# Using virtual wards and long-term conditions management network to improve practice and performance

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## ABSTRACT

England has more than 15 million people and counting with long-term conditions who have the greatest healthcare needs of the population accounting for 50% of all General Practitioner (GP) appointments and 70% of all bed days. Digital technology has the potential to transform care through empowering patients, establishing more robust therapeutic relationships as well as supporting stronger teamworking across boundaries and enabling creation of communities and networks to support patients. There is some hesitancy in National Health Service to adopt digital innovation, but the pandemic has transformed use of remote monitoring in a matter of weeks. The pandemic has highlighted how collaboration and digital technology innovation can radically transform health and care services at pace when people are provided with the space and support to be innovative. Nurse and clinical leaders with digital knowledge are key in engaging nurses who need to be at the heart of technological developments and implementation to make sure changes facilitate, enhance patient care and improve clinical practice.
This project aimed to create a forum that offered time, space and opportunities to innovate; share learning; and develop cross boundary relationships for project teams implementing technology-enabled remote monitoring or virtual ward solutions.
Florence Nightingale Foundation scholar and NHSX Digital Health team ran the forum using community of practice principles. Qualitative data were used to measure any potential value created. Forum members reported increase in their personal knowledge as they managed to learn from others. An online platform created as an extension to the forum enabled members to continue networking and access resources. The forum provided space for relationships to get stronger. This enabled innovation that changed practice and performance around increased uptake of tech-enabled remote monitoring solutions by patients as well as indirect health outcomes. Further work is required to collate quantitative data to confirm these claims from the forum members.

## PROBLEM

There are many health and social care services that have been facing an increase in demand, driven by multiple factors including: a growing and ageing population; advances in health science; and not enough funding to deal with performance and capacity issues and transform services.[1] COVID-19 pandemic has

## WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Digital technology can transform care for the better through supporting stronger teamworking across boundaries and enabling creation of communities and networks to support patients. Community of practice (CoP) is viewed as a strategy for improving organisational performance and as a tool that enhances knowledge and improves practice.

## WHAT THIS STUDY ADDS

⇒ This study used CoP principles to create space and support for innovation around uptake of tech-enabled remote monitoring solutions by patients. Having nurses at the heart of technological developments and implementation enables changes to facilitate and enhance patient care and deliver on freeing up time for care and patient safety. Members reported value in changed practice and improved performance.

## HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ More quantitative and qualitative research is required to strengthen the argument for collaborative approaches that have nurses and clinicians at the heart to embedding technology that has potential to create more responsive treatment models that better reflect post-COVID-19 pandemic healthcare, particularly the recurrent nature and the various forms of long-term conditions and the several issues they raise for patients.

exacerbated the situation for both patients and clinicians who are feeling the impact of an overpressurised system that is struggling to meet demand. The pandemic has also transformed use of remote monitoring (RM) in a matter of weeks, and with remote care having been the only option for most patients, health and social care are unlikely to be the same again.

In 2020, 95% of Integrated Care Systems (ICSs) across the country received funding to support or implement a technology-enabled RM or virtual ward solution, with an aim to save bed days, and avoid admissions.[2] In 2021/2022, NHSX committed to: ensuring at least 300 000 people across the country

receive technology supported care at home; continue to support the national innovation collaborative to maximise the benefits this model of care delivers for citizens and health and care staff; and rapidly sharing learning and evaluating the impact of the programme to compound the great work being done.

The Florence Nightingale leadership scholarship project being discussed here aimed to see whether the use of a community of practice (CoP) would enable possible healthcare benefits due to sharing and learning from peer practice.

## BACKGROUND

England has more than 15 million people with long-term conditions who also have the greatest healthcare needs of the population. This includes approximately 50% of appointments (GP); 70% bed days; and treatment and care that absorbs around 70% of acute and primary care budgets in England.[3] In outpatient services, there is a drive to keep patients out of hospital by delivering more than 120 million appointments per year.[4]

Nursing staff have been key in managing the challenge of current models of dealing with long-term conditions that are not sustainable through increasing their delivering functions that were previously considered to be only in the remit of doctors.[5] As demand continues to rise both patients and staff are feeling the impact of a system under significant pressure that is struggling to meet this demand.

