Qni
International Community Nursing Observatory
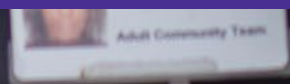
The Queen's Nursing Institute

Nursing in the Digital Age 2023
Using technology to support patients in the home

The Queen's Nursing Institute's International Community Nursing Observatory

The QNI launched the International Community Nursing Observatory (ICNO) in November 2019.

The ICNO analyses data and trends in the community nursing workforce data in greater depth, to aid understanding of the challenges faced by services. It will collate and analyse data about community and primary care nursing services at a regional, national and international level.

Professor Alison Leary MBE, Chair of Healthcare and Workforce Modelling at London South Bank University (LSBU) and a Fellow of the QNI is Director of the ICNO.

The idea behind the foundation of the ICNO originated from an independent strategic review conducted in 2018 by executives at Barclays Bank plc, through the 'Unlocking Insights' programme, led and managed by the charity Pilotlight. The 'Pilotlighters' at Barclays highlighted that data relating to the community nursing services workforce is often incomplete and this leads to barriers which prevent the progression of policy development, service enhancement and improvements to the care of individuals, families, carers and communities.

The ICNO seeks commissions designed to support data gathering and analysis that will provide evidence to enhance service planning and delivery in health and social care settings.

Contents

Authors: Professor Alison Leary MBE and Dave Bushe, ICNO.

Foreword

It is widely acknowledged that there are growing opportunities for digital technology to enhance and improve the nursing care of people in the community. Over the last decade, the QNI has been tracking the use of digital technology by nurses, capturing their views on the impact it has had on their work. In 2012, the QNI published 'Smart New World' and in 2018 'Nursing in the Digital Age – Using Technology to Support Patients at Home', each describing the response of nurses working in the community to the developing technologies available to them.

The data in this publication were collected against a backdrop of almost three years of a pandemic, where technology was vital in communication between professionals and patients, and where existing barriers to data sharing were overcome in order to expedite care. There has also been five more years of opportunity for digital technology development, whilst taking into account the findings of the 2018 report. It is disappointing therefore that many challenges which were reported in 2018 are still very much live issues for nurses working in the community today.

The nursing profession has a proud history of embracing new technology at pace and at scale, and this aptitude and desire is as strong today, or stronger, than it has ever been. This new report shows nurses have a high level of digital literacy, but there are missed opportunities for nurses who are using the digital technology every day in their work to be involved in its development and implementation - and therefore to optimise its applicability and maximise its utility.

Digital technology is being used creatively for a very wide range of work and its use is embedded across community nursing practice and influences how, when and where nurses interact with patients and deliver their care. The number of digital platforms used to help plan care delivery in the community appears to have decreased since the last survey carried out in 2018 as systems have consolidated.

Despite this, many nurses report that the application of digital technology in practice is poor and many feel that it is not saving them time, when time is at a premium. Current technology is making nurses work harder by re-entering data several times. Wi-Fi and connectivity are still poor for many users, limiting the usefulness of apps, undermining their claims to increase efficiency, and frustrating nurses and the people they care for. Nurses are hampered by failing laptop batteries among other hardware problems. Additionally, there are safety concerns about the extended use of laptop computers while sitting in a car seat, for which they are not designed. These are important issues that employers should be identifying and addressing for their workforce.

There is a potential for the benefits of digital technology to be realised should these and many other challenges and frustrations be addressed. The QNI calls upon all those involved in the design, development and deployment of the technology to work together as a matter of course with the nurses who use it every day, to overcome the current challenges and thereby enable the nurses to deliver truly personalised care to the people they serve.

Dr Crystal Oldman CBE
Chief Executive

Most respondents did not have access to a lead nurse for technology or did not know if one as available. The absence of nursing leadership in this space might account for the non-engagement and poor design experiences.

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Executive Summary

In 2021 the QNI District Nursing workforce standards were modelled. Cross sectional workforce surveys contributed to this work and revealed interesting data about the use of technology and the experiences of the community nurses using it. On the basis of these incidental findings, the QNI decided to repeat its previous survey looking at the use of digital, following the last one published in 2018.

Overall, the community nursing workforce has a high level of digital literacy - the poor user experience reported frequently appears to be around design and function rather than a lack of literacy or enthusiasm for technology. The workforce also has an appetite for high functioning technology and can see the potential of new applications, for example in managing wound care or long-term conditions. Indeed, some members of the community nursing workforce have taken an active part in the design of local solutions.

Despite this, there seems to be little interaction with suppliers, vendors or decision makers in the design, purchase or even deployment of technology. Nurses often stated that technology, particularly that which schedules work, is deployed without consultation, user experience trials or impact assessments.

Detailed responses show several challenges regularly encountered by community nurses. Systems are slow, with 74% reporting connectivity issues. For many there were issues with power, for example battery life. Other issues persistently reported were the suitability of both hardware and software, using old heavy laptops, authentication challenges, multiple platforms, little integration and repetition of data entry. There has been little progress since the last survey in 2018 and in some issues such as connectivity, there has been a decline.

The current design of software also interrupted workflows and impacted on work. Some scheduling tools as deployed are reported to cause workload issues, over-allocation of work, unmanageable workloads and loss of personal autonomy. Systems were felt to be impersonal and not well designed, acting as a barrier to interacting with patients. Work was intensified by repetition with dual entry on paper and into platforms required, often because of poor connectivity or design.

Ergonomic issues featured frequently, with heavy laptops and having to work in cars as main concerns. Some nurses also felt unsafe doing this or were worried about confidentiality and so took the work home to complete in their own time.

The highest users of technology-enabled care, for example remote monitoring, were specialists but most was left to General Practice or community nursing teams. Moving technology-enabled care to the community appears to have shifted work from the hospital to the community. 'Virtual wards' at the time of the survey had a limited impact on workloads in the community, with 10% responding that they increased community workloads, but most respondents had not yet experienced them.

Overall, the respondents did not feel that electronic scheduling improved time for care or increased productivity. The use of electronic health records (EHR) and similar platforms was mixed in terms of productivity gains and work capture. The only group that considered EHR and scheduling tools to have overall positive effect on productivity were General Practice Nurses, but this was still only 47% of that group.

Most respondents did not have access to a lead nurse for technology or did not know if one was available. The absence of nursing leadership in this space might account for the non-engagement and poor design experiences.

1. Introduction

During work completed last year[1] on the QNI District Nursing workforce standards, the issue of work and the use of technology was a recurring theme. One of the issues that emerged from the data, were platforms used for scheduling that were generating a poor user experience, resulting in employees' intention to leave and even triggering resignations. The qualitative data also suggested the technology deployed, far from enabling work, was causing issues such as workload intensification, for example the duplication of data entry.

In 2018 the QNI published a large-scale survey on the use of technology in District Nursing and given the issues uncovered in the modelling project, a decision was made to repeat a cross sectional survey with a wider group of community nurses to see how the use of technology was enabling or challenging the care they gave.

2. Method

An updated version of the cross-sectional survey from 2018 was sent out via QNI mailing lists in June 2022 and was open for six weeks.

This was a 31-item survey. Analysis was undertaken using descriptive statistics and comparison of subsections, for example District Nurses, were compared to the 2018 data. Qualitative data was subjected to thematic and sentiment analysis.

3.1 Findings

There were 1184 respondents. The distribution of these by region, job and workplace is shown in Figures 1-3.

