auxiliary nurse midwives have the necessary clinical skills for diagnosis of preterm labour and for the administration of this drug and the intervention may be acceptable and feasible.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed of the effects and the acceptability of midwives delivering magnesium sulphate and / or corticosteroids for women at risk of preterm birth.		

11.12. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES deliver magnesium sulphate to women in preterm labour as a neuroprotection for the foetus?

Problem: Poor access to medical management of preterm birth
Option: Auxiliary nurse midwives delivering magnesium sulphate for preterm labour
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, the review did not identify any studies that assessed the effects of auxiliary nurse midwives delivering magnesium sulphate for women in preterm labour. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The review (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008) **Annex**: page 4 (Lassi 2012)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	E.g. less than 1 week of training for midwives to diagnosis pre-term labour, gestational age and, for magnesium sulphate, be given skills to safely administer and monitor treatment
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening than doctors (moderate certainty evidence), but may prefer doctors for some medical tasks (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence) and may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). • However, doctors and other health workers may be unwilling to relinquish final responsibility for patient care (low certainty evidence). Also, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence). **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate and to IV equipment). In addition, it is simple to deliver. The intervention requires some training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). In some settings, changes to norms or regulations may be needed to allow midwives to prescribe and deliver magnesium sulphate. **Annex**: page 20 (Colvin 2012)	

12.1. RECOMMENDATION:

Should AUXILIARY NURSE MIDWIVES initiate and maintain injectable contraceptives using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses initiating and maintaining injectable contraceptives using a CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***No recommendation made***	*We recommend the option*
	☐	☑	☐
	No recommendation was made for this option.		
Justification	We need research about the effectiveness of delivering injectable contraceptives using a compact, prefilled, autodisable device (CPAD) such as Uniject before considering the cadres that can undertake delivery. The panel therefore did not make a recommendation. It was also noted that studies on this question are underway.		
Implementation considerations	Not applicable		
Monitoring and evaluation	Not applicable		
Research priorities	Not applicable		

12.1. EVIDENCE BASE:

Should AUXILIARY NURSES initiate and maintain injectable contraceptives using a compact, prefilled, autodisable device (CPAD) such as Uniject?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurses initiating and maintaining injectable contraceptives using a CPAD
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ · Probably no ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). Neither of these reviews identified any studies that assessed the effects of using auxiliary nurses to deliver injectable contraceptives using a CPAD device. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** Another systematic review (Oladapo 2012) assessed the effects of LHWs delivering injectable contraceptives to women of reproductive age. This review identified one study from Uganda in which women received DMPA from LHWs using 'autodisable' syringes (it was not clear whether this was a CPAD device). It is uncertain whether LHWs delivering injectable contraceptives improves contraceptive uptake and maintains safety and patient satisfaction because the quality of the evidence from this study is very low. **Annex:** page 15 (Oladapo 2012)	
	Are the undesirable effects small?	No ☐ · Probably no ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ · Low ☐ · Moderate ☐ · High ☐ · No direct evidence ☑ · Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ · Probably no ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ · Probably no ☑ · Uncertain ☐ · Probably yes ☐ · Yes ☐ · Varies ☐	***Main resource requirements***	While the costs of CPAD devices are currently higher than standard syringe, these costs may decrease as production volumes increase.

Resource	Settings in which auxiliary nurses already provide other care
Training	1-2 weeks of practice-based training in injection techniques and in contraceptive methods and promotion
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Contraceptive CPAD, sterile solution, robust supply chain

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based or home-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (contraceptive CPAD, sterile solution). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Training, including in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.2. RECOMMENDATIONS:

Should AUXILIARY NURSE MIDWIVES initiate and maintain injectable contraceptives using a standard syringe?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives initiating and maintaining injectable contraceptives using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of auxiliary nurse midwives to deliver injectable contraceptives using a standard syringe.		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective, acceptable and feasible approach to making injectable contraceptives available more widely. In addition, the delivery of injections is part of auxiliary nurse midwife practice in a number of settings.		
Implementation considerations	The following should be considered when using auxiliary nurse midwives to deliver injectable contraceptives: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurse midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurse midwives' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Supplies need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Auxiliary nurse midwives and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that auxiliary nurses should avoid introducing their own criteria for determining who should receive contraception - Auxiliary nurse midwives need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation	Implementation should include monitoring of the standard of counseling on contraceptive choices.		
Research priorities			

12.2. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES initiate and maintain injectable contraceptives using a standard syringe?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives initiating and maintaining injectable contraceptives using a standard syringe
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). Neither of these reviews identified any studies that assessed the effects of using auxiliary nurse midwives to deliver injectable contraceptives using a standard syringe. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** Another systematic review (Oladapo 2012) assessed the effects of LHWs delivering injectable contraceptives to women of reproductive age. This review identified one study from Uganda in which women received DMPA from LHWs using 'autodisable' syringes (it was not clear whether this was a CPAD device). It is uncertain whether LHWs delivering injectable contraceptives improves contraceptive uptake and maintains safety and patient satisfaction because the quality of the evidence from this study is very low. **Annex:** page 15 (Oladapo 2012)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	1-2 weeks of practice-based training in injection techniques and in contraceptive methods and promotion
Supervision and monitoring	Regular supervision by midwife or nurse
Supplies	Injectable contraceptives, syringes, sterile solution, robust supply chain

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based or home-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012**);** page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (injectable contraceptives, syringes, sterile solution). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Training, including in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.3. RECOMMENDATION:
Should AUXILIARY NURSE MIDWIVES insert and remove intrauterine device (IUDs)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of auxiliary nurse midwives to insert and remove IUDs. This intervention may be used where auxiliary nurse midwives are already an established cadre.		
Justification	This intervention is probably effective and may have few undesirable effects. It may also be cost-effective, feasible and acceptable, and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using auxiliary nurse midwives to insert and remove IUDs: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Auxiliary nurse midwives and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that auxiliary nurses should avoid introducing their own criteria for determining who should receive contraception - Auxiliary nurse midwives need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities			

12.3. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES insert and remove intrauterine device (IUDs)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

BENEFITS & HARMS OF THE OPTIONS

Are the anticipated desirable effects large?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

Are the anticipated undesirable effects small?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

What is the certainty of the anticipated effects?

Very low	Low	Moderate	High	No direct evidence	Varies
☐	☐	☑	☐	☐	☐

Are the desirable effects large relative to the undesirable effects?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. The review identified two studies from the Philippines and Turkey where IUD insertion by auxiliary nurse midwives was compared with IUD insertion by doctors. These studies show that the use of auxiliary nurse midwives probably leads to little or no difference in expulsion rates, removal rates, continuation rates (moderate certainty evidence). There may also be little or no difference in rates of unintended pregnancies or in referral rates before and after IUD insertion (low certainty evidence). The studies did not assess pain at insertion, insertion failure, and complications at insertion.

Outcomes	Impacts	Certainty of the anticipated effect
Expulsion rates	Probably little or no difference between auxiliary nurse midwives and doctors	⨁⨁⨁◯ Moderate
Removal rates	Probably little or no difference between auxiliary nurse midwives and doctors	⨁⨁⨁◯ Moderate
Unintended pregnancies	May be little or no difference between auxiliary nurse midwives and doctors	⨁⨁◯◯ Low
Continuation rates	Probably little or no difference between auxiliary nurse midwives and doctors	⨁⨁⨁◯ Moderate
Referrals before and after IUD insertion	May be little or no difference between auxiliary nurses and doctors	⨁⨁◯◯ Low
Pain at insertion, insertion failure, and complications at insertion	Not assessed	-

Annex: page 60 (Polus 2012a – Table 2)

RESOURCE USE

Are the resources required small?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

Main resource requirements

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	Some training for auxiliary nurse midwives to insert and remove an IUD
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	IUD, antiseptic solution, insertion equipment

			Referral This may be needed for a small number of women	
	CRITERIA	**JUDGEMENT**	**EVIDENCE**	**COMMENTS AND QUERIES**
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐		
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs; a fear of side effects, service fees; and a lack of support from husbands. **Annex:** page 33 (Glenton, Khanna 2012); page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (IUDs, insertion equipment and antiseptic solution). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Adequate referral to a higher level of care for further management may be neccesary if removal leads to complications. Training, including in insertion and removal of IUDs and in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.4. RECOMMENDATION:
Should AUXILIARY NURSE MIDWIVES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation. We suggest using this intervention where auxiliary nurse midwives are already an established cadre and a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective, feasible and acceptable approach and may reduce inequalities by extending care to underserved populations. In addition, this intervention would require relatively few additional skills.		
Implementation considerations	The following should be considered when using auxiliary nurse midwives to insert and remove contraceptive implants: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between auxiliary nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in auxiliary nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Auxiliary nurse midwives and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that auxiliary nurses should avoid introducing their own criteria for determining who should receive contraception - Auxiliary nurse midwives need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities			

12.4. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably No ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurses, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurse midwives to insert and remove contraceptive implants. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** One of these reviews (Polus 2012a) identified two studies from the Philippines and Turkey where IUD insertion by auxiliary nurse midwives was compared with IUD insertion by doctors. These studies show that the use of auxiliary nurse midwives probably leads to little or no difference in expulsion rates, removal rates, continuation rates (moderate certainty evidence). There may also be little or no difference in rates of unintended pregnancies or in referral rates before and after IUD insertion (low certainty evidence). The studies did not assess pain at insertion, insertion failure, and complications at insertion. Another systematic review (Oladapo 2012) assessed the effects of lay health workers delivering injectable contraceptives to women of reproductive age. This review identified one study from Uganda in which women received DMPA from lay health workers using 'autodisable' syringes (it was not clear whether this was a CPAD device). It is uncertain whether lay health workers delivering injectable contraceptives improves contraceptive uptake and maintains safety and patient satisfaction because the quality of the evidence from this study is very low. **Annex:** page 60 (Polus 2012a – Table 2); page 15 (Oladapo 2012)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	Some training for auxiliary nurse midwives to insert and remove a contraceptive implant
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Contraceptive implant, insertion equipment and local anaesthetic, sharps disposal
Referral	Patients may need to go to a referral centre for removal difficulties

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based or home-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex:** page 33 (Glenton, Khanna 2012); page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies (contraceptive implants, insertion equipment, local anaesthetic). However, changes to drug supplies may be needed and the intervention is also likely to require changes to norms or regulations. Training, including in communication about family planning, and supervision is necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). Adequate referral to a higher level of care for further management may be neccesary if removal leads to complications.	

12.5. RECOMMENDATION:
Should AUXILIARY NURSE MIDWIVES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option only in the context of rigorous research* ☐	*We recommend the option* ☐
	We recommend against the use of nurses to perform tubal ligation.		
Justification	There is insufficient evidence on the effectiveness of this intervention. In addition, this procedure is beyond the skills of most auxiliary nurse midwives and there is uncertainty regarding its acceptability, feasibility and cost-effectiveness.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities			

12.5. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurse midwives to perform tubal ligation. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** One of these reviews (Polus 2012a) identified one study from Thailand where the effects of postpartumtubal ligation performed by midwives was compared to the same intervention performed by doctors. This study shows that there is little or no difference between midwives and doctors with regard to complications during surgery or postoperative morbidity. **Annex:** page 62 (Polus 2012a – Table 3)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	Practice-based training in tubal ligation techniques. Auxiliary nurse midwives are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, local anaesthetic, suture material, surgical facility / theatre, resuscitation equipment
Referral	To a referral centre for failed ligations and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires relatively well-equipped facilities, including access to surgical instruments, surgical facility / theatre and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow auxiliary nurse midwives to perform tubal ligation. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b) ; page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

12.6. RECOMMENDATION:
Should AUXILIARY NURSE MIDWIVES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. Implementation in the context of research should be done where: - auxiliary nurse midwives are already an established cadre - a well-functioning referral system is in place or can be put in place **Note**: Five members of the panel dissented and indicated that they would prefer to recommend against the option as they considered this procedure to exceed the typical scope of practice of auxiliary nurse midwives.		
Justification	There is insufficient evidence on the effectiveness of this intervention. In addition, there is uncertainty regarding its acceptability, feasibility and cost-effectiveness.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies to assess the effects, acceptability and feasibility of auxiliary nurse midwives performing vasectomy are needed		