The Royal College of Physicians[5] highlighted that a key element of the outpatient redesign process was better utilisation of the technology already available, but there was some hesitancy to adopt these alternatives due to concerns with locally available IT infrastructure and support, data protection, loss of remuneration from clinical commissioning groups and discrimination against patients less comfortable with necessary technology.

There are several reports and research papers that highlight how the National Health Service (NHS) has struggled to adopt innovation due to various issues that include: leadership and cultures that are not supportive, a lack of improvement capability, evidence of effectiveness and understanding of the evidence.[6 7]

The Department of Health and Social Care,[8] set out a vision for use of technology, data and digital within health and social care to meet the needs of all users. The NHS Long Term Plan[9] included the commitment that digital first patient care will become an option for every patient by 2023–2024.

Research highlights how digital technology can transform care for the better through empowering patients, establishing more robust therapeutic relationships as well as supporting stronger teamworking across boundaries and enabling creation of communities and networks to support patients. It also shows the potential to create more responsive treatment models that better reflect the recurrent nature and the various forms of long-term conditions and the several issues they raise for patients.[6]

COVID-19 pandemic transformed the use of digital technology in a matter of weeks through necessity, with remote care now the only option for most patients, and the NHS is unlikely to be the same again. Hutchings[10] agrees that the pandemic played a crucial role in accelerating change but argues that there are potential risks and downsides in clinical practice, impact on patients and the public and workforce especially when change happens at such a pace. It is important to recognise that staff are the most valuable resource in the health and care system, and digital technology needs to work for them and those receiving care.[11]

Agnew[12] stated that nurses need to be at the heart of technological developments and implementation to make sure changes facilitate and enhance patient care and deliver on promises to free up clinician time and improve patient safety. Using nurse leaders like chief nursing information officers and digital champions is one useful way to engage nurses with digital technology as they are able to work collaboratively with system developers and speak the same language as their nursing colleagues who may be less confident in digital technology.[13]

One of the lessons from the pandemic is how collaboration and innovation enabled by digital technology can radically transform health and care services at pace when people are provided with the space and support to be innovative.[10]

Since the 1990s, CoPs have been endorsed as drivers of knowledge management within business sector that enable the sharing of tacit knowledge, innovation and learning, all of which creates social capital and adds organisational value.[14 15] They later appeared in healthcare[16] and were viewed as a strategy for improving organisational performance.[17] CoPs are also viewed as a tool that enhances knowledge and improves practice.[18] Wenger *et al*[19] defined CoP as having three dimensions that include: a shared undertaking; common engagement; and a shared collection of resources.

It is problematic for researchers to examine the impact of CoP in the healthcare sector as they vary in form and purpose.[20] Most of the case studies reviewed by Li et al[21] used qualitative approaches and had insufficient quantitative data to demonstrate specific impact of CoP on health outcomes in isolation from other interventions. However, other scholars[19 22–26] argued paying attention to processes and outputs as viewed by the CoP members and 'systematic anecdotal evidence'[19] was as important as quantitative evidence of impact.

The social and cultural context within CoP operate are likely to influence their impact as they are used in healthcare to influence change in practice that requires a change in clinician behaviour.[20] Behaviours espoused by a leader in each situation is fundamental to the effect it has on environment in which people they lead are working in.[27] Making CoP environment supportive has potential to influence follower feelings of psychological

safety where they can fully engage in a task.[28] Florence Nightingale Foundation (FNF) through bespoke leadership programmes enabled the author to develop more awareness of self, team and networks; understand and use authority and influence; and express self to enable presence and have better impact on implementing this quality improvement project.

## MEASUREMENT

Our data collections focused on using qualitative data to measure the value created by the community for members. Due to time and resource issues, we were not able to collate quantitative data to help corroborate how members were changing their practices and improving performance around uptake of tech-enabled RM solutions by patients as well as reduction in avoidable admissions, reduction in bed days and reduction in Accident and Emergency attendances. We only managed to track numbers of attendance to the network forum and the number of visits to the collaborative space as this would enable access to information. We had around 40 members attend on launch day, and we also gave them access to the collaborative space. We collected themes after every session of what the members were gaining from the sessions, and we conducted a 6-month review to gain some feedback to understand whether there was any value gained through CoP in personal knowledge and strength of relationships.

