Digital voice recorders – A conceptual intervention to facilitate contemporaneous record keeping in midwifery practice

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Original citation & hyperlink:
Pezaro, S & Lilley, L 2015, 'Digital voice recorders– A conceptual intervention to facilitate contemporaneous record keeping in midwifery practice', Women and Birth, vol. 28, no. 4, pp. e171-e176.
https://dx.doi.org/10.1016/j.wombi.2015.04.008

DOI 10.1016/j.wombi.2015.04.008
ISSN 1871-5192
ESSN 1878-1799

Publisher: Elsevier

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Abstract

Background

The first responder, faced with any obstetric incident, frequently finds themselves within a dichotomy of multi-tasking activities. One challenge for the midwife, is to keep accurate and contemporaneous medical records, whilst simultaneously providing immediate clinical care.

Aim

This paper aims to propose an innovative conceptualisation and a practical solution for maternity services, which strive to uphold best practice in creating contemporaneous and accurate medical records. The feasibility of introducing the use of voice recorders within maternity services will be explored, and offered as a mechanism to facilitate record keeping and simultaneous clinical care.

Methods

A synthesised narrative review of the literature is conducted. This review academically tests the conceptual hypothesis that the implementation of voice recorders within maternity services may augment the midwife's ability to generate contemporaneous medical records. A background literature review will also explore the key drivers for this particular innovation, and the challenges facing healthcare leaders in service improvement.

Findings

This paper builds upon previous suggestions that digital voice recorders may be an effective solution to enhance overall obstetric outcomes, and focuses upon conceptual processes for implementation.

Conclusions

This paper offers the principal conclusion that the integration of voice recorders into midwifery practice for the purpose of supporting contemporaneous record keeping may be feasible within the current healthcare climate.

Keywords

- Midwifery;
- Medical records;
- Emergency medical services;

- Obstetrics;
- Health services

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1. Introduction

Conceptual ideas in relation to the implementation and use of voice recorders in clinical practice lean towards the postulation that the digital integration of voice recorded clinical documentation may improve services.[1] This paper will explore the challenges and opportunities for implementing this intervention specifically within midwifery practice.

The accuracy of the medical record in midwifery is imperative to ensuring effective communication, patient safety, decision making, auditing, and legal investigations.[2] Within the arena of record keeping, consideration has been predominantly afforded towards the epidemiology of poor practice, adverse events, and preventative measures rather than the development of innovative solutions.[3] Accurate documentation of any midwifery care must be written contemporaneously or directly after events occur.[4 and 5] However the incidence of poor contemporaneous record keeping within maternity services has yet to be remedied.[6]

Within hospital settings, a skills drills or emergency team may appoint a time keeper in order to record clinical events in real time. However, within the home birth and other community based settings, lone workers may also be faced with obstetric emergency, either alone or with little support. The unpredictability of such a scenario may be difficult to manage. As the need for clinical midwifery management becomes immediate, clinical record keeping may become retrospective and secondary to primary care.[7 and 8]

Health and social care records are legal documents. A contemporaneous record is considered to be a chief form of evidence, and many practitioners believe that if it is not recorded it did not happen.[9] Keeping contemporaneous and accurate records is an imperative component in providing quality patient care, and could reduce the number of complaints and litigation claims in the NHS.[10] Poor record keeping may have a significant human, as well as financial costs to the UK healthcare system.

This paper will explore the concept, feasibility and potential challenges in using digital voice recorders in midwifery practice to accurately and contemporaneously record clinical events. It will also provide an overview of the central theoretical principles of digital record keeping, and explore pathways towards implementing the use of voice recorders within the maternity services.

Exploring a solution which allows for contemporaneous record keeping during obstetric emergencies will be significant to both practice and research, as written recollections in obstetrics are often incomplete and incorrect.[11 and 12] Exploring digital solutions to improve the accuracy of documentation may be a key step in moving towards comprehensive electronic documentation practices within healthcare.[13] This paper aims to further this conversation.