12.6. EVIDENCE BASE:

Should AUXILIARY NURSE MIDWIVES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Auxiliary nurse midwives performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including auxiliary nurse midwives, in improving the delivery of health care services (Lassi 2012). However, neither of these reviews identified any studies that assessed the effects of using auxiliary nurse midwives to perform vasectomy. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☑ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which auxiliary nurse midwives already provide other care
Training	Practice-based training in vasectomy technique. Auxiliary nurse midwives are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, antiseptic solution (vasectomy), suture material, surgical facility / theatre, resuscitation equipment
Referral	To a referral centre for failed vasectomies and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	We are not aware of any systematic reviews that considered the acceptability of auxiliary nurse midwife interventions. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** A systematic review (Rashidian 2012) exploring factors that influence the success of doctor-nurse substitution suggests that the acceptability of this intervention to key stakeholders may be mixed: • Nurses may be motivated to take on new tasks by increased recognition and job satisfaction (moderate certainty evidence) • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). They may welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks • However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects and service fees. **Annex**: page 43 (Rashidian 2012)**;** page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires relatively well-equipped facilities, including access to surgical instruments, surgical facility / theatre and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow auxiliary nurse midwives to perform vasectomy. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a review of country case studies of task shifting for family planning (Polus 2012b) suggests that auxiliary nurses lacked confidence in their skills, partly because they had insufficient opportunities to practice these skills in settings were demand was low. In addition, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (moderate certainty evidence) (Glenton, Colvin 2012, Rashidian 2012, Colvin 2012). **Annex**: page 63 (Polus 2012b); page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

4.1. RECOMMENDATION:

Should NURSES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for pPROM
***Option**:* Nurses delivering injectable antibiotics for pPROM
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation. As there are questions about whether nurses have the skills and equipment to make the diagnosis, the intervention should be implemented where nurses are trained to give injections and in care for pregnant women.		
Justification	There is insufficient evidence on the effectiveness of nurses diagnosing preterm pre-labour rupture of membranes (pPROM) and delivering initial treatment of injectable antibiotics, using a standard syringe, before referral. However, this is probably an acceptable and feasible approach to the management of preterm PROM. It may also reduce inequalities in settings where access to more highly trained providers is limited.		
Implementation considerations	The following should be considered when using nurses to deliver antibiotics to treat preterm PROM: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Nurses and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of using nurses to deliver injectable antibiotics to treat preterm PROM in LMICs are needed		

4.1 EVIDENCE BASE:

Should NURSES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for pPROM
***Option**:* Nurses delivering injectable antibiotics for pPROM
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

BENEFITS & HARMS OF THE OPTIONS

Are the anticipated desirable effects large?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☑	☐	☐	☐

Are the anticipated undesirable effects small?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☑	☐	☐	☐

What is the certainty of the anticipated effects?

Very low	Low	Moderate	High	No direct evidence	Varies
☐	☐	☐	☐	☑	☐

Are the desirable effects large relative to the undesirable effects?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☑	☐	☐	☐

One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses delivering injectable antibiotics for preterm PROM. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.**

Indirect evidence:
The same review identified a number of studies, mostly from high income settings, where nurses were compared to doctors for the delivery of other types of interventions. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.

Outcomes	Impacts	Certainty of the anticipated effect
Patient health status	For some of the outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors	Very low to moderate
Patient mortality	No differences between nurses and primary care doctors	Moderate
Process of care	Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences	Very low to moderate
Patient satisfaction and preferences	Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor.	Very low to moderate

Annex: page 6 (Laurant 2012)

RESOURCE USE

Are the resources required small?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

Main resource requirements

Resource	Settings in which nurses already provide other care
Training	E.g. one week of training in diagnosis and management, including diagnosis of amniotic fluid volume by ultrasound where available. Assumes proficiency in diagnosing pregnancy, assessing gestational age, and assessing amniotic fluid leakage through observation and simple pH testing
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Antibiotics, diagnostic equipment, e.g. litmus paper. Ultrasound equipment
Referral	Transportation, adequate referral centre

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness. Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	A systematic review of nurse-doctor substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of injectable antibiotics for preterm PROM when delivered by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctors may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (antibiotics and simple diagnostic tools). In addition, it is simple to deliver and requires only a small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty).In addition, in some settings, changes to norms or regulations may be needed to allow nurses to prescribe and deliver injectable antibiotics. **Annex**: page 43 (Rashidian 2012)	

10.1. RECOMMENDATION:

Should NURSES perform external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Nurses performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option with targeted monitoring and evaluation* ☐	*We recommend the option* ☐
	We recommend against the use of nurses to perform external cephalic version.		
Justification	There is insufficient evidence on the effectiveness of nurses performing external cephalic version, the intervention is outside of their typical scope of practice, and its acceptability is uncertain.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities			

10.1 EVIDENCE BASE:

Should NURSES perform external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Nurses performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses performing ECV. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: The same review identified a number of studies, mostly from high income settings, where nurses were compared to doctors for the delivery of other types of interventions. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Outcomes	Impacts	Certainty of the anticipated effect
Patient health status	For some outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors	Very low to moderate
Patient mortality	No differences between nurses and primary care doctors	Moderate
Process of care	Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences	Very low to moderate
Patient satisfaction and preferences	Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor.	Very low to moderate

Annex: page 6 (Laurant 2012)

Resource	Settings in which nurses already provide other care
Training	E.g. 1-2 weeks of practice-based training to assess foetal position and perform ECV
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Talcum powder. If ultrasound is available it may be helpful.
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness. Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of nurse-doctor substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of ECV when performed by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders**. **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctor acceptance may also be influenced by level of nurse experience (low certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling to relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires very few supplies. In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary, for instance if a caesarean section is needed. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). **Annex**: page 43 (Rashidian 2012)	

11.5. RECOMMENDATION:

Should NURSES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

***Problem**:* Poor access to treatment
***Option**:* Nurses administering corticosteroids to pregnant women in the context of preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option***	*We suggest considering the option in the context of rigorous research*	*We recommend the option*
	☑	☐	☐
	We recommend against the use of nurses to administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes		
Justification	There is insufficient evidence on the effectiveness of nurses administering these drugs; they do not have the necessary clinical skills for diagnosis of preterm labour. We therefore recommend against the option.		
Implementation considerations	Not applicable		
Monitoring and evaluation	-		
Research priorities	-		

11.5. EVIDENCE BASE:

Should NURSES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

***Problem**:* Poor access to treatment
***Option**:* Nurses administering corticosteroids to pregnant women in the context of preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses administering corticosteroids. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Indirect evidence:
The review did identify a number of studies, mostly from high income settings, where nurses were compared to doctors for the delivery of other types of interventions. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.

Outcomes | Impacts | Certainty of the anticipated effect
Patient health status | For some outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors | Very low to moderate
Patient mortality | No differences between nurses and primary care doctors | Moderate
Process of care | Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences | Very low to moderate
Patient satisfaction and preferences | Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor. | Very low to moderate

Annex: page 6 (Laurant 2012)</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☑ | Yes ☐ | Varies ☐</td><td>Main resource requirements
Resource | Settings in which nurses already provide other care
Training | E.g. 1-2 months of practice-based training in diagnosing and managing pre-term labour
Supervision and monitoring | Regular supervision by midwife or doctor
Supplies | Corticosteroids
Referral | Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available</td><td></td></tr>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
</table>

	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of corticosteroids when delivered by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling t o relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires some supplies (drugs and simple diagnostic tools). Also, adequate referral to a higher level of care for further management may also be necessary. The intervention requires clinical skills in the diagnosis of preterm labour, which nurses do not normally possess. In addition, while training, clinical experience and supervision are needed, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow auxiliary nurse midwives to prescribe and administer drugs. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.7. RECOMMENDATION:
Should NURSES perform vacuum extraction during childbirth?

***Problem**:* Poor access to vacuum extraction
***Option**:* Nurses performing vacuum extraction
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option***	*We suggest considering the option with targeted monitoring and evaluation*	*We recommend the option*
	☑	☐	☐
	We recommend against the use of nurses to perform vacuum extraction.		
Justification	There is insufficient evidence on the effectiveness of nurses performing vacuum extraction during childbirth, the intervention is outside of their typical scope of practice and its acceptability and feasibility are uncertain. We therefore recommend against the option.		
Implementation considerations	- Not applicable		
Monitoring and evaluation	Failure rates, injuries to mother and baby.		
Research priorities			

11.7 EVIDENCE BASE:

Should NURSES perform vacuum extraction during childbirth?

***Problem**:* Poor access to vacuum extraction
***Option**:* Nurses performing vacuum extraction
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses performing vacuum extraction. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: The review did identify a number of studies, mostly from high income settings, where nurses were compared to doctors for the delivery of other types of interventions. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Outcomes	Impacts	Certainty of the anticipated effect
Patient health status	For some outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors	Very low to moderate
Patient mortality	No differences between nurses and primary care doctors	Moderate
Process of care	Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences	Very low to moderate
Patient satisfaction and preferences	Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor.	Very low to moderate

Annex: page 6 (Laurant 2012)

Resource	Settings in which nurses already provide other care
Training	E.g. 1-2 weeks of practice-based training to use a vacuum extraction device
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Vacuum extraction device, equipment for neonatal resuscitation
Referral	Transportation to a referral centre

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness. Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of vacuum extraction when performed by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling t o relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires a vacuum extraction device and equipment for neonatal resuscitation. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary. However, (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). In some settings, changes to norms or regulations may be needed to allow nurses to perform vacuum extraction. **Annex**: page 43 (Rashidian 2012)	

11.8 and 11.10. RECOMMENDATION:

Should NURSES deliver the loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) to treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Nurses delivering loading dose of magnesium sulphate for prevention and treatment of eclampsia
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☑	☐
	We suggest considering the use of nurses to deliver the loading dose of magnesium sulphate to prevent and to treat eclampsia before referring to a higher facility with targeted monitoring and evaluation.		

Justification

There is insufficient evidence on the effectiveness of nurses delivering a loading dose of magnesium sulphate to prevent and treat eclampsia and refer to a higher facility. However, a World Health Organization guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011).

Implementation considerations

The following should be considered when using nurses to deliver magnesium sulphate:

- The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers
- The distribution of roles and responsibilities between nurses and other health workers needs to be made clear, including through regulations and job descriptions
- Changes in regulations may be necessary to support any changes in nurses' scope of practice
- Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out
- Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility
- Supplies of drugs and other commodities need to be secure
- Responsibility for supervision needs to be clear and supervision needs to be regular and supportive
- Nurses and their supervisors need to receive appropriate initial and ongoing training

Monitoring and evaluation

Research priorities

11.8 and 11.10. EVIDENCE BASE:

Should NURSES deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) to treat eclampsia and refer to a higher facility?

Problem: Poor access to treatment for eclampsia
Option: Nurses delivering loading dose of magnesium sulphate for prevention and treatment of eclampsia
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses delivering magensium sulphate. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: The review did identify a number of studies, mostly from high income settings where nurses were compared to doctors for the delivery of other types of interventions. issues. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		

Outcomes	Impacts	Certainty of the anticipated effect
Patient health status	For some outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors	Very low to moderate
Patient mortality	No differences between nurses and primary care doctors	Moderate
Process of care	Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences	Very low to moderate
Patient satisfaction and preferences	Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor.	Very low to moderate

Annex: page 6 (Laurant 2012)

Main resource requirements

Resource	Settings in which nurses already provide other care
Training	E.g. 2 weeks of practice-based training for nurses to diagnosis eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness. Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of the loading dose of magnesium sulphate for eclampsia when delivered by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctor acceptance may be influenced by level of nurse experience (low certainty evidence). Doctors may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling to relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (Magnesium sulphate, calcium gluconate, IV equipment). In addition, it is simple to deliver and requires only a small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). In some settings, changes to norms or regulations may be needed to allow nurses to prescribe and deliver the loading dose of magnesium sulphate. **Annex**: page 43 (Rashidian 2012)	

11.9 and 11.11. RECOMMENDATION:

Should NURSES deliver the maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Nurses delivering loading dose of magnesium sulphate to prevent and treat eclampsia
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	*We recommend the option*
	☑	☐	☐
	We recommend against the use of nurses to deliver the maintenance dose of magnesium sulphate to prevent or treat eclampsia.		

Justification

There is insufficient evidence on the effectiveness of nurses delivering a maintenance dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility. In addition, the intervention is outside of their typical scope of practice and its acceptability is uncertain.

Implementation considerations

- Not applicable

Monitoring and evaluation

Research priorities

11.9 and 11.11. EVIDENCE BASE:

Should NURSES deliver the maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) treat eclampsia and refer to a higher facility?

