



DIGITAL SKILLS SIMULATION LAB

A discovery project into using a simulation-based approach to developing digital skills for clinicians and better health technology



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About

This innovative partnership, generously funded by the Health Innovation Network, undertook a discovery project assessing the utility of hi-fidelity simulation to drive better adoption and adaptation of digital technologies within health care services. The partnership involved Oxleas NHS Foundation Trust, St George's Advanced Patient Simulation (GAPS) Team, and mHabitat, now known as Thrive by Design.

We aimed to improve our understanding of how mobile phone applications (apps) and similar technology operate at a granular clinical interaction level. The slow and poor uptake of digital technology in the NHS is an issue that has been further highlighted by the CoVID-19 pandemic. A repeated finding from health apps is that users download them, use them once, and then never touch them again. Findings suggest that when use is supported or facilitated by healthcare professionals, this improves persistent use and outcomes.

Whilst facilitation by a healthcare professional appears to be a key aspect to the effective use of digital interventions, this is not reflected in the current knowledge or skills of the workforce. Adopting new practices, languages and frameworks feels burdensome, particularly in the contrast to the sense of "ease" that develops with unconscious professional competence over years of practice. Knowing about and talking about apps brings with it a sense of uncomfortable conscious in-competence for which there is little time or space to explore and learn in day-to-day practice.

In their development, user testing of digital technologies often takes place separate to the clinical setting as developers struggle to access real-world practice settings due to clinical governance, safety, understanding and capacity. As a result, it is barely possible to identify, mitigate and manage problems faced by real users in the context of clinical care.

This two-phased study aimed to:

1. Undertake a learning needs analysis to understand the obstacles that clinicians face with the on-boarding of new technologies (using a variety of NHS digital approved apps for adolescents presenting with mental health related issues).
2. Use this data to inform and support the development of clinically applicable hi-fidelity simulated scenarios, with healthcare staff playing their roles, utilising trained actors and utilising apps in a 'simulation discovery lab'.



Executive summary

Overview

This two-stage pilot study used hi-fidelity simulation to live test clinicians' confidence discussing and demonstrating apps to simulated patients and carers. The study was unique in bringing together clinicians and app developers to provide 'real world' information on the utility of apps, which the authors feel should further inform guidance to strengthen both the process for app development and approval in the NHS, and crucially, improving their clinical effectiveness.

Key findings

- Clinicians found the utility of simulation highly immersive and felt that the simulated scenarios together with structured de-briefing drove effective and reflective learning.
- Clinicians recognised that app familiarisation drives improved self-rated confidence and effectiveness when communicating with patients about apps in line with the 'digital navigator' model.
- Product owners and app developers felt that simulation with clinicians could be helpful at all stages of product development.
- Clinicians found that use of simulation and being able to debrief their own experiences increased their awareness of the need to develop further guidance to help clinicians communicate about apps.
- Both clinicians and app developers recognised that there were limitations in being able to extrapolate the effectiveness of evidence-based treatment modalities to using the same modalities in digital app delivery.
- Clinicians found that framing the intervention with the patient in the context of a wider care plan and asking patients to download the app on their device in the room itself was more likely to lead to utility and engagement.

Conclusion

This pilot study demonstrates the utility of 'live-testing' healthcare related apps using hi-fidelity simulation as a valuable step in product development and implementation, and one that supports clinicians in being able to incorporate discussions more confidently and effectively about apps into care planning conversations with patients and carers.

Recommendations

- 1. Further investment in creating opportunities for app developers to work in partnership with clinicians in the design, implementation and evaluation of healthcare related apps, through simulation based approaches:** NHS organisations leading digital transformation explore the proof of concept of NHS aligned simulation centres working with associated NHS trusts, clinicians and app developers to live-test apps using cost effective (and likely mobile, in-situ) simulation as part of their pathway of development.
- 2. Standard operating procedures and resources are developed for apps used in the NHS, and clinicians are familiarised with this:** Clinicians are aware of how to communicate with patients and relatives about any proposed app much in the same way that they would discuss a medication/ therapeutic intervention and have access to standardised materials to support this.
- 3. A further multicentre Study, co-produced with patients, carers and app developers:** It is advised that a further study takes place using a variety of different apps and technologies (e.g., AI), in a number of NHS trusts with alignment to Digital ICS priorities. Optimally, this should be co-produced with both patient and app developer involvement in addition to clinicians and the simulation community.



Background

The literature has demonstrated that there is increasing awareness and use of apps for managing mental health, but with mixed evidence around their effectiveness. Much of this highlights the importance of engaging in user-centred design practices in developing digital interventions and services that use them.

There has been inconsistent and often limited consideration across relevant NHS and professional organisations of what competencies need to be included in training curricula about effectively and safely “prescribing” apps as part of clinical practice. As far the authors can tell from our clinical practice and networks, the recommendation of apps used in healthcare is highly variable and does not follow pre-defined structures/ guidance – it may be that the patient is simply handed a printed copy of a list of apps that they may want to try.