2. Background

Currently, the majority of UK healthcare organisations use some form of Health Information Technology to manage data storage, record keeping and optimal decision making. Yet these current systems may not meet the complex needs of patients, professionals and organisations.[14] Increasingly, maternity services are employing prompt based electronic medical record keeping. However, prompted electronic medical record keeping alone does not always ensure full compliance with record keeping requirements, and retrospective record keeping has been associated with inaccuracies.[15] and [16]

For the clinician, managing any obstetric emergency can be stressful. Stress can impair a clinician's perception of time, and their ability to multitask.[17] As the midwife prioritises the immediate need for clinical care, records may be more likely to be written in relative retrospect. This may in turn impair the quality of documentation in relation to obstetric emergencies, as the clinician's impaired perception of time may produce inaccurate records.[17]

When documentation is completed in written format, there are often many variations in the terminology used by healthcare professionals.[3] and [18] This can cause confusion and the misinterpretation of the record, particularly when fragmented abbreviations are used.[19] This in turn may result in misinformed decision making and poor care. Careless record keeping can also result when high pressured maternity work environments produce hurried documentation, where some information may be omitted if it is deemed to be of no use.[20]

This paper will use the example of neonatal resuscitation as one of many obstetric incidents where voice recorders may be of use in clinical practice. The World Health Organisation (WHO) approximates that each year, between four and nine million newborns will require resuscitation worldwide.[21] As soon as a baby is born, it is recommended that a clock be started to ensure accurate recordings, so that regular evaluations can be performed.[22] This requirement could be facilitated with the use of digital voice recorders. Accurate records play a vital part in future learning, competence, communication and auditing practice during any obstetric incident.[23] Therefore, the exploration into a viable solution to facilitate this, is of timely significance.

Obstetric staff may be unclear about who is responsible for the prompted electronic documentation of a clinical incident, and may omit vital actions taken by the team.[24] Additionally, many midwives reject the use of computerised medical record systems altogether if they are not based upon the preferred story telling approach to writing patient records.[25] Therefore any new intervention developed to improve record keeping techniques should consider enabling clinicians to capture narratives easily.[26] However, in using the narrative model of record keeping alone, some aspects of the story may be emphasised and others forgotten.[26]

Creating data-rich environments is progressively becoming the key to high-quality care alongside integrated patient-centred care.[14] Yet innovators must create interventions which are predominantly oriented towards supporting healthcare as a social, interactive process.[27] It has also been suggested that such interventions should ideally allow the midwife to input these narratives effortlessly with the additional use of speech in the presence of the patient.[26] The use of speech is innate to humans, and so voice recordings could be a more accurate, simpler and natural way of capturing narrative during both obstetric emergencies and everyday maternity care.[28] Thus, the creation of voice recorded audio files could be an opportunity to improve overall record keeping practices.

Voice recordings are also easily incorporated within electronic medical records. The voice recording of clinical events may also promote a collective narrative of the entire event, rather than isolated data, as the recording becomes a source document. Recordings of clinical events can also be replayed, critiqued and transcribed if necessary, and could directly improve patient care.[29] As such, the use of digital voice recordings for improved record keeping practices is a valid area for exploration, and healthcare leaders may wish to consider turning this vision into practice.

3. Methods

The literature was explored narratively in order to gain a broader perspective of the validity of and problems associated with contemporaneous record keeping in midwifery practice. Throughout this sweeping review of the literature, Academic search complete, MEDLINE and CINAHL were searched using a combination of terms used for medical records, technology and clinical incidents (neonatal resuscitation, voice recorders, PDA, Health informantics, record keeping, nursing, midwifery, obstetrics, maternity, home birth, clinical incident, obstetric emergency, documentation and digital medical records). This was done in tandem with search terms for comprehensive research designs (qualitative, action research, ethnographic, semi-structured interviews, RCT, systematic reviews and meta-analysis). Snowballing was also employed as the researcher recursively pursued relevant references cited within the retrieved literature, as is best practice for brief literature reviewing.[30]

This paper has been led by the ESRC Methods guideline for generating a Narrative Synthesis in Systematic Reviews.[31] As such, searching remained broad in scope, with all papers considered for inclusion. This narrative synthesis aimed to bridge the gap between academic interpretations, by integrating a variety of studies. This was done to address the broadly hypothesised conclusion that the use of voice recorders may be effective in facilitating contemporaneous record keeping and improve midwifery practices. A narrative approach was chosen due to its hypothesis-generating functions and ability to academically test conceptual ideas and theories.[32]

4. Findings

Record-keeping can often be thought of as a chore, but practising midwives in the UK must comply with the record keeping rules, standards and codes set out by the Nursing and midwifery council (NMC) in order to safeguard the public's health and wellbeing.[5 and 33] The ongoing demand for contemporaneous record-keeping proves to be a challenge for midwives, especially as they are duty bound to adhere to professional guidance.[34] Clinicians are motivated to concentrate upon immediate patient care rather than prioritise contemporaneous record keeping, and will often set aside time later in their shift to complete documentation in retrospect.[35] This may be in part due to the time constraints apparent in midwifery work, and the urgency of the clinical situation in question.[34]

High quality practice in record keeping can facilitate and safeguard the welfare of patients by guaranteeing high standards and continuity of care in addition to enhanced communication between healthcare staff.[36]Midwives must adhere to the code: Standards of conduct, performance and ethics for nurses and midwives,[5] which outlines the lucid importance of accurate record keeping. These standards

implore the need to complete high quality records as soon as possible after an event has occurred. However, the Care Quality Commission (CQC) has identified record keeping as a major area of poor performance within maternity.[6] The challenge for healthcare organisations will be to implement strategies for excellence in maternity care records in order to meet the standards set out by the Health and Social Care Act 2012.