Problem: Poor access to treatment for eclampsia
Option: Nurses delivering loading dose of magnesium sulphate to prevent and treat eclampsia
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses delivering magensium sulphate. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: The same review identified a number of studies, mostly from high income settings, where nurses were compared to doctors for the delivery of other types of interventions. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		

Outcomes	Impacts	Certainty of the anticipated effect
Patient health status	For some outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors	Very low to moderate
Patient mortality	No differences between nurses and primary care doctors	Moderate
Process of care	Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences	Very low to moderate
Patient satisfaction and preferences	Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor.	Very low to moderate

Annex: page 6 (Laurant 2012)

Main resource requirements

Resource	Settings in which nurses already provide other care
Training	E.g. 2 weeks of practice-based training for nurses to diagnosis eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness. Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of the loading dose of magnesium sulphate for eclampsia when delivered by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctor acceptance may be influenced by level of nurse experience (low certainty evidence). Doctors may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling to relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (Magnesium sulphate, calcium gluconate, IV equipment). In addition, it is simple to deliver and requires only a small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). In some settings, changes to norms or regulations may be needed to allow nurses to prescribe and deliver the loading dose of magnesium sulphate. **Annex**: page 43 (Rashidian 2012)	

11.12. RECOMMENDATIONS:

Should NURSES deliver magnesium sulphate to women in preterm labour as a neuroprotective for the foetus?

***Problem**:* Poor access to treatment for preterm birth
***Option**:* Nurses delivering magnesium sulphate for preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option only in the context of rigorous research* ☐	*We recommend the option* ☐
	We recommend against the use of nurses to deliver magnesium sulphate to women in preterm labour.		
Justification	While the intervention may be acceptable and feasible, there is insufficient evidence on the effectiveness of nurses delivering magnesium sulphate to women in preterm labour as a neuroprotective for the foetus and the intervention is outside of their typical scope of practice.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies of the effects and acceptability of nurses delivering magnesium sulphate and / or corticosteroids for women at risk of preterm birth		

11.12. EVIDENCE BASE:

Should NURSES deliver magnesium sulphate to women in preterm labour as a neuroprotective for the foetus?

***Problem**:* Poor access to treatment for preterm birth
***Option**:* Nurses delivering magnesium sulphate for preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably Yes ☐ / Yes ☐ / Varies ☐	One systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, this review did not identify any studies that specifically assessed the effects of nurses delivering magnesium sulphate. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: The review did identify a number of studies, mostly from high income settings, where nurses were compared to doctors for the delivery of other types of interventions. issues. The review suggests that nurse care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies.	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Outcomes	Impacts	Certainty of the anticipated effect
Patient health status	For some outcomes, benefits in favour of nurses. For other outcomes, no differences between nurses and doctors	Very low to moderate
Patient mortality	No differences between nurses and primary care doctors	Moderate
Process of care	Mixed results: some studies showed differences between nurses and primary care doctors in process of care, e.g. nurses gave more advice to patients, while others showed no differences	Very low to moderate
Patient satisfaction and preferences	Patients were significantly more satisfied with nurses compared with primary care doctors. Also, patients preferred significantly more often to see a nurse rather than a primary care doctor.	Very low to moderate

Annex: page 6 (Laurant 2012)

Resource	Settings in which nurses already provide other care
Training	E.g. 2 weeks of training to diagnosis pre-term labour, gestational age and, for magnesium sulphate, be given skills to safely administer and monitor treatment
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	No ☐ Probably no ☐ Uncertain ☑ Probably yes ☐ Yes ☐ Varies ☐	Uncertain as there is no direct evidence on effectiveness. Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	No ☐ Probably no ☐ Uncertain ☐ Probably yes ☑ Yes ☐ Varies ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of magnesium sulphate or corticosteroids for preterm birth when delivered by nurses. **We are therefore uncertain about the acceptability of these interventions to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence) • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctor acceptance may be influenced by level of nurse experience (low certainty evidence). Doctors may be comfortable with nurse prescribing, believing that it improves continuity of care (low certainty evidence). However, an increase in nurse autonomy may negatively affect or produce negative reactions among other professions, including doctors and midwives, who for instance may be unwilling relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence) **Annex**: page 43 (Rashidian 2012)	
FEASIBILITY	**Is the option feasible to implement?**	No ☐ Probably no ☐ Uncertain ☐ Probably yes ☑ Yes ☐ Varies ☐	The intervention requires relatively few supplies (magnesium sulphate and to IV equipment). In addition, it is simple to deliver. The intervention requires some training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). In some settings, changes to norms or regulations may be needed to allow nurses to prescribe and deliver magnesium sulphate. **Annex**: page 43 (Rashidian 2012)	

12.3. RECOMMENDATION:
Should NURSES insert and remove intrauterine device (IUDs)?

***Problem**:* Poor access to contraception
***Option**:* Nurses inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of nurses to deliver IUDs.		
Justification	While acceptability may vary, this intervention may be an effective, cost-effective and feasible approach to contraception and may also reduce inequalities my extending care to underserved populations.		
Implementation considerations	The following should be considered when using nurses to insert and remove IUDs: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Nurses and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that nurses should avoid introducing their own criteria for determining who should receive contraception - Nurses need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities			

12.3. EVIDENCE BASE:

Should NURSES insert and remove intrauterine devices (IUDs)?

Problem: Poor access to contraception
Option: Nurses inserting and removing IUDs
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

BENEFITS & HARMS OF THE OPTIONS

CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
Are the anticipated desirable effects large?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. The review also identified two studies from Brazil and Columbia where IUD insertion by nurses was compared with IUD insertion by doctors. These studies show that the use of nurses may lead to little or no difference in expulsion rates and continuation rates (low certainty evidence), and probably leads to less pain (moderate certainty evidence). We are uncertain about the differences between nurses and doctors for removal rates, rates of unintended pregnancies, and complication rates (very low certainty evidence). Other outcomes show mixed results (low certainty evidence).	
Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☐ *Varies* ☑		
Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐		

Outcomes	Impacts	Certainty of the anticipated effect
Expulsion rates	There may be little or no difference between nurses and doctors	⨁⨁◯◯ Low
Removal rates	We are uncertain if there are any differences between nurses and doctors	⨁◯◯◯ Very low
Unintended pregnancies	We are uncertain if there are any differences between nurses and doctors	⨁◯◯◯ Very low
Continuation rates	There may be little or no difference between nurses and doctors	⨁⨁◯◯ Low
Pain at insertion	The use of nurses probably leads to less pain at insertion of IUDs	⨁⨁⨁◯ Moderate
Insertion failure	The use of nurses to insert IUDs showed mixed results	⨁⨁◯◯ Low
Complication rates	We are uncertain if there are any differences between nurses and doctors	⨁◯◯◯ Very low

Annex: page 58 (Polus 2012a – Table 1)

<table>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="2">RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☐ | Yes ☑ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which nurses already provide other care</th></tr><tr><td>Training</td><td>Minimal training for nurses to insert and remove an IUD</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by senior midwife or doctor</td></tr><tr><td>Supplies</td><td>IUD, antiseptic solution, insertion equipment</td></tr><tr><td>Referral</td><td>This may be needed for a small number of women</td></tr></table></td><td></td></tr>
<tr><td>Is the incremental cost small relative to the benefits?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☑ | Yes ☐ | Varies ☐</td><td>Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: Overall, studies showed lower costs for nurse-led care Consultation length was longer for nurses For the frequency of consultations, results were mixed For most studies there were no differences in the use of healthcare services and prescriptions</td><td></td></tr>
</table>

ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of IUDs when inserted and removed by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). For tasks that are considered sensitive (such as pelvic exams) patients may prefer (female) nurses, although views may vary (low certainty evidence). They may also prefer nurses for services that require more attention and time (low certainty evidence). However, in some settings, recipients may experience nurses as too overworked to explain things to recipients (low certainty evidence) In addition, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctors may also welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks (low certainty evidence). • Doctors may also be comfortable with nurse prescribing, believing that it improves the continuity of care that patients receive (low certainty evidence). However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012)**;** page 63 (Polus 2012b)	
EASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies (IUDs, insertion equipment, antiseptic solution). In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is necessary. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). **Annex**: page 43 (Rashidian 2012)	

12.4. RECOMMENDATION:
Should NURSES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Nurses inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of nurses to insert and remove contraceptive implants.		
Justification	There is insufficient evidence on the effectiveness of this intervention, and acceptability may vary. However, there is evidence to suggest that nurses can effectively deliver other similar interventions. In addition, this intervention may be a cost-effective and feasible approach to contraception and may also reduce inequalities my extending care to underserved populations.		
Implementation considerations	The following should be considered when using nurses to insert and remove contraceptive implants: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between nurses and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in nurses' scope of practice - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of drugs and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Because of the sensitivity of sexual and contraceptive issues, planners should consider whether health workers promoting or delivering reproductive health services to women should also be women. It may also be an advantage to ensure that relevant training of female health workers is carried out by females - Nurses and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that auxiliary nurses should avoid introducing their own criteria for determining who should receive contraception - Nurses need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities			

12.4. EVIDENCE BASE:

Should NURSES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Nurses inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, none of these reviews identified any studies that specifically assessed the effects of nurses inserting and removing contraceptive implants. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: One of these systematic reviews (Polus 2012a) did identify two studies from Brazil and Columbia where IUD insertion by nurses was compared with IUD insertion by doctors. These studies show that the use of nurses may lead to little or no difference in expulsion rates and continuation rates (low certainty evidence), and probably leads to less pain (moderate certainty evidence). We are uncertain about the differences between nurses and doctors for removal rates, rates of unintended pregnancies, and complication rates (very low certainty evidence). Other outcomes show mixed results (low certainty evidence). The other systematic review (Laurant 2012) suggests that nurse-led care for a range of other health issues may improve several health outcomes while it may make no difference to other outcomes. However, the quality of this evidence varies. **Annex:** page 58 (Polus 2012a – Table 1); page 6 (Laurant 2012).	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☐ / Yes ☑ / Varies ☐	***Main resource requirements***	

Resource	Settings in which nurses already provide other care
Training	Some training for auxiliary nurse midwives to insert and remove a contraceptive implant
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Contraceptive implant, insertion equipment and local anaesthetic
Referral	Patients may need to go to a referral centre for removal difficulties

	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Indirect evidence from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
	CRITERIA	**JUDGEMENT**	**EVIDENCE**	**COMMENTS AND QUERIES**
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☑	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of contraceptive implants when inserted and removed by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence) • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). For tasks that are considered sensitive (such as pelvic exams) patients may prefer (female) nurses, although views may vary (low certainty evidence). They may also prefer nurses for services that require more attention and time (low certainty evidence). However, in some settings, recipients may experience nurses as too overworked to explain things to recipients (low certainty evidence) In addition, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). • Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctors may also welcome the transfer of certain repetitive tasks to nurses (e.g. pap smears) and nurses seem to be happy with these tasks (low certainty evidence). • Doctors may also be comfortable with nurse prescribing, believing that it improves the continuity of care that patients receive (low certainty evidence). However, a lack of clarity about nurse roles and responsibilities in relation to other health workers may be a challenge (low certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012)**;** page 63 (Polus 2012b)	

SIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies (contraceptive implants, insertion equipment, local anaesthetic). In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is necessary, particularly regarding the removal of contraceptive implants. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). Adequate referral to a higher level of care for further management of implant removal may be necessary. **Annex**: page 43 (Rashidian 2012)	

12.5. RECOMMENDATION:
Should NURSES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Nurses performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option only in the context of rigorous research. This intervention should be evaluated where a well-functioning referral system is in place or can be put in place. The panel acknowledges the different methods of tubal ligation that may be relevant in this context.		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective, acceptable and feasible approach to contraception and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies to assess the effects, acceptability and feasibility of nurses performing tubal ligation are needed		

12.5. EVIDENCE BASE:

Should NURSES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Nurses performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

BENEFITS & HARMS OF THE OPTIONS

CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
Are the anticipated desirable effects large?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, none of these reviews identified any studies that specifically assessed the effects of nurses performing tubal ligation. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: One of these reviews (Polus 2012a) identified one study from Thailand where the effects of postpartumtubal ligation performed by midwives was compared to the same intervention performed by doctors. This study shows that there may be little or no difference between midwives and doctors with regard to complications during surgery or postoperative morbidity (low certainty evidence). While the midwives spent more time performing the operation,this difference was not clinically important (moderate certainty evidence).	
Are the anticipated undesirable effects small?	*No* ☐ *Probably No* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		

