

# **A Study of the Benefits of Benefits Realisation**

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A dissertation submitted to the University of Dublin,  
in partial fulfilment of the requirements for the degree  
Master of Science in Health Informatics

2010

## Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work, and has not been submitted as an exercise for a degree at this or any other university.

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## ***Acknowledgements***

Deep and sincere gratitude to my wife Orla and children Aisling, Aoife, Fionn and Oisín who always understood as I disappeared off to my laptop or books uttering the fatalistic word ..... “study!”

To my nursing colleagues in the Nursing Action Research Group who enthusiastically supported the research endeavour with such dedication.

And

to Professor Jane Grimson for her practical and cheerful guidance.

## **Summary**

The smooth introduction of an Electronic Patient Record into a psychiatric hospital to entirely replace paper based clinical treatment and care recording is both a daunting and exciting challenge. Clinical and other users may not have been engaged in the initial decision-making process to 'go *electronic*' and yet they are the end users of a new system. Although the benefits of Electronic Patient Records are well established it is also well known that many information technology (IT) driven projects fail to reap the expected benefits. One proposition is to conduct Benefits Analysis / Benefits Realisation Planning to determine the expected benefits and how these will be achieved.

This study charts the processes and outcomes involved in generating a Benefits Analysis / Benefits Realisation Plan amongst a group of nurses, of various clinical and administrative grades comprising the Nursing Action Research Group, utilising Action Research as the methodology.

This Nursing Action Research Group completed a benefits realisation plan over six weeks prior to the release of a new Electronic Patient Record (EPR) component. Following the implementation of the new EPR element the group reconvened, reflected on and evaluated the process.

The outcome and evaluation by the Action Research Group on Benefits Realisation Planning is that this was a meaningful activity which increased the group members understanding of the drivers and expected benefits from an Electronic Patient Record and of how the benefits would be achieved. The process of Benefits Realisation Planning also contributed to group support for the introduction of Electronic Patient Recording. Benefits Realisation is a process the Nursing Action Research Group would recommend.

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## **Abbreviations**

AHLTA	Armed-Forces Health Longitudinal Technology Application
DoHC	Department of Health and Children
EHR	Electronic Health Record
EPR	Electronic Patient Record
HSE	Health Service Executive
ICT	Information and Communication Technology
iPMS	National Programme for IT
ISO	International Standards Organisation
IT	Information Technology
PACS	Picture Archiving and Communication System
PAS	Patient Administration System
SEC	Software Engineering Cycle
UK	United Kingdom
USA	United States of America
VistA	Veterans Health Information System and Technology Architecture
WHO	World Health Organisation

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# Chapter 1

## 1. 0. Introduction

The smooth and successful introduction of an Electronic Patient Record to entirely replace paper based clinical recording into a psychiatric hospital is quite a challenge. Initial strategic decision making may not have engaged the end users and yet success depends on the system being fully utilised to achieve benefits. Although the benefits of Electronic Patient Records are well established it is also well known that many Information Technology (IT) driven projects fail to reap the expected benefits.

This study charts the processes and outcomes involved in generating a Benefits Analysis / Benefits Realisation plan amongst a group of nurses, the Nursing Action Research Group, in one psychiatric hospital to ascertain the value of Benefits Realisation planning. The benefits realisation plan was generated over six, weekly meetings which occurred immediately prior to the release of a new Electronic Patient Record element. The final evaluation occurred on the seventh meeting and concluded that Benefits Realisation Planning was a meaningful activity to the group which contributed to increased understanding and commitment to the introduction of the Electronic Patient Record.

### **1.1. *Why this question (motivation)***

**Rationale:** The strategic decision to implement National Electronic Health (EHRs) or local Electronic Patient Records (EPRs) is made from the top down as the sponsor must be prepared to invest considerable financial and other resources. Similarly many Information Technology (IT) projects commence because of drivers or strategic determinations made at a point far removed from the end users. But many IT dependent projects fail. The literature suggests that

undertaking benefits analysis can pave the way towards realising value and achieving benefits.

The decision to implement a whole-scale integrated Electronic Patient Record in a Dublin Psychiatric Hospital was certain to impact on current workflows and practice yet many end users had not had an opportunity to determine what benefits or challenges this would engender. Utilisation of the EPR to the potential envisioned was essential if expected value was to be achieved. Communication of the strategic plan to implement an EPR had been thorough and was well established and understood. The expected benefits had not been articulated or documented by users, particularly clinicians. End users, however, are crucial to the success of the strategic plan as the IT investment only achieved value if benefits were actually realised.

This aim of this study was to determine the value to end users of undertaking a Benefits Analysis in relation to one element of an Electronic Patient Record prior to its implementation.

## **1.2. *When is success not success***

There are many examples of efficient, delivered-within-budget, completed IT projects that fail to deliver the anticipated benefits. Marchand and Peppard (2008: 26) for instance cite numerous studies and reviews which found that only 10% of companies / organisations saw IT investment as delivering high returns, while 74% of Information Technology projects did not deliver the expected value. Tiernan and Peppard (2004: 610) argue that the reason why so many 'successful' IT implementations fail to live up to expectations is due to inadequate or absent planning of how the benefits will be achieved. Or put another way, if it is not established why a system is being implemented it cannot achieve expected benefits except by accident (Finlay, 2008).

This research explores the benefit of engaging end-users to complete a benefits analysis / benefits realisation plan in relation to the introduction of an EPR element into nursing practice using Action Research as the methodology.

The Action Research cycle led to the *planning* and implementation of six research processes to explore the changes and benefits involved in moving to electronic recording, the *action* of utilising the electronic patient record, the Mental Health Information System (MHIS), and establishing commitment to ‘allow, help and make it happen’ (successful EPR uptake and use), the *observation* of these actions (self and others) and *evaluation* (of the Action Research cycle, the Benefits Analysis process and its value).

