Point-of-Care Obstetrical Imaging for Minimally or Untrained Birth Attendants

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Technology description

Advance warning of some of the main causes of maternal and/or neonatal problems can prevent death and long term health complications. These causes include bleeding (e.g., from placenta previa over the cervix), preterm birth and bleeding or infection from obstructed labor (e.g., from fetal malpresentation or undiagnosed twins). Basic assessment – including gestational age, number and presentation of fetuses and placental location – improves outcomes. For example, women identified at risk of preterm birth can be transported to a skilled center for care and evaluation. UW–Madison researchers with expertise in ultrasound technology and maternal-fetal health have designed a simplified, low cost ultrasound device to help minimally or untrained care providers recognize complications in pregnant women and make appropriate referrals. The operator does not need to interpret technical images.
The device is manually swept across the patient’ s abdomen; automated algorithms extract critical structural information from these manual sweeps and convert the data into a 3-D model. Sequential estimation techniques are used to assess fetal gestational age, growth, presentation and number, as well as placental location.
The system features three main improvements:
A specialized transducer fits comfortably in the hand, unlike conventional probes.
The easy-to-understand interface guides the operator to move the probe across the patient’ s abdomen; sonographic training is not required.
If the device detects potential complications (e.g., if the fetus is malpresented, or the placenta is over the cervix) an alarm/flash will signal that the patient should be evaluated by a trained care provider.
The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a specialized ultrasound device tailored for obstetrical monitoring. A simplified, ergonomic transducer is adapted for intuitive sweeping motions across the pregnant patient’ s abdomen.
Built-in algorithms provide automated analysis of various obstetrical conditions, without requiring the operator to interpret standard ultrasound images or make a diagnosis. The device can recognize and alert the operator to potential complications.

Application area

Global maternal health

Family practice clinics
Hospital obstetric triage
Emergency medicine

Advantages

Device is comparatively low cost, durable and intuitive to use.
Provides fast, simple diagnostic scans
No advanced training required

Institution

Wisconsin Alumni Research Foundation

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