AIMS For a better birth...

AIMS Workshop: Technology in the perinatal period

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By Kathryn Kelly

Introduction

In April I was delighted to be joined by eight people from both birth-worker and non-birth-worker backgrounds, for a discussion into what we understand by 'technology' in the perinatal period. I'm enormously grateful to AIMS for providing this space so that I could invite discussion around a topic that I expect to form part of a popular science book I'm developing.

My writing comes from a position of emancipatory feminism and human rights, and my academic teaching credentials are underpinned by work with thousands of expectant parents through facilitating antenatal courses.

Why were we looking at technology?

Most people will have an instinctive reaction to the concept of technology in health and social care. So, this felt a good choice for our first of three discussion topics.

I wanted everyone to feel welcome, safe, and confident to share their thoughts within the room, and so it

felt important to acknowledge that attendees were from different backgrounds. We needed to be respectful of everyone's lived experiences - for some technology may have been a vital and lifesaving tool. So, I made it clear that we weren't there to decide if technology was good or bad, or to demonise its use.

It's a natural human trait to see a problem and want to fix or solve it (maybe this is why I'm reading so many detective stories!). But the use of technology in health and social care feels an important part of a larger cultural picture. Reasons for its use might include the elimination of risk – itself a muddy issue - or as a magic bullet to make life simpler or cheaper.

We'll have to save 'risk' for another time (though I did touch on it in my article onSafety and place of birth). For now, let's say that the muddiness comes from discomfort with risk (though we're largely happy to ignore it for our convenience) and responsibility. Our society is ill at ease with mortality and insufficiently developed to address the issues of social disability.

What technology are we talking about?

To aid our discussion I limited our definition to one year before and one year after birth. This would mean we could also touch on pre-conception technology.

I also explained that we could include technological concepts, for example, algorithms. This means the guidelines and protocols which inform so much of perinatal care, and extend to concepts such as time, risk, and safety.

To promote engagement, I invited everyone to contribute to aPadlet Sandbox, where they could add 'Post-it' style notes to a prepared digital board. After a little time for everyone to add their thoughts, we worked through each page, sorting the notes into themes and discussing as we went.

Pregnancy

Throughout, I was surprised at the variety of parent-as-user tools suggested. Conception timing apps, personal health monitoring, and social media support forums were all mentioned for pregnancy.

The pregnancy test is now straightforward and self-administered, and we had no complaints about that.

We explored midwife tools; a combination of algorithms (e.g. when blood pressure is high or low, take a predetermined action) and older (pregnancy wheel, blood pressure cuff) or more modern technology (Doppler for fetal monitoring, ultrasound machines). Pregnancy tools also include scans and tests, digital notes and records.

These tools were introduced with the aim of making pregnancy and birth safer for women, birthing people, and their babies. And for the most part they appear unthreatening to the first-time parent. Contested areas include the BMI calculation, and carbon monoxide (CO) monitoring.

BMI is not a valid tool for many populations whose muscle mass differs from the norm, established from

Belgian men in 1832[1]. And CO monitoring can result in people feeling anxious that they will be judged for smoking or living in a smoking household.

Some people decline genetic screening or testing as their values are incompatible with ending a pregnancy.

Labour and birth

When it came to labour and birth, we had to touch on the use of the calendar and clock – time as a technological concept – and how they affect the duration of pregnancy and what happens in labour.

We also noted the parental use of contraction apps. These might provide a sense of control and so feel reassuring for some parents. They might suggest a lack of trust in the body or the process of birth. They might create distance between the embodied experience and external, authoritative knowledge. Could this distancing lead parents to be more accepting of external authority throughout their labour, or do we think that deferral to authority is already embedded?

We know that an individual's values are central to decisions they make about their care. Some will opt for low-tech birthing stools, couches or active birth aids such as pulleys, balls, and pools. While others prefer the clinical and flexible modern hospital bed.

Monitoring options in labour move from the lower tech – observation, Pinard or Doppler, the partogram – to higher tech – fetal scalp electrode, fetal blood sampling, and cardiotocograph (CTG).

Even the most technologically complicated – CTG – is still quite basic in modern terms. Research into using AI to improve the value of CTG is under way at the University of Oxford We wondered if layering more technology into an already contested technology would be helpful or distracting. Use of AI might strengthen the value of CTG, or it could demonstrate its lack of value – both of which could be positive outcomes.

We acknowledged that the development of medication – pain relief, hormones, antibiotics etc., - will have involved a level of technical innovation in their manufacture and storage. Delivery systems require varying degrees of technical complexity, for example, injection or catheter and drip. Similarly, induction of labour includes a range from the simple mechanical to the complex bio-chemical tools.

We know that the history of forceps was a marketing success story, creating work and reputation. And while some babies and women will have been helped, many were damaged, and midwifery was squeezed out of practice.

Other clinical tools - ventouse, scalpels, cauterisation, stitches and dressings - were developed with the laudable aim of minimising mortality and morbidity. It feels important that it would have been rare for women's voices to be heard in the development of any of this technology.

Postnatal

Given the higher maternal risk in the year after birth, I found the notable shift in our notes on this period fascinating.

We highlighted incubators, newborn tests, and vaccinations. Then the algorithms of nutrition guidelines and the guidance that informs the Health Visitor checks and care.