At the same time there has been clear public scrutiny and concern about data privacy and the use of information held digitally by the NHS and app developers about patients. One of the drivers for this project was about how current practice could be improved in addressing the consent process around digital interventions, specifically concerns about data privacy.

Our hypothesis was that through simulation, staff will feel more confident in adopting technology in routine clinical practice by being able to (a) cope with likely real world setbacks when it comes to using a technology, (b) develop a “script” for talking through benefits, side effects and so on with patients, and (c) explore how to tailor their approach based on patient needs and context in a safe but realistic environment.

The authors believed that testing digital tools and services in a high-fidelity simulation would allow companies to rapidly find and address real world problems associated with using their technology in clinical practice, and as such, would lead to better product design, utility and adoption.

Simulation is widely used in several safety critical industries to improve the safe and effectiveness of processes (e.g., the airline industry, nuclear energy production), and there is a clear evidence base with regards to its role in optimising human factors ergonomics and non-technical skills in patient care. Simulation labs are well evidenced and used in contexts such as medical training but their application in a digital health context has not previously been systematically researched and tested. mHabitat undertook a piece of research for NHS Digital in 2017/18 which included a theme exploring the role of simulation labs in digital health in the NHS.

The simulation model will benefit patients, practitioners, and the wider system by providing a novel means to test the development and implementation of digital technologies before they are fully deployed in practice. This approach helps identify risks and challenges and gives practitioners an opportunity to socialise technologies and redesign their workflows before they “go live” in practice. The simulation lab model will provide a vital asset for digital innovators and NHS organisations wishing to implement digital technologies.

Methodology and Design

The design of the study was based around the existing evidence which highlights that healthcare professional facilitated use of apps leads to improved uptake. An example of this is the development of the 'digital navigator' role by Hannah Wisniewski, Dr John Torous, and colleagues in the United States (Wisniewski and Torous, 2020; Wisniewski et al, 2020). A digital navigator facilitates the use of digital interventions by patients through advice, training, and support, working alongside other healthcare professional in the team.

The methodology also drew on the existing frameworks for the evaluation of apps to provide a scaffold for clinicians to develop a structure for their communication practices about apps. These frameworks include the latest version of NHS England's digital technology assessment criteria framework, as well as international frameworks developed by the American Psychiatric Association (American Psychiatric Association, 2021), or the website Psyberguide (<https://onemindpsyberguide.org/>).

The authors aimed to focus on child and adolescent mental health as an area where patients and carers are typically familiar with mobile phone apps in their day-to-day lives, have high levels of smart phone ownership, and importantly, there are many apps targeted at this population. Child and young people's mental health also reflects an area of strategic importance to the NHS due to rising demand and desired improvement in access to services. There is potential for the effective use of evidence-based digital interventions across pathways in these services to make a real difference.

The multi-disciplinary team clinicians who participated in the intervention were from child and young people's mental health services in Oxleas. The plan was for members of the Crisis team specifically to take part, with the rationale being that they regularly review people in crisis who may benefit from digital interventions whilst waiting for follow up.

A simulation lab approach was adopted with simulation techs and educationalists involved in study design and implementation to allow for maximal learning. Furthermore, it was anticipated that simulated scenarios would be both pre- and de-briefed in line with the evidence about enhancing learning. Simulation as a modality caters for multiple learning styles, and readily allows recording and playback, creating a ready repository of information for analysis for both clinicians as well as app developers.

The overall implementation relied on two simulation labs: the first would be an onboarding session which would inform the development of the second simulation lab, which would involve scenarios with trained actors playing simulated patients.

All phases of this project were significantly delayed due to restrictions as a result of the CoVid-19 pandemic. The simulation provider (St George's) was the only simulation centre in London to stay fully operational and face-to-face throughout the CoVID-19 pandemic and

associated national lockdowns. The team provided face-to-face training on managing the specific emerging requirements to change in practices because of the pandemic. Like much of the NHS, business as usual activities were stopped. In addition, the use of actors was also limited given that there were clear limits on what would be pandemic driven 'essential business', and as such the 'live simulation lab' was deferred to late in 2021.

For the above reasons, the on-boarding simulation session, designed to explore participants experiences with apps, took place via Microsoft team. The information from this session underpinned the development of realistic scenarios. In addition, the MDT nature of this information gathering exercise further informed some of the logistical and attitudinal barriers that were helpful to bring up in the simulated component of the second simulation lab.

Whilst this session was expansive and useful in uncovering the lack of a clear consistent strategy used across clinicians to engage and discuss apps with patients and carers, it was limited somewhat by the small numbers of clinicians who took part. Again, this continued to be a very challenging time with the operational and other pressures of the Covid -19 Pandemic.

The first iteration of this session took place in late 2020. However, due to further disruption of the delivery of the planned second lab throughout the first half of 2021, the onboarding session was run again in September 2021 with the same clinician participants (bar one) to ensure they were back up-to-speed with the aims, content, and approach for simulation.

