Improving prenatal diagnosis and management in Cumbria by telemedicine.

Ultrasound screening and monitoring is at the core of good antenatal care. If a fetal problem is detected by an ultrasound scan, then the mother is referred to a local specialist or to the regional Fetal Medicine Centre in Newcastle. For mothers living in rural areas such as Cumbria however, a referral to Newcastle could mean 6 hours of travelling at their own expense. A videoconference link between the ultrasonographer in Cumbria and the Fetal Medicine Unit in Newcastle can provide expert assessment and counselling without the need for the patient to travel to Newcastle.

Prenatal management using telemedicine would save considerable costs to patients in time and travel and would upskill local ultrasonography staff.

Outcomes

A telemedicine link has been successfully established between the obstetric ultrasound unit at West Cumberland Hospital (WCH) and the Fetal Medicine Unit in Newcastle. Fetal ultrasound images and audio transmitted via the link are of good quality.

All of the women referred for fetal ultrasound telemedicine have successfully received a scan and consultation via the link. 18 Fetal medicine scans and consultations have so far been done via the link since October 2015.

Staff are enthusiastic about the benefits to patients and the ability to involve the local service more in delivering specialist care. Support has been gained from senior managers, sonographers, obstetricians and midwives at both Newcastle and North Cumbria NHS Trusts. Three sonographers from WCH have started a telemedicine training programme in uterine artery and middle cerebral Doppler ultrasound. All training programmes should be finished by the end March 2016. The University of Cumbria are also working with the partners to support the evaluation, focusing on staff and management stakeholders.

Initial challenges have been overcome and have highlighted the support needs and opportunities of introducing new technology-based services.

Impact

- Reduction in the number of women required to travel to Newcastle for specialist fetal ultrasound.
- Reduction in associated family costs.
- Enhanced standard of local obstetric ultrasound by developing local sonographers through telemedicine training.
- Evidence that a fetal telemedicine service is acceptable to parents and to health professionals.
- Evidence as to how the telemedicine service can be implemented across a wider geography (and potentially across other clinical fields).
- The telemedicine service has been publicised very positively in the local Cumbria press.
Background summary

At present, three consultant-led maternity units in Cumbria refer Fetal Medicine (FM) cases to Newcastle. For some women this entails 6 hours of travelling at their own expense.

The specific aim of this AHSN NENC funded project is to establish a videoconferencing infrastructure between the obstetric ultrasound department at West Cumberland Hospital (WCH) and FM in Newcastle and to determine the success of a telemedicine service.

Work will also be carried out to evaluate the telemedicine service as a means of training local sonographers.

The system works as follows:

- Videoconferencing equipment is set up and a connection established.
- A sonographer undertakes an ultrasound scan under the direction of a fetal medicine consultant in Newcastle.
- Real-time images and audio are transmitted to the FM Centre in Newcastle.
- The scan image is viewed by a fetal medicine consultant and/or sonographer using a videoconferencing unit at Newcastle.
- The patient (and her partner if present) is counselled by the fetal medicine consultant via the videoconferencing link.
- The consultant grades the image and sound quality and the patient completes a questionnaire about the consultation experience.

The videoconferencing link has been established and is functioning.

This will be the first time that a fetal telemedicine service has been developed in the UK (apart from small projects). It is an opportunity to dramatically alter the way FM services are offered and to improve care.

The technology can be used to provide on-site training for local sonographers in ‘advanced’ ultrasound investigations (e.g. fetal and maternal Doppler). Successful implementation of the technology would also be seen as ‘proof of principle’ and wider use of the innovation in other clinical areas could follow.

The project commenced in July 2015. Good quality real-time ultrasound images are now being transmitted from WCH and successfully viewed in Newcastle.

Benefits

- Patients - Less travel, less financial cost, obstetric consultations within their own local maternity unit, more highly trained staff within their local maternity unit.
- Clinicians and staff - enhanced training opportunities, improved links to additional FM expertise, improved and consistent care for local women.
- Local NHS Trusts - Upskilled workforce, improved care for local women, further development of clinical and academic links between the obstetric departments at NCUH and NuTH, established referral pathways for complex fetal problems.

Next steps and plans for the future

- Evaluation of patient questionnaires and interviews.
- Evaluation and feedback of stakeholder interviews.
- Assessment of cost impact (consultation times and staff utilisation).
- Explore the use of the technology to provide a telemedicine service in other units and specialties.

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