The 2010 White Paper, Liberating the NHS, has set out a contemporary visualisation to deliver an NHS that is pioneering, and puts clinicians in the driving seat with the power to innovate and discover new ideas.[37]There is a vision for moving technologies forward within the NHS in order to improve maternity care, provide contemporaneous ways of record keeping and 'work smarter' to reduce long term costs. Ultimately, the government has set out a "digital by default" vision for public services.[38] Using a digital voice recorder to document patient records could exemplify clinical and cost based efficiencies, and improve record keeping practices for service quality improvements. Therefore, organisations may wish to consider the implementation of voice recorders within clinical areas to realise this vision of becoming digital by default and efficient in maternity services.

5. Feasibility

Any clinical voice recordings made would need the ability to integrate within digital patient record systems, as well as serve to facilitate the clinician in scribing written notes.[26] When considering the benefits of these integrated contemporaneous voice records in comparison with written records, it will be imperative to consider the efficacy of both practices.[14] Previous studies have alluded to the fact that written documentation can be underreported throughout significant clinical events when compared to digitally recorded reports.[39] and [40] These studies hypothesise that the ongoing or intermittent recording of clinical events may enhance overall obstetric outcomes and staff learning in training scenarios. Therefore, the digital recording of events may support overall excellence in maternity care.

Additionally, the feature of the digital stop watch, which is integrated within the voice recorder, could be started simultaneously with the voice recording. This could augment time keeping techniques and the accuracy of Apgar scoring during birth and any subsequent resuscitation. This is significant, as clinicians agree that Apgar scoring is an asset when evaluating the newborn condition, and assists subsequent assessments at successive time intervals, thus improving care quality.[41]

The NHS Plan[37] reinforced the significance of 'getting the basics right' by recuperating the excellence in care and the experience of patients through the implementation of electronic patient records. However, the use of technologies, with clinicians who claim to be unfamiliar with IT/digital devices, proves to be a constant challenge. The need for core IT competencies will become intrinsic to our services, yet we must be careful that when mitigating human error, that we do not develop human device error or inappropriate data storage techniques.[42]

Family members present at a medical emergency, benefit from contemporaneous narratives.[43]Consequently, the recording of events would encourage further narrative, and become beneficial during reflection and/or during the debriefing process.[43, 44] and [45] A 'real time' voice recording of events could also aid written or filed dictation at a later time, and keep parents informed throughout the debriefing process. Family engagement during any obstetric emergency is key in facilitating optimum

psychological and physical outcomes.[46] The digital voice recording of clinical events could promote open conversations and contemporaneous narratives, which may serve as ongoing psychological support tools for families in distress.

Emergencies can trigger significant emotional distress, and therefore, the interpretation of events may have a significant part to play in the subsequent mental health and wellbeing of the families involved.[47]Conceptually, any misguided interpretations surrounding the context of patient experience may be clarified and understood at a later date by revisiting the accurate digital recording of the clinical event. However, we also ruminate that these voice recordings may themselves be open to interpretation, and therefore generate further problems in providing a retrospective clarity of events.

6. Discussion

As it is a current priority to reduce the UK's financial deficit, we must work 'smarter' and reduce the cost of our health services.[37] An increase in service demands along with the economic downturn has placed further strains on decision makers to effectively target healthcare goals with limited resource. Internationally, it is the countries with a higher share of public health expenditure that are more successful in controlling healthcare costs and thus become more financially effective.[48] Leaders within the NHS may want to consider this innovation above others as it may secure high quality service improvements in exchange for relatively low financial expenditure.