Outcomes	Impacts	Certainty of the anticipated effect
Length of operation	Midwives probably spend more time than doctors, but the difference is not clinically important	⨁⨁⨁◯ Moderate
Complications during surgery	There may be little or no difference between midwives and doctors	⨁⨁◯◯ Low
Postoperative morbidity	There may be little or no difference between midwives and doctors	⨁⨁◯◯ Low

Annex: page 62 (Polus 2012a – Table 3)

RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☑ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which nurses already provide other care
Training	Practice-based training in tubal ligation techniques. Nurses are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, local anaesthetic, suture material, surgical facility / theatre, resuscitation equipment
Referral	To a referral centre for failed ligations and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness. **Indirect evidence** from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	

ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of tubal ligation when performed by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctor acceptance may be influenced by level of nurse experience (low certainty evidence). However, an increase in nurse autonomy may negatively affect other professions or produce negative reactions among these professions, including doctors and midwives, who for instance may be unwilling to relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence). A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 43 (Rashidian 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The interventions require relatively well-equipped facilities, including access to surgical instruments, surgical facility / theatre and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow nurses to perform tubal ligation. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). **Annex**: page 43 (Rashidian 2012)	

12.6. RECOMMENDATION:
Should NURSES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Nurses performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. This intervention should be evaluated where a well-functioning referral system is in place or can be put in place		
Justification	There is insufficient evidence on the effectiveness of this interventions. However, this intervention may be a cost-effective, acceptable and feasible approach to contraception and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies to assess the effects, feasibility and acceptablity of nurses performing vasectomy are needed		

12.6. EVIDENCE BASE:

Should NURSES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Nurses performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ · Probably No ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of nurse-led primary care compared to care that was given by primary care doctors (Laurant 2012). However, none of these reviews identified any studies that specifically assessed the effects of nurses performing vasectomy. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: One of these reviews (Polus 2012a) identified one study from Thailand where the effects of postpartumtubal ligation performed by midwives was compared to the same intervention performed by doctors. This study shows that there may be little or no difference between midwives and doctors with regard to complications during surgery or postoperative morbidity (low certainty evidence). **Annex:** page 62 (Polus 2012a – Table 3)	
	Are the anticipated undesirable effects small?	No ☐ · Probably No ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ · Low ☐ · Moderate ☐ · High ☐ · No direct evidence ☑ · Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ · Probably no ☐ · Uncertain ☑ · Probably yes ☐ · Yes ☐ · Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ · Probably no ☑ · Uncertain ☐ · Probably yes ☐ · Yes ☐ · Varies ☐	***Main resource requirements***	

Resource	Settings in which nurses already provide other care
Training	Practice-based training in vasectomy techniques. Nurses are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, antiseptic solution, sutures, surgical facility / theatre, resuscitation equipment
Referral	To a referral centre for failed vasectomies and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	No ☐ Probably no ☐ Uncertain ☑ Probably yes ☐ Yes ☐ Varies ☐	Uncertain as there is insufficient evidence on effectiveness. **Indirect evidence** from the review referred to above (Laurant 2012) suggests that, compared to doctor-led care: • Overall, studies showed lower costs for nurse-led care • Consultation length was longer for nurses • For the frequency of consultations, results were mixed • For most studies there were no differences in the use of healthcare services and prescriptions	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	No ☐ Probably no ☐ Uncertain ☑ Probably yes ☐ Yes ☐ Varies ☐	A systematic review of doctor-nurse substitution (Rashidian 2012) did not identify any studies that evaluated the acceptability of vasectomy when performed by nurses. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other maternal and child health interventions, the same review suggests that: • Nurses may be motivated to offer advanced care by increased recognition and job satisfaction (moderate certainty evidence). • Recipients may regard nurses as more accessible and better at listening and caring than doctors (moderate certainty evidence). However, some recipients may have concerns about nurses' competence and willingness to provide high quality care compared to doctors (low certainty evidence). In addition, for tasks that are more "medical" in nature, recipients may prefer doctors over nurses (low certainty evidence). • Doctors were generally satisfied with the contribution of nurses to maternal and child health care, although some concerns were raised (low certainty evidence). Doctors may welcome the contribution of nurses where it reduces doctors' workloads (moderate certainty evidence). Doctor acceptance may be influenced by level of nurse experience (low certainty evidence). However, an increase in nurse autonomy may negatively affect other professions or produce negative reactions among these professions, including doctors and midwives, who for instance may be unwilling to relinquish final responsibility for patient care. A lack of clarity about nurse roles and responsibilities in relation to other health workers may also be a challenge (low certainty evidence). A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects and service fees. **Annex**: page 43 (Rashidian 2012)**;** page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	No ☐ Probably no ☐ Uncertain ☑ Probably yes ☐ Yes ☐ Varies ☐	The interventions require relatively well-equipped facilities, including access to surgical instruments, surgical facility / theatre and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow nurses to perform vasectomy. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a systematic review (Rashidian 2012) suggests that nurses may be unprepared or not adequately trained or supervised when they are given advanced and substitution roles (low certainty). **Annex**: page 43 (Rashidian 2012)	

4.1. RECOMMENDATION:

Should MIDWIVES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for preterm PROM
***Option**:* Midwives delivering injectable antibiotics
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest using this intervention where midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness and feasibility of midwives diagnosing preterm pre-labour rupture of membranes (pPROM) and delivering initial treatment of injectable antibiotics using a standard syringe before referral. However, this intervention may be acceptable and feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	- Not applicable		
Monitoring and evaluation			
Research priorities			

4.1. EVIDENCE BASE:

Should MIDWIVES diagnose preterm pre-labour rupture of membranes (pPROM) and deliver initial treatment of injectable antibiotics, using a standard syringe, before referral?

***Problem**:* Poor access to injectable antibiotics for preterm PROM
***Option**:* Midwives delivering injectable antibiotics
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of midwives delivering injectable antibiotics for preterm PROM. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: The review (Lassi 2012) did identify a number of studies, all from high income settings. In these studies, midwives delivered antenatal, intrapartum and postpartum care, but it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008). **Annex**: page 4 (Lassi 2012)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements*** **Resource** — **Settings in which midwives already provide other care** *Training* — As midwives should be able to diagnose pregnancy, assess gestational age and leakage of amniotic fluid through observation and simple pH testing, little training on this is required,.e.g. less than one week of training for midwives to diagnosis and manage, including diagnosis of amniotic fluid volume by ultrasound where available. *Supervision and monitoring* — Regular supervision by senior midwife or doctor *Supplies* — Antibiotics, equipment needed for diagnosis, e.g. litmus paper. Ultrasound equipment in some settings	

			Referral Transportation, adequate referral centre	
	CRITERIA	**JUDGEMENT**	**EVIDENCE**	**COMMENTS AND QUERIES**
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of injectable antibiotics for preterm PROM when delivered by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives are more likely to accept task-shifting initiatives if these increase the midwives' ability to provide more holistic and continuous care. Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • However, midwives may not readily accept a mode of care that is technology-focused and that views pregnancy as risky and uncertain (moderate certainty evidence) • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires relatively few supplies (antibiotics and simple diagnostic tools). In addition, it is simple to deliver and requires only a small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). In addition, in some settings, changes to norms or regulations may be needed to allow midwives to prescribe and deliver injectable antibiotics. **Annex**: page20x (Colvin 2012)	

10.1. RECOMMENDATION:

Should MIDWIVES external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Midwives performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option in the context of rigorous research. We suggest evaluating this intervention where midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of midwives performing external cephalic version and it has the potential to cause harm. However, this intervention is probably acceptable, is probably feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations	- Not applicable.		
Monitoring and evaluation			
Research priorities			

10.1. EVIDENCE BASE:

Should MIDWIVES perform external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Midwives performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	One systematic review searched for studies that assessed the effects of ECV for breech presentation at term (Hofmeyr GJ, 2010). However, none of the included studies involved midwives. A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of midwives performing ECV. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** One of these reviews (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008). **Annex**: page 4 (Lassi 2012)	Although direct evidence on effects is lacking, midwives are often trained to perform this intervention, the intervention is likely to have benefits and is not likely to have significant undesirable effects. We have therefore judged the desirable effects as probably large relative to the undesirable effects.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	E.g. 1-2 weeks of practice training to assess foetal position and perform ECV
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Talcum powder. If ultrasound is available it may be helpful.
Referral	Transportation to a centre where Comprehensive Emergency Obstetric Care(CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Although there is no direct evidence on effectiveness, the benefits are likely to be large in relation to the incremental costs.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of ECV when performed by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders**. **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives appear to be more likely to accept task-shifting initiatives if these increase the midwives' ability to provide more holistic and continuous care (moderate certainty evidence) • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques (moderate certainty evidence). Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who work closely with midwives may have better attitudes towards them (low certainty evidence). • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may lead to poor working relationships and 'turf battles' (moderate certainty evidence) **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies. In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary, for instance if a caesarean section is needed. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). **Annex**: page 20 (Colvin 2012)	

11.5. RECOMMENDATION:

Should MIDWIVES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

***Problem**:* Poor access to treatment
***Option**:* Midwives administering corticosteroids to pregnant women in the context of preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the use of midwives to administer corticosteroids to pregnant women in the context of preterm labour in the context of rigorous research.		
Justification	There is insufficient evidence on the effectiveness of midwives administering corticosteroids to pregnant women for the foetus in the context of preterm labour. This intervention is probably feasible but its acceptability is uncertain. It may reduce inequalities by extending care to underserved populations. We therefore suggest considering the option in the context of rigorous research.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies assessing the effects and the acceptability of using midwives to administer) corticosteroids to pregnant women are needed		

11.5. EVIDENCE BASE:

Should MIDWIVES administer corticosteroids to pregnant women in the context of preterm labour to improve neonatal outcomes?

Problem: Poor access to treatment
Option: Midwives administering corticosteroids to pregnant women in the context of preterm labour
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th colspan="2">CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of midwives administering corticosteroids. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Indirect evidence:
The review (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008)

Annex: page 4 (Lassi 2012)</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☑ | Yes ☐ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which auxiliary nurse midwives already provide other care</th></tr><tr><td>Training</td><td>E.g. 1 week of practice-based training in diagnosing and managing pre-term labour</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by midwife or doctor</td></tr><tr><td>Supplies</td><td>Corticosteroids</td></tr><tr><td>Referral</td><td>Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of corticosteroids when administered by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives are more likely to accept task-shifting initiatives if they increase the midwives' ability to provide more holistic and continuous care (moderate certainty evidence) • Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • However, midwives may not readily accept a mode of care that is technology-focused and that views pregnancy as risky and uncertain (moderate certainty evidence). They may also be less likely to accept tasks that increase the involvement of others in clinical care. In addition, midwives may be concerned about the increased liability that may accompany new tasks (moderate certainty evidence) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty). • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires some supplies (drugs and simple diagnostic tools). Also, adequate referral to a higher level of care for further management may also be necessary. While training, clinical experience and supervision are needed, systematic reviews of lay health worker, nurse and midwife programmes suggest that sufficient training and supervision is often lacking (Glenton, Colvin 2012; Rashidian 2012; Colvin 2012). In some settings, changes to norms or regulations may be needed to allow midwives to prescribe and administer drugs. **Annex**: page 26 (Glenton, Colvin 2012); page 20 (Colvin 2012); page 43 (Rashidian 2012)	

11.7. RECOMMENDATION:
Should MIDWIVES perform vacuum extraction during childbirth?

***Problem**:* Poor access to assisted delivery
***Option**:* Midwives performing vacuum extraction
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation of failure rates, complications and process measures such as frequency of use. We suggest using this intervention where midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		

Justification

There is insufficient evidence on the effectiveness of midwives performing vacuum extraction during childbirth and its acceptability is uncertain. However, it is probably feasible and may reduce inequalities by extending care to underserved populations.

Implementation considerations

The following should be considered when using midwives to perform vacuum extraction:

- The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers
- The distribution of roles and responsibilities between midwives and other health workers needs to be made clear, including through regulations and job descriptions
- Changes in regulations may be necessary to support any changes in midwives' scope of practice
- Programmes need to ensure that this task promotes continuity of care, for instance by ensuring that all midwives are "upskilled" to deliver this task for all potential recipients
- Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out
- Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility
- Supplies and equipment need to be secure
- Responsibility for supervision needs to be clear and supervision needs to be regular and supportive
- Midwives and their supervisors need to receive appropriate initial and ongoing training

Monitoring and evaluation

The aim of the targeted monitoring and evaluation would be to gain additional data on how the intervention is being implemented, risk of harm to baby and mother, failure rates, and how frequently the cadre uses this skill

Research priorities

11.7. EVIDENCE BASE:

Should MIDWIVES perform vacuum extraction during childbirth?