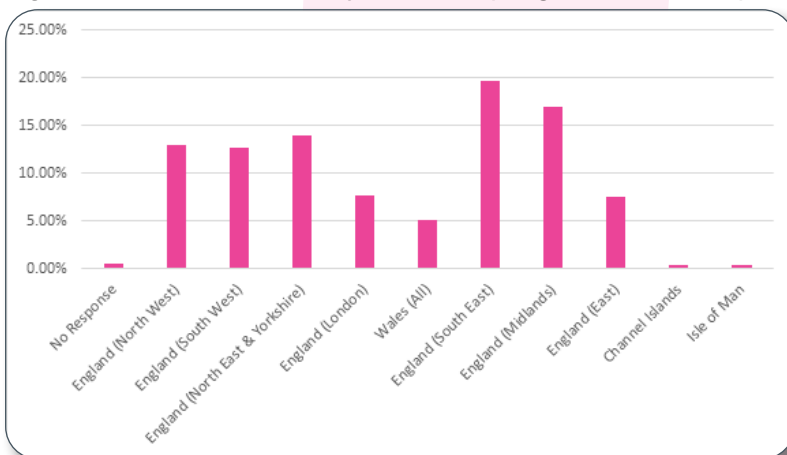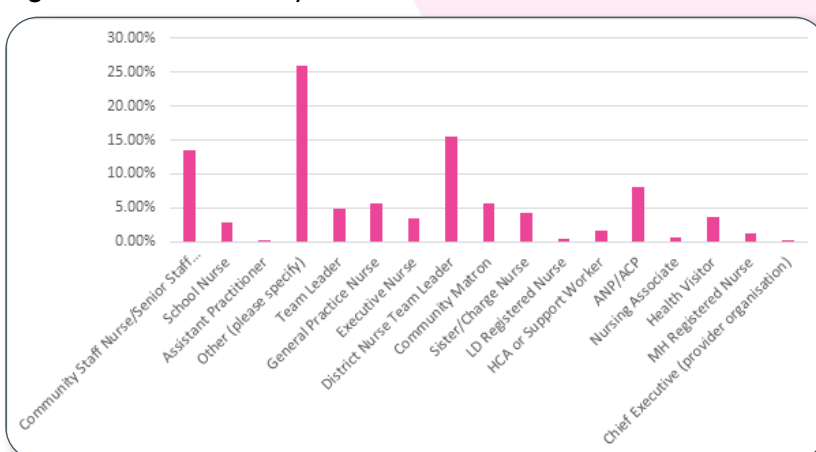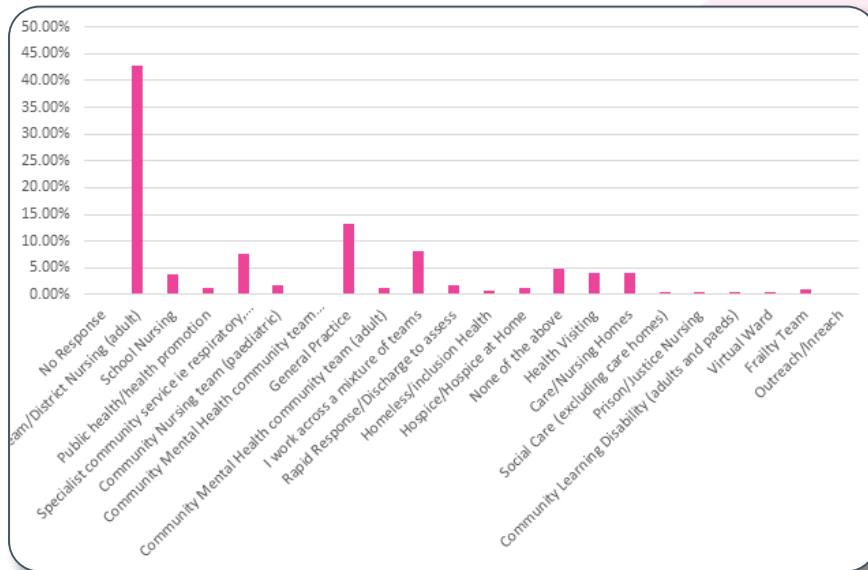**Figure 1.** Distribution of respondents by region and country. N=1184

Figure 2. Distribution by role

The majority worked in District Nursing (42.9%) and General Practice (13.34%).

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1 https://www.qni.org.uk/wp-content/uploads/2022/02/Workforce-Standards-for-the-District-Nursing-Service.pdf

Figure 3. Distribution by place of work/type of team

The majority of the workforce had worked in the community for ten years or more.

Figure 4. Length of time working in the community N=1184
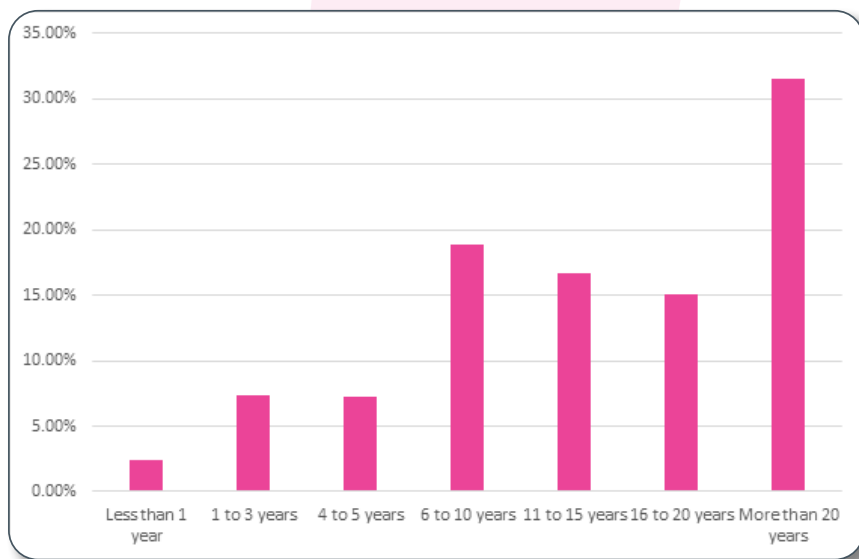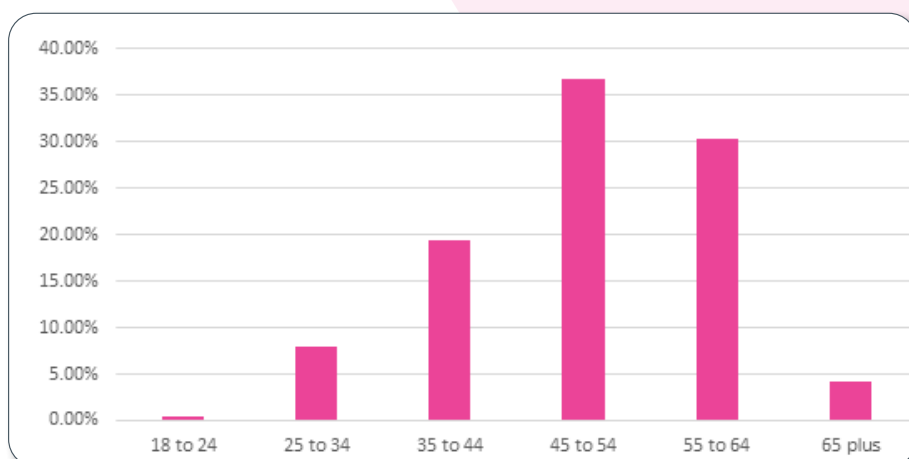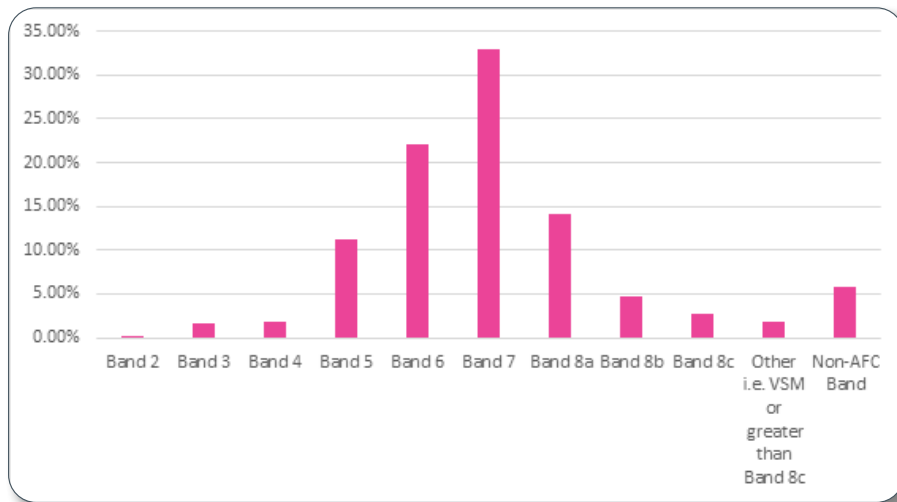

Figure 5. Age of respondents

This was a 31-item survey. Analysis was undertaken using descriptive statistics and comparison of subsections, for example District Nurses, were compared to the 2018 data.

**Figure 6.** Agenda for Change pay bands of respondents

3.1 Using Technology

Respondents used technology in a variety of ways, with the majority using mobile working and EHR.

Respondents could choose several options for this question, and it reflects the range of technology currently in use in this population.