### **1.3. Relevance**

St John of God Hospital had set an objective of implementing an Electronic Patient Record to be adopted and utilised proficiently by all clinicians within the hospital to record all patient care. Internationally there is strong evidence of the benefits of Electronic Health / Patient Records but there is also evidence of under-utilisation, of clinician reluctance to adopt e-health solutions and of failure to reap the promised benefits offered by EPRs.

The methodology used in this research is participative and inclusive and the findings will be of direct value to the organisation and perhaps other organisations similarly contemplating or in the process of implementing an EPR.

## **1.4. EHR / EPR Definitions**

The terms EPR and EHR should be understood as in the National Health Information Strategy, 2004; EPR represents the electronic patient record, this corresponds with the record normally maintained by the individual clinician / health service provider and currently maintained on paper by most tertiary health service providers in psychiatry in Ireland (DoHC., 2004).

For the purposes of this research the scope of a complete EPR shall be deemed to have the following minimum component features:

1. Patient Administration System (PAS) interoperability,
2. Database interoperability,
3. Appointment scheduling, attendance recording, admissions booking
4. Clinical Note entry (assessments [medical, nursing, other disciplines] of psychiatric / physical / emotional state, risk assessment and management)
5. Diagnosis, recording of clinical progress (contemporaneous and reports),
6. Patient management at ward, out-patient, day patient, specialist centre or programme level,
7. 24 hour availability to users (clinicians, pharmacists, nurses, medical secretaries, administrators, etc),
8. Access and Security features to comply with data protection laws and requirements and best practice.

Note 1: Items 3-8 are the minimum requirements as would be found in the paper clinical records of any patient undergoing treatment or care within Irish psychiatric services; additionally the EPR must provide:

9. Multi-site interoperability,
10. Computerised physician order entry – (laboratory investigations).

Note 2: The actual MHIS EPR contained many more implemented and planned elements.

The electronic healthcare record (EHR) is a larger entity than the EPR. It is frequently described as a ‘longitudinal record’ and is potentially capable of recording all health care including immunisations, investigations and treatments over the individual’s life span and potentially from many different healthcare providers (DoHC., 2004).

Thus the EHR is not only a larger record but is potentially a record shared across health service providers and utilised by primary physicians (General Practitioners) and secondary and tertiary health care specialists. In some countries the EHR is also accessible to and utilised by the patient who can choose and book services (UK), view and determine who has accessed their EHR and alter demographic details to update information such as contact phone numbers and address changes etc (for example – Denmark and Estonia).

In practice however, the EHR is rarely utilised as a ‘cradle to the grave’ record but more as in the ISO 20514 definition as a ‘repository of retrospective, concurrent and prospective information ... in computer processable form’ (ISO, 2003) which “usually does not contain life-long health data” (Dobrev et al, 2009: vi). Thus information maintained in the EHR is current, comprehensive, may also include *some* historical and future health data such as pending appointments, investigations, and expected treatment outcomes and is sharable to a limited or extensive degree depending on the organisation/purpose (Dobrev et al, 2009).

## **1.5. The Mental Health Information System**

### Origins

St John of God Hospitaller Order in Ireland provides a range of community and hospital based services in both mental health and intellectual disability settings. In relation to this study the area considered is adult mental health particularly in relation to the Electronic Patient Record known as the Mental Health Information System (MHIS).

The idea for an electronic *clinical support* suite to suit the needs of St John of God Hospital, the *Mental Health Information System*, was first mooted in 1994/5. The idea was born out of the evident success of the patient administration system begun twenty years earlier which managed electronic patient billing, appointments and admissions.

Recording practice at the time consisted of all notes being hand written within a clinical file. It was extremely difficult to find essential information quickly, especially if the file consisted of several volumes, had been incorrectly filed, mislaid or was maintained and stored in an alternate setting to the current requirements such as in a community hostel when required by hospital registrar etc.

A process of research commenced to evaluate what was in use elsewhere in the specialised area of Mental Healthcare records. The research discovered that nothing as conceived at the time was available in Europe or the USA.

Within two years the concept within St John of God Hospital had developed towards the creation of a fully integrated Electronic Patient Record. The EPR would provide complete and detailed clinical information, stored electronically, available at all times to those with appropriate access.

Research indicated that there was no vendor product available to meet the needs as envisioned. So began a process of in-house development of the Mental Health Information System (MHIS).

By 2002 the first MHIS electronic patient record components were tested and released into the live environment and in 2005 the large system went live in the community psychiatric services managed by St John of God Order. The vision has always included a fully operational EPR that clinicians can access, (as needed and subject to authorisation / access rules), across community and hospital services. Continual funding and development has led to this becoming a reality in 2010.

## **1.6. Scope**

The Mental Health Information System is an existing fully operational EPR. 2010 will see the introduction into St John of God Hospital of many of the EPR processes already in place in the community psychiatric setting but in a format relevant to the workflows and procedures of hospital practitioners. The MHIS will continue to operate across a shared platform with full integration with other existing administrative systems (accounting, payroll, billing /insurers etc).

## **1.7. The research question**

Is benefits analysis an aid to nurses in achieving benefits from an EPR implementation in psychiatry?

The research (Davidson 2009, Dobrev et al, 2009, Peppard, 2009, Marchand, 2008, Peppard, 2007, Eilenfield, 2006, Stroetmann et al, 2006, Ward, 2006, Hillstad, 2005, Scholl, 2004) suggests that insufficient attention paid to organisational and social factors may lead to IT ‘solutions’ that do not realise benefits. The introduction of the MHIS into a hospital setting posed four possibilities; exploring one aspect of change with the group primarily affected, testing of the hypothesis that benefits analysis contributes to benefits realisation,



generating research knowledge and finally learning as an organisation through participative research with those directly engaged with utilisation of the organisational strategic changes in practice.