The live-simulation lab session was carried out at St George's on 30th September 2021. This session was originally anticipated to take place remotely at a facility on an Oxleas site in South East London. Again, due to the operational restrictions of the pandemic, the only environment large enough to accommodate all involved was not suitable to provide a high-fidelity experience (i.e., a large meeting/events hall) when compared with the simulation lab at St George's. A regrettable consequence of this was that the travel time required for Oxleas staff to attend the St George's site shortened the time available for the simulation lab. However, despite the compressed nature of the event, the experience and learning for those involved was sufficient to underline the benefit of planning further such labs.

The following participants were involved across the project:

- 3 clinicians from CAMHS from different teams
- PHR owner from Oxleas
- App developer
- CYP digital leads
- CCIO/Clinical safety officer
- Sim Centre Clinical director
- Educationalist
- Sim Techs
- Digital expert from mHabitat
- HIN team

The HIN Team and the app developer joined us via video link. All other participants were present in person at the St George's Simulation Centre. Further information on the centre can be found here <https://gapssimulation.com/>.

In November 2021, a further virtual follow-up session was held with the clinicians and the simulation team to draw together reflections on the whole experience.

Pedagogical Stance and educational activities

We used Greenhalgh and colleagues' (2017) NASS framework reflexively to guide conversations and to develop activities explicitly focussed on adoption spread and sustainability of new technologies. Teaching and learning activities in the labs were designed to examine the recursive relationship between human action and the wider organisation and system.

Our prime focus was to explore the nature of inputs in conversations in the 'adopter system' between staff patient and caregivers. But also, to examine the value proposition to intended users of the technologies and personal or professional reasons to resist or reject them.

In our pedagogical stance we drew on Bandura's (1976, 1977) social learning theory the most relevant aspect of which is that people learn by observing and imitating the behaviour of others. A key educational adjunct in our approach was therefore simulation and role play. Both strategies allowed participants to reflect on the challenge that when a technology is introduced into an organization it is open to multiple interpretations. The goal of these interactive simulations was to see that successful embedding of health apps into care pathways requires the opening of a space for dialogue. This entails listening to concerns, allowing people time to argue out the challenges, and learning from the experiences of others.

Finally, we drew on techniques of motivational interviewing (Miller & Rollnick 2013; Frost et al. 2018; Moyers, 2016) to support strategies for adoption. Motivational interviewing is a counselling approach designed to help people find the motivation to make a positive behaviour change. Based on these foundations the *observer sheets* in the appendix provide example frameworks for 'what good might look like' in conversational interactions between health care staff and client users.

Findings

Screenshots and observations that support the findings can be found in the appendix. These screenshots illustrate the technical set up of the simulation experience, as well as some key aspects of the interactions during the simulation.

Learning outcomes

The learning outcomes that follow are organised by the different user/participant group. Each group had different learning to take away. This underlines the value of the simulation lab wasn't just about the direct experience of being in the simulation, but also creating the opportunity for observing the simulation, particularly for non-clinicians who may not otherwise get to see such clinical encounters.

Clinicians:

- Clinical staff recognised the importance of improving their confidence when discussing and communicating about apps with patients and relatives. The simulation scenarios provided a safe, immersive environment to be able to reflect on whether they had a suitable structure that enabled them to do this confidently. As a whole, one of the most important outcomes from the exercise was how simulation improved the confidence of learners through practice in having a 'spoken language' about how to communicate about the apps used.
- It was also important to acknowledge that there was a paucity of information from app-developers themselves on how to interact/ communicate about the app. Furthermore, it also became apparent that the existing face-to-face delivery evidence base for the modalities of intervention used in the apps, e.g. cognitive behavioural therapy or dialectical behaviour therapy, did not necessarily translate into clinicians feeling as confident in talking about their effectiveness when delivered through an app. Clinicians need to feel confident in advocating for both the modality and means of delivery if they are to inspire confidence and manage concerns in young people and parents, particularly those who are more sceptical. We intuitively pre-suppose the effectiveness of face-to-face delivery as it is innately familiar to us as a successful form of communication. This is not true for digital delivery.
- Another central and emergent theme of the simulation lab was that clinicians repeatedly highlighted how useful the simulation lab was in improving clinicians' familiarity and self-rated confidence with using the app, demonstrating it to a young person and answering associated questions from both the young person and parent/carer. All the participants endorsed the use of a safe, facilitated learning space to be able to discuss these concerns as important.
- One consistent theme that emerged from the simulation lab was the importance of iterative feedback loops which work as part of a process. These feedback loops involve clinicians, who valued multiple attempts to improve their own confidence in communicating about apps, with trained facilitators and staff, as well as iterative feedback to app developers on the need to modify/ develop their product in a dynamic manner taking on board the feedback provided by the clinician.
- There were some important behaviours that were observed to help facilitate the "onboarding" conversation:
 - Framing the intervention in the wider conversation about care planning

- Having a second device to use could be helpful – the second device allows the demonstration of the app, on top of a primary device for access and managing clinical record making
- If possible, giving a patient a device to explore the app themselves – perhaps in a guided access mode to prevent access to other apps if this is a concern
- If sharing a device to demonstrate an app, this is easier to do on an iPad than a phone due to the size of the screen – this is particularly true when there is an increased awareness about the need for social distancing
- Asking or recommending the patient downloads the app in the room during the consultation or assessment was felt to be helpful step in increasing the chance they would use it subsequently. This allows for any technical problems to be solved but does require access to Wi-Fi/Internet. It may extend the time required but this must be balanced against the potential for it to make the intervention more successful.