Figure 7. The different forms of digital technology community nurses use
Thinking of your professional role, in what way do you use technology? Please tick all options that apply
n=1184
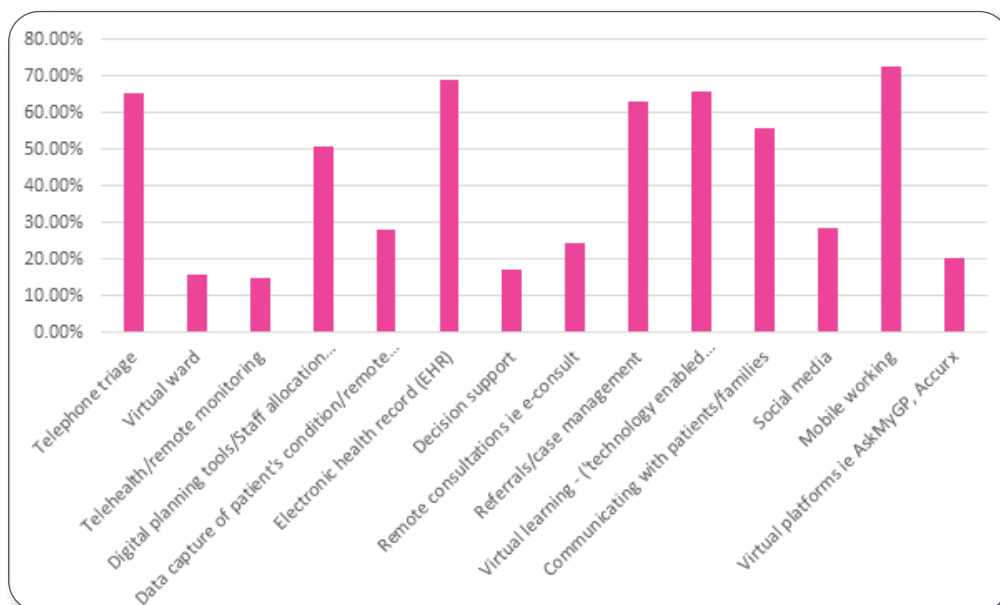
The previous survey in 2018 found that over 90 systems were named. In this survey we asked more specifically about systems used to record patient information electronically, like SystmOne or Malinko. This accounts for a large drop in the number of systems named by respondents, which was just over 30 (2022). Some of the systems named in the previous survey include country specific systems such Welsh services, and there has been some work undertaken in the intervening years to standardise these, for example in 2017 Welsh Patient Administration System (WPAS) became the standard all-Wales PAS. A small number of systems were identified where tools had been absorbed and rolled into other systems through acquisitions or were now defunct. A number of the details given in free text in the previous survey suggested that organisations were in the process of either moving to or planning to move to new systems and the reduction in the number of named systems suggests this process has now been completed; this matches with data showing some systems being integrated with others in the years since 2018.

One of the areas that emerged from other work such as the workforce standards, was the fitness for purpose of current technology. This was also an issue in the previous 2018 survey, and it can be seen from Figure 8 and 9 that there are still substantial issues including connectivity, suitability of hardware and software and deployment with-out consultation or fitness for use.

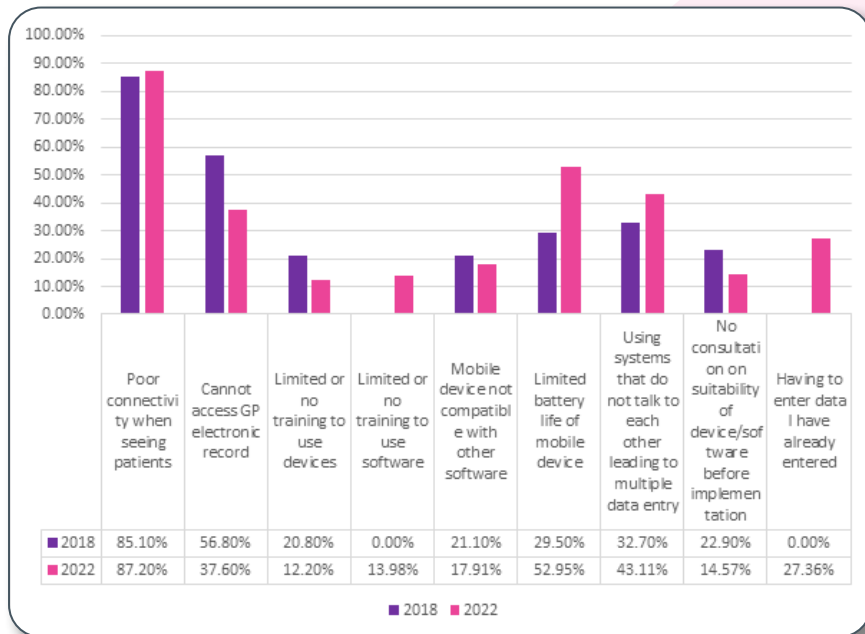**Figure 8.** The challenges preventing mobile working
When in a patient's home or out in practice, what are the challenges that prevent effective mobile working? Please tick all that apply n=1184
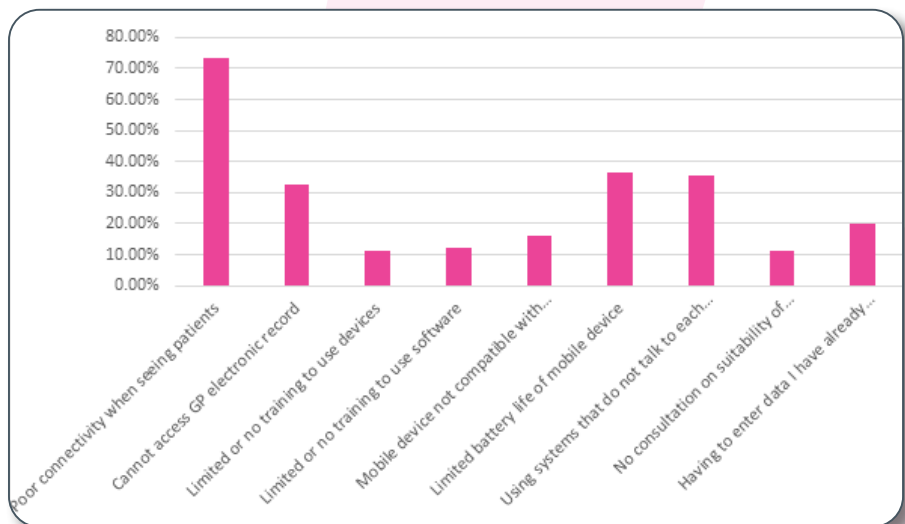
The District Nursing sample was compared with the District Nursing sample in the previous survey and there appears to have been very limited progress in terms of technology fitness for work, as shown in Figure 9.

Figure 9. A comparison of district nurse experiences and challenges in 2018 and 2022
District Nurses: 2018 and 2022 Compared 2022 n= 508; 2018 n=534

	Poor connectivity when seeing patients	Cannot access GP electronic record	Limited or no training to use devices	Limited or no training to use software	Mobile device not compatible with other software	Limited battery life of mobile device	Using systems that do not talk to each other leading to multiple data entry	No consultation on suitability of device/software before implementation	Having to enter data I have already entered
2018	85.10%	56.80%	20.80%	0.00%	21.10%	29.50%	32.70%	22.90%	0.00%
2022	87.20%	37.60%	12.20%	13.98%	17.91%	52.95%	43.11%	14.57%	27.36%

■ 2018 ■ 2022

The qualitative data reflected these responses:
'Old and outdated laptops with poor battery life and connectivity. Old android phones with no internet. Unable to print anything remotely.'

'Tech is all well and good but need the IT backup to prevent systems going down all the time. Very infuriating when almost finished writing an in-depth assessment then the system crashes losing all the information and time. Ahh well - that's what your day off is for!'

'The main challenge to mobile working we find is staff not feeling comfortable doing all record keeping in the home, so will regularly do in the car and ergonomically this isn't great.'

'We have some technology, but it always seems to be the cheapest rather than assessing what we actually need and what will work for us. We have an agile system which is meant to work without internet, then upload when connected. But lots of the templates and plans we are meant to use don't work properly on the agile system. There are apps we could use for e.g wound management and assessment that would save time and improve accuracy, but no one will pay for it.'

'A laptop with a good battery! Have ended up buying my own personal car charger otherwise laptop dies halfway through visits.'

'Technology is brilliant. I think everything should be electronic but we are doing full assessments writing them by hand then rewriting them back in the office electronically which is doubling our work load.'

'It always seems to be that the technology 'solution' comes first and then our work has to 'fit in' with how the technology operates (pre-determined algorithms etc.). It would be great if the starting point came from clinicians and patients – i.e., 'this is what we need and this is how we need the technology to work.'

