Ultrasound screening in pregnancy: a systematic review of the clinical effectiveness, cost-effectiveness and women's views

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Record Status
This is a bibliographic record of a published health technology assessment from a member of INAHTA. No evaluation of the quality of this assessment has been made for the HTA database.

Citation

Authors' objectives
The objectives of this review were: - To update the pre-existing Cochrane review of ultrasound for routine fetal assessment in early pregnancy. - To compile new Cochrane reviews of routine ultrasound in late pregnancy and routine Doppler ultrasound in pregnancy. - To review the literature on the detection of fetal abnormalities by ultrasound screening examinations during pregnancy. - To conduct a primary study to assess the consequences of a routine two-stage ultrasound regimen in pregnancy in a teaching hospital (clinical pathways). - To compile literature reviews of (a) women's views on undergoing routine ultrasound examination and (b) estimates of costs and cost-effectiveness of routine ultrasound examinations. - To conduct a primary study of costs of a routine two-stage ultrasound regimen in early or mid-pregnancy in a UK teaching hospital. - To refine and update a decision model of cost-effectiveness of options for routine scanning for fetal anomalies.

Authors' conclusions
There is evidence that routine ultrasound in early pregnancy provides: (i) better gestational age assessment (ii) earlier detection of multiple pregnancies (iii) detection of clinically unsuspected fetal malformation at a time when termination of pregnancy is possible. These effects have not been shown to improve ultimate fetal outcome. No convincing evidence of benefit from routine examination in late pregnancy (> 24 weeks) was found, whether using imaging or Doppler ultrasound.

Clinicians, women and health planners need to decide if these effects are sufficient to justify routine ultrasound. Clinicians in the UK seem convinced of the benefits, given the very wide-spread use of the technique. As seen from the systematic review of women's views, imaging is popular with women (provided the appearance of the baby is normal). The study in Liverpool indicates that the average cost to the hospital of providing a 20-week anomaly scan is 15 GBP. This seems modest in the UK but will be prohibitively high in many developing countries.

If routine ultrasound is to be offered before 24 weeks, what timing is optimal? The Royal College of Obstetricians and Gynaecologists (RCOG) Working Party report of 1997 recommended a two-stage regimen of booking ultrasound at about 12 weeks, followed by a second ultrasound anomaly scan at 20 weeks the regimen offered at Liverpool Womens Hospital. When this report was initially drafted, no comparative information was available about the clinical impact of different regimens. Since then, an RCT comparing the two-stage regimen with a 20-week scan alone has demonstrated less need for readjustment of dates at the mid-pregnancy scan in the two-stage group (with possible consequences for timing serum screening, if available) and less anxiety among the women. Again, clinicians, women and health planners have to decide whether such benefits justify the costs.

The systematic review of the effectiveness of anomaly detection has highlighted substantial variation in, and limits to, detection rates of certain structural abnormalities. This information should be made available to clinicians and women, and may also be relevant to the medico-legal arena. Given these limits, the RCOG Working Party's recommendations, that ultrasound examinations should be conducted only by appropriately trained personnel and using equipment no more than 5 years old, seem appropriate. Quality control mechanisms should be set in place to audit performance. The system
of reporting suspected anomalies to regional fetal anomaly registers should be encouraged where these exist.

A number of inefficiencies in the routine ultrasound screening programme were identified (including the need for repeat scans and that not all women book at early gestations), some of which are unavoidable, but which have implications for both its clinical and cost-effectiveness.

**Project page URL**
http://www.hta.ac.uk/1057

**INAHTA brief and checklist**

**Indexing Status**
Subject indexing assigned by CRD

**MeSH**
Costs and Cost Analysis; Mass Screening; Prenatal Diagnosis; Ultrasonography, Prenatal

**Language Published**
English

**Country of organisation**
England

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**AccessionNumber**
32000000903

**Date bibliographic record published**
17/10/2000

**Date abstract record published**
17/10/2000