It was an organisational goal to successfully implement this EPR. An imperative for the hospital was to achieve gains from the investment. Yet the users knew very little about how it would affect their practice for better or worse. A focus on delivering to the hospital on the technical specification received of what the EPR should do might have been viewed as an achievement by the developers and sponsor. However, if the system was not appropriately utilised it would not lead to realising the hoped for benefits (Dobrev et al, 2009, Stroetmann et al, 2006). Furthermore if these benefits were never understood, articulated, planned for, how could any measurement of gain or benefit ensue?

The research question therefore sets out to explore whether the process of generating a Business Benefits Analysis by users would indeed lead to benefits.

Secondary questions are:

- What are the benefits identified if any?
- Was the process deemed of value by the action research group?
- Would the action research group recommend this as an approach to others?

## **1.8. Overview of dissertation**

In this dissertation the motivation for the research project undertaken and the broad areas of interest are established in Chapter 1. In the next chapter the nature of the research interest, which is achieving benefits from IT, is explored further and a definition of benefits analysis provided. The case is made for the necessity to invest in understanding organisational and social conditions through planning and preparation with the end users of *what benefits* and *how* benefits will be achieved; which ultimately lead to formation of a benefits realisation plan. Information is provided next on analytical models and a rationale provided for the choice of benefits analysis model used for the study. Chapter 3 describes the MHIS element implemented which partly shaped the judgement of the action research group of the value of a Benefits Analysis. Chapter 4 is the literature review and provides a background in relation to the subject matter of EPR/EHR implementations in several European countries and the USA. This is followed in Chapter 5 by a rationale for and detailed explanation of the methodology used throughout the study which is Action Research. The actual research study is presented next in Chapter 6 whilst Chapter 7 concludes the study with a presentation of the research findings, discussion, evaluation and acknowledgement of limitations of the study, recommendations and conclusion.

## **Chapter 2 Benefit**

### **2. *Business investment not IT investment***

It has been known for decades now that business / organisational changes that involve information technology as fundamental components run a high risk of failure (Hirscheim, 1985). Part of the reason for this is perhaps an overemphasis on technical and financial management and insufficient attention to social and organisational impacts (McDonagh and Coughlan, 2001, Reason and Bradbury, 2001). Implementation of ICT may well act as a catalyst in transforming healthcare (Stroetmann et al., 2006, Harno, 2008) but the benefits hoped for from this catalyst must be carefully planned for and understood if they are to be realised (Menachemi et al., 2007, Peppard et al., 2007, Marchand and Peppard, 2008). Equally it is true that qualitative benefits without consideration of the actual financial costs are not sustainable and will ultimately fail (Peppard et al., 2007, Peppard, 2009). It is important to have a detailed understanding of to whom the benefits of IT investment will accrue in order to calculate return on investment (ROI) (Menachemi and Brooks, 2006). In short, initiation of IT into healthcare should be viewed as a business investment not an IT investment and the benefits and beneficiaries of this investment and of how the return on investment will be achieved must be clearly understood.

IT benefits management is defined as the process of actually realising the potential benefits of IT through organisation and management (Peppard, 2009). In other words the achievement of benefits in healthcare must be undertaken as a business investment in which IT plays a significant part but, it is organisational change, new skills, new ways of working and utilising e-health that achieves the improvements

(such as in access to quality health care and increased efficiency / productivity) not the mere presence of IT.

There are now so many examples of IT utilisation in health care returning value from investment; for instance the use of electronic rather than postal referrals in Denmark was demonstrated in one study to save considerable time for people off work and waiting to be medically reviewed, the savings alone in enabling return to work faster were considerable (Cannaby et al., 2004). European wide studies examining the health impacts of EHRs, electronic prescribing, tele-triage, information management and other IT solutions applied in the healthcare arena prove the considerable financial, health and quality improvement value of IT e-health implementations (Stroetmann et al., 2006, Dobrev et al., 2009b).

### ***2.1. Change in practice leads to benefits***

Many studies exploring the benefits of IT in relation to the health industry highlight economic and other benefits particularly in such areas as improved efficiency and safety, reduction in medical errors and litigation costs, prevention and management of chronic disease, quality improvement and measurement and cost savings directly related to electronic communication (Cannaby et al., 2004, Johnston et al., 2004, Hillstad et al., 2005).

Economic comparisons of gains are made between the other industries that heavily invested in IT infrastructure and use such as the retail, telecommunications and financial industries and the health industry; which permit estimation of potential return on investment and savings (Hillstad et al., 2005). In the US potential savings from increased IT use in health care are calculated as \$23 billion to Medicare and \$3.2 billion to private payers per year (Hillstad et al., 2005). California alone could save \$3.2 billion after costs, if computerised physician order entry were implemented and used state-wide (Johnston et al., 2004). IT can reduce preventable costs, for example, postal referral

takes longer than electronic referral resulting in increased days off work for the patient, an average of 1.33 days longer, annual savings of €84 million may be derived from e-communication of referrals (Cannaby et al., 2004).

Other benefits are construed in non-financial terms such as social and quality benefits (Dobrev et al., 2009b). These broad terms such as social benefits can be understood for example, in terms of better informed citizens, patients and carers, improved convenience and choice and improved quality such as more efficient, timely and seamless care, improved patient safety and effectiveness of care (Stroetmann et al., 2006).

## **2.2. Who reaps the benefits?**

The 2009 European Commission EHR Impact study of socio-economic benefits of interoperable electronic health records found on average benefits accrue as follows:

17% to citizens,

17% to clinicians

61% to health provider organisations and

5% to third parties (Dobrev et al., 2009b).

Some of the most commonly cited benefits of EHR and EPRs are cited in Table 1 below.

