Chapter 6: A New Framework for Implementing and Sustaining EAIRRS in Healthcare

6.1 Introduction

The previous two chapters used a model by Heeks et al (1999) to explore the barriers to implementing and sustaining an EAIRRS in healthcare through a questionnaire and semi-structured interview study. These data suggested that not all of the dimensions in the model are relevant. The purpose of this chapter is to extend the literature by proposing a new model for implementing and sustaining an EAIRRS in healthcare based on the research findings.

6.2 What constitutes a good model in quality management?

A myriad of 'frameworks' and 'models' was proposed in the quality management literature without first providing an operational definition for either. Researchers have often used the two terminologies interchangeably in different contexts. Some define 'framework' or 'model' through pictorial representation of diagrams, graphs, or flowcharts, while other define it as a set of ideas for one's judgement.

A 'framework' has been defined in the dictionary and by other researchers. As defined by the Cambridge Advanced Learner Dictionary (2005) 'framework' is '*a supporting structure around which something can be built; a system of rules, ideas or beliefs that is used to plan or decide something*'.

A positive framework should first assess the current state of the organisation, i.e. what an organisation does or is trying to do, followed by an analysis of the steps taken to do it in a correct sequence (Struebing and Klaus, 1997). A transparent and explicit framework should involve evaluating any new initiatives, proposals and recommendations with an appraisal in terms of validity and completeness, then some measure of relative value or worth should be assigned (Wilson et al., 1993). In the context of engineering and design, Mathaisel (2005) considered a framework as a facilitator in the unification of several disciplines in the change process to allow their combined use in the design process.

A ‘model’, on the other hand, is defined as imitation of something on a smaller scale (Chamber’s Dictionary, 2003). Steinmuller (1993) defined a ‘model’ as ‘*information on something, created by someone, for somebody, for some purpose*’. Comparing the definition of framework and model, it may be comprehended that model answers the query of ‘*what is the phenomenon of interest’*, whereas a framework answers ‘how to’ questions and provides a guideline or path to proceed forward in the implementation of ‘phenomenon of interest’ (Yusof and Aspinwall, 2000).

6.3 Main Research Findings

The ITPOSMO model (Heeks et al 1999) identified information, technology, objectives and values, staffing and skills, management and structure, resources and time as dimensions which can differ between system conceptualization to system implementation. This section will explain how the research findings can be triangulated to inform and develop a new model which extends and departs from the socio-technical model (Heeks et al 1999).

The questionnaire was based on the ITPOSMO model. The main findings from the questionnaire were that consultants, managers, and nurses all had positive attitudes about responsibility for reporting adverse incidents. All respondents indicated that the design and collection of information collected by DATIX was adequate but medical consultants had more negative attitudes and perceptions than managers and nurses in this respect. All respondents expressed negative attitudes about the amount and type of feedback they received from reporting, and consultants expressed more negative attitudes about how DATIX is managed than managers and nurses.

The topic areas for the semi-structured interviews were also based on the ITPOSMO model but the findings of the questionnaire informed the development of interview questions. A thematic analysis of the interview notes yielded seven main themes:

1) Leadership and Engagement,
2) Training, Staffing, and Skills,
3) Information and Technology,

4) Work Pressure and Time,

5) Feedback,

6) Under-reporting, and

7) Data analysis.

Table 6.1 compares the main findings from the questionnaire and semi-structured interviews by technical and socio-barrier.

Barriers	Questionnaire Survey	Semi-structured Interviews
Technical barriers		
Information and Technology	-Usefulness of DATIX for improving patient safety (questions 3x,4x,6x,10x,13x); neutral views expressed by all groups but consultants had the most negative views -Adequacy of DATIX for reporting and recording adverse incidents (questions 9,11,12); neutral views expressed by all groups, no differences between groups	-Information was regularly presented at directorate clinical governance and risk committees. -Information ownership: 'It's not clear who owns the information, the patient, reporter, clinician or organisation, it's a bit of a mess.'
Data Analysis and Technology	-How information from DATIX informs the organisation (questions 8, 14, 15); consultants had more negative views than nurses and managers -Electronic system was perceived to be an improvement on the paper system -Use of DATIX on a continuous and hospital-wide basis (1, 2x, 7); consultants had more negative attitudes than nurses and managers	-All groups perceived reporting to be a time-consuming activity -One director argued that the organisation was limited on staff skills to analysis the data recorded: 'organisation is limited in staff with analysing skills.' -No other occupational groups raised data analysis as an issue. -All occupational groups agreed that the electronic system was better than the paper system: 'No I'd stick with electronic. I mean in terms of collating data, looking at trends all of that sort of stuff it's a no brainer.' -Medical staff wanted to use their old internally developed system