Product Owners

- *Supporting Familiarisation:* “I don’t want to sign up and pretend to be a 14-year-old to see how it works” was a pertinent quote from a clinician participant when it came to their attempt to familiarise themselves with a particular app. A key point for product owners is to provide a facility for clinicians to familiarise themselves with the app, exploring the features and content, and testing any likely problems in a way that doesn’t require them to “pretend” to be a young person, particularly in apps that facilitate peer support. It was felt that preview videos of apps were helpful but not enough.
- *Standardised structured information:* Clinicians felt that it would be helpful to have standardised information about apps available from the product owner. This will need to clearly set out information on evidence, data privacy, usability/personalisation configurability. There are similar “standard product characteristics” sheets produced about medications that are helpful for clinicians when looking for details about the specific pharmacology of a drug.
- *Simulation with clinicians could be helpful at all stages of the product life cycle:* This requires product developers to use tools and processes that support iterative development through repeated testing. Bringing “finished” products to live testing, that requiring significant time/resource to change, limits the cadence with which simulation can be used to improve products – an agile set of tools and processes used throughout the product lifecycle will allow rapid design-test-redesign-retest sequences.

- *Feedback mechanism from clinicians:* A reflection from one of participants was how they were unsure how to feedback to a product owner about things that could be improved about an app. Product owners should consider ways of supporting clinicians in feeding back to them directly (vs commenting on app store listing for the app). This would be particularly helpful around “adverse reactions”.

Digital leads and digital clinical Leads (such as Chief Information Officer, and Chief Clinical Information Officer)

- *Local resources to facilitate the app consent conversation:* It would be helpful for CCIOs and digital clinical transformation teams to work with clinicians to develop standardised tools/information sheets about apps to support conversations with patients about those apps. These localised resources would build on the standardised information created by product owners but may provide specific information in terms of how the app fits in with local care/treatment pathways.
- *Clinical teams need to talk about digital interventions when discussing care planning.* There was a clear difference between the experiences of clinicians in the level of discussion that happened in team meetings with regards to the use of digital interventions in care planning when reviewing cases. One clinician was recognised as the “expert” so was often invited to make suggestions about what digital interventions might work. This is similar to the intention of the “digital navigator” role described earlier. Other clinicians felt that apps were not routinely discussed as options in considering care plans.
- *Creating a community of practice for people to share experience:* There was a desire amongst clinicians to share resources and best practice beyond the simulation. This would facilitate the building of confidence and expertise in a wider group. Given the ubiquity of platforms like Microsoft Teams, it was felt that this could be readily done. The videos created from simulation would provide a helpful resource for future training material – see the appendix for example screenshots and notes.
- *Consider the devices that need to be made available to clinicians:* When considering their investment in technology, digital leaders need to consider that clinicians may need to be able to access two devices at time to facilitate the demonstration of app in satisfactory way. The best options appeared to be an iPad or other tablet devices (vs laptops) that allow mobile phone apps to be shown on a larger screen that can be readily viewed by two people. It needs to be easy for staff to access a device that will allow them to demonstrate the functionality of an app or they will shy away from the doing this meaningful and continue to hand out printed lists of apps.

Simulation team

- *Technology set up to support access to apps/second device essential when trying to do this:* It was important for the experience of “viewing” team watching the simulation that they also had a live feed from the device that was being used to demonstrate the app. This allowed those watching to see how the clinicians and patient navigated through app and how this corresponds with other communication going on.
- *Psychiatry/Mental Health assessment can be long and jumping to the end can be difficult for clinicians:* Clinicians reflected on the artificial nature of jumping straight into the care planning discussion part of an assessment, without the normal build up through the assessment process of getting to know the patient and carer. This introduced an element of dissonance when comparing simulation and real-world practice. Future iterations of the simulation process would benefit from managing this through pre-briefing and refining the scenarios/actors’ briefs.
- *Future simulation experiences need to be longer:* The simulation lab was truncated in terms of the time available by the decision to move the event to the St George’s centre, which incurred greater travel time for staff. Future iterations of the simulation lab should plan for an overall long period for the event, specifically to allow greater pre-briefing with participants, and reflection with the actors.
- *Specific reflection tools for psycho-socio-technical experience:* The specific reflective frameworks developed by simulation team based on the app characteristic domains (e.g., usability, security) were helpful in guiding the conversation around the experience of “onboarding” a patient with an app. We would expect these tools to be further developed in future iterations. Please see the current versions used in the appendix.