'Made and influenced by people who are not health care background, or health background who haven't put a hand on a patient in years. Staff on the ground not listened to. This results in added stress and frustration amongst staff, therefore data entry doesn't get done. Poorly designed interfaces take forever to negotiate. You wouldn't expect a GP to faff about with these systems.'

'I currently have about 40 different passwords, required to do my job and not possible not to write them down yet we're advised not to, leaves us in an impossible situation.'

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As a proxy for digital literacy, we asked the respondents how they used technology in a personal and professional capacity (Figure 10). Usage across applications such as WhatsApp, social media and other platforms was high.

Figure 10. The use of technology in professional and personal life
Do you have any of the following in either a personal or professional capacity? Please tick all that apply
n=1184
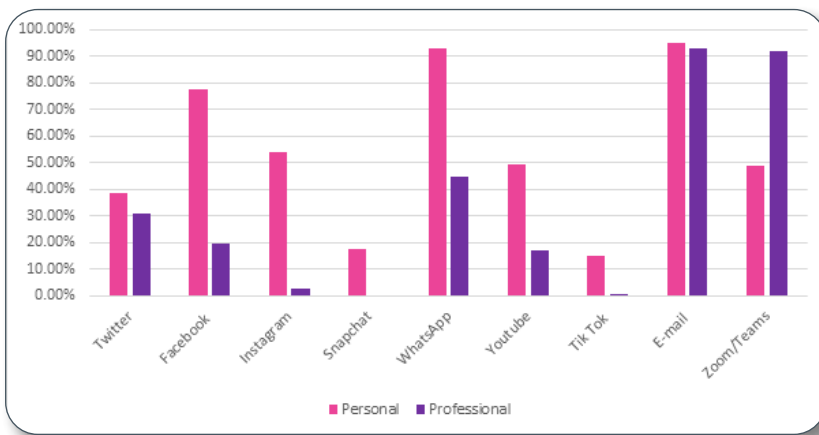
Respondents had an appetite for technology, if it was fit for purpose.

'There are so many areas we could use technology for like wound care, long term conditions, communication with others.'

'There is huge potential for technology to improve patient and staff safety and experience. The biggest barrier to this is that there isn't the workforce. People do not have time to implement changes effectively. They're running on empty.'

'Scanners that work would save time and frustration. I wish electronic systems were constructed in a more patient centred way. Wi-Fi speed in GP surgeries in our area is atrocious, I am working with IT and CNIO to try to get our own Wi-Fi wired in, we trialled it in one surgery and it made so much difference, the cost is holding us back.'

'Technology has been amazing for being able to continue to provide education and development to our teams. Whilst this questionnaire has been challenging to fill out due to the nature of my role, I feel it is important to comment how technology has supported online education to increase the time front-line staff have to care for patient as they do not have to travel to face-to-face training. There are obviously challenges with the training, however we have adapted and use online quizzes, whiteboards, jamboards, videos, breakout rooms for discussions.'

'We have currently been supplied with some digital headwear which some areas within the trust are using -the aim for virtual on the job consultations to take place e.g., with Tissue Viability. We have also recently commenced use of the [app] which assists staff with real time data access with patient record whilst out on visits.'

In summary

Main Opportunities:	Main Challenges:
✚ Digitally literate workforce	✚ Lack of access to health records, lack of interoperable systems
✚ Experienced workforce	✚ Lack of reliable IT (hardware, software and connectivity)
✚ Technology being used effectively in some places for specific reasons	✚ More appropriate hardware for role: laptops or iPads and smartphones, including cameras (e.g., for wounds)
✚ Appetite to develop and use technology in the community.	✚ System not being fit for purpose/ not capturing work or functionality, poor user experience
	✚ More training for complex systems
	✚ Scheduling platforms and poor user experience, anxiety and workload intensification
	✚ Time and cost.

3.2 Work Capture

The respondents were asked about their day-to-day use of technology and how technology captures work.

Figure 11. Opinions on the use of platforms such as EHR
If you use an electronic system to capture your work such as an electronic health record, please choose the option closest to your use or opinion of the system, n=1184
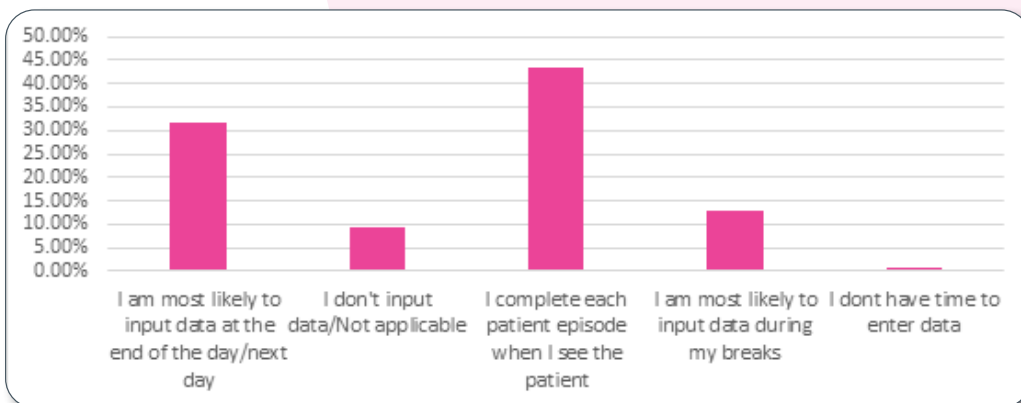

In previous work, the QNI found that platforms such as EHRs have had limited use in workforce modelling, as they appear to underestimate workloads. Respondents were asked how well they thought such systems recorded their work. Just under 14% thought they captured work easily and completely. Just under 32% thought it captures most of their work (Figure 12).

**Figure 12.** Opinions of those using platforms and how well they capture work

If you use an electronic system to record your work how well do you think it captures your day to day work? Capturing your work would also mean your non face to face work with patients such as managing care. n=1184
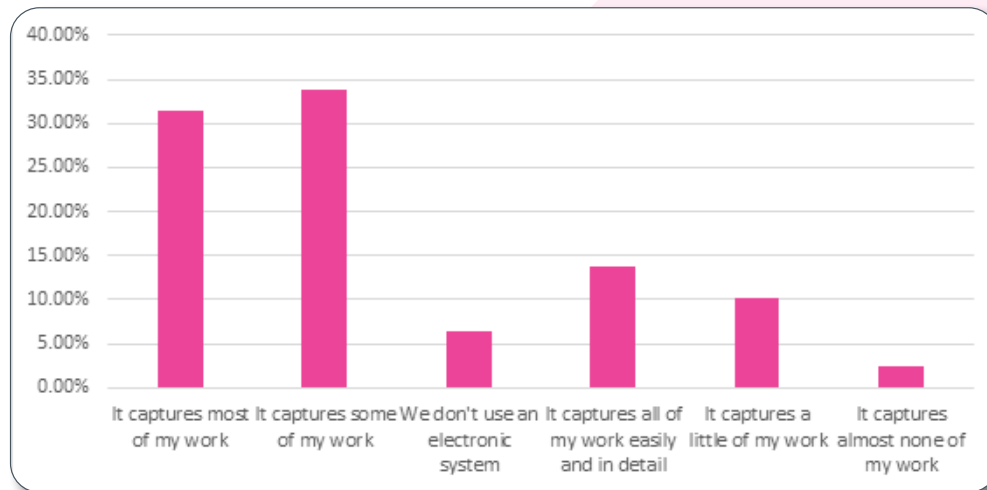
11% of District Nurses thought platforms captured work easily and fully (Figure 13). GPNs felt work was captured more fully (Figure 14).

