Driving Reform: Digital Health is Everyone's Business A. Georgiou et al. (Eds.) © 2015 The authors and IOS Press. This article is published online with Open Access by IOS Press and distributed under the terms of the Creative Commons Attribution Non-Commercial License. doi:10.3233/978-1-61499-558-6-134

The Relationship between Using Electronic Health Records and Meeting Accreditation Standards for Client Safety in Residential Aged Care Homes

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Abstract. This study aims to identify the benefits of using electronic health records (EHR) for client safety in residential aged care (RAC) homes. The aged care accreditation reports published between 27 April 2011 and 3 December 2013 were downloaded and analysed. It could be seen from these reports that only 1,031(37.45%) RAC homes in Australia had adopted an EHR system by 2013. 13 RAC homes failed one or more accreditation standards. Only one of these was using an EHR system and this one met the accreditation standards on information systems. Our study provides empirical evidence to suggest that adopting and using EHR can be one of the effective organisational mechanisms to meeting accreditation standards in RAC homes.

Keywords. Electronic health records, EHR, nursing documentation, safety, risk, residential aged care, long term care, nursing home

Introduction

According to the International Organisation for Standardisation (ISO), EHR is a repository of patient data in digital form, stored and exchanged securely, and accessible by multiple authorised users. It contains retrospective, concurrent, and prospective information and its primary purpose is to support continuing, efficient and quality integrated healthcare [1]. Many residential aged care (RAC) homes have introduced electronic health record (EHR) systems [2] to standardise the structure and process of nursing documentation in order to improve the quality and efficiency of documentation, to comply with nursing and accreditation standards and to meet legal requirements [2].

Although there appears to be a high potential for EHR to contribute to improving client safety in aged care, empirical evidence is required in order to validate this claim. Previous studies have found a number of benefits of EHR, which may indirectly contribute to resident safety [3-6]: They can provide healthcare workers with faster access to enter data and retrieve health information than traditional paper based records [7], a benefit that is particularly useful in emergency situations [5]. They can improve communication between nurses and residents and among care staff, facilitate compliance with nursing procedure and improve efficiency in information management and education [2]. An EHR system that integrates decision support functions and

guidelines can provide support for treatment and care [7]. It can also provide easy access to test results in order to alert nurses to possible risks to residents' health [8]. An EHR system with an alert function about adverse drug interactions can reduce medication errors [9]. This study aims to provide the empirical evidence necessary to validate the relationship between EHR and client safety.

The Australian government implements its accreditation system through the Aged Care Standards and Accreditation Agency, Ltd, an Australian company limited by guarantee by the Minister for Mental Health and Ageing [10]. Accreditation is the internationally recognised evaluation process used in many countries to assess the quality of care [10]. Accreditation reports provide a relatively comprehensive and authoritative coverage of the performance of a RAC home by auditing whether the aged care services in the home meet the safety standard established by the Australian government [11]. The accreditation standards in Australia are detailed in the Quality of Care Principles 1997 [10]. According to the Australian Institute of Health and Welfare, the definition of safety is "avoidance or reduction to acceptable limits of actual or potential harm from healthcare management or the environment in which healthcare is delivered" [12]. Homes which want to pass aged care accreditation are required to have: effective information management systems, accurate and appropriate or required information, timely information, monitoring mechanisms, an evaluation system to monitor changes, and an appropriate care plan. It must be able to identify gaps in resident care and/or in the communication process [11]. As these factors are all related to client safety, this enabled this study to use the results of aged care accreditation reports as indicators as to whether the aged care services in a RAC home are safe or not.

1. Materials and Methods

This study takes the approach of secondary research using the published aged-care accreditation reports at the website of the Aged Care Accreditation Agency (www.accreditation.org.au). The primary accreditation reports were produced between 27 April 2011 and 3 December 2013.

In order to identify whether a RAC home had one or more items which failed to meet accreditation standards, the key words 'not met' were used to search each report. In order to identify whether a RAC home used EHR or not, the following key words were used in Section 1.8. Information Systems. In the documents a RAC home submitted to the Accreditation Agency the search terms used were: 'electronic clinical plan', 'electronic clinical documentation', 'electronic clinical information', 'electronic care plan', 'electronic care documentation', 'electronic care information', 'electronic care information', and 'electronic health record'.

In order to aggregate the information, the reports were grouped into four categories: met all the standards and used EHR, met all the standards but did not use EHR, did not meet the standards but used EHR, and did not meet the standards and did not use EHR.

A chi square test was used to identify whether there was a statistically significant difference in meeting accreditation standards among the above four groups of RAC homes. SPSS version 21.0 (SPSS inc., Chicago, IL, USA) was used to conduct the analysis. A detailed in-text analysis was conducted on the RAC homes that did not meet one or more accreditation standards.

2. Results

2.1. The Difference in Meeting Accreditation Standards between the RAC Homes that Used an EHR System and Those which Only Used Paper Records

2,741(99.5%) of the 2,754 RAC reports which were audited by the accreditation agency during the period of January 2 to December 3, 2,013 met the 44 accreditation standards. Of them, 1,031(37.4%) used an EHR system for client health and personal care information management. The remaining 1,710(62.59%) used paper for information management.

Only 13 (0.5%) RAC homes failed to meet one or more accreditation outcomes, and only one (7.7%) of these 13 RAC homes used an EHR system for client health and personal care information management. The remaining 12 (92.3%) of the 13 RAC homes relied on paper-based systems. The result of a Pearson Chi-Square test shows that the RAC homes that had EHR in place were significantly more likely to meet accreditation standards than those that did not (p = 0.026). This evidence supports the claim that EHR can contribute to meeting aged care accreditation standards.