Discussion

Like many things over the 2020-22 period, this project was shaped and reshaped by the course of the COVID-19 pandemic. The original plan to involve more CAMHS clinicians was made harder because of the effects of the pandemic – referrals to CAMHS have significantly increased in the last year. A good simulation experience for staff takes time, both before, during and after the event. To achieve the potential gains from digital interventions being designed into pathways to address the unmet needs and increasing waiting lists, staff need to be allowed to have the time in simulation experiences to develop the skills and knowledge that mean these digital interventions are used safely, effectively, and ethically to realise those gains.

Without this investment of staff time, *digital waste* is a significant risk. Pharmaceutical waste is a well-documented problem in the NHS, estimated to be £300 million in 2015 (NHS England, 2015). We must learn the lessons of many decades of patients being prescribed medicines, never taking them, or starting a course but not finishing it. Well-designed services that make the best use of technology to ensure care is efficient and effective are

also likely to be greener. Given the constraints, both ecological and financial, we cannot afford to pay for digital interventions that never get used or are not supported enough through service design to be used effectively. Investing time in training staff to develop knowledge and skills around digital interventions is critical to avoid the potential for digital waste. Though they should be embedded early in training, we cannot wait for a new generation of professionals to learn these competencies through graduate curricula so need to “onboard” our current workforce.

Whilst some organisations have commissioned their own local apps libraries, there is a difference between knowing where to find a book and being able to recommend one book over another in a way that convinces the potential reader to get beyond the dust jacket. One the key elements that will support clinicians with making “talking tech” an everyday practice is developing and maintaining local resources that help to bridge this gap between an app’s library listing and the act of care. This includes resources about app evaluation frameworks so that clinicians have the context in which to understand the app listings. The slide deck produced for the first lab, which goes through app evaluation frameworks and some initial considerations for communicate about apps, is a good foundation to build from for Oxleas NHS Foundation Trust.

Building and maintaining this resource takes leadership. Oxleas are currently developing a plan for expanding their digital clinical leadership, as well as their programs around digital workforce development. The effective use of digital interventions in care pathways will be a focus for the future expanding leadership capacity. Other organisations are similarly expanding their digital clinical leadership capacity, and we would recommend that they also consider this area an important priority.

Further investment around local resources for simulation should also be considered. Simulation requires a degree of technical set up to facilitate the remote observation element, particularly as mentioned the link to any apps being demonstrated. In this case, due to the impact of the pandemic, we chose to take the team to the lab, rather than the lab to the team. We would hope in future to take the lab to the team for two reasons: it will be more efficient for staff to stay in their clinical base in terms of avoiding additional travelling time; and fidelity of the environment is part of the experience, and where possible, using the actual environments of practice, adds to the sense of immersion of the simulation. Mental health care settings are different to the acute hospital settings catered for in most current simulation environments.

To make the best use of the iterative and agile benefits of simulation across the product development lifecycle, developers/product owners need tooling and platforms that would allow rapid iteration of design in response to simulation. All the apps that were used in the simulation were “finished” products available to the public. Changing elements of those apps during the simulation would not have been possible. Had we worked with the app developers earlier in the product life cycle, we may have been able to use “light weight” prototyping processes to rapidly develop improvements to, for example, an “onboarding” mode for clinicians, which allows them to run through the features with a patient without

creating an account. Designing into products that the current operational reality is it will be largely clinicians who facilitate effective use of an app in NHS services at an early stage of development will help. Giving developers the opportunity to work with clinicians and clinical users through experiences like this simulation lab needs to be the quid pro quo for getting the best out of technology in the NHS.

This simulation lab project had important limitations, some of those were intentional and others were imposed by external factors. We focused on one sector of mental health; on only three apps; on only one scenario; and a small number of clinicians. These limitations were designed to keep the simulation lab relevant, and manageable with the time and resource constraints we had. As we have reflected, the time and number of clinicians involved was further affected by the consequences of the pandemic, not least social distancing rules at the time. To overcome this, we tried to make the best use of blending virtual and face-to-face approaches through allowing a wider audience to join remotely, but we felt this approach could be further improved. In future simulation labs, we would like to explore different sectors, scenarios, and different technologies, such as talking about the complex area of “Artificial Intelligence”, as well as involving larger groups of clinicians through a longer lab. We did not have young people or carers directly involved in this experience. We discussed the ethical, safety and practical implications of this and decided that we would test this process first to consider how they could be safely involved in future. We would want to ensure that those with lived experience, patients and carers are involved across the planning and production of future simulation labs.

Whilst the project budget was £10,000, it should also be acknowledged that clinicians and Dr Woollard’s time was not accounted for in the budget. Future funding may need to account for proportionally more funding to accommodate the inclusion of patients and carers, greater number of clinicians, longer simulation experiences, and sufficient project management resource alongside organisational leadership to ensure timely effective delivery.