The fact there is little to support the woman perhaps reflects that maternity services discharge her once the urination, feeding, and mental health questions are ticked. Care then moves to public health, in the form of the Health Visitor, within a couple of weeks.

As a result, much of the technology we identified postnatally is that which is marketed to parents.

For parents, buggies or slings and car seats might be considered essentials. Cots, sleeping bags, and nappies too. Many parents use smart devices for self-monitoring, and social media for peer support.

While hand-expressed breastmilk has been collected since ancient times, the C19th brought the mechanical pump and the C20th the electric (at that time almost exclusively used within hospitals). Now there are a wealth of options to express and store breastmilk, as well as sterilising the pumps and bottles.

In addition to these fundamentals, we now have a raft of products of debatable value. Marketing positions these as increasing either 'safety' or 'ease'. Whatever the promise, they certainly part new parents from money.

Products positioned as taking the load off the mother or primary carer could be said to be emancipatory. However, many cater only to the privileged: auto rocking cradles, auto bottle prep, and remote-controlled reclining chairs come with hefty price-tags.

Some products are informed by, and certainly play on and feed, parental anxiety: apps to log feeding and sleeping, baby monitors and cot cams, home weighing scales, and room thermometers.

I'm conscious of the importance of listening to recent parents – neither our personal experience of parenting, nor our personal values, should cloud our perspective and lead us to judge new parents. But it can feel like most products benefit the marketeers, rather than the parents.

Some feel actively bonkers - heated baby wipe containers, pee teepees, anyone?

The future

I had intended to touch on ectogenesis in our discussion, but we didn't get round to it. Research into artificial wombs is inspired by the aim of keeping very premature infants alive. But there are those who would create and develop babies entirely outside a womb, which prompts serious ethical questions[2,3].

It's an interesting example of one kind of feminism – that sees childbearing as burdensome and the foundation of inequity between the sexes – being diametrically opposed to another kind of feminism – that sees pregnancy and birth as intrinsic to their femaleness[4].

Discussion

For many of us in the discussion, our first exposure to what technology in childbirth might look like came from Monty Python's 1983 film 'The Meaning of Life'. (You can watch the clip here.) We've come a long way from 'the machine that goes ping', and I think we can agree that the experiences of women and birthing people are now higher on the agenda.

Attendees summarised that tools are assessed on their clinical function, with historically little research into their side-effects or impacts. Therefore, most tools went into routine use without a good evidence-base or research into the long-term impact on the woman or baby.

This was particularly true if the side effects were not considered to be clinically relevant, such as the impact on mobility, gut flora, or the woman's experience or identity.

The algorithms embedded in NICE and local Trust guidance can be informed by custom and practice due to a lack of good quality evidence. Some feel that CNST[6] pressure has led to 'action bias', where the clinician feels safer acting, rather than not acting, because it's easier to defend 'we did everything we could' in the courts of either justice or public opinion.

For some birth-workers this might feel like a patriarchal 'fixing' of problems, rather than trusting the process and allowing situations to unfold, reminiscent of Monty Python's sketch. And that's true, but recent maternity investigations, and worldwide maternity care, illustrate that not intervening appropriately (or having the resources to do so) can also lead to dangerously poor care.

I was interested in my own response to exploring this topic. Preparing for the discussion made me think through my own biases. It revealed the breadth of application of technology – beyond physical artefacts - and helped me to see it in a wider context.

Having said that, I'd like to see the 'machines that go ping' under dust covers until women are heard, the tech is proven necessary and helpful, and healthcare resources are more equitably distributed across the globe.

But broadly speaking, our discussion agreed that it's not the technology that's the issue, it's the way it's used. Thoughtful, intelligent use of well-grounded and continually reviewed technology (from guidelines to physical tools) is beneficial. Sadly, we know that the current maternity services are under extreme stress, which can lead to poor decision making and defensive practice.

Summary

Does it matter if members of the general public understand the role of technology in the perinatal period?

Part of my motivation for working on this book proposal was that educating parents in the third trimester can feel too little too late. At that point we have a lifetime's social conditioning (not least by tv medical dramas) to overcome.

If our whole society was better educated on the perinatal period – the physiology, the impact of intervention, the enablers and disrupters of an optimum experience for all – then those with the power to bring about change would have a better understanding. And then, maybe, change would be more likely.

Our next discussion was about Power and Politics in the Perinatal period, and you can read more about that in the next AIMS Journal.

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2 Kleeman, J (2020) Sex robots and vegan meat. London, Picador.

3 Wilkinson S, Williams NJ, Fovargue S (2023) Artificial wombs could someday be a reality – here's how they may change our notions of parenthood.https://theconversation.com/artificial-wombs-could-someday-be-a-reality-heres-how-they-may-change-our-notions-of-parenthood-217490[26 May 25]

4 Tong R, Botts RF (2017) Feminist Thought: a more comprehensive introduction. (Fifth). New York, Hachette.

5 Monty Python (1983) The Meaning of Life: Birth.https://www.youtube.com/watch?v=NcHdF1eHhgc [26 May 25]

6 The Clinical Negligence Scheme for Trusts (CNST) provides insurance against clinical negligence claims for NHS Trusts. NHS Resolution (no date) Clinical Negligence Scheme for Trusts. https://resolution.nhs.uk/services/claims-management/clinical-schemes/clinical-negligence-scheme-for-trusts/ [26 May 25]