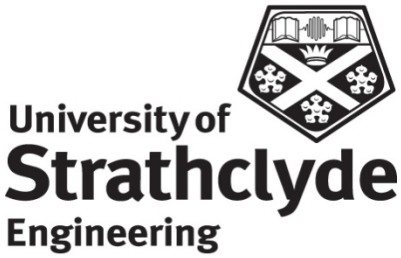

What are the Barriers to Implementing and Sustaining an Electronic Adverse Incident Recording and Reporting Management System in an Acute Healthcare Organisation?

KERRY J. WALSH

Thesis submitted for the Degree of PhD

2012

DEPARTMENT OF DESIGN MANUFACTURE AND ENGINEERING MANAGEMENT

UNIVERSITY OF STRATHCLYDE

GLASGOW, UK

Declaration of Authority and Author Rights

This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of degree.

Signed:

Date:

Dedication

To my darling wife Sue who, despite her stroke, has continued to encourage me in this endeavour and my two boys Daniel and Robert for their unconditional love and support.

Acknowledgements

I am indebted to an army of people who have helped and guided me through the course of the studies that form the foundation of this thesis.

Clinicians and managers, who work in NHS Ayrshire and Arran, have helped in the construction and application of the research methods. I am equally indebted to members of staff who have been interviewed and have taken the time from their busy schedules to share their experience and knowledge.

My gratitude and respect are also extended to my Director of Studies, Professor Jiju Antony. Without his direction, enthusiasm, guidance and support this would not have seen the light of day. I would also like thank personally Dr Calvin Burns, for his steadfast patience and identifying deficiencies and flaws in my arguments and drafts. I am grateful to Dr Stephen Greep and Mrs Fiona McQueen who had the insight to support me on this endeavour and having the understanding when I struggled with competing demands as a part-time student.

Finally I am grateful to Dr Carol Haraden, Vice President, Dr Robert Lloyd, Executive Director for Performance Improvement and Dr Rocky Perla, Fellow, all of the Institute for Healthcare Improvement (United States of America) for sharing their experience. To Dr Paul Barack, Professor and Director of the New South Wales Risk Management Research Centre (Australia) who challenged me in relation to the research findings and testing of the new proposed model for implementing and sustaining an Electronic Adverse Incident Recording and Reporting System in Healthcare based on the research findings.

I am eternally grateful to you all.

Abstract

Patient safety is an important topic for policy makers, health service clinicians and managers, and researchers. One way that many organisations are trying to improve patient safety is by incident reporting but they are meeting with limited success. The question this dissertation investigates is "What are the barriers to implementing and sustaining an Electronic Adverse Incident Reporting and Recording System in an acute healthcare environment?" As part of answering that question, this dissertation develops a socio-technical systems model of those barriers.

A mixed methods approach (questionnaire survey and semi-structured interviews) was used to investigate the research question. By triangulating the findings from the questionnaire and interview studies, one technical barrier and three socio-barriers were identified. The technical barrier was Information and Technology, and the three socio-barriers were: 1) Attitudes and Values, 2) Training, Staffing and Skills, and 3) Leadership and Feedback. A model was then proposed which posits 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.

The overarching implication of the proposed model is that an NHS organization cannot just purchase a commercial Electronic Adverse Incident Reporting and Recording System and expect improvements in patient safety. The principle of joint optimization requires that changes to the socio- and / or technical sub-system be considered concurrently. The proposed model offers opportunities for future research such as investigating barriers to reporting in other national healthcare contexts and other high risk industries.

Table of Contents

		Page No
Declaration of Authority and Author Rights		i
Dedication		ii
Acknowledgements		iii
Abstract		iv
Table of Contents		v
Appendices		viii
List of Tables		x
List of Figures		xii
Abbreviations		xiii
Chapter 1: Introduction		
1.1	Background	1
1.2	Reporting Systems	1
1.3	Barriers to reporting	8
1.4	Electronic Reporting System	9
1.5	Research Question and Objective	10
1.6	Dissertation Structure	10
Chapter 2: Adverse Incident Recording and Reporting Systems		
2.1	Introduction	12
2.2	Adopting new (electronic) technology for recording and reporting adverse incidents in healthcare	12
2.2.1	EAIRRS in different health specialities	14
2.3	Barriers to implementing and sustaining reporting systems in healthcare	15
2.3.1	Technology	15
2.3.2	Data analysis and data collection	17
2.3.3	Leadership and blame	17
2.3.4	User groups' attitudes to reporting	19
2.3.5	Lack of engagement	21
2.3.6	Accountability	23

2.3.7 Communication and feedback 24
2.4 A Socio-Technical Systems Approach 26
2.5 Heeks's ITPOSMO Model 28
2.6 Justification for adopting Heeks's Model 31
2.7 Chapter Summary 31