Conclusions

This discovery project explored how we can develop clinicians’ skills, knowledge, and confidence in communicating about apps with patients through simulation-based experiences to facilitate effective use of digital interventions in mental health services. The project delivery was significantly affected by the COVID-19 pandemic, but lead to a positive experience for all involved, and as described in the previous section, the richness of the learning across different perspectives speaks to an outsized effect given the limited nature of what was undertaken.

The preparative, virtual “Lab 1” provided an opportunity for clinicians to share and develop knowledge about apps and start to consider communication processes. The discussion that

occurred amongst clinicians about their own experiences was insightful for all. This element of the process should not be underestimated in future projects. All clinicians involved acknowledged a degree of apprehension about the simulation element of the project, and this first lab provided an opportunity to warm up to this. This 'lab' enabled a host of learning outcomes that were then embedded into the eventual simulated scenario.

The simulation lab provided an opportunity for clinicians to practice talking about apps with a patient and a carer in an immersive safe environment with challenging scenarios, to not worry about getting it wrong, and to focus on exploring what good looks, sounds and feels like. The ability to watch a simulation may have been the first opportunity for non-clinicians to get a idea of what a mental health assessment looks, sounds, and feels like. Whilst clinicians may be saturated in the reality of talking to someone in mental health crisis, the comment from one observer, "I never seen an assessment before", highlighted that simulation provides opportunities for safe observations of situations not otherwise available in "live" clinical services.

The project has also highlighted some wider reflections on implementing digital transformation and service design. There have been, perhaps, some unexpected reflections on what are the technology resources that staff need available to adequately demonstrate a digital intervention to someone. Tablets computers with larger screens and the ability to run smartphone apps appear to have a greater value than a smartphone or a laptop.

Building on this specific insight, using simulation throughout product and service design processes would help to get to a better understanding of user needs in the environments they are likely to operate. So often we "design" services and products in workshops away from actual operational environments and for good reason, "live" clinical environments need to be carefully managed for the safety of those being cared for, and often under significant operational pressure. Simulation experiences provide an opportunity for safe exploration of human and technical factors around change, avoiding the fear and real cost of failure. If "Get it right first time" is an aim of clinical services in the NHS, then simulation-based experiences are how we safely get it wrong many times to achieve this.

At Oxleas, Dr Woollard will be exploring the opportunity for further simulation experiences as part of the development of the personal health record, Oxcare, at the Trust. This will focus on working with clinical teams so they can explore how to make the best use of Oxcare in different scenarios and help us to continue to develop the features and content on the platform. In Oxleas, Dr Woollard is also working with colleagues on building the leadership and workforce capability to further improve the use of digital interventions in all care pathways. This project has significantly influenced the how and what of that capability. The artefacts from this project are helpful in building a set of resources for workforce development.

At London level, Dr Woollard is also working with regional colleagues in exploring how a simulation-based approach can be used to develop better platform interfaces around information sharing. This is likely to involve simulating scenarios that involve clinicians reviewing information about a patient's mental health and how best interfaces can be

designed to support clinicians quickly make sense of and respond sensitively to this in order to optimise care for a patient. In addition, at GAPS this work will be showcased to the trust (St George's University Hospitals NHSFT), as well as to the Southwest London Integrated care system, and the London simulation network. Sharing with the latter of these will facilitate discussion about dissemination and sustainability in a manner that encourages trusts across London to work together and share learning about specific apps.

John Torous and colleagues' model of the Digital Navigator was an influential concept in the development of this project. In this model, Digital Navigators are distinct, new members of the health care team with specific training related to digital interventions, that sit alongside and support traditional professionals. This project explored how we might develop these competencies in our existing workforce. Given the pressure on our existing workforce around productivity in the face of rising demand, and the clear need for recruiting thousands of clinicians into mental health services as set out in NHS plans, there remains a question about the best investment for developing capability around digital interventions. Developing skills in existing staff takes them away from frontline services, which feels almost intolerable at times, but costs less than new members of staff over time, and helps staff continue their professional development. It continues to be a struggle to meet the desired recruitment of staff in mental health services set out in workforce plans. Developing roles similar to Digital Navigators might encourage those from a wider variety of backgrounds to enter the NHS workforce. With briefer training requirements, they may have more of an impact on the existing workforce in a shorter timescale than waiting for the longer-term incubation of more traditional professionals. Simulation clearly has a role in testing what might work best.

To avoid the trap of digital waste and disillusionment, we need the capability and confidence in our workforce to make the best use of digital interventions. We need products and services that work for all users, so they are effective, efficient, and as a result, greener. Simulation based approaches can be a productive, safe part of helping us explore getting it wrong with digital skills, processes, and technologies, so we can "get it right first time" when it matters.

Recommendations

- 1. Further investment in creating opportunities for app developers to work in partnership with clinicians in the design, implementation and evaluation of healthcare related apps through simulation-based approaches:** It is recommended that NHS Digital explores the proof of concept of NHS aligned simulation centres working with associated NHS trusts, clinicians and app developers to live-test apps using cost effective (and likely mobile, in-situ) simulation as part of their pathway of development.
- 2. A standard operating procedure is developed for apps used in the NHS, and clinicians are familiarised with this:** Clinicians are aware of how to communicate

with patients and relatives about any proposed app much in the same way that they would discuss a medication/ therapeutic intervention and have access to standardised materials to support this.