**Table 2.1. Commonly cited benefits of Electronic Patient / Health Records**

<b>Type</b>	<b>Benefits</b>
Improved Quality	Improved: care, efficiency, safety, timeliness, access to health care, avoided waste, decision making, knowledge availability, optimisation, convenience to users, reduced stress, increased clinical attention, alerts and reminders
Increased Speed	Referral, diagnosis, treatment, access, retrieval of records, information
Practice Improvements	Improved: workflow, productivity, labour saving, information at point of care and when needed, flexible access, security, use of research / evidence based best practice, compliance (guidelines and protocols), standardised practice, secure e-mail, information re-use, clinical audit, clinical decision support, electronic test results, electronic prescribing, collaboration, integrated care, improved coding.
Reduction in:	Errors, wait times, known adverse drug reactions, paperwork, filing, file retrieval, lost records, lost results, physical storage space, costs of paper / supplies, staffing (for chart management), transcription costs, risk (minimised harm / potential), duplicate tests, length of stay, disease prevention / management, robust inexpensive storage
Sources:	(Johnston et al., 2004, Hillestad et al., 2005, Miller et al., 2005, Barron et al., 2006, Mladek et al., 2006, Stroetmann et al., 2006, Holbrook, 2007, Thompson et al., 2007, Arnold et al., 2008, HIMSS, 2008, Dobrev et al., 2009b, Dobrev et al., 2009a, Zaroukian, 2009)

What is also clear however is that IT of itself has no *inherent* value (Stroetmann et al., 2006, Peppard et al., 2007). It is only through utilising IT, as part of a business strategy, that benefits from IT will be realised but to do this effectively the business benefits and the necessary changes must be considered, planned and implemented. IT is only one part of this process (Dobrev et al., 2009b). The implementation of EHRs / EPRs must engage all stakeholders, reduce and overcome resistance, manage organisational change, through understanding and working with the social and political factors which restrain and enhance acceptance and use (Scholl, 2004, Barron et al., 2006, Mladek et al., 2006, Stroetmann et al., 2006, Marchand and Peppard, 2008, Dobrev et al., 2009b).

In order to determine the benefits to be realised, the business practices and changes that must occur and the role of IT in this business process it is important to choose a suitable analytical model. The next section outlines the rationale for the model chosen for this study.

### **2.3. Choice of benefits analysis models**

In this section some of the most common medical and business analysis models are presented, in brief, and a rationale presented for the choice of the Cranfield University model, the model used in this study.

There are numerous Benefits / Analytical models to choose from ranging from those familiar to physicians to those utilised by financial analysts. Some models are predominantly aimed at enhancing medical decision making in relation to outcome for example, whether to chose chemotherapy or surgery. These models provide a means to calculate (based on experience, probabilities and evidence), the beneficial outcomes of particular treatments for particular patients. The cost of treatment / intervention may or may not be a factor here.

Other models focus on establishing cause and effects through simulations, mathematical models, algorithms or decision trees. These are widely used in areas such as engineering, IT, mathematics, finance etc and essentially help make predictions on the outcome of decisions given the effects of variables on various scenarios (Forbes, 2010). They can also be used to enhance medical decision making.

Two of the commonest business analytical models are cost benefit analysis and cost effectiveness analysis.

Cost benefit analysis is a method of assigning monetary values to benefits and costs and comparing the two whilst cost effectiveness is concerned with what will be most effective (not necessarily the cheapest) and provide the best outcomes. Both the UK (Treasury Green Book) and Germany (WiBe) agree cost benefit analysis as an appropriate analytical methodology and tool for measuring investment impact on health care (Dobrev et al., 2009b). Return on Investment (ROI) models are increasingly being used as a means to calculate benefits prior to spending.

Table 2. 2. on the next page lists and describes the purpose of some frequently used models.



**Table 2.2 Analysis models**

<b>Analysis name</b>	<b>Purpose</b>	<b>Primarily financial measure</b>	<b>Primarily clinical / value measure</b>
Cost benefit analysis	Attribute financial value to costs & benefits and compare ratios Often excludes values which cannot be measured in economic terms	Yes	
Cost effectiveness analysis	This analysis compares the costs and effects of various courses of action. It is often used in healthcare where it may be inappropriate to put a monetary value on health outcomes. Frequently gains are measured in quality adjusted life years (Qualys) not primarily measured in monetary terms (ACP, 2010).		Yes
Stakeholder value or cost benefit analysis	The exact model is developed by users. The formula is: Estimated costs (minus) Estimated benefits/ value (tangible and intangible) = adjusted by provider user system utilisation & stakeholder value or return on investment (Rodgers, 2009)	Mixture of cost benefit / quality / other value added benefits analysis	
Value Frameworks	This is not a model but more a construct of benefits to measure the gains from IT. It is described as “The sum of ITs financial, clinical and organisational benefits” (Johnston et al., 2004).		
Monte Carlo simulation	This is a method of calculation applied to areas of significant uncertainty where an analytical calculation is not possible due to gross complexity. To use this method a quantitative model of the business activity, risk, process or change must be developed. Then simulations using random sampling of parameters are calculated by computer (thousands of “what if” scenarios analysed) or across spreadsheets and the results analysed	Simulation To aid decision making (financial & non financial)	