Barriers	Questionnaire Survey	Semi-structured Interviews
Socio-barriers		
Leadership	-Trust (questions 41, 41x, 44x); all groups reported that they trusted their line management with respect to reporting incidents and using DATIX non-punitively. There were no differences between groups -Reviewing and checking use (questions 51,53x); neutral views for managers and nurses, slightly negative views for consultants. Consultants' views were more negative than nurses.	-Managers at all levels were frustrated by the lack of leadership and engagement of directors: 'Frustrated that senior clinicians and consultants do not take part in training and rely on nursing staff to complete. Directors did not use DATIX despite having direct computer access themselves but instead relied on admin staff.' One director stated,' 'I am returning this as I do not have any detailed knowldge of Datix.' Another director stated, '' I don't use Datix system' and yet another director stated, I am returning this (Questionnaire) as I do not have any detailed knowldge of Datix.' -Managerial / Leadership roles and responsibilities not clear with respect to incident reporting and recording: ''I am aware of the system. I understood from those who have used it had it is a pain in the backside. I am not aware of any good coming from it.I have never personally used it.'
Training, Staffing, and Skills	-Received training on DATIX (question 31); Nurses and managers had positive about receiving training whereas consultants had significantly more negative attitudes	-Medical staff did not attend DATIX training and they were not held accountable for non-compliance: 'Consultants are reluctant to take up training. Training.' -Ease with which the system can be used is dependent on training and experience with the system. -Nurses and managers thought that reporting has led to increased workloads: 'I think it has increased the workload to an extent, in the sense that it is relatively bureaucratic to put that information in and for somebody then to follow that up and my understanding is that in a fair proportion of instances there's not maybe a huge amount of action actually falls out of it.'

Barriers	Questionnaire Survey	Semi-structured Interviews
Attitudes & Values about reporting	-Responsibility for reporting (questions 22,23,24); all groups reported positive attitudes about responsibility for reporting. There were no differences between groups	*-All groups perceived reporting to be a time-consuming activity: 'I have used the Datix system to log clincial incidents. I have found the system quite cumbersome and the drop down box lists have not always seemed approriate. This has proven particularly true in obstetric setting-where we already had a good system of clinical incident reporting.Nurses and managers expressed frustration that many medics did not report incidents and did not consider it as part of their role / responsibility* *-Non-clinical staff had to report directly to their line manager for reporting an adverse event.* *-Medical staff thought that the reporting system was a management control tool: 'System is seen as a management tool by medical staff.'* *-Nurses and managers thought that medics' attitudes about reporting / using the system were consistent with the medical culture*
Feedback	-Feedback (questions 48,49); All groups reported negative attitudes about receiving feedback. There were no differences between groups	-Managers expressed concern that directors did not provide feedback and hold medical staff accountable for non-compliance. -Nurses complained that their managers did not feedback results of the investigations and the actions taken: 'Staff often complain that they do not hear back about incidents. They should be made aware that it is line managers duty to investigate incident and inform staff of findings'.

Barriers	Questionnaire Survey	Semi-structured Interviews
Under-reporting	-Analysis of adverse incident reporting data found that the proportion of Consultants using DATIX to report incidents was significantly lower than that of Managers and Nurses.	-Nurses and managers recognised that there was under-reporting across the four hospitals which was caused largely by lack of feedback: 'Any system is only worhwhile if all employees comply with its use, there continues to be under-reporting from clinical staff in particular the medics.' -Medical staff recognised that they contributed to under-reporting on DATIX but did so in response to be being perceived as a management control tool

Table 6.1: Barriers from Questionnaire Survey and Semi-structured interview

6.4 Proposed Model

By triangulating the findings from the questionnaire and interview studies, four common barriers can be identified. These are:

1) Information and Technology,
2) Attitudes and Values,
3) Training, Staffing and Skills, and
4) Leadership and Feedback.