***Problem**:* Poor access to assisted delivery
***Option**:* Midwives performing vacuum extraction
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of midwives performing vacuum extraction. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The review (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008) **Annex**: page 4 (Lassi 2012)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	E.g. 1-2 weeks of practice training to use a vacuum extraction device
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Vacuum extraction device, equipment for neonatal resuscitation
Referral	Transportation to a referral centre

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of vacuum extraction when performed by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives are more likely to accept task-shifting initiatives if they increase the midwives' ability to provide more holistic and continuous care (moderate certainty evidence) • Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • However, midwives may not readily accept a mode of care that is technology-focused and that views pregnancy as risky and uncertain (moderate certainty evidence). They may also be less likely to accept tasks that increase the involvement of others in clinical care. In addition, midwives may be concerned about the increased liability that may accompany new tasks (moderate certainty evidence) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty). • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires a vacuum extraction device and equipment for neonatal resuscitation. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). In some settings, changes to norms or regulations may be needed to allow midwives to perform vacuum extraction. **Annex**: page20 (Colvin 2012)	

11.8 and 11.10. RECOMMENDATION:

Should MIDWIVES deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to prevention of and treatment for eclampsia
***Option**:* Midwives delivering loading dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☑	☐
	We suggest considering the use of midwives to deliver a loading dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility with targeted monitoring and evaluation.		

Justification

There is insufficient evidence on the effectiveness of midwives delivering a loading dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility. However, a World Health Organization guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011).

Implementation considerations

The following should be considered when using midwives to deliver magnesium sulphate:

- The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers
- The distribution of roles and responsibilities between midwives and other health workers needs to be made clear, including through regulations and job descriptions
- Changes in regulations may be necessary to support any changes in midwives' scope of practice
- Programmes need to ensure that this task promotes continuity of care, for instance by ensuring that all midwives are "upskilled" to deliver this task for all potential recipients
- Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out
- Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility
- Supplies and equipment need to be secure
- Responsibility for supervision needs to be clear and supervision needs to be regular and supportive
- Midwives and their supervisors need to receive appropriate initial and ongoing training

Monitoring and evaluation

Research priorities

Studies of the effects and acceptability of midwives delivering magnesium sulphate for the prevention and treatment of eclampsia

11.8 and 11.10. EVIDENCE BASE:

Should MIDWIVES deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to prevention of and treatment for eclampsia
***Option**:* Midwives delivering loading dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of midwives administering magnesium sulphate. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The review (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008) **Annex**: page 4 (Lassi 2012)	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	E.g. less than 1 week of training for midwives to diagnosis and manage eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of using midwives to deliver the loading dose or maintenance dose of magnesium sulphate for eclampsia. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives are more likely to accept task-shifting initiatives if they increase the midwives' ability to provide more holistic and continuous care (moderate certainty evidence) • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques (moderate certainty evidence). Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence). • However, midwives may not readily accept a mode of care that views pregnancy as risky and uncertain (moderate certainty evidence).They may also be less likely to accept tasks that increase the involvement of others in the clinical care (moderate certainty evidence). In addition, midwives may be concerned about the increased liability that may accompany new tasks and may be wary of new tasks that increase their workload (moderate certainty) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty evidence). • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate, calcium gluconate and IV equipment). In addition, it is simple to deliver and requires only a small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). In some settings, changes to norms or regulations may be needed to allow midwives to prescribe and deliver magnesium sulphate. **Annex**: page 20 (Colvin 2012)	

11.9 and 11.11. RECOMMENDATION:

Should MIDWIVES deliver a maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) treat eclampsia and refer to a higher facility?

Problem: Poor access to initial and ongoing treatment for eclampsia
Option: Midwives delivering loading dose and maintenance dose of magnesium sulphate
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation. We suggest using this intervention in settings where midwives are working alone in primary care and it is not routinely possible to access more specialized cadres. Since appropriate care of a woman with pre-eclampsia and eclampsia requires a team effort, referral to higher care should be sought for such cases.		
Justification	There is no direct evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective and feasible approach and may be acceptable under certain conditions. The intervention may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using midwives to deliver magnesium sulphate: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in midwives' scope of practice - Programmes need to ensure that this task promotes continuity of care, for instance by ensuring that all midwives are "upskilled" to deliver this task for all potential recipients - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies and equipment need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Midwives and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation			
Research priorities	Studies of the effects and acceptability of midwives delivering magnesium sulphate for the prevention and treatment of eclampsia		

11.9 and 11.11. EVIDENCE BASE:

Should MIDWIVES deliver a maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility, and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to initial and ongoing treatment for eclampsia
***Option**:* Midwives delivering loading dose and maintenance dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of midwives administering magnesium sulphate. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The review (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008) **Annex**: page 4 (Lassi 2012)	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	E.g. less than 1 week of training for midwives to diagnosis and manage eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of using midwives to deliver the loading dose or maintenance dose of magnesium sulphate for eclampsia. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives are more likely to accept task-shifting initiatives if they increase the midwives' ability to provide more holistic and continuous care (moderate certainty evidence) • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques (moderate certainty evidence). Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence). • However, midwives may not readily accept a mode of care that views pregnancy as risky and uncertain (moderate certainty evidence).They may also be less likely to accept tasks that increase the involvement of others in the clinical care (moderate certainty evidence). In addition, midwives may be concerned about the increased liability that may accompany new tasks and may be wary of new tasks that increase their workload (moderate certainty) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty evidence). • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate, calcium gluconate and IV equipment). In addition, it is simple to deliver and requires only a small amount of training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). In some settings, changes to norms or regulations may be needed to allow midwives to prescribe and deliver magnesium sulphate. **Annex**: page 20 (Colvin 2012)	

11.12. RECOMMENDATIONS:

Should MIDWIVES deliver magnesium sulphate to women in preterm labour as a neuroprotection for the foetus?

***Problem**:* Poor access to medical management of preterm birth
***Option**:* Midwives delivering magnesium sulphate for preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option in the context of rigorous research. We suggest evaluating this intervention where midwives are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of midwives delivering magnesium sulphate to women in preterm labour as a neuroprotective for the foetus. However, midwives have the necessary clinical skills for diagnosis of preterm labour and for the administration of this drug and the intervention may be acceptable and feasible.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed of the effects and the acceptability of midwives delivering magnesium sulphate and / or corticosteroids for women at risk of preterm birth.		

11.12. EVIDENCE BASE:

Should MIDWIVES deliver magnesium sulphate to women in preterm labour as a neuroprotective for the fetus?

***Problem**:* Poor access to medical management of preterm birth
***Option**:* Midwives delivering magnesium sulphate for preterm labour
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, the review did not identify any studies that assessed the effects of midwives delivering magnesium sulphate for women in preterm labour. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The review (Lassi 2012) did identify a number of other studies, all from high income settings, in which midwives delivered antenatal, intrapartum and postpartum care, although it is not clear precisely what services this care included. The review suggests that midwife-led care may improve several health outcomes while it may make no difference to other outcomes. However, the certainty of this evidence varies. Similar findings were seen in another systematic review on the effects of midwife care (Hatem 2008) **Annex**: page 4 (Lassi 2012)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	E.g. less than 1 week of training for midwives to diagnosis pre-term labour, gestational age and, for magnesium sulphate, be given skills to safely administer and monitor treatment
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review oftask-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of magnesium sulphate or corticosteroids for preterm birth when delivered by midwives. **We are therefore uncertain about the acceptability of these interventions to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Mothers and midwives are more likely to accept task-shifting initiatives if they increase the midwives' ability to provide more holistic and continuous care (moderate certainty evidence) • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques (moderate certainty evidence). Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • However, midwives may not readily accept tasks where pregnancy is viewed as risky and uncertain (moderate certainty evidence). In addition, midwives may be concerned about the increased liability that may accompany new tasks, and may be wary of new tasks that increase their workload (moderate certainty evidence) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty evidence) • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence). **Annex**: page 20 (Colvin 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate and to IV equipment). In addition, it is simple to deliver. The intervention requires some training. Regular supervision needs to be in place, and adequate referral to a higher level of care for further management may also be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). In some settings, changes to norms or regulations may be needed to allow midwives to prescribe and deliver magnesium sulphate. **Annex**: page 20 (Colvin 2012)	

12.3. RECOMMENDATION:
Should MIDWIVES insert and remove intrauterine devices (IUDs)?

***Problem**:* Poor access to contraception
***Option**:* Midwives inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of midwives to deliver IUDs with targeted monitoring and evaluation. We suggest using this intervention where a well-functioning midwife programme already exists		
Justification	There is insufficient evidence on the effectiveness of this intervention, and acceptability may vary. However, there is evidence to suggest that auxiliary nurse midwives and nurses can effectively insert and remove IUDs. In addition, this intervention is probably be a cost-effective and feasible approach and may also reduce inequalities my extending care to underserved populations.		
Implementation considerations	The following should be considered when using midwives to insert and remove IUDs: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in midwives' scope of practice - Programmes need to ensure that this task promotes continuity of care, for instance by ensuring that all midwives are "upskilled" to deliver this task for all potential recipients - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of equipment needs to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Midwives and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that midwives should avoid introducing their own criteria for determining who should receive contraception - Midwives need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities	Studies of the acceptability to midwifes of inserting IUDs		

12.3. EVIDENCE BASE:

Should MIDWIVES insert and remove intrauterine devices (IUDs)?

***Problem**:* Poor access to contraception
***Option**:* Midwives inserting and removing IUDs
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, none of these reviews identified any studies that assessed the effects of using midwives to insert and remove IUDs. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** One of these reviews (Polus 2012a) identified two studies from the Philippines and where IUD insertion by auxiliary nurse midwives was compared with IUD insertion by doctors. These studies show that the use of auxiliary nurse midwives probably leads to little or no difference in expulsion rates, removal rates, continuation rates and rates of unintended pregnancies (moderate certainty evidence). There may also be little or no difference in referral rates before and after IUD insertion. The studies did not assess pain at insertion, insertion failure, and complications at insertion. The same review (Polus 2012a) also identified two studies from Brazil and Columbia where IUD insertion by nurses was compared with IUD insertion by doctors. These studies show that the use of nurses may lead to little or no difference in expulsion rates and continuation rates (low certainty evidence), and probably leads to less pain (moderate certainty evidence). We are uncertain about the differences between nurses and doctors for removal rates, rates of unintended pregnancies, and complication rates (very low certainty evidence). Other outcomes show mixed results (low certainty evidence). **Annex:** pages 58 and 60 (Polus 2012a – Tables 1 and 2)	
	Are the undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☐ / Yes ☑ / Varies ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	Minimal training for midwives to insert and remove an IUD
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	IUD, antiseptic solution, insertion equipment
Referral	This may be needed for a small number of women

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The costs of this intervention by midwives are likely to be small in relation to the benefits	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of IUDs when inserted and removed by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques. Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • However, midwives may be unwilling to take on tasks that require them to move beyond obstetric care, such as tasks related to family planning and sexual health, possibly because this is not viewed as part of their role and may entail an increased workload (moderate certainty evidence) • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 20 (Colvin 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies (IUDs, insertion equipment, antiseptic solution). In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). **Annex**: page 20 (Colvin 2012)	

12.4. RECOMMENDATION:
Should MIDWIVES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Midwives inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend the use of midwives to insert and remove contraceptive implants. We suggest using this intervention where a well-functioning midwife programme already exists.		
Justification	There is insufficient evidence on the effectiveness of this intervention and acceptability is uncertain. However, this intervention would require minimal additional skills. In addition, this intervention is probably a cost-effective and feasible approach to contraception and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	The following should be considered when using midwives to insert and remove IUDs or contraceptive implants: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - The distribution of roles and responsibilities between midwives and other health workers needs to be made clear, including through regulations and job descriptions - Changes in regulations may be necessary to support any changes in midwives' scope of practice - Programmes need to ensure that this task promotes continuity of care, for instance by ensuring that all midwives are "upskilled" to deliver this task for all potential recipients - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed. Specifically, local health systems need to be strengthened to improve quality of care at the first referral facility - Supplies of equipment needs to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Midwives and their supervisors need to receive appropriate initial and ongoing training, including in communicating with recipients and in side effects of different contraceptive methods. Training needs to reinforce that midwives should avoid introducing their own criteria for determining who should receive contraception - Midwives need to be trained in confidentiality issues and recipients need to be made aware that their interactions with health workers regarding contraception are confidential.		
Monitoring and evaluation			
Research priorities	Studies of the acceptability to midwifes of inserting IUDs and contraceptive implants		

12.4. EVIDENCE BASE:

Should MIDWIVES insert and remove contraceptive implants?