## DESIGN

Discussion with the NHSX Digital Health team on context of their regional scaling programme objectives highlighted that there were more similarities than differences to FNF leadership scholar project objectives, and it made sense to combine the projects because of these mutual benefits.

Desk research highlighted that a CoP approach was the best strategy for this project as it provided a space for knowledge to be shared across boundaries, generate and manage information resources for members to draw on, promote standardisation of practice and innovation,[15] which were all part of the objectives we agreed in our discussion that led to development of a draft terms of reference (ToR).

A focus group with staff from NHS trusts that were part of the project teams within the NHSX Regional scaling programme was used to test if this was the right thing to do for the project groups. We had endorsement from the focus group as well as some additional information to strengthen the ToR.

The final ToR was also checked and signed off with key stakeholders before the launch. The implementation team met before and post sessions to review what went well and what could be improved, which helped to ensure there was value in the CoP activities for the members. Despite changes in the implementation team, the CoP

activities were not impacted as the team had clear roles in how they supported the forum as defined in the ToR.

> The most important single change in the NHS … would be for it to become, more than ever before, a system devoted to continual learning and improvement of patient care, top to bottom and end to end. – Berwick Report[29]

This forum was designed to run with CoP principles that will make it more likely to be sustainable as it offers time, space and opportunities for members to innovate, share and learn from each other as well continue to develop cross boundary relationships with others who have a passion to see those issues tackled on behalf of the technology enabled Long-Term Conditions (LTC) and virtual wards (VWs) projects.

Membership to the forum was initially restricted to nurses working with LTC and VWs projects within the portfolio of the NHS Regional Scaling programme, but this extended to other clinicians (medical and allied healthcare professionals) as well as other project team members as multidisciplinary group was perceived as more beneficial. We also managed to connect with chief nursing information officer (CNIO) network, digital nurses' network and community nursing digital network so the voice of the nurse was strong.

## STRATEGY

Plan, Do, Study, Act (PDSA) cycle was used as a supporting mechanism for iterative development of the CoP strategy.[30]

### PDSA cycle 1

The initial Quality Improvement idea was to create and run a national nurse-led digital forum to aid sharing and learning from peers that would enable delivery of place-based care to patients with LTC and improve access to healthcare for patients and ultimately reduce the number of unnecessary admissions and appointments. When we looked nationally at potential participants for this QI, we discovered that most projects had different and varied aims that would make it difficult for us to measure change due to lack of homogeneity. We decided to use participants from NHSX Regional scaling programme as it had good national reach and the projects had similar aims. Through discussions we found that we could collaborate this programme with the initial QI idea. Through discussions, we managed to identify key objectives that would suit both NHSX and FNF projects. We also completed a desk research to see what kind of approach was best suited to run our project.

### PDSA cycle 2

The information gathered enabled us to design and create draft ToR that was tested with a focus group from some of the project teams on NHSX Regional scaling programme (2021/22) to see if having this group was a good idea, whether context and vision made sense, if purpose was

pitched right, if time and frequency of meetings was good and whether the chair needed to be held centrally by the implementation team or rotate between the members.

The focus group were positive and excited about this forum and gave us useful feedback. This feedback enabled us to improve the ToR, that is, clearly define what we meant by remote monitoring (RM), examples of technology enabled RM and specific support the Regional Scale Programme would offer to group members, for example, specific clinical oversight for set periods of time, using the 'Virtual Ward' concept. The ToR was signed off by our sponsors and the forum. Launch date had to be delayed as there were only a couple of nurses involved and the forum needed to have a strong nursing voice. Invites were resend stating the importance of having nurses involved from each project team that resulted in the membership having at least 25% who were nurses and those that did not had other clinicians involved. The sessions were eventually launched in October 2021.

## PDSA cycle 3

We ran sessions monthly for an hour with a plan to review in 6 months. This included a presentation of some sort, and then participants would be split into smaller groups to discuss implications for their projects and also network. Each group did feedback some themes from those discussions to the wider group.