Figure 6.1 presents these four barriers in a new model which extends but departs from Heeks et al's model. Most noticeably, Heeks et al (1999) do not identify which of their seven dimensions are socio and / or technical but argue that theirs is a socio-technical model. This section shall explain how the research findings inform the development of a new socio-technical system model for implementing and sustaining an EAIRRS in healthcare. In so doing, one technical barrier and three socio-barriers are proposed.

6.4.1 Information and Technology

This section presents the findings about the technical barrier, Information and Technology. This finding is consistent with Heeks et al's model (1999) in that both information and technology are identified as dimensions in their model.

The questionnaire survey identified that medical staff expressed neutral views on the design of the information collected and presented. The questionnaire also indicated that all other groupings had positive attitudes about the information collected.

The questionnaire and semi-structured interviews also highlighted that it was not clear who owned the information reported on DATIX (e.g. does a patient own information?), 'It's not clear who owns the information; the patient, reporter, clinician or organisation. It's a bit of a mess.' The semi-structured interviews highlighted that consultants found the questions difficult and challenging; 'I find some of the questions on the Datix system confusing such that I find it difficult to know what to put in that particular field.' One semi-structured interview with a director argued that

the organisation had not sufficient skills to interrogate and interpret the data available in the organisation.

The semi-structured interviews implied that there were also mixed views within the consultant grouping, 'I'd stick with the electronic system rather than the paper in terms of collecting data. Looking at trends all of that sort of stuff it's no brainer.' All occupational groups clearly identified the benefit of an electronic system over paper throughout the semi-structured interviews. The semi-structured interviews similarly indicated that the nurses and managers remained frustrated that medical staff received the information but did not act on it.

The organisation implemented the EAIRRS so that they could capture adverse incidents and establish trends in order to take corrective action and hence improve patient safety. In order to achieve this, the right conclusions need to be drawn from the data collected but directors noted that the 'organisation is limited in staff with analysing skills.'

6.4.2 Attitudes and Values

'Attitudes and values' about reporting is one of three socio-barriers identified in this research. This barrier is a slight departure from Heeks et al's model (1999) which identified objectives and values as one of their seven dimensions. The questionnaire survey found that all participants had positive attitudes about responsibility for reporting but that they had slightly less positive attitudes about how incident reporting could improve patient safety. Implicit in the proposed model is that strategic organisational objectives (improving patient safety by increasing the quality and quantity of incident reports) need to be aligned with espoused organisational values (incident reporting is important for improving patient safety) and staff attitudes (about reporting).

Where the proposed model departs from Heeks et al's model is in its wider consideration of attitudes about reporting. Attitudes can predict behaviour (Fazio & Olson, 2003) and, therefore, this model recognizes that attitudes about reporting are an important antecedent to reporting behaviour. For example, medical staff viewed

reporting on DATIX as ‘management control over their activities’. One doctor commented that, ‘I am aware of the system. I understood from those who use it had it is a pain in the backside. I am not aware of any good coming from it. I have never used it’.

The nursing staff expressed positive attitudes about reporting as they recognized its importance in the patient care process. One nursing ward manager argued that, ‘I would welcome feedback or shared learning from incidents in order to prevent further incidents.’

Finally, other occupational groups were aware that consultants have negative attitudes about reporting. One midwife argued that the medical staff ‘don’t think they think it’s their job to report; two I think they think the midwives are going to do it anyway because the midwives do, you know nurses and midwives do it for them; and three I don’t think they think it needs to be reported’

6.4.3 Training, Staffing and Skills

‘Training, staffing, and skills’ is the second socio-barrier identified in this research. This barrier is a slight departure from Heeks et al’s model which identified staffing and skills as one of their seven dimensions. Where the proposed model departs from this model is in its consideration of training.