The future NHS, must regain approximately £20 billion through efficiency.[38] Maternity services in England historically account for a 60–70% of the cost of litigation claims.[49] In response to this, the NHS Litigation Authority (NHSLA) has increased its total provision for all claims to over £20 billion.[50] The Clinical Negligence Scheme for Trusts (CNST) enables trusts to fund the cost of these claims. This scheme has set out eight maternity standards for NHS Trusts to attain, so that they may become eligible for discounts to their premiums. High quality record keeping features heavily within these standards of fundamental safety, which NHS Trusts will be aiming to achieve. Although the financial incentives look attractive should high standards of record keeping be achieved, attaining these standards should also result in better maternity care and fewer litigations.[49]

According to the NHSLA, a patient's health records should provide a contemporaneous record of the patient's treatment and related episodes.[23] The financial drivers to achieve a reduction in litigation and insurance costs are a clear incentive for healthcare organisations to improve care and efficiency. There is scope for the use of digital voice recorders to achieve high quality record keeping, practice improvements, reflective staff learning and enhanced maternity outcomes. As such, the implementation of this innovation could reduce both the financial and human cost of sub optimal care.[51]

7. Leadership challenges and solutions

There are three main challenges facing UK maternity services: rising birth rates, an increase in complex births, and inadequate staffing levels.[38] The majority of UK maternity units are striving to enhance clinical maternity care by improving record keeping practices. Therefore, any conceptual ideas which may

increase the effectiveness and quality of contemporaneous record keeping should come as a welcomed opportunity for improvement.

Additional benefits to the implementation of digital voice recorders into clinical practice may be to improve clinical outcomes through learning, candour, improved professional behaviour and the facilitation of 'whistle blowing'.[52] These factors increase the value of using digital voice recorders for any NHS Trust striving to improve. However, for all healthcare systems, the biggest challenge is prioritising which quality innovations should be chosen to action and finance, as policymakers are increasingly urged to curtail expenditure whilst maximising outputs.[53] The task in hand involves the empowerment of decision makers to prioritise this innovation above others.

The World Health Report in 2000 suggested that the principal future priorities of international healthcare organisations are likely to include: improved overall population health, safe and high quality healthcare, and services that respond to patient expectations.[54] Improved record keeping meets with these healthcare targets, and should therefore be a key driver in prioritising this area of practice for improvement. Digital voice recorders may be one solution to improved record keeping, and therefore their application should be considered to be of future significance for international healthcare organisations.

One barrier to the implementation of digital voice recorders may be that it is a relatively small change without warrant of priority. Key high value stakeholders may also be uncertain of its contribution to healthcare, and therefore, uncertainty, avoidance and resistance to change may surrender this innovation to organisational inertia.[55] Negativity, scepticism and the pessimistic criticism of this proposal to innovate should also be expected, but any setbacks are not necessarily a bad thing, they are an obligatory part of the process, and can generate economic growth.[56]

Conversely, as a comparatively small innovation, it may be easier to engage primary stakeholders in the visioning process, thus making usability and acceptability more probable.[57] Organisational cooperation is imperative to all technology based innovations, as the introduction of technology plays an important role in many new healthcare innovations.[58] The challenge will be to engage key stake holders in change, and illuminate the wider benefits of this relatively simple innovation in order for change to occur.

Innovation not only disrupts the social order of an organisation, but it may also create cognitive conflict for individuals.[59] By engaging key opinion leaders and decision makers with the process of implementation process, a leader of change can ensure that the organisation's functioning will benefit.[60] This can be achieved by assuring a champion is identified for the implementation process, because "Where radical innovation is concerned, the emergence of a champion is required. Given the underground resistance to change … the new idea either finds a champion or dies".[61(p84)] If change makers champion this innovation, healthcare leaders may see change happen from the edge of the NHS, and therefore be more willing to invest in the collective vision.

To destabilise an organisation's status quo, we must also depict the desired new circumstance, because organisational members may be reluctant to change without the understanding of why routines need to change in the first place.[62] The publication of this paper aims to encourage healthcare leaders and clinicians to become more inclined to embrace change, explore the possibilities of implementing this innovation and empower champions to take it forward. UK clinicians have gone through many changes,

yet they remain receptive to further change if it means providing a consistent, improved service.[63] As collective momentum for this particular change surges forward, NHS organisations may see maternity excellence thrive.

8. Ethical considerations

With healthcare units already using wireless Personal Digital Assistants (PDAs) for voice recordings, insights into the possible security, safety and usage obstacles which may occur, should become apparent in time. The first ethical consideration, for the implementation of voice recorders within the maternity setting, is that any recording could capture an episode of medical error or poor practice. This could potentially result in the recording of clinical events becoming 'evidence'. However, all midwives are required to exercise their professional duty of candour,[5] and thus any disclosures of medical error or impaired practice would be obligatory, whether digitally recorded, or otherwise.