Sessions were planned in advance, and after running each session, we met as project team to review the feedback themes received from participants. The participants valued patient stories that were shared, and the opportunities to hear from other project teams on their project journey as well as having time to network with others. After discussion as a team, feedback was incorporated into planning for each subsequent session using this feedback.

One of the challenges we had with our sessions was participants feeling that time allocated to sessions was not enough and to help manage this we created a virtual collaborative platform called (Innovation Collaborative Digital Health Future NHS collaboration workspace) to enable participants to still share and find resources shared during the sessions as well as continue networking within their own time outside the monthly sessions. We tracked visits to the online space, and this resulted in us inviting our engagement lead to learn about accessing and navigating the collaborative workspace.

## RESULTS

While launch meeting had about 40 participants, other sessions had reduced numbers, but these stayed consistent around mid-20s as shown in figure 1. The session in February did not go ahead due the government plan B measures in response to winter surge busyness caused by increased infection rates from Omicron variant. The members were sent presentations after the sessions, and they could also access it on the collaborative workspace.



**Figure 1**  Number of members who attended the session.

The number of member visits to the collaborative workspace averaged around 25.4% each month against total members in a month, as shown in figure 2. December had the lowest visit at 19%, which can be attributed a time of Christmas season when most members would be expected to be off.

The 6-month review shown in online supplemental file 1 highlighted that there was value gained through the forum. Members felt that their personal knowledge had increased as they were able to learn from others but also access resources on the collaborative site. Relationships were reported as definitely stronger, and members felt that this enabled innovation that was changing practice and performance around uptake of tech-enabled RM solutions by patients. The members also felt that there was psychological safety due the structure of the forum in that it was not recorded, and members had opportunities to discuss and network in smaller groups and then feedback themes to the wider group. Due to time and resource issues, we were not able to collate quantitative data to help demonstrate the reported indirect health outcomes that include reduction in avoidable admissions, reduction in bed days and reduction in A&E attendances.

## Lessons and limitations

Feedback themes from participants highlighted the value they gained from being part of the CoP. While the participants attribute the value CoP activities in changing their practice and improving performance, it was difficult to attribute these benefits to any particular healthcare outcomes in the absence of quantitative data. Accounting for this quantitative data will help to strengthen the case in the use of CoP. It is important to note 6 months' data are still small to make any significant trends or correlations. It would useful to revisit this project post 1 year of running to see if there are any material changes.

Most of the projects in the forum highlighted the challenge of clinical engagement that might help to explain why the launch date had to be delayed. However, resending the invites and stating the importance of having nurses involved from each project team resulted in the membership having at least 25% who were nurses and those project teams who did not had other clinicians involved. We managed to enhance the nursing voice through connecting with the CNIO network; digital
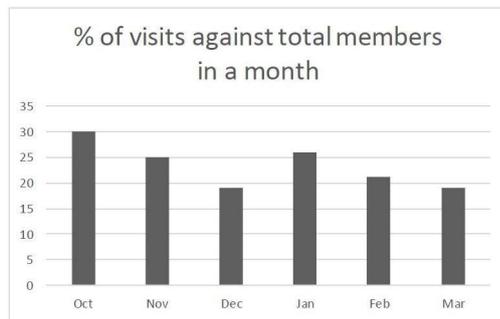
**Figure 2** Percentage of visits against total members in a month.

nurses' network; and community nursing digital network. Involvement of nurses and clinicians in the forum proved useful when discussing issues around increasing clinical engagement in the projects.

As participants of the CoP were selected from the NHSX Regional scaling programme, there could be perceived bias in the use of technology and therefore could be argued that organisations not part of this initiative may not have been as invested and positive about their experiences. NHSX and forum members committed to continuing the group for at least a year that will ensure some sustainability. The chair of the group had training and support from Florence Nightingale Foundation around leadership, communication, personal and professional presence that enhanced how the group was managed and coordinated. It could be argued that a change in chair of the group could potentially impact on the group dynamics future engagement.

