Fetal Telemedicine Pilot – A study of clinical stakeholder acceptance of a telemedicine innovation linking a rural district general hospital with a fetal medicine unit at a major teaching hospital in Northern England

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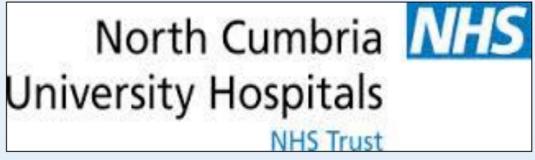
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Introduction

- The provision of fetal medicine (FM) services is dependent on the availability of specialists who have the required expertise in interpreting ultrasound images and counselling parents.

- Women who live in Cumbria previously had to travel to Newcastle to access specialised FM, a journey of up to 6 hours.

- A fetal telemedicine service was established in October 2015, between West Cumberland Hospital (WCH), Whitehaven (~1200 births per year) and the FM Unit in Newcastle.

- Women referred for FM consultation from WCH were seen via a weekly telemedicine service, excluding cases with a cardiac anomaly and where invasive testing was anticipated.

Methods

- University of Cumbria (UoC) undertook a study with clinical stakeholders to ascertain the barriers and benefits of the service from their perspective.

- This study followed the Stakeholder Empowered Adoption Model (developed by UoC)

- Commissioners and managers were involved in determining the evidence needed to inform the design of the interview guide.

- Semi-structured qualitative interviews were undertaken with key clinical stakeholders: two consultants and three sonographers.

- Interviews were recorded, fully transcribed and analysed using NVIVO (qualitative data analysis software).

Results

The adoption study identified a range of tangible benefits for clinicians and the referring hospital:

- Sonographers reported being upskilled; more involved in women's pregnancies; and having easier access to specialist support
- Consultants felt better supported and less isolated professionally
- Benefits were reported to have resulted in improved management of high risk pregnancies at the referring hospital
- All contributors identified benefits for pregnant women from convenience and continuity of care.

Challenges were also identified.

- Concerns over staff capacity and difficulties in engaging with hospital management had threatened the success of the pilot
- The video-link was more difficult to establish than was expected
- Sonographers reported tele-ultrasound to have interrupted their routine practice; the main challenges came from:
  - Delivering a shared consultation when used to working alone
  - The need to resist scanning intuitively
  - Knowing when to move on after acquiring a satisfactory image
- Most sonographers adapted to and overcame these challenges during the pilot.

> I think the biggest thing for our ladies is that they're not travelling, they're still getting the same service but they're not travelling (Sonographer)

> I've learned about the topic yes, because when we have discussions … we can discuss why x, y, z was said, or raise concerns … so you can say 'should we maybe have done x, y, z' and [the answer is] 'no, no, that's just the way it is' … you're learning medically (Consultant).

> It's being watched when I'm not used to having anyone in around me, or not somebody in around me that's above me, professionally […] Sometimes we're doing what we think we should be doing before they're actually asking us we're already at the point where they wanted us to be (Sonographer).

Discussion

Consideration of staff experiences and perspectives is important because lack of staff acceptance is a major barrier to adoption[1-7]; this is often due to:

- Non-awareness and/or non-acceptance by staff of associated benefits [2,4,6,7].

- Impact on workload, which is often underestimated[3] and can result in staff perceiving telehealth as burdensome[1]; a feeling exacerbated by staff shortages[4].

- Staff discomfort from being monitored and having their practices scrutinised[8,9].

Taken together these factors can lead staff to resist the additional responsibilities of telemedicine in defence of their professional identities[5].

Conclusion

- Fetal telemedicine enhanced maternity provision at the referring hospital and improved the management of complex pregnancy.

- Initial challenges were reported: sonographers highlighted disruption to routine practice and discomfort in being observed; increased workload in an already stretched service was also a concern.

- The challenges faced could have been major barriers to success; the ways in which staff responded to and overcame these challenges was admirable.

- Whilst the literature identifies staff acceptance as a barrier to adoption, tangible benefits are known enablers.

- In this instance the identification of early benefits for both patients and staff influenced their acceptance of fetal telemedicine.

References: 1. Brewster, L., et al., (2013), "Factors affecting frontline staff acceptance of telehealth technologies: a mixed-method systematic review", J ADV NURS, 70(1). 2. Buck, S. (2009), "Nine human factors contributing to the user acceptance of telemedicine application", J TELEMED TELECARE, 15(2). 3. Joseph, V. et al., (2011), "Challenges in the development and implementation of telehealth projects", J TELEMED TELECARE, 17. 4. Odeh, B., et al., (2014), "Implementing a telehealth service: nurses' perceptions and experiences", BR J NURS, 23(21). 5. Segar, J. et al., (2013), "Roles and identities in transition: boundaries of work and inter-professional relationships at the interface between telehealth and primary care", HEALTH SOC CARE COMM, 21(6). 6. Taylor, J. et al., (2015), "Examining the use of telehealth in community nursing: identifying the factors affecting frontline staff acceptance and telehealth adoption", J ADV NURS, 17(71). 7. Wade, V. et al., (2010), "A qualitative study of sustainability and vulnerability in Australian telehealth services", STUD HEALTH TECHNOL INFORM, 161. 8. Moeckli, J. et al., (2013) "Staff acceptance of a telemedicine intensive care unit program: A qualitative study", J CRIT CARE, 28. 9. Young et al., (2011) "Staff Acceptance of Tele-ICU Coverage, A Systematic Review", CHEST 139.