Figure 13. Views of District Nurses on work capture

District Nurses How well do you think your current system captures your work? n=508
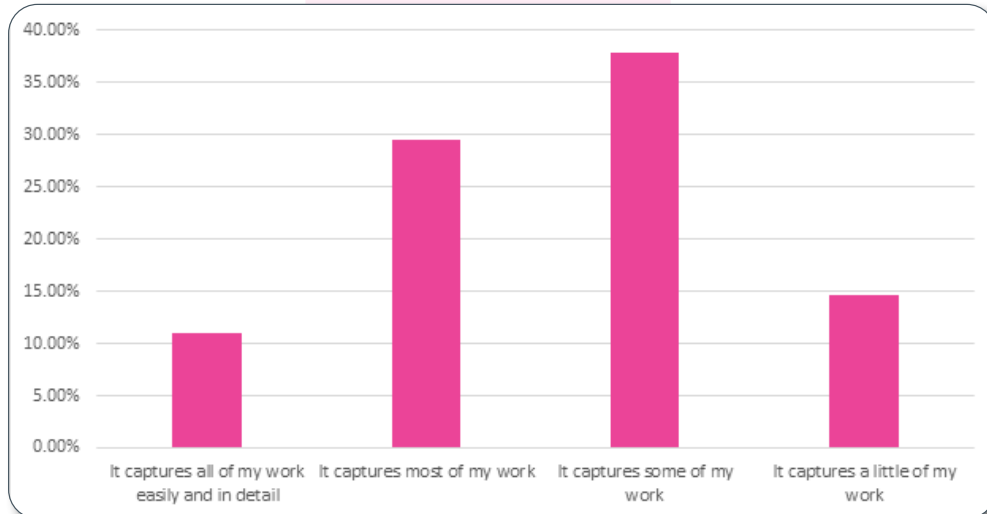
District nurses were more ambivalent; only 27% found that platforms improved productivity. This group were more likely to associate the platforms with driving task-based care and loss of patient centeredness.

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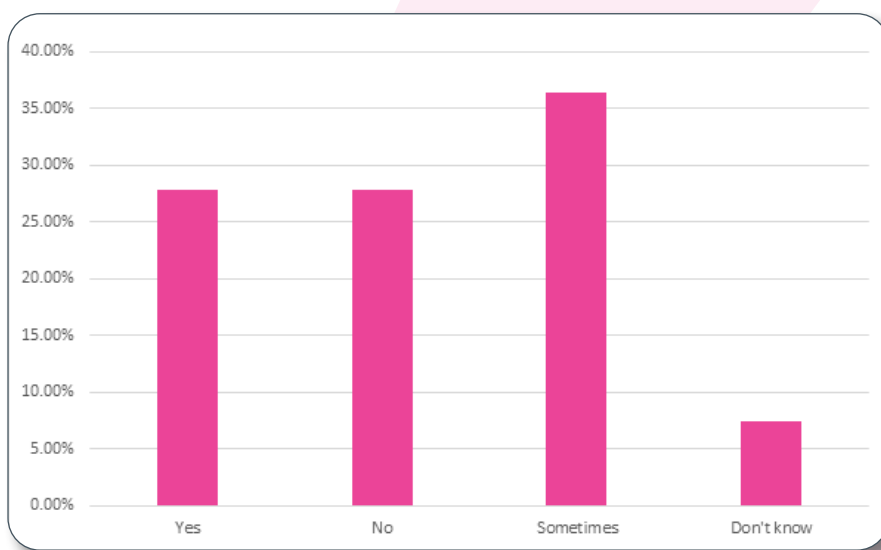**Figure 14.** Views of General Practice Nurses on work capture
General Practice Nurses: How well do you think your current system captures your work? n=158
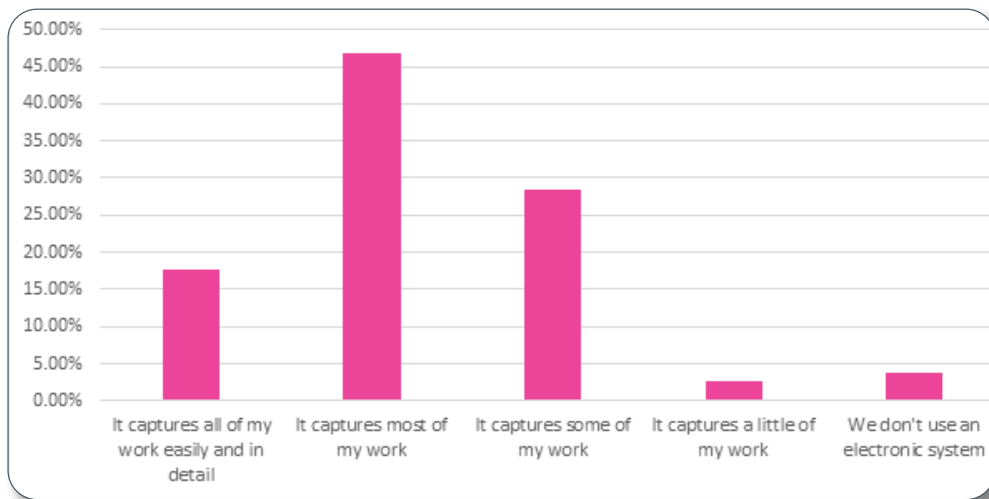
Overall the use of EHR and scheduling platforms was thought to be of benefit in terms of productivity by 34% of respondents, while 36% thought they were of use sometimes and 20% felt it did not improve productivity at all.

Figure 15. Views on technology and work productivity
Do you find technology such as electronic health records or scheduling tools saves you time and increases productivity? n=1184
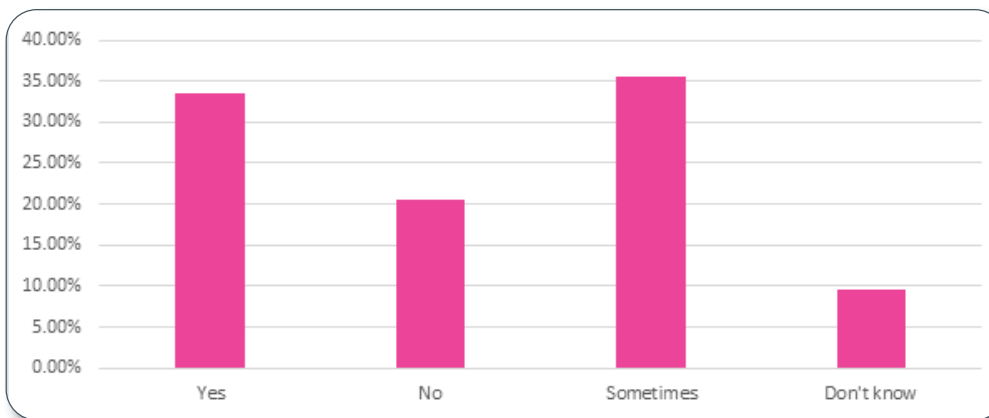
A small number of replies were positive but overall sentiment to technology in the entire group was negative.

'It's made a massive difference to my team. We have never had admin support and 'going digital' has reduced the amount of time spent typing letters etc. Also more joined up care as can see what other members of MDT are doing for the patients what is happening in acute care as well.'

District nurses were more ambivalent; only 27% found that platforms improved productivity. This group were more likely to associate the platforms with driving task-based care and loss of patient centeredness.

'Technology has made the role as DN a more task orientated role rather than a holistic autonomous role it used to be, tick boxes are now the driving force for quality outcomes, rather than patient focused, individualised care planning.'

'Due to its often poor function, things are being missed/duplicated leading to time wasting. One of the reasons I am retiring now.'

Figure 16. District Nurses' views on technology and productivity
District Nurses: Do you find technology such as electronic health records or scheduling tools saves you time and increases productivity? n=508

EHR and scheduling platforms were considered by practice nurses to be of more use, with 47% stating that they found them beneficial (Figure 17).

Figure 17. The views of General Practice Nurses on EHR and scheduling
General Practice Nurses: Do you find technology such as electronic health records or scheduling tools saves you time and increases productivity? n=158
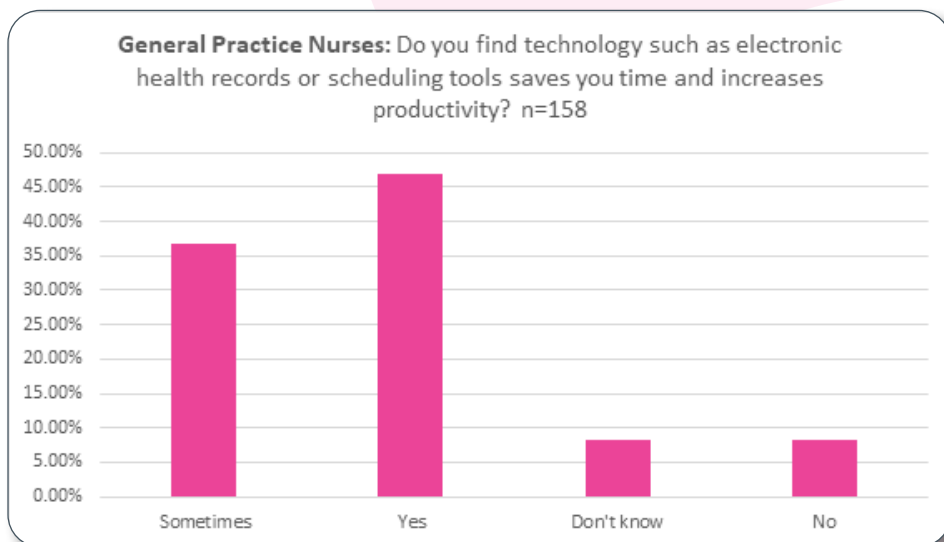
'We have had numerous problems since specifically [platform] was introduced. For example: poor rural connectivity, unable to capture work we actually do, limited time to do 'tasks', 'task' based nursing, musculoskeletal issues from using IT in unsuitable locations (car/patient home) etc, etc.'

