

Fetal and umbilical Doppler ultrasound in normal pregnancy

NICE has developed the Cochrane Quality and Productivity topics to help the NHS identify practices that could be significantly reduced or stopped completely, releasing cash and/or resources without negatively affecting the quality of NHS care. Each topic has been derived from a Cochrane systematic review that has concluded that the evidence shows that the practice is harmful or ineffective and should not be used, or that there is insufficient evidence to support widespread use of the practice.

Unless otherwise stated, the information is taken with permission from the Cochrane systematic review.

NICE summary of Cochrane review conclusions

The review of trials of routine Doppler ultrasound of the baby's vessels in pregnancy identified five studies involving more than 14,000 women and babies. The studies were not of high quality and were all undertaken in the 1990s. They showed that the use of routine umbilical artery Doppler ultrasound, or a combination of umbilical and uterine artery Doppler ultrasound in low-risk or unselected populations benefits neither mother nor baby and should not be used. Stopping or reducing the use of routine umbilical artery Doppler ultrasound, or combination of umbilical and uterine artery Doppler ultrasound in low-risk or unselected populations is likely to lead to improved quality of patient care and improved patient experience through the reduced use of unproven and unnecessary investigations. This is in line with the recommendation in NICE clinical guideline 62, 'Antenatal care for uncomplicated pregnancies.' More research is needed to clarify whether this will also lead to improvements in patients' safety.

The 'Implications for practice' section of the Cochrane review stated:

'When we take into account the perinatal mortality including anomalies, there is no conclusive evidence that Doppler ultrasound makes a difference. There is some evidence that umbilical artery Doppler velocimetry may reduce the risk of potentially preventable perinatal deaths. However, these findings are based on few trials and subgroup analyses. For these reasons, we conclude that existing data do not provide robust enough evidence that the use of routine umbilical artery Doppler ultrasound, or combination of umbilical and uterine artery Doppler ultrasound in low risk or unselected populations benefits either mother or baby. Until further research can support new practices, Doppler ultrasound examination should be reserved for use in high-risk pregnancies (Alfirevic et al, 2013).'

Details of Cochrane review

Cochrane review title

Fetal and umbilical Doppler ultrasound in normal pregnancy (Review)

Citation

[Alfirevic Z, Stampalija T, Medley N. Fetal and umbilical Doppler ultrasound in normal pregnancy. Cochrane Database of Systematic Reviews 2015, Issue 4. Art. No.: CD001450. DOI: 10.1002/14651858.CD001450.pub4](#)

When the review content was assessed as up to date

Cochrane Quality and Productivity topics

28 February 2015.

Quality and productivity category

Right care

| | | | |
|----------------|------|-------|-----|
| Relevant codes | OPCS | ICD10 | HRG |
| | N/A | N/A | N/A |

Programme budget:

Maternity and reproductive health.

Evidence

Relevance to the NHS

The Cochrane review identified five randomised controlled trials involving more than 14,000 women and babies looking at the use of routine Doppler ultrasound of the baby's vessels in pregnancy. The studies were not of high quality and were all undertaken in the 1990s.

No differences in perinatal mortality were demonstrated overall, although heterogeneity was considerable, and the number of participants remained too small to detect small but potentially significant changes in perinatal outcome.

Results from one trial suggested that routine Doppler ultrasound in unselected pregnancies assessing both umbilical and uterine artery Doppler may do more harm than good, but the authors acknowledged that the increase seen in perinatal deaths was an unexpected finding that may have occurred by chance. Another study showed an unexpected finding of a greater risk of intrauterine growth restriction in the group that had serial ultrasound and Doppler examination. The authors stated that statistical analyses indicated that this was probably not a chance effect, and that frequent exposure to ultrasound may have influenced fetal growth. This finding was not associated with increased perinatal morbidity and mortality, and follow-up of these children at age 1 year found that the difference in growth was no longer discernible.

Because both of these studies suggest the possibility that the investigation may cause more harm than good, it raises the need for further investigation of the effects of frequent ultrasound exposure on fetal growth. Overall no improvements were identified for either the baby or the mother, by using Doppler ultrasound routinely in low-risk pregnancies.

Relevant NICE guidance and products

[Antenatal care for uncomplicated pregnancies – NICE clinical guideline 62](#) (published: March 2008; reviewed and placed on the [static list](#) following consultation with stakeholders: February 2014)

1.10.3 Routine Doppler ultrasound should not be used in low-risk pregnancies.

Other accredited guidance and products

Finnish Medical Society Duodecim: [Ultrasound scanning during pregnancy](#)

02 April 2014.

Cochrane Quality and Productivity topics

Clinical Knowledge Summaries Antenatal care - [Antenatal care - uncomplicated pregnancy](#)
March 2011.

Potential productivity savings

Estimate of current NHS use

- There were approximately 637,000 deliveries in England, 2014-15 (NHS Maternity Statistics - England, 2014-15)

Level of productivity savings anticipated

- This practice is consistent with NICE guidance on [antenatal care for uncomplicated pregnancies](#).
- All maternity ultrasound scans are included in the antenatal tariff of the maternity pathways payments system so there is no saving for commissioners.
- Where this is current practice staff time will be released for other work and release ultrasound capacity. This may reduce waiting times.

Type of saving

- No cash savings expected but increased availability of staff which may reduce waiting times

Any costs needed to achieve the savings

- There is not likely to be a cost barrier to change.

Other information

- This is likely to benefit NHS provider trusts.

Potential impact on quality of NHS care

Impact on clinical quality

No significant improvement in clinical quality anticipated.

Impact on patient safety

No clear predicted impact on patient safety from current evidence. More research is required to establish if patient safety will be improved.

Impact on patient and carer experience

Improved patient and carer experience anticipated.

Likely ease of implementation

Time taken to implement

Can be achieved quickly: 0–3 months.

Healthcare sectors affected

Affects a whole organisation across a number of teams or departments.

Cochrane Quality and Productivity topics

Stakeholder support

Likely to achieve good buy-in from key influencers.

References

Alfirevic Z, Stampalija T, Gyte GML (2013). Fetal and umbilical Doppler ultrasound in high-risk pregnancies. Cochrane Database of Systematic Reviews, Issue 11.

[NHS Maternity Statistics - England, 2014-15 \(2015\)](#)

Accessed December 2015