	(Solver.com, 2009). In health Monte Carlo simulations can be used to predict outcomes (survival) for large cohorts of patients (Sanders, 2009)	
Markov Model	<p>Markov models hold that the patient is in one finite state at a time but in transition between health states (well, ill, dead for example). This can be represented (modelled) as a decision tree.</p> <p>A decision tree graphically represents points at which decisions can be made (decision node) and points at which chance determines outcome (chance node) each branch leading to a terminal node (the final outcome).</p> <p>This is a mathematical model and works by establishing the state of a system and then computing distribution probabilities of moving from one state to a new state. This model has been used in engineering, medicine, and in IT system analysis (Sonnenberg and Beck, 1993). In health measurement can be based on survival rates in years or in quality of life years (QUALYs) (Sanders, 2009)</p>	Probability model to aid decision making (non financial)
Sensitivity Analysis	<p>This is another mathematical model that can support decision making and enhance understanding by modelling the effects of varying the input variables (uncertainties) on outcomes (Sanders, 2009). Sensitivity can aid a deeper understanding by calculating the effects on outcomes of probabilities and assumptions (Dobrev et al, 2009).</p>	Can be used across a multi-spectrum to generate financial, effectiveness or probabilities to aid decision making.
Custom built models or bespoke analysis such as Probit Regression models, Extrapolation models	<p>These are specifically tailored models built to investigate particular phenomena within the framework or parameters of interest to the analysts. This is a methodology used in two significant EU studies (Dobrev et al, 2009 and Stroetman et al, 2006).</p>	Financial or health

ValIT	This is a vendor product from the information systems audit and control association (ISACA) which provides an investment decision framework (management practices) in relation to benefits realisation from IT investment.	Portfolio governance, management and investment strategy based on financial / project management skills set
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A consideration by this study author was to source an analytical model that was appropriate, suitable for purpose, one that could readily be understood and rapidly applied. The model chosen was the Cranfield IT Benefits Management Model (Peppard et al., 2007). This model met the criteria of being flexible, suitable, rapidly understandable, focused on benefits, change and the role of IT; as distinct from being a purely medical or financial outcome focused model.

Whilst cost benefits analysis is a useful model in relation to measuring impact of financial investment / business changes / IT investments, a consideration of costs of the programme was not deemed to be part of the action research group remit. Furthermore information in monetary values in relation to EHR/EPR benefits is never entirely available from healthcare organisations because many benefits are intangibles and not routinely calculated statistically or financially (Dobrev et al, 2009). Therefore strict cost benefits analysis and similar models were not deemed suitable models for this study.

A guiding principle was to utilise the methodological frameworks of action research and the technique of rapid appraisal of the research group deliberations on benefits analysis. The model chosen was similar in many respects to the model used in the much larger action research study of the use of IT in central accounting (Scholl, 2004).

### ***The Cranfield IT Benefits Management Model***

The Cranfield model centres on the concept that it is organisational change and business improvement that produces benefits (Peppard et al., 2007). Articulating the business changes necessary and the role of IT is the key to realising benefits; a process known as Benefits Realisation Planning (Peppard et al., 2007). Several tools are utilised to clearly map what benefits are expected and how these will be realised. The tools include Benefits Dependency Network, Table 2.3 below, Stakeholder Analysis and Stakeholder Mapping (Marchand and Peppard, 2008).

The Benefits Dependency Network is a tool that maps the relationships between organisational Drivers, Objectives, Benefits, Changes, Enabling Activities and IT; see Appendix 2.8. By utilising the model to identify the dependencies under each heading and then linking them by arrows, clarification is reached as to how each is related and ultimately how benefits are to be achieved if the dependencies are met. IT for example, may enable change or new ways of working or lead directly to benefits by solving existing problems. Table 2.3 below provides an example where, in this instance, the objective to reduce preventable adverse incidents is enabled by an IT alert created in the EPR which raises clinician awareness of any known patient's allergies. This alert is dependent on the clinician using the system and creating the alert which required training in use of the EPR and change in practice.

The stakeholder maps and risk analysis tools help determine commitment of personnel to the project and to ascertain potential barriers and resistance. The Stakeholder Map simply asks individuals to graphically indicate their perception of the level of Benefits in relation to Change required of them whilst the Stakeholder Commitment requires text entry and graphical indication of perceived resistance, commitment and benefits please see Appendices 2.6 and 2.7.

Some processes or interim implementation stages in the course of benefits realisation may initially impede or slow down existing processes, these are described within the model as ‘Dis-benefits’ (Marchand and Peppard, 2008). The role of IT in contributing to benefits realisation is identified as essentially solving problems or using IT in innovative, new or different ways to achieve gains (Peppard et al., 2007).

**Table 2.3. Benefits Dependency Network**

IT enablers	Enabling Activities	Changes	Benefits	Objectives	Drivers
Alert pop up (allergies)	Training in use of EPR alert function	Clinicians use this function to indicate / check for known allergies	Reduction in harm to patients caused by clinicians (such as prescribing medication to which the patient has a known allergy)	Reduce preventable adverse incident occurrence	Risk Reduction
	→				
				→	
←					←

The Cranfield Model is plainly articulated and graphically very clear. The model was readily understood and applicable within the study time frame and more importantly within the overall ethos of the study methodology which is based on collaboration, empowerment and the research group as active participants. Too complex a model would have taken a longer time for the group to learn would not have been applicable within the study time frame and more importantly might have proved disenfranchising for some members. The Cranfield model was therefore deemed the most appropriate and accepted by the group.

## **2.4. Business Benefits Analysis Definition**

IT benefits management is defined as the process of actually realising the potential benefits of IT through organisation and management (Peppard, 2009). These benefits may be expressed in monetary value and or value added in non monetary terms (the organisations purpose ~ inclusivity/ accessibility / mission, values etc). The Business Benefits Analysis identifies and documents the drivers for the project, and sets out who will be impacted, who will be responsible for initiating, managing, supporting, evaluating and sustaining change and how and when the benefits are to be realised. The Analysis highlights the changes that must occur in practice, procedures, roles, and resource use and the enabling role of IT within these processes. The analysis clarifies that the introduction/ availability of an IT solution *of itself* does not bring benefits it is the appropriate use of the IT that brings benefits.

## **2.5. Benefits Analysis Vs System Requirements Specification & Software Engineering Cycles, IT processes**

The software engineering cycle (SEC) is a staged process which moves from consultation and scoping of a software solution to delivery of a product by the supplier to meet the specifications of the user. Within this cycle a system requirements specification is developed which sets out technically what the system will do. These processes do include consultation with project sponsors, clinicians and end users however the focus here is predominantly about developers gaining understanding in relation to design of how the system is used from a technical viewpoint (Marchand and Peppard, 2008).

