

Digital Transformation in the Health and Care Professions

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Table of Contents

Introduction.....	3
Overview of Virtual Wards.....	3
Impact on the Workforce	4
Impact on Service Delivery	5
Impact on Patients and Service Users	6
Impact on Communities	7
Conclusion	8
References.....	10

Introduction

Digital transformation is now an integral part of the health and social care systems of today. Digital Technology has transformed the delivery of care in the health sector, redesigning the models of care, improving patient outcomes and increasing the efficiency of the services. In the past decade, a major digital innovation introduced in health care is virtual wards based on remote patient monitoring technologies. Virtual wards enable hospital standard care in the patient's home, using digital monitoring, mobile apps, pulse oximetry and frequent contact with health care staff. While the virtual ward concept came into existence during the COVID-19 pandemic, it is a concept that is now adopted as a component of health care services in the United Kingdom beyond the pandemic period. This report critically examines how virtual wards are a digital transformation of health and social care.

Overview of Virtual Wards

Virtual wards are healthcare models that offer patients continuous monitoring and support through clinical activities outside of the hospital setting. Patients stay at home and health care workers use digital technologies to evaluate symptoms, monitor physiological data and provide clinical interventions remotely. These are typically pulse oximeters, mobile health apps, video consults, and electronic health records.

COVID-19 pandemic has contributed significantly to the increase in virtual wards. The use of virtual wards was mentioned as a new concept which was introduced to support patients in the community to reduce pressure on hospital resources (Thornton, 2020). Likewise, Greenhalgh et al (2021) showed that home pulse oximetry and virtual ward support can help to manage patients with COVID-19 remotely, allowing clinicians to detect deterioration before patients are admitted to hospital.

There are indications that virtual wards are a more than an ephemeral response to emergencies. Norman, Bennett and Vardy (2023) state that virtual wards have increasingly gained significance in the delivery of healthcare services, especially for older adults who have complex care needs. They fit into the normal service as part of a wider digital transformation that will enable patient-centred care to be provided outside of hospital.

Impact on the Workforce

Virtual wards have greatly changed the role and responsibility of healthcare professionals. Within traditional healthcare delivery, a lot of patient care is dependent on patient-provider relationships and physical examination in hospital environments. Healthcare professionals must acquire new skills and knowledge in digital technologies, remote monitoring, and virtual communication to work in virtual wards.

One positive effect of a positive workforce outcome is the ability to have real-time patient data to improve clinical decision-making. Greenhalgh et al. (2021) reported that the use of home pulse oximetry has helped healthcare professionals to monitor oxygen saturation levels remotely and thus allowed them to pick up on patient deterioration earlier. This will enable proactive action and help to enhance clinical outcomes.

Virtual wards are also used to facilitate multidisciplinary working. Successful implementation was observed to require coordination between doctors, nurses, information technology staff and administrative staff, by Schultz et al. (2021). This can enhance the flow of communication and help to develop more integrated pathways to care.

Moreover, digital technologies can boost the efficiency of workforce. Shah et al. (2021) concluded that mobile application remote patient monitoring decreased unnecessary clinical interactions without compromising patient safety. Healthcare staff had the ability to prioritize those in need of urgent intervention, which helped to manage workloads during peak times.

There are still substantial hurdles to be overcome, though. There is a need for a great deal of staff training and professional development for virtual wards to be implemented. There was a lack of awareness among many healthcare professionals about remote monitoring systems and digital platforms. Schultz et al. (2021) found that the COVID-19 pandemic had an impact on how effectively staff were trained and on maintaining a consistent level of digital competence within teams.

Even if you're trying to cut back on workload, you might find it hard to keep up with the demand. Constantly monitoring patients remotely can produce a lot of patient data to interpret and follow-up. Shah et al. (2021) identified the issue of more administrative workload for digital alert review

and submission of patients. This can therefore result in a re-distribution of workload and not a reduction in workload.

One drawback is the risk of not having direct observation. Non-verbal cues and physical assessments are frequently used to assess patients. The lack of face-to-face interaction could make it harder to see subtle signs of deterioration and thus make clinical decision making uncertain. So, although virtual wards are a means of workforce innovation, they do need to be well managed to ensure staff are appropriately supported and trained.

Impact on Service Delivery

Virtual wards have revolutionized the delivery of health care by moving services from hospital to community. This shift is part of the larger healthcare goals to lower hospital stays, optimize resources, and promote person-centred care.

Among the greatest advantages is the decrease in strain on hospital resources. The COVID-19 pandemic has introduced new technology into the hospital home. Virtual wards allowed healthcare providers to safely care for many patients at home. Thornton (2020) found that virtual wards were able to maintain hospital bed capacity when it was needed most. The capacity advantage is still pertinent in the current context of growing challenges from managing chronic diseases and an aging population in healthcare systems.

The use of remote monitoring technologies helps to reduce the need for admissions and hospital discharge. Using pulse oximetry to monitor patients with COVID-19 at home was showed to be feasible and non-harmful by Greenhalgh et al. (2021) and this decreased the need for unnecessary hospitalisation. Likewise, Hutchings et al. (2021) reported the effectiveness of virtual healthcare models to manage community patients without compromising on clinical supervision and patient safety.

One of the key benefits of virtual wards is they enable continuous monitoring. While periodic clinical assessments may be used in traditional health care, remote monitoring systems can gather data throughout the day. This can help health care workers to detect deterioration sooner and act swiftly if needed.

However, there are service delivery issues. The effectiveness of virtual wards is still unclear, especially in older people with complex care requirements, as reported by Norman, Bennett and Vardy (2023). Some studies have indicated that admissions and outcomes were lower, while others have had minimal differences between the two types of care.