The questionnaire survey revealed that nurses and managers had received training whereas consultants had received none. The semi-structured interviews and subsequent examination of the training attendance records showed that medical staff were offered training but did not attend training. The semi-structured interviews also found that NHS Health Board directors were ‘reluctant to take up training.
Because it is quicker and more efficient than the paper system, the EAIRRS has increased workloads associated with reporting, recording and acting upon adverse incidents. Training was provided with regard to the benefits of the EAIRRS and how to use it, and some staff recognised that the EAIRRS became easier to use the more familiar they became with it.

6.4.4 Leadership and Feedback

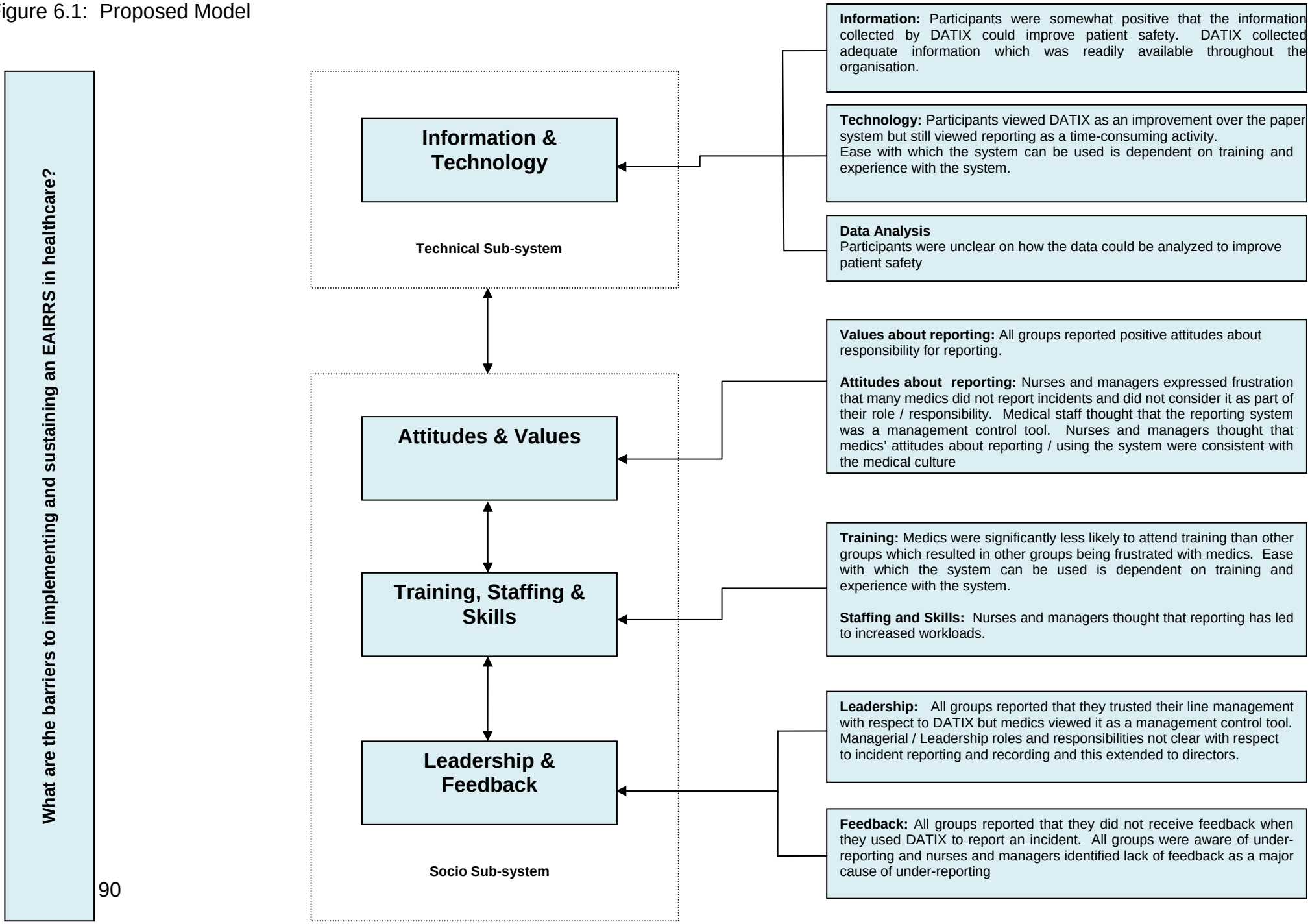
'Leadership and feedback' is the third socio-barrier identified in this research. Although Heeks et al. (1999) identified management and structures as one of their seven dimensions, the proposed model recognizes a need for leadership in all occupational groups and at all levels in order to motivate / inspire staff to report incidents. The semi-structured interviews found that leadership roles and responsibilities for mangers (clinical and non-clinical) were not clear with respect to incident reporting and recording. It was also found that directors were not providing leadership with respect to reporting. The wider management literature (e.g. Schein 1990) argues that senior managers (i.e. directors) need to provide leadership in order to manage/change the culture of an organization. Directors decided to implement DATIX mainly in part to foster a culture of patient safety. The lack of leadership with respect to reporting which was found here led to frustration across all levels of management.