The SEC does not address the social and organisational needs or views of users.

Benefits analysis is the process of gleaning a deep organisational understanding of the benefits expected and of how these will be realised.

This chapter provided a definition of Benefits Analysis, a rationale for the choice of Benefits Analysis model chosen and argued that benefits are achieved through business strategy and change in practices not just implementing IT facilities.

Chapter 3 to follow provides detail of the Electronic Patient Record element which was to be introduced immediately following the Nursing Action Research Group's completion of the Benefits Realisation Planning processes in order to inform and permit the reader to gauge the impact of this particular component on practice.

## **Chapter 3 The MHIS Element Implementation**

### **3. MHIS**

The Mental Health Information System (MHIS) is an Electronic Patient Record developed in house by St John of God Order Information and Communication Technology department. Access and use of the system is limited to St John of God personnel defined by service and role and controlled in accordance with stringent legislative and contemporary security protocols. In 1994 the idea of enhancing the then 20 year old electronic Patient Administration System (PAS) to a clinical support system led to the creation and launch in 2002 of the MHIS, a fully integrated Patient Administration System and Electronic Patient Record. Cluain Mhuire, described below, was chosen as the service into which the MHIS was first launched.

In relation to this study a group, the Nursing Action Research Group, convened in St John of God Hospital to consider the benefits of Benefits Realisation Planning in relation to Electronic Patient Records. The Group met prior to the release of one new MHIS element, the new MHIS EPR Viewer and then re-convened following the release to evaluate the benefits of Benefits Realisation Planning in relation to EPRs as a whole and in consideration of the release of this new element. To begin a baseline view of what already existed will be presented in order to establish the context of how important this release was.

The MHIS is an integrated EPR and has been implemented, operational and fully utilised by administrative and all clinical disciplines in the Cluain Mhuire Community Mental Health setting since 2002. Cluain Mhuire is a Health Service Executive (HSE) service and therefore a public service, which provides community mental health resources to the Dunlaoighre-Rathdown, Dublin South East catchment area. St John of God Hospital is a 210 bedded private



hospital providing mental health services on a nationwide basis and is sited within the Cluain Mhuire catchment area. Both the above services are administrated by the St John of God Order and the services are strongly linked as the hospital provides psychiatric in-patient treatment to Cluain Mhuire patients' and both services utilise the MHIS.

All the patient administration components have been in use in both the community mental health services and hospital since 1995. The clinical use of the system in the hospital was limited however. Clinically use consisted largely of internal electronic referral, through secure MHIS mail and the recording of summative data such as psychologist, occupational therapist, social work, medical and specialist programme reports and discharge summaries. Typically this information was then printed and stored in the paper based patient file. Use of the system by nurses was extremely low as the MHIS was not the primary care record and nursing department did not avail of the secure messaging potential.

2009 saw the introduction of the first element of the MHIS 'Ward Management Suite' for use specifically by nurses. This first in a suite of specific functionalities designed to enhance information availability for clinicians on wards and available electronically hospital wide, replaced the old physical 'white boards' with an electronic white board. Formerly white boards were mounted on ward walls, and displayed patient data such as patient name, treating consultant, bed number, sex, legal status, and a host of other information written in full or indicated by symbols with dry board markers. The symbol meanings were localised and varied in meaning from ward to ward. These boards were updated throughout the day as patient status and in-patient movement such as discharges, internal patient transfers, patient admissions warranted. As these boards were static and localised to establish information for example: in-patient numbers for the hospital in real time, required making a phone call to each ward.

The new MHIS ward management suite permitted a localised ward view of all the patient details, (as on the previous ward white boards), but also facilitated a hospital wide view of patient acuity and movement. Internal transfers, patients moving wards, were a simple matter of clicking on the patient's name, then drag and drop into the appropriate bed. It included a bed view, a detailed map of the ward bed layout and occupancy, temporary absences such as weekend leave, programmes patients were attending, the required frequency at which patients must be observed for their safety and a notes space for brief multidisciplinary notifications.

The significance of this was that it meant each and every clinical nurse was required to engage with the EPR, many for the first time. All nurses are issued on commencement of employment with St John of God Hospital with user identification and passwords to access ward and office PCs and the MHIS. Initially some nurses at clinical management level and almost the entire staff nurse cohort required their passwords to be re-established as these had never been utilised and had expired.

### **3.1. MHIS April release**

In the older MHIS version the EPR view could be entered in several ways. Directly entering the viewer required one to select the patient from a horizontal row of tabs: *'hospital'*, *'managed services'*, *'case management'* Figure <1 and 2 > below. A further mouse click opened the patient's demographics page. The new release was an enhanced Electronic Patient Record Viewer. This release improved upon the previous version by providing instant information, reducing the number of mouse clicks required and providing improved functionality Figure 3.1 and 3.2 screen shot of previous MHIS viewer below.