***Problem**:* Poor access to contraception
***Option**:* Midwives inserting and removing contraceptive implants
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). However, none of these reviews identified any studies that assessed the effects of using midwives to insert and remove contraceptive implants. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** The same review (Polus 2012a) also identified two studies from Brazil and Columbia where IUD insertion by nurses was compared with IUD insertion by doctors. These studies show that the use of nurses may lead to little or no difference in expulsion rates and continuation rates (low certainty evidence), and probably leads to less pain (moderate certainty evidence). We are uncertain about the differences between nurses and doctors for removal rates, rates of unintended pregnancies, and complication rates (very low certainty evidence). Other outcomes show mixed results (low certainty evidence). **Annex:** page 58 (Polus 2012a – Table 1)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	Some training for midwives to insert and remove a contraceptive implant
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Contraceptive implant, insertion equipment and local anaesthetic
Referral	Patients may need to go to a referral centre for removal difficulties

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The costs of this intervention by midwives are likely to be small in relation to the benefits	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of contracptive implants when inserted and removed by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques. Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence) • However, midwives may be unwilling to take on tasks that requires them to move beyond obstetric care, such as tasks related to family planning and sexual health, possibly because this is not viewed as part of their role and may entail an increased workload (moderate certainty evidence) • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence) A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that recipients appreciate the easy access that community-based provision of contraceptives provides and appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 20 (Colvin 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies (contraceptive implants, insertion equipment, local anaesthetic). In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is necessary, particularly regarding the removal of contraceptive implants. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). Adequate referral to a higher level of care for further management may be neccesary if removal leads to complications. **Annex**: page 20 (Colvin 2012)	

12.5. RECOMMENDATION:
Should MIDWIVES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Midwives performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. The intervention should be evaluated where: - A well-functioning midwife programme already exists - A well-functioning referral system is in place or can be put in place The panel acknowledges the different methods of tubal ligation that may be relevant in this context.		
Justification	This intervention may be effective, and may reduce inequalities by extending care to underserved populations. There is some uncertainty as to whether the intervention is an acceptable and feasible approach.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies to assess the effects and acceptability of midwives performing tubal ligation are needed		

12.5. EVIDENCE BASE:

Should MIDWIVES perform tubal ligation (post-partum and interval)?

***Problem**:* Poor access to contraception
***Option**:* Midwives performing tubal ligation
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. The review identified one study from Thailand where the effects of postpartumtubal ligation performed by midwives was compared to the same intervention performed by doctors. This study shows that there is little or no difference between midwives and doctors with regard to complications during surgery or postoperative morbidity (low certainty evidence). While the midwives spent more time performing the operation,this difference was not clinically important (moderate certainty evidence).	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☑ / Moderate ☐ / High ☐ / No direct evidence ☐ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☑ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐		

Outcomes	Impacts	Certainty of the anticipated effect
Length of operation	Midwives probably spend more time than doctors, but the difference is not clinically important	⊕⊕⊕◯ Moderate
Complications during surgery	There may be little or no difference between midwives and doctors	⊕⊕◯◯ Low
Postoperative morbidity	There may be little or no difference between midwives and doctors	⊕⊕◯◯ Low

Annex: page 62 (Polus 2012a – Table 3)

Main resource requirements

Resource	Settings in which midwives already provide other care
Training	Practice-based training in tubal ligation techniques. Midwives are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, local anaesthetic, suture material, surgical facility / theatre, resuscitation equipment
Referral	To a referral centre for failed ligations and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	We are uncertain about whether the desirable effects are large relative to the undesirable effects. In addition, the resources required are relatively large.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of tubal ligation when performed by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques (moderate certainty evidence). Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence). • However, midwives may be unwilling to take on tasks that requires them to move beyond obstetric care, such as tasks related to family planning and sexual health, possibly because this is not viewed as part of their role and may entail an increased workload (moderate certainty evidence) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty evidence) • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence). A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, appreciate the use of female health workers in the delivery of contraceptives. However, the review also suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees; and a lack of support from husbands. **Annex**: page 20 (Colvin 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The interventions require relatively well-equipped facilities, including access to surgical instruments, surgical facility and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow midwives to perform tubal ligation. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). **Annex**: page 20 (Colvin 2012)	

12.6. RECOMMENDATION:
Should MIDWIVES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Midwives performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option only in the context of rigorous research. Implementation in the context of research should be done where: - A well-functioning midwife programme already exists - A well-functioning referral system is in place or can be put in place		
Justification	There is insufficient evidence on the effectiveness of this intervention. However, this intervention may be a cost-effective, acceptable and feasible approach to contraception and may also reduce inequalities by extending care to underserved populations.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies to assess the effects and acceptability of midwives performing vasectomy are needed		

12.6. EVIDENCE BASE:

Should MIDWIVES perform vasectomy?

***Problem**:* Poor access to contraception
***Option**:* Midwives performing vasectomy
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review (Polus 2012a) searched for studies that assessed the effects and safety of task shifting for family planning delivery in low and middle income countries. Another systematic review searched for studies that assessed the effects of midlevel providers, including midwives, in improving the delivery of health care services (Lassi 2012). Neither of these reviews identified any studies that assessed the effects of midwives performing vasectomies. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence**: One of these reviews(Polus 2012a) identified one study from Thailand where the effects of postpartum tubal ligation performed by midwives was compared to the same intervention performed by doctors. This study shows that there is little or no difference between midwives and doctors with regard to complications during surgery or postoperative morbidity. **Annex:** page 62 (Polus 2012a – Table 3)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☑ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which midwives already provide other care
Training	Practice-based training in vasectomy techniques. Midwives are not normally trained in surgical techniques during their graduate studies. Training needs may therefore be relatively substantial
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Surgical instruments, antiseptic solution, local anaesthetic, suture material, surgical facility, resuscitation equipment
Referral	To a referral centre for failed ligations/vasectomies and / or complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is insufficient evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review of task-shifting in midwifery programmes (Colvin 2012) did not identify any studies that evaluated the acceptability of vasectomy when performed by midwives. **We are therefore uncertain about the acceptability of this intervention to key stakeholders.** **Indirect evidence:** For other midwife-delivered interventions, the same review suggests the following: • Midwives and their supervisors and trainers generally felt midwives had no problem learning new medical information and practicing new clinical techniques (moderate certainty evidence). Midwives may also be motivated by being "upskilled" as it can potentially lead to increased status, promotion opportunities and increased job satisfaction (moderate certainty evidence). • However, midwives may be unwilling to take on tasks that requires them to move beyond obstetric care, such as tasks related to family planning and sexual health, possibly because this is not viewed as part of their role and may entail an increased workload (moderate certainty evidence) • Doctors may be skeptical about the extension of midwifery roles in obstetric care, although doctors who worked closely with midwives tended to have better attitudes towards them (low certainty evidence) • A lack of clarity in roles and responsibilities between midwives and other health worker cadres, as well as status and power differences may also lead to poor working relationships and 'turf battles' (moderate certainty evidence). A review of country case studies of task shifting for family planning (Polus 2012b), which mainly included LHW programmes, suggests that some health workers may introduce their own criteria when determining who should receive contraceptives, including criteria tied to the recipient's marital status and age. Other factors that may affect the uptake of the intervention are primarily tied to the contraceptives themselves rather than the use of specific types of health workers, including a lack of knowledge about different methods of contraception; religious and other beliefs regarding family planning; a fear of side effects, service fees. **Annex**: page 20 (Colvin 2012); page 63 (Polus 2012b)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The interventions require relatively well-equipped facilities, including access to surgical instruments, surgical facility and resuscitation equipment. In addition, changes to norms or regulations may be needed to allow midwives to perform vasectomy. Training and regular supervision is also needed, and adequate referral to a higher level of care for further management may be necessary. However, a systematic review (Colvin 2012) suggests that ongoing support, training and supervision was often insufficient in midwife taskshifting programmes (moderate certainty evidence). **Annex**: page 20 (Colvin 2012)	

10.1. RECOMMENDATION:
Should ASSOCIATE CLINICIANS perform external cephalic version (ECV)?

***Problem**:* Poor access to ECV
***Option**:* Associated clinicians performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option in the context of rigorous research* ☐	*We recommend the option* ☐
	We recommend against the use of associate clinicians to perform external cephalic version.		
Justification	There is insufficient evidence on the effectiveness of associate clinicians performing external cephalic version, the intervention is outside of their typical scope of practice and its acceptability and feasibility are uncertain.		
Implementation considerations	- Not applicable		
Monitoring and evaluation			
Research priorities			

10.1. EVIDENCE BASE:

Should ASSOCIATE CLINICIANS perform external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Associated clinicians performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	One systematic review searched for studies that assessed the effects of ECV for breech presentation at term (Hofmeyr GJ, 2010). However, none of the included studies appear to have involved associate clinicians. A systematic review searched for studies that assessed the effects of midlevel providers, including associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using associate clinicians to perform ECV. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☐ / Yes ☑ / Varies ☐	***Main resource requirements***	

Resource	Settings in which associate clinicians already provide other care
Training	E.g. 1-2 weeks of practice training to assess foetal position and perform ECV
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Talcum powder. If ultrasound is available it may be helpful.
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A rapid review of literature on associate clinicians / advanced level associate clinicians programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians/ advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex**: page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary, for instance if a caesarean section is needed. Delivrey of the interventions by associate clinicians may require changes to norms or regulations in some settings.	

11.7. RECOMMENDATIONS:

Should ASSOCIATE CLINICIANS perform vacuum extraction during childbirth?

***Problem**:* Poor access to obstetric care
***Option**:* Associate clinicians performing vacuum extraction
***Comparison**:* Procedure delivered by other cadres or no care
Setting: Health care facilities in LMICs

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option with targeted monitoring and evaluation* ☐	*We recommend the option* ☐
	We recommend against the use of associate clinicians to perform vacuum extraction during childbirth		
Justification	There is insufficient evidence on the effectiveness of associate clinicians performing vacuum extraction during childbirth, the intervention is outside of their typical scope of practice and its acceptability and feasibility are uncertain.		
Implementation considerations	- Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects of associate clinicians performing vacuum extraction or manual removal of the placenta.		

11.7. EVIDENCE BASE:

Should ASSOCIATE CLINICIANS perform vacuum extraction during childbirth?

***Problem**:* Poor access to obstetric care
***Option**:* Associate clinicians performing vacuum extraction
***Comparison**:* Procedure delivered by other cadres or no care
Setting: Health care facilities in LMICs

<table>
<tr><th></th><th>CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">A systematic review searched for studies that assessed the effects of midlevel providers, including associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using associate clinicians for these interventions. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Indirect evidence:
A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section.

Annex: page 18 (Wilson 2011)</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☑ | Yes ☐ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which associate clinicians already provide other care</th></tr><tr><td>Training</td><td>Training would need to include obstetric care such as delivering the baby, vacuum extraction procedures, understanding the physiology of the 3rd stage of labour and the manual removal technique</td></tr><tr><td>Supervision and monitoring</td><td>Some monitoring and supervision by an obstetrician or a medical doctor with obstetric experience would be needed</td></tr><tr><td>Supplies</td><td>Antiseptic cleansing and antibiotics, vacuum extraction device</td></tr><tr><td>Referral</td><td>Referral to a higher facility (including for caesarean section in the case of vacuum extraction complications) essential since the procedures may fail regardless of manual skill</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that associate clinicians are trained to deliver - associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex:** page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Vacuum extraction may be feasible after practical training. The intervention requires a vacuum extraction device and equipment for neonatal resuscitation. Adequate referral to a higher level of care for further management may also be necessary.	

11.8 to 11.10. RECOMMENDATION:

Should ASSOCIATE CLINICIANS deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility if appropriate; and (b) treat eclampsia and refer to a higher facility if appropriate?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Associate clinicians delivering loading dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☑	☐
	We suggest considering the use of associate clinicians to deliver the loading dose of magnesium sulphate to prevent and treat eclampsia with targeted monitoring and evaluation		

Justification

There is insufficient evidence on the effectiveness of associate clinicians delivering a loading dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility. However, a World Health Organization guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011).

