Leeds University Business School – Research and Innovation Podcast

Episode: Introducing the Surgical Care Observatory – why sociotechnical thinking is needed within the NHS

Speakers: Dr Helen Hughes and Emma Findlay

[00:00:05] **Emma:** Hi everyone, and welcome back to another episode of the Research and Innovation Podcast. My name's Emma Findlay, and I'm a researcher at Leeds University Business School. And I'm currently working in the National Institute for Health and Care Research (or NIHR) Health Tech Research Centre in Accelerated Surgical Care.

[00:00:28] **Helen:** And I'm Helen Hughes. I'm an Associate Professor in the Business School and I'm the theme lead of the Surgical Care Observatory theme within that NIHR Health Tech Research Centre. So yeah, great to be here.

[00:00:41] **Emma:** So, yeah, I should have said as well that I also work in the Surgical Care Observatory alongside Helen. So we're working together on this project over the next few years together, so in this episode, we wanted to introduce the Health Tech Research Centre, which we'll sometimes refer to as the HRC, but it's the Health Tech Research Centre and we want to introduce the work that we do within it.

So what we're going to do is highlight the key research questions and the opportunities that we're trying to tackle through our work here, and primarily looking to examine how the NHS can better prioritize and implement new surgical technologies, which, you know, is a bit of a complex challenge that requires us to look beyond the technology itself and into the system it enters.

So what we know is that the pace of innovation in surgical technology is really rapidly accelerating. However, the adoption and the actual integration of these technologies within the NHS remains quite inconsistent. So really the question isn't just whether a technology works, but it's also whether the system is actually ready to support it, and that's really what we are interested in within the Surgical Care Observatory theme.

[00:02:00] **Helen:** Yeah, that's right. And I think this, for us, is what we would call a classic kind of sociotechnical challenge. And what that means is that the technology can't just go in on its own. The technology when, you know, however minor or seemingly incremental that is, it still interacts with the way people, processes, and the institution overall behaves.

And if you don't kind of think about that alignment across those different domains and think about those at the same time, even the most promising of innovations can fail to

deliver meaningful impact or the impact that they're supposedly going to aspire to achieve.

[00:02:40] **Emma:** Yeah, exactly Helen. And so over the last year or so, as we've been working with stakeholders in the Health Tech Research Centre, we've kind of being consistently coming back to this concept of what we're calling System Readiness or Sociotechnical System Readiness, which to us is a framework that considers, like Helen was just saying, not only the technical feasibility of all these surgical technologies, but also these organisational behavioural infrastructural preparedness.

So it's a concept we've kind of recently explored in an article that we'll share a link to in the episode description, in "The Psychologist", where we were arguing in that article that, you know, all this, knowledge that we have as organisational psychologists and the way we can apply sociotechnical frameworks, you know, all that stuff is really essential to saving the NHS and getting that system readiness for all this new technology coming down the pipeline.

[00:03:41] **Helen:** Yeah, and I think, in that particular piece, we highlighted what I think are quite sobering statistics really. If you look - only 7% of NICE recommended technologies, so NICE is the National Institute for Health and Care - if you look at them, only 7% of NICE recommended technologies are fully adopted.

And we know from kind of a whole, you know, several decades of research and management more widely there, 88% of technologies, tech driven change rather, initiatives, they fail and by "fail", I mean they fail to sort of reach the full aspiration of what they set out to do. And these failures are rarely due to the technology itself.

They're usually more typically due to a lack of kind of behavioural insight and system alignment. And I think we do see that within the NHS, very often, because we buy technologies that have tons of, you know, potential in a really kind of sanitized environment, but throw them into the NHS, which is hugely complex, and you suddenly have all this complexity to deal with. and we, we talk about sociotechnical systems, but we don't yet have the kind of the system readiness tools available in the NHS to help us implement these appropriately.

[00:05:02] **Emma:** So Helen and I, as organizational psychologists, we really think we bring this kind of unique lens into this problem. So our training and our background and our research across different industries allows us to kind of understand how people interact with systems and how identities and incentives might shape behaviour and how to design these environments that support this sustainable innovation going forward.

Because really what we want is not for technology just to kind of come in and maybe solve one small problem. It's quite a kind of systemic change that the NHS is going to have to go through, especially when you look at the 10-year health plan and the big

shifts that we're trying to do in this country when it comes to supporting the NHS to be sustainable going forward.