Another concern is the reliability of technology. Internet connection, functioning devices, and data transmission are all critical for the proper functioning of virtual wards. Technology malfunctions can put patient safety at risk and can cause interventions to be delayed. Technological challenges emerged as a common problem in implementing (Hutchings et al., 2021), and this reinforces the need for strong digital infrastructure.

Also, not all patients are appropriate candidates for virtual ward care. People with significant cognitive and communication problems, social difficulties, and little or no digital literacy might need face-to-face support. As such, healthcare institutions need to thoroughly evaluate their patient eligibility for safe and effective service provision.

Impact on Patients and Service Users

Patients have several key benefits from the use of virtual wards. The increased benefit that is often noted is being cared for in a comfortable home-like setting. Staying home can help to lower stress, foster independence, and enhance wellbeing.

Home based care is suggested to provide patient comfort and satisfaction. Many patients valued the convenience of healthcare delivery remotely, along with the ability to maintain their normal daily routines, according to Hutchings et al. (2021). Patients did not have to travel to health services for support, and were less likely to have disruption in their family life.

Virtual wards can also have a positive impact on patient engagement of their own care. Patients typically have to log symptoms and physiologic parameters on their own using remote monitoring technologies. Greenhalgh et al. (2021) state that home pulse oximetry makes the patient more active in monitoring his/her health status which might increase the patient self-management skills.

Another significant advantage is in the area of the physical environment. Hospital wards are a source of noise, stress and disruption of sleep. Zhou et al. (2020) showed that the acoustics of the

hospital can have a negative impact on physiological and psychological outcomes. Patients could avoid some of the circumstances of hospitalisation by receiving care at home.

Though there are advantages, patient experiences are not always positive. Digital exclusion is still a concern. Access to technology, connectivity to the internet and digital skills are important for successful engagement with virtual wards. There may be barriers to engagement for older adults and socioeconomically disadvantaged groups.

Norman, Bennett and Vardy (2023) point to the worry that some older patients may not be able to effectively utilize remote monitoring technologies. When operating devices and/or applications are challenging, this may lead to lower confidence and, in turn, higher anxiety. Patients may also be afraid to make errors in collecting health data or transmitting it.

With no face-to-face interaction, patient perceptions of quality of care could be impacted. Others prefer to have a personal connection with health care providers and may feel that electronic visits are less supportive. Vindrola-Padros et al., (2021) found issues with decreased human contact and the challenges of forming therapeutic relationships in virtual care models.

In addition, patients might feel responsible for their condition and add to their stress. Self-monitoring on an ongoing basis can lead to higher levels of health-related anxiety, especially if there is a lack of confidence in symptom and device interpretation. Thus, though there are many benefits to virtual wards for patients, there are a number of access, confidence and emotional support concerns that need to be addressed by healthcare providers.

Impact on Communities

Virtual wards aren't just about individual patients; they also have implications for communities. Virtual wards can contribute to population health goals by shifting the care model away from hospital to community settings and increase the accessibility of healthcare.

A significant community good is improved access to care for people in rural or geographically remote areas. The use of remote monitoring technologies helps to decrease the frequency of travel to health care services, which may help mitigate geographic disparities in access to care. Patients can access specialist support no matter the location which in turn allows for more even access to healthcare.

VW can also help improve the resilience of the public health system. In the case of COVID-19, remote monitoring helped to avoid the need to attend hospital unnecessarily and to limit the risk of infection. Vindrola-Padros et al. (2021) found that virtual ward models were found to be good for the sustainability of the healthcare system and for keeping vulnerable populations away from exposure to infectious diseases.

Another significant community consideration is family involvement. Virtual wards typically enable more family members and informal carers to be involved in monitoring and supporting patients. Engaging families can support care coordination and enhance the quality of patient care. Co-production can also be improved in the context of home-based care as it provides opportunities for patients and families to be more actively involved in their care decisions.

But the effects of the community are not all good. There is fear that the responsibility may shift from health care providers to family carers. Or relatives may be burdened by monitoring devices, symptom reporting or technology management. In addition to the stress that staff might experience, family members may also feel stressed when caring for patients in their homes, especially with complex health issues.

There are also huge health inequalities. Risks to unintentionally exacerbating gaps may exist if populations are not connected to technology or knowledge of how to use it. The effectiveness of virtual wards for people with frailty was influenced by the context of the intervention, such as social support, digital literacy and resources (Westby et al., 2024). Virtual wards may then be less effective in these communities with less technology infrastructure.

Additionally, virtual wards demand significant digital systems, employees training, and technical support. Long-term efficiencies can be gained, but cost of implementation may be a challenge for a healthcare organisation in financial constraints. This means that policymakers need to strike a balance between innovation and equity and sustainability issues.

Conclusion

Virtual wards is one of the most important digital changes in modern health and social care. Using remote monitoring systems, healthcare providers can provide hospital-level care in the comfort of patients at home, ensuring clinical oversight and prioritising person-centred approach to care.

The evidence shows that there are a number of positive outcomes. Virtual wards allow for better working across the workforce, a more efficient service, make fewer demands on hospital services and make life easier for patients. Patients enjoy the benefit of receiving care in their familiar surroundings and there may be a get-up-and-go effect for communities in terms of access to health care.

There are important caveats, however. Current needs for workforce training, technological difficulties, digital exclusion and the growing needs of family carers continue to pose concerns. Studies on effectiveness are inconsistent for a variety of patients, especially older adults with complex needs.

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