- 3. A further multicentre study, co-produced with patients, carers, and app developers:** It is advised that a further study takes place using a variety of different apps and technologies (e.g., AI), in several NHS trusts with alignment to Digital ICS priorities. Optimally, this should be co-produced with both patient and app developer involvement in addition to clinicians and the simulation community.

Thank you:

Thank you to the Health Innovation Network for supporting this project, financially and with their understanding and flexibility through the pandemic. Thank you to Victoria Betton, formerly of mHabitat, for being on the initial team putting the bid together. We would also like to thank those clinical colleagues and the app developer, Dr Nihara Krause, who took the time to take part in project.

Appendices

Screenshots and artefacts from the simulation experience

The following pages contain screenshots taken from the records made of the simulation experience via the cameras available in the simulation experience. The availability of this material could via a basis for future training, illustrating point of good practice for others to learn from and build on. In future simulations labs, working with developers, this video material could provide a great “take away” resource to support further review of an app’s design and usability.

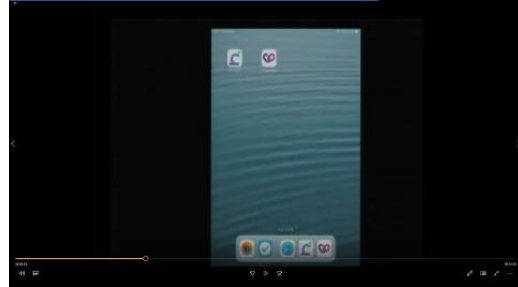
The first set of images illustrates the different views captured from the cameras recording on the day. There is a simulation room which is configured to resemble an A&E room setting, with the appropriate monitors and bed in the environment. The observation room is adjacent to the simulation room, and it is possible to between the two room through a one-way mirror. The second set of images illustrates the set up in the observation room.

The remaining images illustrate important points of interaction with in the two scenarios that were played out. These really help capture the socio-technical nature of the interaction - there are three “actors” in the room: the patient; the clinician; and the technology.

View 1 of the simulation room



Live sync to the connected iPad in the simulation room



View 2 of the simulation room



The observation room

The viewing team assemble in the observation room ahead of the simulation. Allocating particular tasks or elements to pay attention to for each of the team

The iPad used in the simulation is connected to the remote system which allows the viewing team to see what is being done on screen.

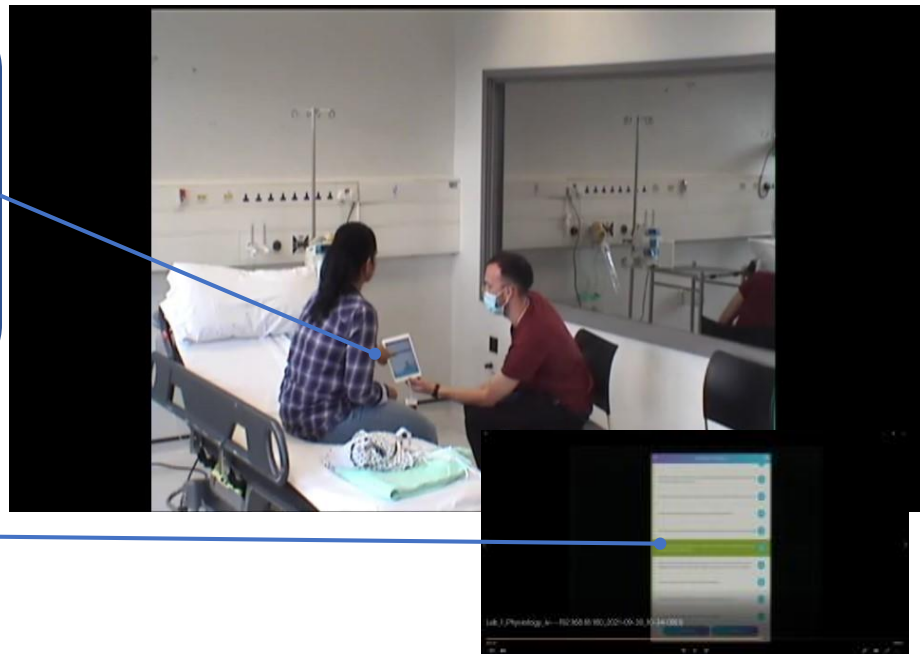
With the lights off, the simulation room is directly viewable through a one way mirror, as well feeds from the cameras in the room.



In part 1 of the scenario, a young person has presented with suicidal ideation, and the clinician is asked to discuss using digital interventions to help them cope whilst they are waiting follow-up. During the simulation, the clinician uses the iPad to talk through the app Calm Harm. It is clear that larger screen of a tablet computer allows this to be more interactive, whilst maintaining appropriate social distance.