## CONCLUSION

The pandemic has revealed that collaboration and innovation enabled by digital technology can radically transform health and care services at pace when people are provided with the space and support to be innovative. Qualitative data show that CoP has potential to enhance knowledge and improve practice as it enables space and support to be innovative. However, it is difficult to attribute with 100% certainty the activities of a CoP to a particular outcome without the quantitative data. Having access to the collaborative workspace provided space for relationships to get stronger, and this enabled innovation reported by participants. Leadership is key in managing the social and cultural context within CoP operate as it is likely to influence change in practice that requires a change in member's behaviour. This project has shown that there are benefits to be realised for staff, patients and organisations despite the data being small to make significant trends or correlations. Getting clinical engagement was one of the key issues that most projects were struggling with, which highlights the need for nurses and clinicians to be at the heart of technological developments and implementation. Having nurses and clinicians in the forum provided useful insights to the group around this

issue and how they could also use CNIO and clinical chief information officers in digital projects.

The forum has potential to be sustainable as the project team will continue to run the group as members are keen for that to happen. It will also explore adding other project teams to this group who are not necessarily part of the NHSX Regional scaling programme.

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Key themes across discussions

Session 1

**Key themes from across discussions**

- Clinical buy in, medical responsibility when pts interfacing between 2 services and governance around that

- Start small when staring a project and build on it slowly

- Getting acute trust on board with the model is one of the highlighted challenges. It's something about trust in terms of how they can have confidence in something like this to discharge people sooner

- Information governance challenges, when in silos as providers it makes IG more simpler but as you across organisations and have patients in virtual wards there are issues in how we share that data and we support mutual aid and IG challenges that brings

- Use of honorary contracts as a workaround on access to systems

- ICS- being a potential solution. Few people are working on ICS level and its still a challenge

- ICS compounds the problem because trying to bring 31 PCNs and 4 trusts together for step up and step down makes the problem worse. If we treat each PCN as an individual then the problem becomes much simpler

- Breaking challenge down into step up (admissions avoidance) and step down (early supported discharge) models within primary, secondary and community areas

Session 2

- Importance of communication and engagement with MDT particularly referring clinicians. Engagement with referring clinician
  Present the results e.g. patient doing well to increase confidence

- Sharing common pathways and reducing duplication

- Using clinical reference groups for example to get buy in to drive those pathways for remote monitoring and virtual wards

- How information governance is key enabler – (NHSX commissioned some work on this and we will keep you updated)
- How to support multiple languages through virtual ward solution to ensure fully inclusive
- How we can extend the sessions as one hour not enough for these conversations. Potential space to keep the conversations, and connections going

Session 3

- Getting clinical engagement including GP, nurses in primary care given recent letter from NHS England to put normal activity on hold, Clinical Consultants at senior level within the trusts
- How care sector could be incorporated into LTC
- Need to have clear and defined definitions of virtual ward, LTC, NHS@Home as it means different things to different people and how this is included within the guidance, so we all have the same view
- In-year funding is a bit of hiatus in terms of transformation and getting projects off the ground- next year will be the last that funding will be managed that way. We are listening to what you are saying about the how tricky the funding can be at times
- How care sector could be incorporated into LTC
- Need to have clear and defined definitions of virtual ward, LTC, NHS@Home and how this is included within the guidance so we all have the same view

Session 4- meeting stood down

Tech enabled guidance shared and members encouraged to connect via NHS futures online collaborative platform

Session 5 – Feedback session

Members were happy to keep the same format of sessions

**Benefits of NHS futures**

- Extension space for members who find that one hour is not enough for the sessions
- Useful for those wanting to keep the conversations, and connections going
- Good for checking and sharing information on other projects

**What benefits/value that have been realised so far as a result of implementing technology-enabled remote monitoring of LTC or virtual wards?**

- Benefits to patients sharing information and earlier discharge admission avoidance
- Less travel for clinicians and patients
- Improved patient experience, reduction admissions, started to collate information into ESD and reduced LoS

Supplemental material

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- Estimated benefits but we could do with a clinician going through to determine actual benefits
- Bed day savings and reduction in LoS, prevention of admission
- Some reduction in LAS callouts and no-elective admissions, strong partnership working
- Avoided F2F visits, PGs, ANPs, home visits, A&E, admissions
- Early supported discharge for covid patients and admission avoidance for Asthma patients
- Clinical time sharing information
- Plus links to ICS