Digitally recording clinical events may also compromise confidentiality, both for the clinician and the family involved in maternity care. However, precise time keeping during any obstetric emergency or clinical action is indispensable. A voice recording would be more accurate in time keeping, and as such, would aid clinicians in improving the quality outcomes of effective record keeping. This priority in clinical care may outweigh the risks posed by any undesirable recordings, as long as efforts to mitigate any risks are observed.

Another ethical consideration would be that the recording device may record the voice of patients and families as well as maternity staff. Literature would suggest that prior to recording a patient interaction, consent should be obtained, and a rationale with a full explanation should be given regarding the justifications for the recording.[64] This would ideally be done during the antenatal period, as obtaining informed consent is often impossible during emergency situations.[65] Specifically, written consent would optimise the safeguarding of both families and clinicians, as both will hold a comprehensive copy of the negotiated agreement.[64]

One study recommended that only essential staff and patients be notified of any impeding recordings, in order to reduce any contributory factors and ethical dilemmas, which may influence the data recorded.[66]This is also known as the Hawthorne effect.[67] Obtaining and retaining informed consent for the digital voice recording of clinical events may always remain a challenge. The challenge for healthcare leaders will be to navigate pathways towards a shared promise of trust.

Ethically, staff may be reluctant to record clinical errors due to the perceived risky threat of blame and litigation when voice recordings are potentially used as evidence. However, the disclosure of medical error is mandatory whether recorded or otherwise.[68] The ethical doctrine surrounding the disclosure of errors, confidentiality, consent, medical ethics and laws consist of truth-telling, and respect for the public. These considerations are encompassed within the professional standards set for healthcare professionals.[69,70] and [5] If these are taken into account during project planning and implementation, key stakeholders should be reassured in project investments.

Ultimately, clinicians have a professional responsibility to ensure their conduct and competence when using any technology in practice, maintain privacy rights and uphold appropriate data storage

practices.[71]Therefore, many of the ethical challenges put forward within this paper may be overcome through the development of appropriate organisational guidance, governance policies and procedures.

9. Conclusions

It has been argued that innovations do not occur in isolation, but are developed and disseminated between different stakeholders and components.[72] This paper has explored how the political drivers, social and technological factors, financial and organisational challenges along with ethical and legal dilemmas are intertwined in service improvement planning. The NHS is currently planning its improvements with limited resources in place. The empirical findings within the literature reflect the important general principle that voice recorders, used to facilitate contemporaneous record keeping, may provide opportunities for service and practice improvement. As such, theoretically, this intervention should be considered by healthcare leaders as a worthy innovation, fit for pilot testing.

It is recognised that the research literature retrieved within this paper may be limited by weaknesses and flaws of evidence. The literature reviewed by this paper has also been largely procured from within the social and behavioural sciences. Therefore, future research may wish to consider carrying out further quantitative research in order to assess the impact of such an intervention becoming amalgamated within midwifery services through pilot testing. Unfortunately this narrative literature review retrieved a paucity of literature in this area.

Digital devices now form a part of most healthcare strategies, as they allow for fast and contemporaneous access to medical information for clinicians.[73] The NHS envisions a future where nurses and midwives operate through PDAs and digital applications, reaching out to families through social media in an age of digital care giving. Yet digital voice recordings can only be the tip of the iceberg of what is to come for digital healthcare, and any positive service improvement, however small, in times of austerity should be considered a welcome one.

NHS hospital trusts have been urged to centre upon a wider set of performance targets beyond their economic competence, and are directly accountable for clinical governance. Digital, electronic health records are gradually being introduced worldwide, and research indicates that UK hospitals are in overwhelming support of this.[74] and [75] Eventually, digital records could be tailored to meet individual and specific needs.[76] and [77] Consider the possibilities for the NHS. The future is exciting.

The use of digital voice recorders has been put forward within this paper as a conceptual solution to meet the needs of staff, who are required to maintain contemporaneous documentation throughout the duration of any clinical event. These voice recordings, taken simultaneously alongside clinical care, may be integrated within emerging digital health record systems as source documents for medical reference. As such, this intervention would serve to meet the vision for UK healthcare services and excellence in midwifery.[37]

This article provides a thought provoking exploration into the conceptual possibilities of using digital voice recorders as a tool for improved record keeping in midwifery practice. Should readers of this paper wish to receive a board report template and project proposal in order to take this idea forward within their own clinical settings, please contact the primary author via email.

Acknowledgments

The authors would like to thank the University of Northampton and altstrat for supporting the submission of this paper.

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