As the scenario progress, the clinician invites the patient to make selections on the app. This is a great way of rehearsing intended use for the patient, and may also present an opportunity for the clinician to explore why they chose particular option. Again the larger screen is critical for this to be done comfortably.



The viewing team can see what is going on in terms of interaction with the app via the live sync link. This is helpful in seeing in detail how the clinician and patient work through the different features of the app.

In part 2 of the scenario, the parent of the young person has been invited in to the room to discuss the care plan. The clinicians start to talk through the idea of the young person using an app to support themselves whilst waiting for follow-up.

The father is upset and angered by the young person being “fobbed off” with “some app”.

This was a difficult scenario for the clinicians. They did not really get a chance to demonstrate the app, due to managing the fathers emotional response to what was being suggested. Clearly, acknowledging and addressing these fears in a parent is key. The parent was keen to understand the evidence for the intervention being suggested, something the clinicians found hard to respond to confidently enough to reassure the father.

The artificial nature of the time limited nature of the scenario and jumping straight into the end of an assessment, which could have taken 12 hours already, was felt by the clinicians here. This helped us think about the future pre-briefing and design of the scenario to ensure it's a meaningful realistic experience.



The clinician hands the iPad to the patient and gives them a few moment to explore the app themselves, before asking whether they had a further questions about it.

The clinician is left without a device after handing it to the patient. With a second device, the clinician could take this opportune moment to check any areas that need further clarification or update the electronic record.

From an information governance point of view, if the device that is handed to the patient could allow access to email or electronic records then it should be done so whilst in guided access mode, which limits access to one app. A clinician knowing how to do this quickly is important. A device that is simply for demos, without access to records, may be easier for clinicians and allow ready switching between apps in the conversation.



Observer Sheets

The following two pages show the observers developed to guide reflection. Please see the description in the methodology section outlining how these were developed from existing frameworks.

SIMULATION SCENARIO

Observer Sheet

Instructions: Use the table below to analyse communication strategies used by your colleague during the simulation exercise. Use the completed form to give feedback to your colleague during the post simulation debrief.

Communication Skills

Motivational Interviewing

✓ Observed X = Not observed

Interviewing Strategies	✓	X	Comments
Establishing Partnership Conveys an understanding that expertise and wisdom about change reside mostly within the client.			
Asking permission before giving advice Emphasis on collaboration or autonomy support while using direct influence. <i>e.g. I have some information.... I wonder if I might share this with you</i> <i>This may not be the right thing for you, but some clients....</i>			
Affirming the client perspective and strengths States something positive about the client's strengths, efforts, intentions, or worth. <i>e.g. I can see that it's important for you to be a good friend'</i>			
Emphasising the client control Highlights a client's sense of control, freedom of choice, personal autonomy, ability, and obligation about change. <i>e.g. You are the one who knows yourself best... You're absolutely right. No one can force you to...</i>			
Supporting the client with statements of compassion and sympathy Understands or makes an effort to grasp the client's perspective and experience. <i>e.g. Well, there really is a lot going on with you at the moment isn't there</i>			
Simple Reflection Reflects a client's statement with little or no added meaning or emphasis: <i>e.g. echoing: You say 'It really hurts'</i>			
Complex reflection (add substantial meaning or emphasis to what the client has said. Reflects a client's statement with added meaning or emphasis. <i>e.g. What your telling me is that you are struggling to understand why your mum is so worried about you: can you talk me through that a little more?</i>			
Seek Collaboration Attempts to share power or acknowledge the expertise of a client. With your vital feedback and suggestions we can work together on this			

Adapted from: *Motivational Treatment Integrity MITI; T.B Moyers et. al., (2016) J Subst Abuse Treat 65: 36–42*

SIMULATION SCENARIO

Observer Sheet

Instructions: Use the table below to analyse how your colleague introduces and talks about the App during the simulation exercise. Use the completed form to give feedback to your colleague during the post simulation debrief.

Communication Skills

Advocating for Digital Apps

Technology themes	✓	✗	Comments
IT Literacy			
<i>Ascertains IT skills of client and, use of social network apps including what apps appeal, or not, and why)</i>			
<i>Raises topic of how a digital health app may affect care or condition</i>			
Functionality of App			
<i>Describes the key features of a specific App</i>			
<i>Explains what kind of knowledge the app brings into play including the types of data generated</i>			
<i>Describes what knowledge and/or support is required to use the technology?</i>			
<i>Explains to what extent the app is 'customisable' to the individual user</i>			
Value			
<i>Makes a case for the desirability, efficacy and safety of the app</i>			
Client/patient adopter			
<i>Describes what is expected by the user of the app (by the patient and/or immediate caregiver)</i>			
<i>Explores how acceptable and achievable expectations are and underlying assumptions for use or benefit</i>			
Organisation			
<i>Describes what will be needed in terms of interactions with carers and routines</i>			
<i>Describes evaluation of the app in terms of joint sense making and collective reflections</i>			

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