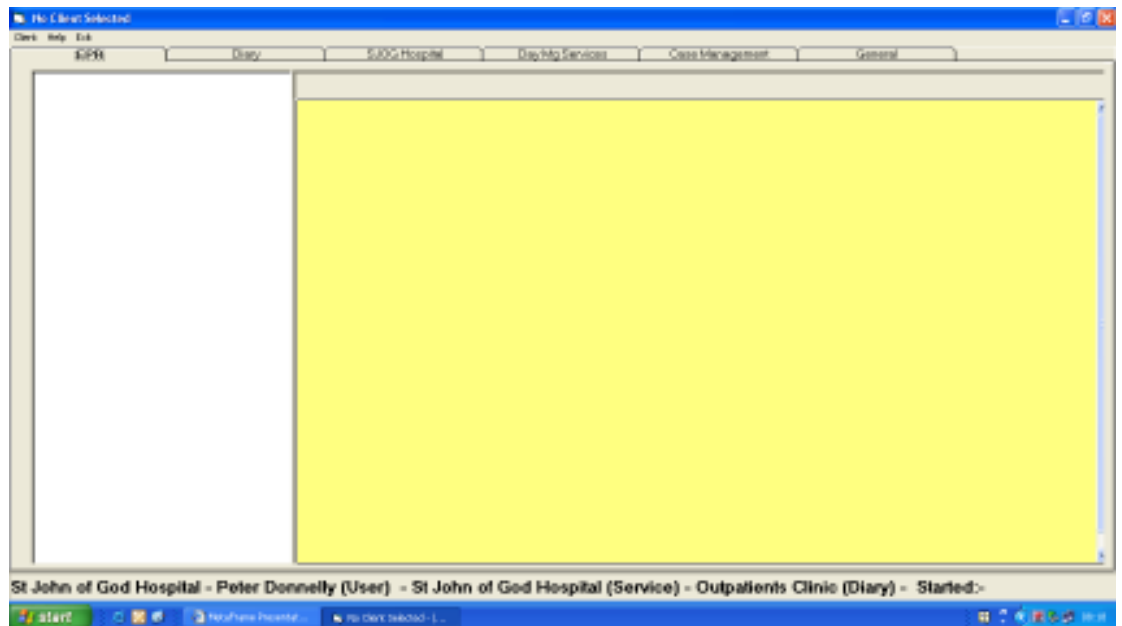


Figure 3.1 Previous MHIS EPR view

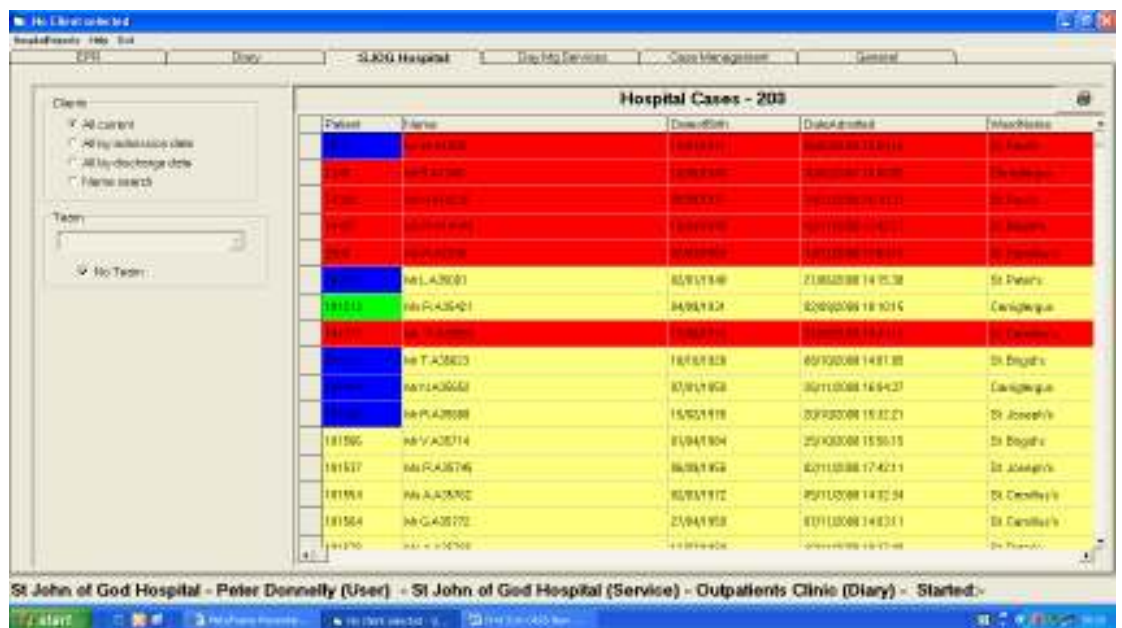
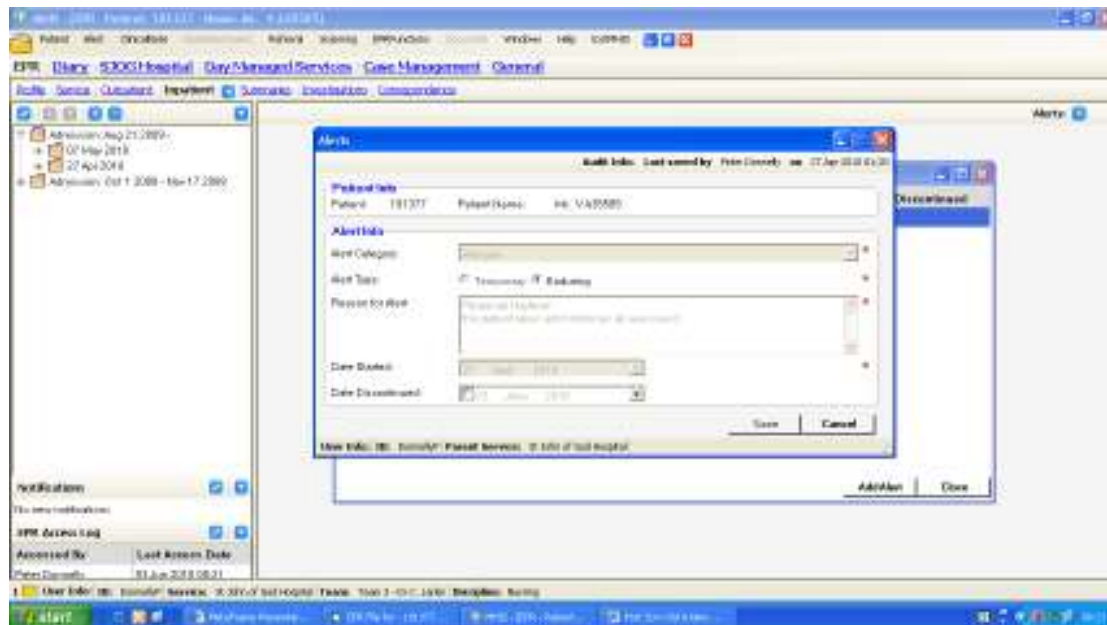


Figure 3.2 Previous MHIS Viewer showing all hospital in-patients

The new EPR viewer hosts many additional functions, provides information faster whilst requiring less navigation and presents a more modern look and feel, Figure 3.3 below.