The responses indicated platforms seemed more likely to intensify work effort rather than enable productivity.

'I find... using the computer to evaluate patient care and documenting of nursing assessments and referrals a constant struggle. There is no specific time set aside to complete the documentation, it is incorporated into unachievable time slots which are often inappropriately booked for much less time than is required.'

'In theory, having access to electronic patient records should improve our ability to deliver care. However, the reality is that there are often connectivity problems with [Platform] which means updates or patient consultations do not sync in a timely manner. On a daily basis, over an average week, I would estimate approximately 2.5 hours are lost waiting for mobile devices to sync/connect/update.'

'The main issue is unreliability of EHR due to frequent broken connectivity. I experience lost consultations every clinical session - creates loads of extra, duplicitous work increasing stress levels and leading to unpaid overtime that is required to check and double check all patient documentation again at the end of each shift, in order to protect self professionally for legal purposes.'

3.3 Remote monitoring and virtual wards

In the original modelling, data emerged around the workloads generated by the implementation of technology in areas such as remote monitoring or virtual care environments, for example in care homes or in the community. Of the 1184 responses, 703 did not use remote monitoring. Of those that did (481) the most common was the use in specialist long term conditions management by specialist teams (Figure 18). However there appears to be an in-creased expectation that community nursing and general practice teams will manage and respond to remote monitoring initiated by hospital services.

Figure 18. Who is responsible for monitoring remote technology?
Where remote monitoring is used who is responsible for monitoring the patient's condition/health status? n=481
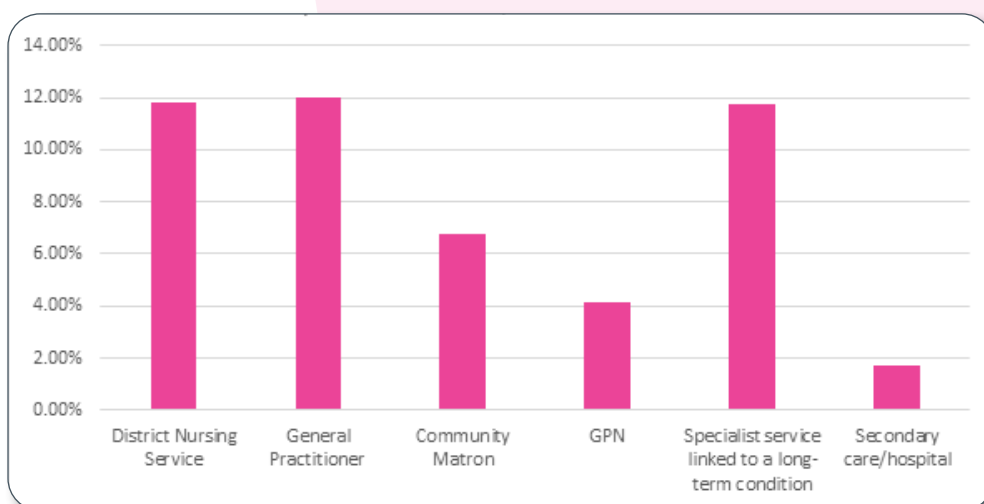
'Virtual ward totally underutilized in general practice. GPs rely on the assessments and recommendations of nurses, ancillary staff and patients' relatives to make decisions in a crisis. If virtual ward used correctly for LTC prior to reaching crisis point, then admissions may be avoided.'

'We are about to start using remote monitoring as we roll out virtual wards. This will be really useful as we are very rural and the time taken to reach patients to take observations will be reduced. Point of care blood testing would be extremely useful.'

'We are about to start using remote monitoring as we roll out virtual wards. This will be useful as we are very rural and the time taken to reach patients to take observations will be reduced. Point of care blood testing would be extremely useful.'

As found in the workforce modelling research, newer technology-enabled services seemed to be increasing work-load and so this was a focus in the survey. Around 10% felt that these services had increased their workload and 23% that they had not; however 22% were not sure and it could be that it is too early to see impact on workloads fully (Figure 19).

Figure 19. The impact of technology enabled care on workloads
Has the introduction of services such as technology enabled care homes or Virtual Wards impacted on your workloads? n=1184 but 473 respondents did not have Virtual Wards in their area leaving 771.
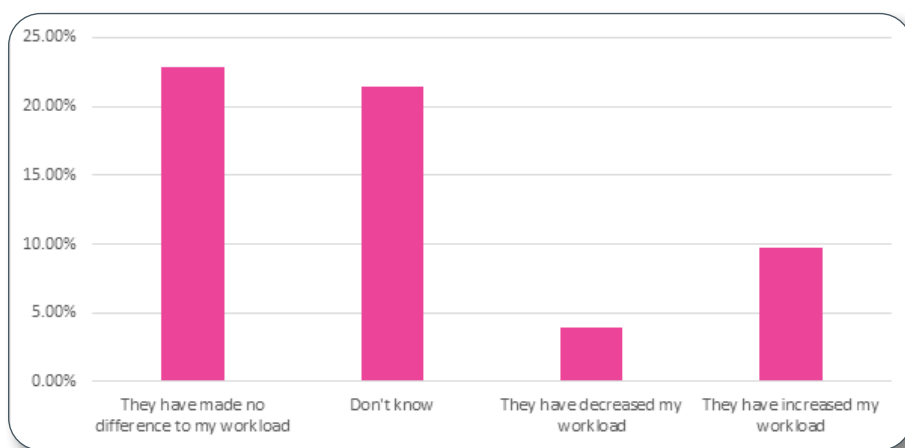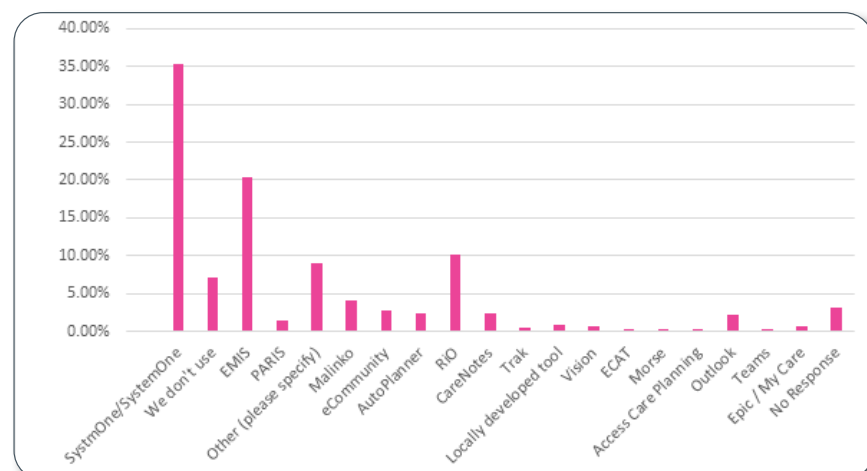

3.4 Scheduling platforms
E-scheduling was commonly deployed across workforces, with District Nursing teams the most common users with a range of platforms in use.

**Figure 20.** Scheduling platforms in use
If you use an electronic system/diary to plan/assign/schedule work, which one do you use most of the time? n=1184

Response was n=1184 but 432 did not use e-scheduling platform. This left 752 responses for analysis.