So we really think our insights are critical in these surgical kind of settings with surgical technology, where importantly, the workflows themselves in surgery, they're complex and on all these team dynamics and these sociotechnical dynamics are really, really central to how these surgeries are, are effective and safe.

[00:06:10] **Helen:** I think that's right. And we're really lucky, actually, because the Health Tech Research Centre in Accelerated Surgical Care here at the University of Leeds and in in the Leeds Health Trust, is dedicated to driving health tech innovation to benefit patients in the healthcare systems. And so the goal of the HRC overall is to deliver socioeconomic benefits through quicker diagnosis and treatment of surgical conditions.

[00:06:35] **Helen:** And then ensure that, you know, people when they have had surgery that they recover safely and well and effectively within the community, and I guess within the Surgical Observatory theme itself, we're designing research projects and developing frameworks that really support these aims.

[00:06:54] **Helen:** So we're not just looking at whether a technology works, although we are interested in that, of course, but we're also asking, okay, when is technology works? Is the system around it ready to support it? And so it can be effectively implemented when it's procured and adopted by the NHS.

[00:07:12] **Emma:** I think we've done a bit of an introduction to the HRC overall and the kind of overarching, I guess, area of focus for the Surgical Observatory theme. So just to break down our approach a little bit. So the first kind of work stream, or particular area of focus, is all about horizon scanning. So, within this, we're working with stakeholders like the NIHR Innovation Observatory up at Newcastle, and NICE, who, as Helen mentioned before, the National Institute for Health and Care Excellence, to understand how these surgical technologies are currently identified and prioritised within the NHS. So we know that there's a lot of development out there, there's lots and lots of medical devices, kind of data, technologies, all sorts of different technologies being developed globally.

The point of horizon scanning is, how do we A) find them all? and then B), how do we kind of funnel them down so that the right technology is getting procured for the right kind of patient group, at the right time. So that kind of horizon scanning piece is really about, does what it says in the tin, in the sense that it's looking out to the horizon what is kind of really an early development, the gadgets and the, the really cool stuff that is happening out there.

And how can we kind of understand what it does and how it might help our patients in the NHS. So for horizon scanning, we really want to kind of find the gaps in the kind of

methodologies and frameworks for surgery and we are really trying to develop a bit of a toolkit relief for better scanning for surgical technologies in the future.

Because there's lots of different ways you can go about it at the moment. So trying to find ways we can do it for surgery in particular is really what we're trying to do with our horizon scanning work.

Then we have a kind of another work package if you like, which is all about understanding patient and system needs. So we've kind of talked about system readiness at high level already, but that work on system readiness allows us to identify something called we're calling “system change requirements” of different technologies, which is basically highlighting areas where needs are overlooked or deprioritized. And these might be patient needs or clinical needs, but also the needs of the actual system and the workforce as well.

So we are working with clinical and surgical stakeholders to, you know, on these collaborative projects to unpick underserved needs and adoption barriers to new technologies, which involves working with tech developers, health economists, and surgeons to understand really what's missing. So what are we not, what needs are we not meeting with these technologies?

[00:10:11] **Emma:** And then how could these new technologies that we're maybe identifying through our horizon scanning, fill some of these gaps?

[00:10:18] **Helen:** Yeah, and I think then the final piece fits really nicely with both of those things. So finally, we're developing our System Readiness Framework. And this is going to really help us, we think, evaluate how much change new technology needs, requires of the system. So this is about categorizing technologies based on their implementation demands, if you like, so that we can better plan for adoption and not just procurement.

So, at the moment we have a bit of a challenge where things get in, but then they can't be used, they don't get on once they, once they arrive in the NHS. So, the UK government and the NHS are investing significantly in the development and deployment of medical technologies. I mean, if you look, you've got over 10 billion pounds committed to digital transformation between 2025 and 2029.

That's alongside targeted initiatives such as the 30 million pounds Health Technology, Adoption and Acceleration Fund, and 600 million pounds for health data research infrastructure. So I mean, I think these investments reflect a national ambition to position the UK as a global leader in health innovation. But yet despite this substantial financial commitment that the translation of innovation to practice, I would say remains fairly inconsistent and often inefficient. And I think this is often because a key challenge lies in this kind of dominant reliance on a very established approach, known as, where people examine tech readiness levels.

