

The technological ward round: Discuss the benefits and challenges posed by paperless systems within the NHS. Should drugs charts, NEWS scores and patient notes all be transferred onto tablets?

Information technology (IT) has revolutionised patient health records through the use of electronic patient record systems. These systems conveniently allow patient health records to be accessed by healthcare staff, allowing a patient's condition to be monitored, updated and appropriate interventions to be implemented [1]. These systems provide a platform of communication and transparency between both the patient and healthcare professionals. The use of a portable computer device in the form of a tablet allows access of patient health records from a wide variety of locations. An increase in the implementation of these services throughout the NHS [2] poses the question whether all patient notes, drugs charts and NEWS scores should be transferred onto tablets. This report aims to consider the benefits and challenges posed by paperless systems within the NHS.

The current use of paper medical notes poses a major problem of confidentiality. Medical records trolleys with numerical keypad pin or lock and key systems are implemented in the NHS, as a means of adherence to the 'NHS England Confidentiality Policy' [3]. This policy states:

“all records containing person-identifiable or confidential information [must be kept] in recognised filing and storage places that are locked.”

However, in practice, this is rarely adhered to, with medical records folders being scattered around the ward and documents containing confidential patient information being misplaced. A study published by BMC Health Services Research in 2011 showed that 15% of clinical information were missing in consultations. 32% of these experienced delay or disruption to their healthcare and 20% showed a risk of harm [4]. This delay and disruption of the provision of efficient healthcare can be avoided through electronic health record use where this problem can virtually be eliminated due to central data storage systems.

These misplaced confidential patient documentation can freely be accessed by any passer-by, posing a major risk to patient confidentiality with no evidence of healthcare staff accountability. A tablet system with a unique smart card or pin code to each healthcare professional will not only allow the identity of the accessing healthcare professional to be logged but can also be designed to display patient information only relevant for the particular healthcare professional's role. For example, nurses may be immediately able to access a patient's drug prescriptions and NEWS scores, with doctors being able to modify treatment plans and modify drug prescriptions. Login timeout systems allow confidential patient information to be protected when not in use. Currently, unsupervised paper medical records can easily be accessed by unauthorised individuals.

The idea of relevant information being displayed to each healthcare professional upon their access to the health record system is highlighted in Figure 1, according to their role [5]. This method of electronic healthcare system provision allows more efficient team-working.

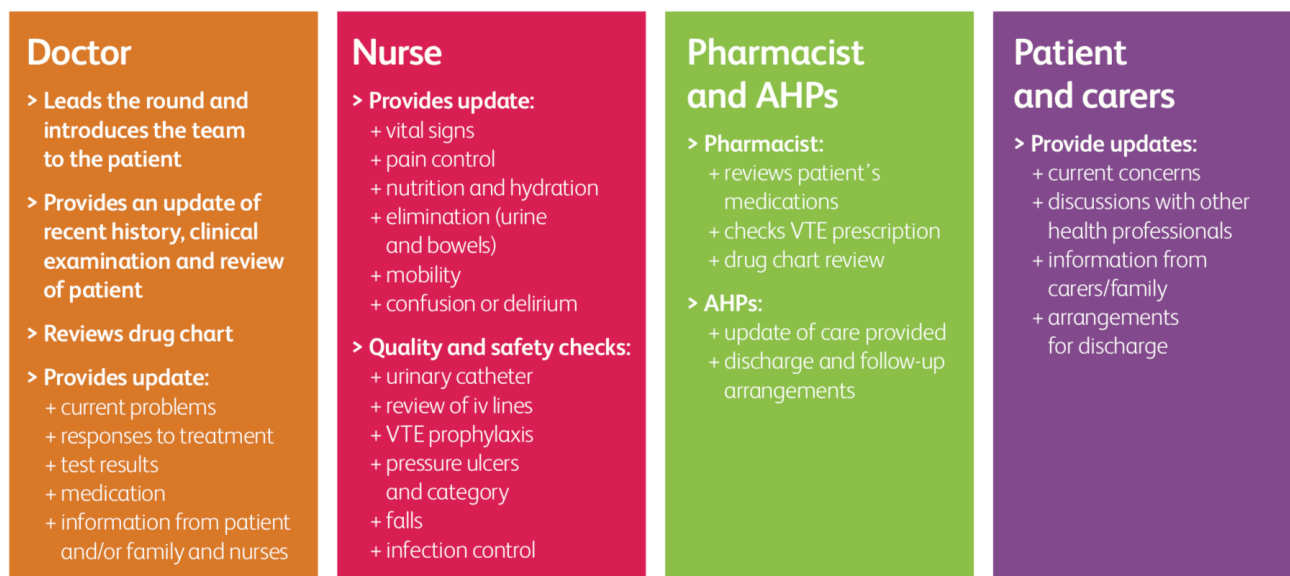


Figure 1: Different groups involved in patient healthcare. Implementation of personalised access to healthcare record systems through a unique login method such as a smart card or pin can allow relevant information to be easily accessed, according to the role descriptions shown.