**Figure 21.** Views on how using scheduling has affected work
In scheduling work if using a scheduling tool or platform, please tell us how you feel about how work is scheduled (respondents could tick more than one answer) n=752 respondents
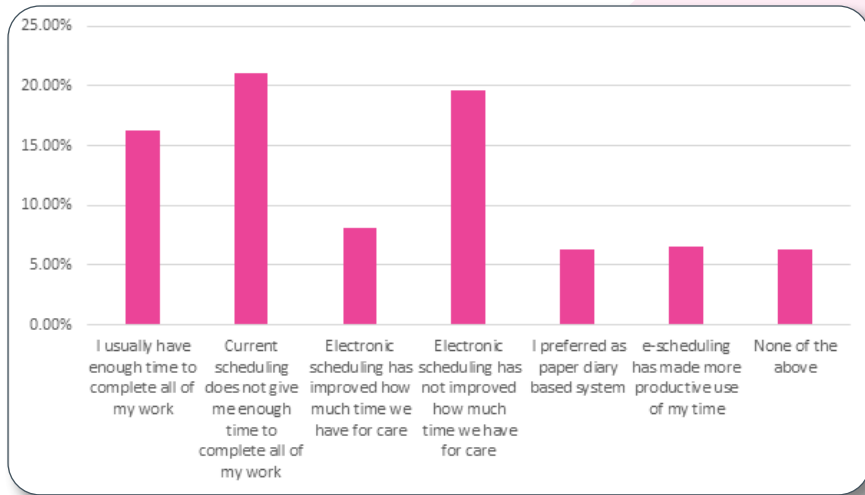

District Nurses overall found e-scheduling did not improve productivity, with more responding that it did not improve time for care (Figure 22).

Figure 22. District Nurses views on how using scheduling has affected work
District Nurses: In scheduling work if using a scheduling tool or platform, please tell us how you feel about how work is scheduled (respondents could choose more than one answer) n=508
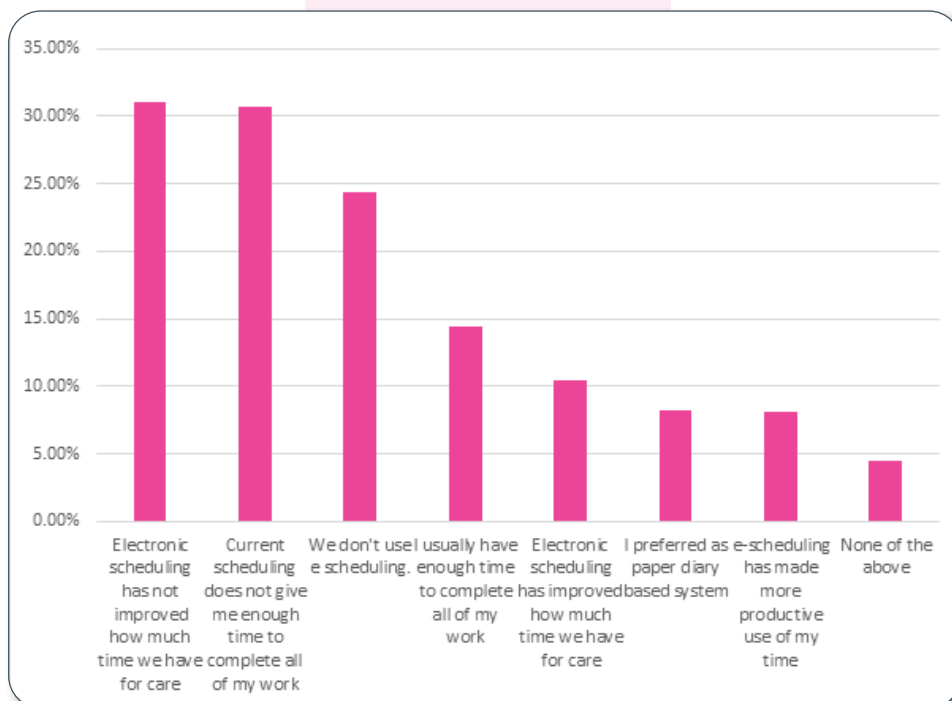
Scheduling platforms were not generally seen as enablers of efficiency of work. They were felt to enable 'tick box care', did not leave sufficient time for work and caused workload intensification. Professionals also did not like the loss of autonomy, which is a staff retention factor. For a small number of respondents, scheduling platforms even caused anxiety.
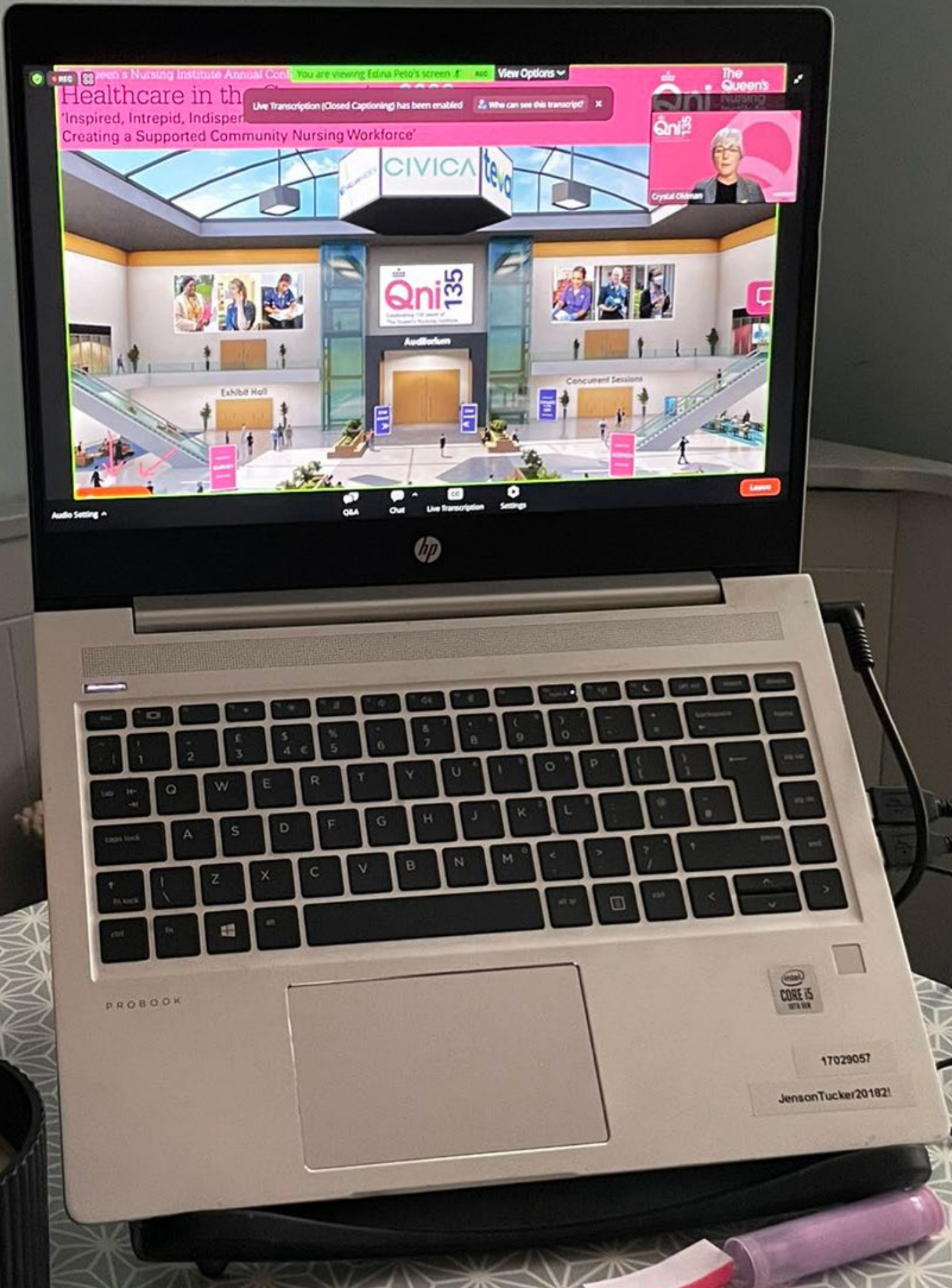
Photo courtesy of Frankie Pacey, Community Nurse Team Leader

'[Platform] recently introduced. Takes up lots of time, not efficient and visits not allocated appropriately with visits split to two different nurses, patient not getting senior or trained review, multiple nurses going to one care home as some examples. Management have told us it's here to say and to get on with it. Senior nurses now spend hours trying to rejig lists to make them safe and efficient when we could be out doing visits.'

'[Platform] has been implemented in our service by management without staff on the ground being able to see how it works prior to implementation. It has doubled the work of allocation as it leaves half of the visits each day unallocated, mainly essential visits such as insulins and syringe drivers as it is unable to differentiate between RAG ratings. Triage of visits now has to be input into 2 systems for visits to be generated doubling the time it takes. User interface is clunky and not at all user friendly. A grievance has been raised with the RCN due to management not listening to our concerns.'