Implementation considerations

The following should be considered when using associate clinicians to vacuum extraction or manual removal of the placenta:

- The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers
- Clear scopes of practice are needed, and these need to be implemented at all levels of the health system. Linked to this, the distribution of roles and responsibilities between associate clinicians and other health workers needs to be made clear
- Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out
- Career progression may be an important motivator
- Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed
- Supplies of surgical instruments and other commodities need to be secure
- Responsibility for supervision needs to be clear and supervision needs to be regular and supportive
- Associate clinicians and their supervisors need to receive appropriate initial and ongoing training

Monitoring and evaluation

Research priorities

Studies of the effects and acceptability of associate clinicians delivering magnesium sulphate for the prevention and treatment of eclampsia

11.8 and 11.10. EVIDENCE BASE:

Should ASSOCIATE CLINICIANS deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility; and (b) treat eclampsia and refer to a higher facility if appropriate?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Associate clinicians delivering loading dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using associate clinicians for these interventions. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which associate clinicians already provide other care
Training	I month of training for associate clinicians to diagnosis and manage eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that associate clinicians are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex**: Page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate, calcium gluconate and IV equipment). In addition, it is simple to deliver and requires only a relatively small amount of training. Changes to norms, regulations and scopes of practice may be needed to allow associate clinicians to perform these procedures. Regular supervision is also necessary, and adequate referral to a higher level of care for management may be required.	

11.9 to 11.11. RECOMMENDATION:

Should ASSOCIATE CLINICIANS deliver a maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility if appropriate; and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Associate clinicians delivering maintenance dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option only in the context of rigorous research*	*We recommend the option*
	☑	☐	☐
	We recommend against the use of associated clinicians to deliver a maintenance dose of magnesium sulphate to prevent or treat eclampsia.		
Justification	There is insufficient evidence on the effectiveness of associate clinicians delivering a maintenance dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility, the intervention is outside of their typical scope of practice, and its acceptability is uncertain.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies of the effects and acceptability of associate clinicians delivering magnesium sulphate for the prevention and treatment of eclampsia		

11.9 and 11.11. EVIDENCE BASE:

Should ASSOCIATE CLINICIANS deliver a maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility; and (b) treat eclampsia and refer to a higher facility if appropriate?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Associate clinicians delivering maintenance dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using associate clinicians for these interventions. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which associate clinicians already provide other care
Training	I month of training for associate clinicians to diagnosis and manage eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	A rapid review of literature on associate clinician / advanced associate level clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that associate clinicians are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex**: Page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate, calcium gluconate and IV equipment). In addition, it is simple to deliver and requires only a relatively small amount of training. Changes to norms, regulations and scopes of practice may be needed to allow associate clinicians to perform these procedures. Regular supervision is also necessary, and adequate referral to a higher level of care for management may be required.	

11.13. RECOMMENDATIONS:
Should ASSOCIATE CLINICIANS perform caesarean sections?

***Problem**:* Poor access to caesarean section
***Option**:* Associate clinicians performing caesarean section
***Comparison**:* Caesarean section delivered by other cadres
Setting: Health care facilities in LMICs

Recommendation	***We recommend against the option*** ☑	*We suggest considering the option targeted monitoring and evaluation* ☐	*We recommend the option* ☐
	We recommend against the use of associate clinicians to perform caesarean section.		
Justification	There is insufficient evidence on the effectiveness of associate clinicians performing caesarean section. We are also uncertain about its acceptability and its feasibility in many settings as associate clinicians do not generally have surgical skills.		
Implementation considerations	Not applicable		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects of associate clinicians performing caesarean section.		

11.13. EVIDENCE BASE:

Should ASSOCIATE CLINICIANS perform caesarean sections?

***Problem**:* Poor access to caesarean section
***Option**:* Associate clinicians performing caesarean section
***Comparison**:* Caesarean section delivered by other cadres
Setting: Health care facilities in LMICs

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☑ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☐ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☑ / Probably no ☐ / Uncertain ☐ / Probably yes ☐ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which associate clinicians already provide other care
Training	Several months of practice-based training in caesarean section
Supervision and monitoring	Associate clinicians may operate without supervision but the procedure related morbidity and mortality should be regularly monitored. In addition, associate clinicians should have access to a doctor or highly experienced associate clinician for support
Supplies	Facility with surgical and anaesthesia capacity, surgical instruments and supplies, drugs, resuscitation equipment
Referral	Referral essential in case of complications

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisabiliy of the findings are unclear. **Annex**: page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	The intervention requires well equipped facilities, including access to a surgical facility / theatre, surgical instruments and resuscitation equipment. In addition, changes to norms, regulations and scopes of practice are likely to be needed to allow associate clinicians to perform these procedures. Significant training and regular supervision is also necessary, and adequate referral to a higher level of care for management may be required.	

11.14. RECOMMENDATIONS:
Should ASSOCIATE CLINICIANS perform manual removal of the placenta?

***Problem**:* Poor access to obstetric care
***Option**:* Associate clinicians performing manual removal of the placenta
***Comparison**:* Procedure delivered by other cadres or no care
Setting: Health care facilities in LMICs

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option with targeted monitoring and evaluation. We suggest using this intervention where associate clinicians are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	The effects and acceptability of associate clinicians performing manual removal of the placenta is uncertain. We are also uncertain about its feasibility in many settings as associate clinicians do not generally have surgical and manual obstetric skills. However, this intervention has the potential to reduce inequalities by extending vital health care to underserved populations.		
Implementation considerations	The following should be considered when using associate clinicians to vacuum extraction or manual removal of the placenta: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - Clear scopes of practice are needed, and these need to be implemented at all levels of the health system. Linked to this, the distribution of roles and responsibilities between associate clinicians and other health workers needs to be made clear - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Career progression may be an important motivator - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed - Supplies of surgical instruments and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Associate clinicians and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation			
Research priorities	Studies are needed to assess the effects of associate clinicians performing vacuum extraction or manual removal of the placenta.		

11.14. EVIDENCE BASE:

Should ASSOCIATE CLINICIANS perform manual removal of the placenta?

***Problem**:* Poor access to obstetric care
***Option**:* Associate clinicians performing manual removal of the placenta
***Comparison**:* Procedure delivered by other cadres or no care
Setting: Health care facilities in LMICs

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using associate clinicians for these interventions. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which associate clinicians already provide other care
Training	Training would need to include obstetric care such as delivering the baby, vacuum extraction procedures, understanding the physiology of the 3rd stage of labour and the manual removal technique
Supervision and monitoring	Some monitoring and supervision by an obstetrician or a medical doctor with obstetric experience would be needed
Supplies	Antiseptic cleansing and antibiotics, vacuum extraction device
Referral	Referral to a higher facility (including for caesarean section in the case of vacuum extraction complications) essential since the procedures may fail regardless of manual skill

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex:** page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Manual removal of the placenta may be feasible after theoretical and practical training. The intervention requires antiseptic cleansing. Adequate referral to a higher level of care for further management may also be necessary	

10.1. RECOMMENDATION:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS perform external cephalic version (ECV)?

***Problem**:* Poor access to ECV
***Option**:* Advanced level associate clinicians performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option only in the context of rigorous research***	*We recommend the option*
	☐	☑	☐
	We suggest considering the option in the context of rigorous research in a hospital setting. We suggest using this intervention where advanced level associate clinicians are already an established cadre and where a well-functioning referral system is in place or can be put in place.		
Justification	There is insufficient evidence on the effectiveness of advanced level associate clinicians performing external cephalic version. It may be feasible and may reduce inequalities by extending care to underserved populations, but acceptability may vary.		
Implementation considerations	- Not applicable		
Monitoring and evaluation			
Research priorities			

10.1. EVIDENCE BASE:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS perform external cephalic version (ECV) for breech presentation at term?

Problem: Poor access to ECV
Option: Advanced level associate clinicians performing ECV
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

<table>
<tr><th colspan="2">CRITERIA</th><th>JUDGEMENT</th><th>EVIDENCE</th><th>COMMENTS AND QUERIES</th></tr>
<tr><td rowspan="4">BENEFITS & HARMS OF THE OPTIONS</td><td>Are the anticipated desirable effects large?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td><td rowspan="4">One systematic review searched for studies that assessed the effects of ECV for breech presentation at term (Hofmeyr GJ, 2010). However, none of the included studies appear to have involved advanced level associate clinicians. A systematic review searched for studies that assessed the effects of midlevel providers, including advanced level associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using advanced level associate clinicians to perform ECV. We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.

Indirect evidence:
A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section.

Annex: page 18 (Wilson 2011)</td><td rowspan="4"></td></tr>
<tr><td>Are the anticipated undesirable effects small?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>What is the certainty of the anticipated effects?</td><td>Very low ☐ | Low ☐ | Moderate ☐ | High ☐ | No direct evidence ☑ | Varies ☐</td></tr>
<tr><td>Are the desirable effects large relative to the undesirable effects?</td><td>No ☐ | Probably no ☐ | Uncertain ☑ | Probably yes ☐ | Yes ☐ | Varies ☐</td></tr>
<tr><td>RESOURCE USE</td><td>Are the resources required small?</td><td>No ☐ | Probably no ☐ | Uncertain ☐ | Probably yes ☐ | Yes ☑ | Varies ☐</td><td>Main resource requirements
<table><tr><th>Resource</th><th>Settings in which advanced level associate clinicians already provide other care</th></tr><tr><td>Training</td><td>E.g. 1-2 weeks of practice training to assess foetal position and perform ECV</td></tr><tr><td>Supervision and monitoring</td><td>Regular supervision by senior midwife or doctor</td></tr><tr><td>Supplies</td><td>Talcum powder. If ultrasound is available it may be helpful.</td></tr><tr><td>Referral</td><td>Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available</td></tr></table></td><td></td></tr>
</table>

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex**: page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary, for instance if a caesarean section is needed. Delivrey of the interventions by advanced level associate clinicians may require changes to norms or regulations in some settings.	

11.7 and 11.14. RECOMMENDATIONS:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS perform (a) vacuum extraction during childbirth and (b) manual removal of the placenta?

***Problem**:* Poor access to obstetric care
***Option**:* Advanced level associate clinicians performing vacuum extraction and manual removal of the placenta
***Comparison**:* Procedure delivered by other cadres or no care
Setting: Health care facilities in LMICs

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☐	☑
	We recommend this option. We suggest implementing this intervention where advanced level associate clinicians with obstetric skills are already an established cadre and where a well-functioning referral system is in place or can be put in place.		

Justification

There is insufficient evidence on the effectiveness of advanced level associate clinicians performing vacuum extraction during childbirth or performing manual removal of the placenta and acceptability is uncertain. However, advanced level associate clinicians are likely to have the necessary obstetric skills, the intervention is probably feasible and it may also reduce inequalities by extending care to underserved populations.

Implementation considerations

The following should be considered when using advanced level associate clinicians to vacuum extraction or manual removal of the placenta:

- The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers
- Clear scopes of practice are needed, and these need to be implemented at all levels of the health system. Linked to this, the distribution of roles and responsibilities between associate clinicians and other health workers needs to be made clear
- Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out
- Career progression may be an important motivator
- Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed
- Supplies of surgical instruments and other commodities need to be secure
- Responsibility for supervision needs to be clear and supervision needs to be regular and supportive
- Associate clinicians and their supervisors need to receive appropriate initial and ongoing training

Monitoring and evaluation

Research priorities

Studies are needed to assess the effects of advanced level associate clinicians performing vacuum extraction or manual removal of the placenta.

11.7 and 11.14. EVIDENCE BASE:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS perform (a) vacuum extraction during childbirth and (b) manual removal of the placenta?