2.2. The Accreditation Outcomes that the RAC Home that Used EHR Fail to Meet and the Reasons for the Failure

Although the only RAC home using an EHR system failed to meet more than one accreditation outcomes, it did not fail in information systems, but in Accreditation Outcome 1.6 Human Resource Management and Outcome 2.4 Clinical Care.

The reason for the first failure was that the management had difficulty replacing staff on sick-leave or absence, causing a lack of adequately and appropriately skilled and qualified staff. The reason for the second failure might also relate to their deficiency in human resource management because of a lack of effective mechanisms to monitor staff work practices.

2.3. The Accreditation Outcomes that 12 RAC Homes that Only Used Paper Records Failed and the Reasons for the Failure

Of the 12 RAC homes that used paper records, nine failed in Accreditation Outcome 1.8 Information Systems. Six failed in 2.4 Clinical Care, 2.7 Medication Management, or 2.13 Behavioral Management. Five failed in 2.8 Pain Management or 2.10 Nutrition and Hydration. There were also six homes which failed in 1.6 Human Resource Management.

The three homes that failed to meet certain accreditation outcomes but met the standard on information systems all failed 2.13 Behavioral Management. In addition, one home failed other two outcomes: 2.4 Clinical Care and 2.8 Pain Management.

For the nine RAC homes that failed Accreditation Outcome 1.8 Information Systems, five also failed in 1.6 Human Resource Management, or 2.4 Clinical Care, or 2.7 Medication Management, or 2.10 Nutrition and Hydration, or 2.13 Behavioral Management. Four homes failed in 2.8 Pain Management.

The reasons for these failures are a lack of effective information management, accurate, appropriate or required information, and inappropriate care planning. The required information was not provided in time. A lack of an effective evaluation system fails to monitor changes in residents' health status in time. One home did not complete

incident reports, or failed in monitoring mechanisms and audit systems. Some homes could not identify gaps in resident care or communication process failure.

2.4. The Inferior Practices Identified for the RAC Homes that Used an EHR System and Met the Accreditation Standards

1,030 RAC homes that used an EHR system did meet age care accreditation standards. Three (0.29%) of these homes, however, received negative comments about performance. One of them was requested to develop and implement effective monitoring systems, suggesting the usage of EHR did not automatically improve the monitoring mechanism in a RAC home. Some inferior practices were identified in RAC homes that used paper records and met the accreditation standards.

There were 1,698 RAC homes which used paper records and met aged care accreditation standards. Ten of these homes, however, were requested to improve their monitoring mechanisms. It appears that more RAC homes (0.58%) that used paper did not have effective monitoring mechanisms than their peers which used an EHR system (0.10%). The possible reason is that the 'alert' functions in the common commercial EHR systems designed for RAC can effectively remind the nursing staff about the timeline for the re-assessment of healthcare needs of a resident and the development of new care plans. This overcomes the challenges in monitoring residents' health status and does so better than paper-based systems.

3. Discussion

This research has synthesised the results of 2754 accreditation reports published between 27 April 2011 and 3 December 2013 in order to identify the potential relationship between use of EHR and resident safety. We found that EHR systems had already been adopted as information systems by 37.4% of RAC homes in Australia by 3 December 2013. The RAC homes which had adopted EHR were significantly less likely to fail the accreditation standards. This provides the empirical evidence to support our proposition that EHR contributes to resident safety.

Paper-based nursing documentation is time-consuming and records are often illegible. Often, data must be entered several times, and this has the potential to cause inconsistency and/or error. It is also not easy to retrieve or update such data. Such difficulties have been identified as a major cause of stress and dissatisfaction among nurses in aged care [1]. These challenges might also be the root cause for the failed performance in information management by the RAC homes that used a paper-based information system. For example, inaccurate and inappropriate information might be caused by inadequate information capture, which would hinder nursing judgment and cause inappropriate care planning. The substantially better performance in aged care accreditation by RAC homes that used EHR suggests that many problems associated with paper-based records can be resolved by the use of well-designed EHR systems.

The literature shows that EHR systems have great potential to mitigate or avoid risk factors and enhance client safety [3-6]. For example, the ability to quickly enter and retrieve data at multiple computers scattered over an aged care facility will motivate busy nursing staff to enter more data [1], and this will lead to an improvement in the accuracy and timeliness of information. This will again lead to an information system that can provide more accurate feedback, and improve communication among care staff. An alert in an EHR system can remind nursing staff of changes in resident status and help them to follow up with these changes. These benefits will obviously facilitate compliance with nursing procedure and improve efficiency in information management and education.

The limitation of this study was the nature of any secondary study, with all the findings drawn from analysis of Aged Care Accreditation reports. We can only identify information about whether an EHR system was used in a RAC home in the accreditation reports, but we cannot ascertain the nature and extent of usage of the EHR system by nursing staff. As only 13(0.5%) of the RAC homes failed the accreditation standard, the relationship between the use of EHR systems and the quality of aged care services cannot be determined by evidence collected from this information source alone.

4. Conclusion

There is a paucity of research evidence on the impact of EHR on the performance of RAC homes. By synthesising the accreditation results of 2,754 RAC homes between 27 April 2011 and 3 December 2013, this study has proved that the use of EHR can improve the opportunity for a RAC home to meet accreditation standards for information systems. Although the quality of aged care is determined by strategies used in many different areas of the home, our research suggests that the use of EHR can contribute greatly to quality care.

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