And that's the kind of primary framework for assessing innovation maturity. So the TRL scale, as it's known, the Tech Readiness scale, comprises nine different levels of conceptual development. And this provides quite a structured measure of looking at technological capability. And, this is really well established in, sort of NHS discussions. And while this framework is really valuable for tracking the technological progress it's inherently limited really to looking at the characteristics of the technology itself. So that is, you know, its functionality, its limitations, and its trajectory. And this is where we think our System Readiness Framework is really required.

[00:12:35] **Emma:** Thanks Helen. Yeah, that's right. And the research evidence has kind of consistently shown us that this technological maturity that you're talking about, that's measured by the TRL scale, is insufficient to ensure successful adoptions, which is where we see our System Readiness Framework being a really complimentary thing to this TRL scale.

So change initiatives that focus solely on the technology like we've been discussing before, that don't account for these human, organizational, and contextual factors, are significantly more likely to fail. So we're trying to unpick why that is. And we believe that our System Readiness Framework can really help understand that.

So, a key part of our work in the Health Tech Research Centre is to utilize and promote Sociotechnical Systems Thinking both as a framework and a tool for research, but also as a mindset in our interactions that we have with stakeholders across this interdisciplinary project.

And Social Technical Systems thinking offers a critical lens that we can address the problems that we've identified and talked about so far. So it's rooted in the work of Cherns and Clegg, and we can link some articles in the podcast description if you're interested in diving deeper into this. And the approach really conceptualizes organizations as complex systems, which we can identify the NHS as a complex system, and these complex systems comprise interdependent social and technical components and changes to one part of the system, such as, for example, the introduction of a new technology. It can have cascading effects elsewhere and sometimes, often even these cascading effects can have unintended consequences. And research across multiple industries, including in healthcare, has shown that oftentimes barriers to adoption of new technology are frequently sociotechnical in nature.

Yet these are often identified only in the late stages of development or often post-deployment. So research has shown us that barriers to adoption are actually frequently sociotechnical in nature as opposed to just being about the technical characteristics of a technology themselves.

However, often what we find is that these kind of unintended consequences and these barriers are identified only either in the late stages of the technology development, or often post-deployment. So once a technology has been bought, it's been procured, it's

passed, you know, effectively all the tests in terms of health economics and the clinical trials,

Yet still, these technologies end up in the back of the cupboards, not being used. And what we find is, if these barriers are only identified in kind of post-deployment, or kind of post-procurement situations, mitigation of these barriers, you know, is costly and sometimes completely infeasible, and we just end up with wasted money.

[00:15:51] **Helen:** I think that's a really good point, Emma. And, I think one of the things you might, sort of recognise, if you work in, you know, if you're listening to this and you work in surgery or in the health service, is that in reality not all technologies are equal in their demands of their health system.

So, if you imagine, you know, some innovations can be integrated with kind of minimal disruption because they might be an incremental upgrade to an existing device or a change of material, or something quite, you know, reasonably straightforward. And you might be thinking, well actually, you know, there isn't a huge amount of system change that is required.

But then there's other kinds of innovation technologies, particularly those that alter care pathways or work force roles or patient engagement, actually these require substantial redesign of the surrounding system. So if you think of, you know, the technologies that support the NHS strategic shift from hospital to community-based care, for instance.

So this kind of rise of things like, you know, we're hearing of virtual wards, and technologies that really kind of turn care on its head, if you like, and really challenge us to rethink our principles altogether. Those kind of things, you know, change clinical work flows, they change the way professions have to coordinate, they change public perceptions of care. So actually those things have massive sociotechnical implications. And similarly, you know, the transition from analogue to digital services, you would sort of see that similar widespread sociotechnical change. But I think we're interested in all of these things because at the moment it's really hard to know where the line is between, you know, what is going to require this major kind of sociotechnical redesign and what isn't.

And sometimes changes that we think are going to be incremental are actually far more widespread than we expected them to be.

[00:17:40] **Emma:** Yeah, so hopefully we've introduced all the really interesting and exciting work and challenging work that we are doing within the Health Tech Research Centre and in the Surgical Care Observatory theme.

And what we're hoping to do is come back to this podcast later with updates on the different projects and things that we're doing. We'll be diving deeper into the themes

we've introduced here in future episodes. So do check back in and we'll be bringing in stakeholders and partners from industry and across the wider HRC to talk to some of these things as well, to bring that real world experience. And doing some bits and bobs on the blog as well.

So if you're interested in how all this stuff works, do keep checking in.

[00:18:25] **Helen:** Thanks for listening, and we'll hopefully see you next time.

Ends