Chapter 3: Research Methodology

3.1 Introduction 32
3.2 Research Philosophy 32
3.3 Research Design and Methods 34
3.3.1 Research Design 34
3.3.2 Methods 35
3.3.3 Questionnaire Survey 36
3.3.4 Semi-structured interviews 36
3.4 Organisational Context: NHS Ayrshire & Arran Profile 37
3.4.1 Justification for context 38
3.4.2 Datix electronic software system 42
3.5 Ethics 44
3.6 Limitations 45
3.6.1 Hawthorn effect 45
3.6.2 Gaining access 45
3.7 Chapter Summary 46

Chapter 4: Questionnaire Survey Development & Findings

4.1 Introduction 47
4.2 Developing the Questionnaire 47
4.2.1 Questionnaire Content and Format 47
4.2.2 Pilot testing the Questionnaire 48
4.3 Method 48
4.3.1 Participants 48
4.3.2 Procedure 49
4.4 Results 50
4.4.1 Objectives and Values about reporting 50

4.4.2 Design and information 51
4.4.3 Attitudes toward management of Datix 53
4.4.4 Attitudes toward Training 54
4.4.5 Reporting behaviour 55
4.5 Chapter Summary 56

Chapter 5: Semi-Structured Interviews & Findings

5.1 Introduction 58
5.2 Developing the Semi-structured interviews 58
5.2.1 Interview Schedule 58
5.2.2 Pilot Testing the Interview Schedule 61
5.3 Method 61
5.3.1 Participants 61
5.3.2 Procedure 62
5.4 Results and Analysis 63
5.4.1 Leadership and Engagement 65
5.4.2 Training, Staffing and Skills 67
5.4.3 Information and Technology 71
5.4.3.1 Security 72
5.4.3.2 Paper or electronic 72
5.4.4 Work pressures and time 73
5.4.5 Feedback 74
5.4.6 Under reporting 75
5.4.7 Data analysis 76
5.5 Limitations and Reflections on the semi-structured interviews 76
5.6 Chapter Summary 77

Chapter 6: A New Framework for Electronic Adverse Incident Recording and Reporting Systems

6.1 Introduction 78
6.2 What constitutes a good model in quality management? 78
6.3 Main Research Findings 79
6.4 Proposed Model 85

6.4.1 Information and Technology 85
6.4.2 Attitudes and Values 86
6.4.3 Training , Staffing and Skills 87
6.4.4 Leadership and Feedback 88
6.4.5 Summary of Proposed Model 91
6.5 Limitations of the Proposed Model 91
6.6 Chapter Summary 92

Chapter 7: Conclusion

7.1 Introduction 93
7.2 Practical Implications of the model 93
7.2.1 Information 94
7.2.2 Technology and Data Analysis 94
7.2.3 Attitudes and Values 95
7.2.4 Training, Staffing and Skills 95
7.2.5 Leadership and Feedback 95
7.3 Limitations 96
7.4 Questions for further research 97
7.5 Conclusion 98

References 99

Appendices

1 Questionnaire 109
2 Information sheet 124
3 Consent form 125
4 List of publications from doctoral research 127
5 Selected publications 131

List of Tables

Page No.

Chapter 1: Introduction

1.1 WHO (2005) Characteristics of successful Reporting Systems 3

1.2 Recommendations to WHO (2005) member states 5

Chapter 3: Chapter 3: Research Methodology

3.1 Overview of the EAIRRS process 43

Chapter 4: Questionnaire Survey Development & Findings

4.1 Demographics of the sample by main occupational groups 49

4.2 Hospital staff's views on Objectives and Values 51

4.3 Hospitals staff's views on Design and information collected by Datix 53

4.4 Hospitals staff's attitude towards Management 54

4.5 Hospitals staff's attitude towards Training 55

Chapter 5: Semi-Structured Interviews Development & Findings

5.1 Number of times a participant mentioned a theme 64

5.2 Training by profession and non-clinical for entering an adverse incident on to the system 68

5.3 Training by profession and non-clinical for undertaking an investigation into reported adverse incident on to the system 69

5.4 Training by profession and non-clinical for undertaking data base tuition 70

Chapter 6: A new framework for the implementing and sustaining EAIRRS in healthcare

6.1 Barriers from Questionnaire Survey and Semi-structured interviews 81

List of Figures

Page No.

Chapter 2: Adverse Incident Recording and Reporting Systems

2.1 The ITPOSMO Model Dimensions of change healthcare information system proposals 30

Chapter 3: Research Methodology

3.1 Heeks et al (1999) Model of healthcare information system 34

3.2 NHS Health Boards in Scotland and site of research 38

3.3 Adverse incidents across four hospitals from 2005-2009 41

Chapter 6: A new framework for the implementing and sustaining EAIRRS in healthcare

6.1 Proposed Model 90

Abbreviations

AIMS	Advanced Incident Management System
DOH	Department of Health
EAIRRS	Electronic Adverse Incident Reporting and Recording System
IOM	Institution of Medicine
IRAMS	Information Reporting and Management Systems
ITPOSMO	Information, Technology, Processes, Objectives and values, Staffing and skills, Management Systems and Structures; and other resources time and money
NAO	National Audit Office
NHS	National Health Service
SPC	Statistical Process Control
SPSS	Statistical package for the social sciences
WHO	World Health Organisation