Chapter 14
Lessons Learned from the Implementation of an Emergency Department Information System

Paraskevas Vezyridis
University of Nottingham, UK

Stephen Timmons
University of Nottingham, UK

Heather Wharrad
University of Nottingham, UK

ABSTRACT

Clinical information systems are increasingly used in emergency departments across the English National Health Service. The implementation outcome is unpredictable and success is not guaranteed. This study identifies facilitating social and technical factors for implementing an Emergency Department Information System. This is a qualitative study, using interviews with 28 emergency department clinicians, administrators and managers. Project management documents, user guides, design blueprints and internal reports were also analysed. Lessons learned include the importance of acquiring an established, customised and user-friendly system, attracting funding, establishing communication channels between stakeholders, developing detailed implementation plans and tailored training programmes, investing in peer-support, and analysing the workflow impact of the system. Socio-technical factors, both in and out of the hospital, influenced the success of the implementation. By being systematic in addressing these socio-technical factors certain implementation barriers can be overcome.

INTRODUCTION

Emergency departments (EDs) require sophisticated information technology (IT) for managing their complex operations. Despite a rather low adoption rate (Landman, Bernstein, Hsiao, & Desai, 2010),

introducing such clinical information systems can assist EDs in the provision of quality care (Aronsky, Jones, Lanaghan, & Slovis, 2008). EDs are thus well equipped to improve their efficiency (Baumlin & Richardson, 2006) through more accurate forecasting of demand and better resource allocation (Stuart, 2004). This is particularly true as patient volume, crowding and acuity continue to rise (Shapiro et al., 2010), whilst the number of inpatient beds decreases (Baumlin et al., 2010).

However, the outcome of the implementation of a clinical information system in practice is often unpredictable and success is not always guaranteed. Even in cases where failure in the process of deploying a system is attributed to specific technical inconsistencies or deficiencies, there are always issues and parameters outside the sphere of influence of IT staff that need to be considered; issues that are rooted in the organisation or in the surrounding social environment in which the system is designed to operate (Berg, 1998). There is also the issue of time. Hillestad et al. (2005) assert, for example, that for a system to prove its efficiency a widespread adoption is required. Only after a certain period of time, process changes, and resource reduction will the potential cost effectiveness or quality improvements become clear. Thus, it is necessary to consider both technology and the organisation as concepts that intertwine with one another to produce something new. Despite technology's capacity to act as an agent for change, organisational change is often a prerequisite for the deployment of new technologies (Grimson & Grimson, 2002). This is because it is the established organisational norms and values that provide the context of this interaction and, often, determine the outcome of the implementation (Berg, 2001).

In this chapter, the authors attempt to contribute to an increasing body of knowledge around the lessons that can be learned from these types of programmes. They studied an Emergency Department Information System (EDIS) for patient registration and tracking in an ED of a large University NHS hospital in England: the first clinical information system that was successfully implemented under the National Programme for Information Technology (NPfIT). They have previously identified clinical users' initial reactions and interacting concerns with EDIS (Vezyridis, Timmons, & Wharrad, 2012). Here, by adopting a qualitative approach, based on interviews and document analysis, the study evolved around the identification and analysis of the *wider* social, technical, economic and policy factors, conditions and processes that have impacted upon its initial diffusion. The particular research questions were:

- Why was this particular system selected for deployment? Was the selection of this system internal or external to the organisation process?
- How was this project initiated and how did this implementation proceed?
- What are the practical lessons that can be learned from this implementation?

BACKGROUND

Emergency Department Information Systems

First pioneered in Australia in 1994 (New South Wales Department of Health [NSW DH], 1998), Emergency Department Information Systems can provide EDs with computing capabilities for electronic *registration* and *triage*, real-time patient flow and care *tracking*, *charting* (time-stamped patient care documentation and continuity, remuneration, benchmarking and critical pathways), *referencing* (information about medications, interactions, diagnoses, treatments and best practices), *prescribing, order entry* and finally *discharging* (clinical and non-clinical information for discharge, follow-up instructions

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