Leadership and feedback were also found to be an interlocking issue. The questionnaire and semi-structured interviews found that all occupational groups did not receive feedback after making a report on DATIX. Many nurses expressed sentiments like 'line management do not always come back to us with the outcome of the investigation'. The semi-structured interviews found evidence which attributed this lack of feedback to under-reporting. Another reason for under-reporting was the fear of blame, especially among medical staff. A senior medical consultant stated that 'I think people writing a DATIX incident feel that blame will be apportioned for that particular incident. I think we still whether we like it or not, in a blame sort of culture. I think unless you can change that and show that there are benefits to having a system like DATIX that will highlight and identify problems that we have in systems and give us guidance in how to correct those. Until you make that link then and make it very clearly and do away with the blame side of things, I think it's going to be difficult to get medical staff on board.'

The wider literature on safety culture (e.g. Burns et al., 2006) argues that trust is needed in order to integrate a reporting culture, a just culture and a learning culture

(the sub-components of a safety culture) into a safety culture. They argue that providing workers with rapid and useful feedback after they report incidents should increase their trust in management and reinforce reporting behaviours, thus, allowing the organisation more opportunities to learn from its shortcomings.

Figure 6.1: Proposed Model



6.4.5 Summary of Proposed Model

This model proposes four barriers (one technical barrier and three socio-barriers) which interact in a socio-technical system. The one technical barrier identified by the research was Information and Technology. The three socio-barriers identified were: Attitudes and Values, Training, Staffing and Skills, and Leadership and Feedback. Figure 6.1 shows that the three socio-barriers interact with each other as part of the socio-sub-system and that the socio-sub-system interacts with the technical sub-system to form a socio-technical system.

6.5 Limitations of the Proposed Model

The first limitation of the proposed model is that it was developed from research in one Health Board. Further research needs to be conducted in other Health Boards in order to determine the extent to which the model is reliable (i.e. to determine whether the same barriers would emerge). This would depend in part on whether those Health Boards were implementing the same EAIRRS (i.e. DATIX) or another electronic system.

The second limitation concerns how the model could be validated. The model assumes that improving / removing the four barriers and jointly optimizing the technical and socio-sub-systems will lead to improvements in patient safety. Consistent with the socio-technical systems approach, the proposed model also assumes that technical barriers affect socio-barriers as much as socio-barriers affect technical barriers. The model also assumes that within each sub-system, each barrier is of equal weight. Further research needs to be conducted in order to determine how to measure improvements in the proposed barriers. For example, it would be easy to measure improvements in training on the EAIRRS by measuring the number of people who attend training. Assuming that training is effective, this may lead to increased reporting on the EAIRRS but this in itself may not improve patient safety; therefore it is unclear whether increased levels of reporting are appropriate measures of improvement in training.

Finally, with the development of new technology, new socio-technical barriers to implementing and sustaining an EAIRRS may emerge. Thus, the proposed socio-technical systems model should not be thought of as static.

6.6 Chapter Summary

This chapter proposed a new socio-technical systems model of the barriers to implementing and sustaining an EAIRRS in acute healthcare. This model proposes four barriers:

1) Information and Technology,
2) Attitudes and Values,
3) Training, Staffing and Skills and
4) Leadership and Feedback.

The limitations of the model and some associated questions for further research were considered. The practical implications of the model and associated further research questions will be presented in Chapter 7.