'…the computer system dictates to the professionals rather than the computer be a help; 'it's a master not a slave'!! But the staff and patients suffer and often the appointment who did not have the assistance has to return at a later date, delaying appropriate care/intervention and lengthens the waiting list further. Ridiculous!!'

'Sadly, I now find myself anxious before and throughout every shift. With less than a year to my retirement I am determined not to be beaten by the technology and allocated time slots that overwhelm me. Instead, I continue to prioritise each patient while they are in my care because in doing so this ensures there will be no omissions in my duty of care. As a result, the shortfall of time required for nursing care, documentation, booking follow up appointments and keeping up to date with mandatory e-learning and technology is inevitably 'unpaid overtime'.'

'[Platform] is the worst system ever to be implemented in community nursing especially in a very rural area it does not work. We have to use [Platform] also which is what was previously used for scheduling; this could have been utilised better; implementing a system that nobody who was actually out in the field uses was ridiculous. Now we are stuck with it staff are leaving and morale is low. Laptops' battery life poor, not provided with battery packs. Rural area poor connectivity so the live system doesn't work.'

'We are awaiting implementation of [Platform] in our area. We currently use t cards with patient information on and write into a diary daily. This method is fail safe and when IT is down or bank nurse covers shift they still have access to the work and know where, what patient requires [and] when. There was no consultation of teams or visits to see what teams already have in place. We have directed our managers to read reviews on RCN forums.'

One of the issues that occurred was having to check the accuracy/safety of allocations using platforms.

'I can see the absolute benefit of a work allocation tool. The difficulty for the District Nurses is the lack admin of time is to ensure the allocation system is accurate.'

'[Platform] has caused multiple issues for patients, staff and the service. We do not have enough staff to use [Platform] and our organisation is telling us to cancel visits. This is approx 60 patients some days. Patients are having missed visits and being admitted to hospital with deteriorating wounds.'

3.5 Nursing leadership in digital

The majority of nurses did not have a nurse leader for digital technology. This opens up the question of who is re-presenting nursing work at a senior level.

All healthcare providers should have a nurse who is appropriately experienced and skilled to lead on the use of digital technology within the organisation.

Figure 23. Senior nurse leadership in digital
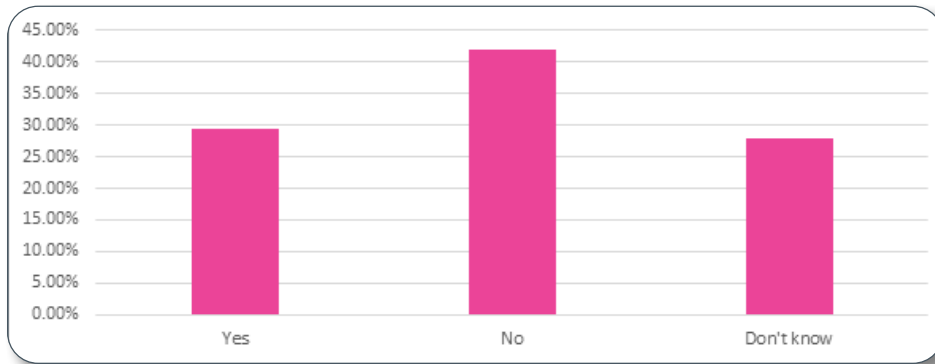Is there a senior nurse who leads on information and technology use in your organisation? n=1184

Figure 24. District Nurse services senior nurse leadership in digital 2018 and 2022
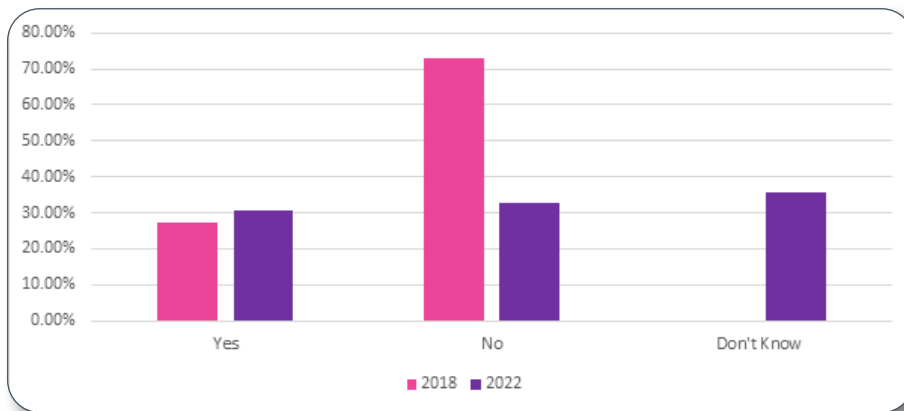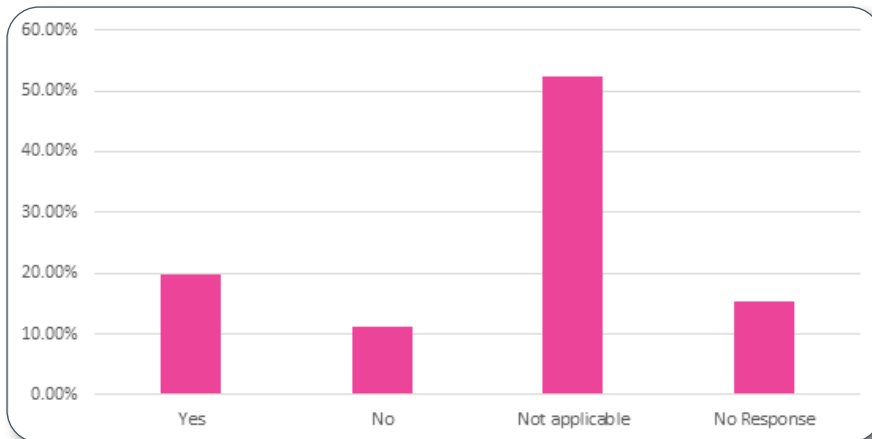District Nurses: 2018 and 2022 Compared 2022 n=508 2018 n=534

Figure 25. Leadership and engagement
Do you feel that having a lead nurse for technology has increased your engagement with technology? n=1184

4. Conclusions

Detailed responses show several challenges regularly encountered by community nurses. Systems and applications are considered slow, there are connectivity and power issues, particularly battery life. Other challenges include authentication issues, too many platforms and little integration. Repetition of entry and replication of work featured strongly, for example having to enter data multiple times or complete paper forms that were then entered into platforms. Using laptops in the home was considered impersonal - not well designed and act a barrier to interacting with patients, including poor design of platforms and EHR, for example with different versions of care plans. There were reports of musculoskeletal problems related to entering information while sitting in the car, and staff feeling unsafe using devices in their cars, especially at night.

Some staff had no access to hardware at all, others expressed information governance/confidentially issues, ergonomic issues such as size of screen, carrying heavy laptops, working in cars or homes.

Hardware is often brought up with repeated suggestions that laptops are old, slow, and not suitable for purpose, with repeated mentions of poor battery life. Also, suggestions that they are heavy, leading to issues with carrying them all day; several nurses also reported issues from completing laptop forms in their cars. Poor hardware and software also link with themes of replication of work with work done on paper then entered into platforms later, often back at base or at home.

In summary there seems to have been little improvement in either provision or functionality of community nursing technology in the past four years. Poor user experience is a retention issue in a workforce that is already fragile.

5. Recommendations

Technology that is obsolete should be replaced with up-to-date models by employers. The cost of using obsolete devices in terms of lost time and efficiency is likely to far outweigh the cost of purchasing new hardware.

Nurses should be consulted at an early stage in the choice of hardware for use in community settings to ensure that it is appropriate and safe for its designated use.

Companies that design mobile devices should be called upon to improve future designs of those used by the community nursing workforce, actively seeking nursing feedback.

Nurses should be involved at an early stage in the design and development of software programmes that they will use as part of their everyday work.

Healthcare provider organisations, commissioners and policy makers should undertake national, regional and local reviews of WiFi internet connectivity in all areas where their services are delivered and understand how this is directly impacting on the work of nurses delivering care in people's homes and communities.

Healthcare services and supporting organisations could usefully campaign for improved internet connectivity and ask for increased investment by mobile phone operators and government.

Scheduling tools and related apps should always be designed, developed and used in a manner that is consistent with the nursing process, professional judgement and autonomy, personalised care and patient need.

All healthcare providers should have a nurse who is appropriately experienced and skilled to lead on the use of digital technology within the organisation.

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