***Problem**:* Poor access to obstetric care
***Option**:* Advanced level associate clinicians performing vacuum extraction and manual removal of the placenta
***Comparison**:* Procedure delivered by other cadres or no care
Setting: Health care facilities in LMICs

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including advanced level associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using advanced level associate clinicians for these interventions. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	
	Are the anticipated undesirable effects small?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
	What is the certainty of the anticipated effects?	Very low ☐ / Low ☐ / Moderate ☐ / High ☐ / No direct evidence ☑ / Varies ☐		
	Are the desirable effects large relative to the undesirable effects?	No ☐ / Probably no ☐ / Uncertain ☑ / Probably yes ☐ / Yes ☐ / Varies ☐		
RESOURCE USE	**Are the resources required small?**	No ☐ / Probably no ☐ / Uncertain ☐ / Probably yes ☑ / Yes ☐ / Varies ☐	***Main resource requirements***	

Resource	Settings in which advanced level associate clinicians already provide other care
Training	Training would need to include obstetric care such as delivering the baby, vacuum extraction procedures, understanding the physiology of the 3rd stage of labour and the manual removal technique
Supervision and monitoring	Some monitoring and supervision by an obstetrician or a medical doctor with obstetric experience would be needed
Supplies	Antiseptic cleansing and antibiotics, vacuum extraction device
Referral	Referral to a higher facility (including for caesarean section in the case of vacuum extraction complications) essential since the procedures may fail

			regardless of manual skill	

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex:** page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Vacuum extraction: may be feasible after practical training. The intervention requires a vacuum extraction device and equipment for neonatal resuscitation. Adequate referral to a higher level of care for further management may also be necessary Manual removal of the placenta: may be feasible after theoretical and practical training. The intervention requires antiseptic cleansing. Adequate referral to a higher level of care for further management may also be necessary	

11.8 to 11.10. RECOMMENDATION:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility; and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Advanced level associate clinicians delivering loading dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	*We suggest considering the option with targeted monitoring and evaluation*	***We recommend the option***
	☐	☑	☐
	We suggest considering the use of advanced level associated clinicians to deliver the loading dose of magnesium sulphate to prevent and treat eclampsia with targeted monitoring and evaluation.		
Justification	There is insufficient evidence on the effectiveness of advanced level associated clinicians delivering a loading dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility. However, a World Health Organization guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011).		
Implementation considerations	The following should be considered when using advanced level associated clinicians to vacuum extraction or manual removal of the placenta: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - Clear scopes of practice are needed, and these need to be implemented at all levels of the health system. Linked to this, the distribution of roles and responsibilities between advanced level associated clinicians and other health workers needs to be made clear - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out - Career progression may be an important motivator - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed - Supplies of surgical instruments and other commodities need to be secure - Responsibility for supervision needs to be clear and supervision needs to be regular and supportive - Advanced level associated clinicians and their supervisors need to receive appropriate initial and ongoing training		
Monitoring and evaluation			
Research priorities	Studies of the effects and acceptability of advanced level associated clinicians delivering magnesium sulphate for the prevention and treatment of eclampsia		

11.8 and 11.10. EVIDENCE BASE:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS deliver a loading dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility; and (b) treat eclampsia and refer to a higher facility?

***Problem**:* Poor access to treatment for eclampsia
***Option**:* Advanced level associate clinicians delivering loading dose of magnesium sulphate
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including advanced level associate clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using advanced level associate clinicians for these interventions. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which advanced level associated clinicians already provide other care
Training	I month of training for advanced level associated clinicians to diagnosis and manage eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	A rapid review of literature on associate clinician / advanced level associate clinician programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex**: Page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate, calcium gluconate and IV equipment). In addition, it is simple to deliver and requires only a relatively small amount of training. Changes to norms, regulations and scopes of practice may be needed to allow advanced level associated clinicians to perform these procedures. Regular supervision is also necessary, and adequate referral to a higher level of care for management may be required.	

11.9 to 11.11. RECOMMENDATION:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS deliver a maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility if appropriate; and (b) treat eclampsia and refer to a higher facility if appropriate?

Problem: Poor access to treatment for eclampsia
Option: Advanced level associated clinicians delivering maintenance dose of magnesium sulphate
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering this option with targeted monitoring and evaluation. We suggest using this intervention in settings where advanced level associate clinicians are working alone in primary care and it is not routinely possible to access more specialized cadres.		
Justification	There is insufficient evidence on the effectiveness and acceptability of advanced level associated clinicians delivering a maintenance dose of magnesium sulphate to prevent or treat eclampsia and refer to a higher facility. However, this intervention is probably feasible and may reduce inequalities by extending care to underserved populations.		
Implementation considerations			
Monitoring and evaluation			
Research priorities	Studies of the effects and acceptability of advanced level associate clinicians delivering magnesium sulphate for the prevention and treatment of eclampsia		

11.9 and 11.11. EVIDENCE BASE:

Should ADVANCED LEVEL ASSOCIATE CLINICIANS deliver a maintenance dose of magnesium sulphate to (a) prevent eclampsia and refer to a higher facility if appropriate; and (b) treat eclampsia and refer to a higher facility if appropriate?

Problem: Poor access to treatment for eclampsia
Option: Advanced level associated clinicians delivering maintenance dose of magnesium sulphate
Comparison: Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
BENEFITS & HARMS OF THE OPTIONS	**Are the anticipated desirable effects large?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	A systematic review searched for studies that assessed the effects of midlevel providers, including advanced level associated clinicians, in improving the delivery of health care services (Lassi 2012). However, this review did not identify any studies that assessed the effects of using advanced level associated clinicians for these interventions. **We are therefore unable to draw any conclusions about the desirable or undesirable effects of this intervention.** **Indirect evidence:** A systematic review compared clinical officers (unclear what level of training they had) with medical doctors for caesarean section (Wilson 2011). The review identified 6 studies from low and middle income countries, but the evidence is of very low certainty and we are therefore unable to draw conclusions on the effects of using clinical officers for caesarean section. **Annex**: page 18 (Wilson 2011)	**Note**: A World Health Organisation guideline recommends that for settings where it is not possible to administer the full magnesium sulphate regimen, the use of magnesium sulphate loading dose, followed by immediate transfer to a higher-level health facility, is recommended for women with severe pre-eclampsia and eclampsia (very low quality evidence, weak recommendation) (WHO, 2011). The guideline makes no reccommendation regarding (a) which cadre should deliver the loading or maintenance doses for preventing and treating eclampsia, and (b) what should be done when immediate transfer to a higher-level facility is not possible following the loading dose.
	Are the anticipated undesirable effects small?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
	What is the certainty of the anticipated effects?	*Very low* ☐ *Low* ☐ *Moderate* ☐ *High* ☐ *No direct evidence* ☑ *Varies* ☐		
	Are the desirable effects large relative to the undesirable effects?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐		
RESOURCE USE	**Are the resources required small?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	***Main resource requirements***	

Resource	Settings in which advanced level associated clinicians already provide other care
Training	I month of training for advanced level associated clinicians to diagnosis and manage eclampsia and pre-eclampsia
Supervision and monitoring	Regular supervision by senior midwife or doctor
Supplies	Magnesium sulphate, calcium gluconate, IV equipment
Referral	Transportation to a centre where comprehensive emergency obstetric care (CeMOC) is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☐	Uncertain as there is no direct evidence on effectiveness	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☑ *Probably yes* ☐ *Yes* ☐ *Varies* ☑	A rapid review of literature on associate clinicians / advanced level associate clinicians programmes suggests that: - There may be a lack of acceptance of associate clinicians / advanced level associate clinicians among other professionals and professional bodies in a number of settings, and these bodies may block the development of the cadre or attempt to restrict what they can do. Acceptance appears to vary across procedures that they are trained to deliver - Associate clinicians / advanced level associate clinicians may not be given recognition and respect from doctors and health administrators, despite doing work similar to that done by doctors, and this is seen as problematic - There may be discrepancies between acceptance at national ministry level, existing regulations for registration of associate clinicians / advanced level associate clinicians, the training they receive and clinical practice. Consequently, they may only be able to undertake a proportion of what they were trained to do in relation to emergency and comprehensive obstetric care or may be perform services without regulatory authorisation The certainty of this evidence is unclear as the quality of the contributing studies and the generalisability of the findings are unclear. **Annex**: Page 25 (Daniels 2012)	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires relatively few supplies (magnesium sulphate, calcium gluconate and IV equipment). In addition, it is simple to deliver and requires only a relatively small amount of training. Changes to norms, regulations and scopes of practice may be needed to allow advanced level associate clinicians to perform these procedures. Regular supervision is also necessary, and adequate referral to a higher level of care for management may be required.	

10.1. RECOMMENDATION:

Should NON-SPECIALIST DOCTORS perform external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Non-specialist doctors performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

Recommendation	*We recommend against the option*	***We suggest considering the option with targeted monitoring and evaluation***	*We recommend the option*
	☐	☑	☐
	We suggest considering the use of non-specialist doctors to perform ECV for breech presentation at term with targeted monitoring and evaluation		
Justification	The available evidence suggests that the use of non-specialist doctors to perform ECV has important benefits, and is likely to be acceptable and feasible.		
Implementation considerations	The following should be considered when using non-specialist doctors to deliver ECV: - The relevant professional bodies should be involved in the planning and implementation of the intervention to ensure acceptability among affected health workers - Clear scopes of practice are needed, and these need to be implemented at all levels of the health system. Linked to this, the distribution of roles and responsibilities between non-specialist doctors and other health workers needs to be made clear - Supervision and support need to be in place - Referral systems need to function well, i.e. financial, logistical (e.g. transport) and relational barriers need to be addressed - Non-specialist doctors need to receive appropriate training - Implementation needs to be in the context of a comprehensive remuneration scheme, in which salaries or incentives reflect any changes in scope of practice. Giving incentives for certain tasks but not for others may negatively affect the work that is carried out		
Monitoring and evaluation	Monitoring and evaluation should assess providers' confidence to deliver the procedure; success rate of procedure; any complications		
Research priorities			

10.1. EVIDENCE BASE:

Should NON-SPECIALIST DOCTORS perform external cephalic version (ECV) for breech presentation at term?

***Problem**:* Poor access to ECV
***Option**:* Non-specialist doctors performing ECV
***Comparison**:* Care delivered by other cadres or no care
Setting: Community/primary health care settings in LMICs with poor access to health professionals

BENEFITS & HARMS OF THE OPTIONS

Are the anticipated desirable effects large?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

Are the anticipated undesirable effects small?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

What is the certainty of the anticipated effects?

Very low	Low	Moderate	High	No direct evidence	Varies
☐	☐	☑	☐	☐	☐

Are the desirable effects large relative to the undesirable effects?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☑	☐	☐

One systematic review searched for studies that assessed the effects of ECV for breech presentation at term (Hofmeyr GJ, 2010). The review identified seven trials, including four from LMICs and included both specialist and non-specialist doctors. The review suggests that the intervention probably reduces non-cephalic birth and caesarean section (moderate certainty evidence) and may reduce neonatal admissions (low certainty evidence). However, it may make little or no difference to perinatal deaths (low certainty evidence). The review also notes that there is not enough evidence from randomised trials to assess complications of external cephalic version at term. Large observational studies suggest that complications are rare.

Outcomes	No ECV (per 1000)	ECV (per 1000)	Difference (per 1000)	Certainty of the anticipated effect
Non-cephalic births	756	348	408 fewer	⨁⨁⨁◯ Moderate
Caesarean section	296	187	109 fewer	⨁⨁⨁◯ Moderate
Neonatal admission	111	40	71 fewer	⨁⨁◯◯ **Low**
Perinatal death	8	3	5 fewer	⨁⨁◯◯ Low

Annex: page 3 (Hofmeyr 2010)

RESOURCE USE

Are the resources required small?

No	Probably no	Uncertain	Probably yes	Yes	Varies
☐	☐	☐	☐	☑	☐

Main resource requirements

Resource	Settings in which non-specialist doctors already provide other care
Training	E.g. 1-2 weeks of practice training to assess foetal position and perform ECV
Supervision and monitoring	Regular supervision by senior doctor
Supplies	Talcum powder. If ultrasound is available it may be helpful.
Referral	Transportation to a centre where CeMOC is available

	CRITERIA	JUDGEMENT	EVIDENCE	COMMENTS AND QUERIES
	Is the incremental cost small relative to the benefits?	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	The resources required for non-specialist doctors to perform ECV are small and the available evidence suggests important benefits.	
ACCEPTABILITY	**Is the option acceptable to most stakeholders?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☑ *Yes* ☐ *Varies* ☐	Evidence on the acceptability of non-specialist doctors performing ECV was not reviewed. The following factors should be considered: • Basic training in obstetrics is part of core medical training in most settings and, in many settings, non-specialist doctors provide routine care for women during pregnancy. This could be extended to include ECV where indicated • Women are likely to consider the option acceptable, particularly in settings where access to specialist doctors is limited and / or most routine pregnancy care is conducted by non-specialist doctors • Where ECV is currently conducted largely by specialist doctors (obstetricians), this group may not consider the option acceptable or safe. In some settings this shifting of tasks may also have revenue implications for specialist doctors. However, general medical and midwife professional associations are unlikely to object to this option	
FEASIBILITY	**Is the option feasible to implement?**	*No* ☐ *Probably no* ☐ *Uncertain* ☐ *Probably yes* ☐ *Yes* ☑ *Varies* ☐	The intervention requires very few supplies. In addition, it is unlikely to require changes to norms or regulations. Some training and supervision is needed, and adequate referral to a higher level of care for further management may also be necessary, for instance if a caesarean section is needed.	