The current paper medical notes system also provides a barrier in the ability to provide simultaneous access of patient health records to multiple healthcare professionals. During ward rounds, the records may be inaccessible to nursing staff for updating latest patient vital signs or nursing notes. Tablet systems tackle this issue through both healthcare roles being able to access the patient health records simultaneously. A nurse may then, for example, be able to update vital signs during the ward rounds providing immediate update of patient monitoring whilst the ward round is being carried out by the consultant team. Any abnormalities can be notified directly to the ward round team's tablet devices, allowing immediate action to be taken.

Documentation errors can lead to poor patient outcomes and lack of appropriate healthcare provision. Table 1 shows common documentation entry errors in nursing [6], and how patient health records being available in tablet devices can address these issues.

Documentation error	The use of tablet patient health records to address issue
Dating, timing and signing entries	The tablet system is synchronised centrally with the date and time which, along with the healthcare professional's identity, is logged with any information which has been accessed, entered or modified.
Illegible handwriting	Information can be typed instead of requiring handwriting, eliminating illegible handwriting as an issue.
Not documenting omitted medications or treatments	The system could be designed to make this information compulsory to complete for the healthcare professionals (most relevantly nursing staff in this case) involved in the patient's healthcare.
Leaving blanks on forms	The system could be designed such that fields are compulsory to fill in, reducing the incidence of forms not being completely filled out.
Adding late entries	The system could be designed such that the current date and time is logged, with the ability for the healthcare professional to add the actual date and time of the entry or mark it as a late entry.

Table 1: Common documentation entry errors in nursing and how a tablet system of patient health records is able to address these issues.

Currently, vital signs are monitored and written down on paper before transferring onto the electronic patient record system. This method provides a source of human error on transcribing from the measurement device to paper then from paper to the computer. It is also a lengthy process and often the lag time between vital signs measurement and updating of NEWS scores on electronic patient record systems is high. Current vital signs monitoring practices are reported by nurses to be time-consuming and overwhelming [7]. The issue of human error and lag time of updating records can easily be solved by tablets which can be used to connect directly to the monitoring devices. As soon as vital signs are measured, the information can be immediately updated on the electronic patient record system. Abnormal NEWS scores may more quickly be identified and alerts sent directly to relevant health professionals.

Furthermore, the need for the nurse to inform Outreach may be eliminated if the Outreach team and relevant doctors are directly informed of any abnormal NEWS scores and deteriorating patient vital signs which require urgent action. The results can be viewed from the Outreach team and healthcare team from any location and the patient's conditions can be assessed immediately. This allows faster healthcare intervention, if required. This safety alert system has also shown to be effective in minimising drug prescription errors associated with illegible handwriting for drug doses and human error of drug dose prescriptions [8].

The use of tablets of course also has many disadvantages to consider. For one, with such a portable system of healthcare information, the tablet devices may easily be stolen, lost, misplaced or damaged. Whether the use of tablets can effectively be implemented in modern day-to-day patient care needs yet to be pilot-tested to identify the frequency of such problems arising and therefore whether the use of tablets is viable in practice. However, the information being available centrally means that a lost tablet will not lead to the loss of health care information. Security and protection methods need to be considered if tablets are to be incorporated in practice.

If, however, the central data system is compromised due to hardware failure, virus or malware attacks or if the data encryption system fails or is compromised, patient healthcare information may be accessible by unauthorised individuals. If these health record systems are to be properly implemented in the NHS, the topic of data storage and security must therefore be carefully considered to avoid such unfortunate events from occurring.

The implementation of such system will have high initial costs as it will require new hardware systems such as tablet systems, data storage systems, network and server systems and servers and. Other costs involved include security and staff training. There may be a discrepancy in communication between trusts or services who implement this new system and trusts or services which continue using paper medical records. Therefore, for the NHS to function properly as truly paperless, an transition initiative needs to be considered carefully to overcome this huge challenge.

Whether the use of tablet systems impact patient to doctor relationships must be considered since this is one of the most important factors in consultations and overall healthcare experiences of the patient. A systematic review study on the impact of medical record use on the doctor-patient relationship and communication showed no impact [9].

The use of tablets being used for all patient notes, drugs charts and NEWS scores shows a promising future in the NHS. The potential advantages of this system in providing efficient healthcare, minimising errors, addressing confidentiality issues, addressing issues of medical record access, and the system of safety notifications all lead to improved patient outcomes. With every system, there is bound to be some disadvantages. In this particular case, the practicality of such systems, initial costs and effective implementation in the NHS need to be considered. If these major issues can be addressed, using tablets for patient healthcare records shows a very promising potential for the future in the NHS.

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