**Figure 3.3 The new MHIS EPR viewer**

Some of the functions of the new viewer are briefly described below.

- Patient selection / patient profile (complete demographics)
- *New Alerts*: functionality to create alerts visible to all clinical users in relation to medical / medication / allergies or behavioural notifications which may be temporary or permanent in nature
- Service history / administrative information: details of every contact with service and every episode of admission to hospital or outpatient treatment
- Clinical notes: create and save clinical notes of all types, referrals, progress notes, transfer or discharge summaries, reports ...
- Dashboards: summative information including hospital occupancy by consultant team or program, reminder flags for documents not yet completed or authorised
- *New Notifications*: patient specific system generated alerts, prompts, reminders

- *New Access log*: the last 5 users to access the patient's EPR are displayed on screen,
- *New modification* Mail notification - Secure clinical messaging (now available from within the viewer)
- Investigations, correspondence, summaries (view these clinical notes)
- *New Filters* The EPR view can now be altered (filtered in four ways) Keyword searching; by note; by discipline, and by date
- View discharge summaries, laboratory results, referrals, diagnosis, clinical details.
- *New Template creator and Template editor*, design report and other documentation layouts for consistent data presentation and re-use by teams.

The importance of this release for nurses working in the hospital was that it built on the ward management view used by nurses into a more detailed knowledge of the EPR. This was a preparatory step towards full EPR use in the hospital, scheduled for late summer, when all aspects of treatment and care would be documented completely electronically from admission to discharge by all disciplines, a major change in nursing practice.

The immediate impact of this interim step was that all nurse managers were required to engage in the EPR implementation (including those not directly involved in the Action Research study); to promote awareness of full EPR use, to help identify future ward needs and to plan for consequent changes in practice.

The Nursing Action Research Group met on six occasions prior to this release to strategically consider the impact of these changes, to plan and devise a Benefits Realisation Plan and then met once again subsequent to the release to evaluate the processes involved.

The next chapter details the literature review undertaken and the findings from this in relation to EPR/EHR adoption and the use of benefits analysis in regard to EHR implementation.

## **Chapter 4 Literature Review & enquiry**

The purpose of the literature review was to determine how widespread is the use of Benefits Realisation Planning in relation to Electronic Health / Electronic Patient Records. A detailed review of the literature occurred prior to commencing the study and ongoing review of the literature was undertaken periodically throughout the research. Key steps and processes are outlined in brief below:

### **4. Search Parameters**

Literature searches were conducted at Trinity College and St John of God Hospital libraries and through the following databases: Web of Science / Knowledge; Ovid; Synergy; Cinahl; Psychinfo; National Council for Professional Development of Nursing and Midwifery: On-line Research database; Mental Health Commission: Research database; All Ireland electronic Health Library (ALeHL), Lenus, the Irish Health Repository and the Cochrane library. The review focused on Electronic Health/Patient Records, Action Research, Benefits Realisation/Analysis and analytical models.

The following Journals were interrogated: Action Research; International Journal of Action Research; Systematic Practice and Action Research; Journal of Health Informatics; MIS Quarterly Executive; Information Systems Research; and others as in reference list / bibliography

Search criteria & terms for Literature Search:

Action Research: “Action Research”, “Action Research & Information Technology”, “Action Research & Health”, “Action Research & Information Technology & Health”, “Action Research nursing”, “Action Research organisational change”, “Action Research approaches / methodologies / participative Action Research”

Benefits Analysis: “Benefits Analysis and change management,” “Benefits Analysis and Information Technology,” “Benefits Analysis Information Technology & Health,” “Benefits Analysis & Action Research,” “Information Technology & Health;” “Benefits analysis prior to,” “Benefits analysis and EPR /EHR / Electronic Patient / Health Records,” “Information technology and benefit”

Models: “IT analytical models,” “benefits models,” “cost benefit models,” “Sensitivity models,” Markov models,” and others as indicated in the main dissertation

Other searches / enquiries were made by e-mail or telephone to the Health Service Executive (HSE), Irish Nursing Midwifery Practice Development Association, Department of Health (UK), NHS UK, and NHS Direct

NHS Scotland

Welsh Assembly Government, NHS Direct Wales, Health of Wales, Mental Health Wales

#### **4.1. State of the Art**

This section expounds (non exhaustively) on the state of EPR/EHR use in USA and Europe in relation to benefits derived and the relationship of their relative success to use of a Business Benefits Analysis in as far as could be established.

##### **4.1.1. Ireland**

The Health Service Executive (HSE) is responsible for the comprehensive provision of health services to the Irish public since its inception in January 2005. The HSE is divided into 4 regions and 32 Local Health Offices. An enquiry of the psychiatric services within each of these regions to ascertain use of Electronic Patient Records



(EPR) revealed no complete EPRs in existence in Mental Health services. Some localised, partial EPR or Information Systems variously funded and often initiated as pilots or trial versions are in operation. However the systems identified are largely patient administration systems (PAS) which focus on demographic, contacts, appointment maintenance with or without various additional levels of clinical detail. Very few of these have moved from patient administration (PAS) to Electronic Patient Recording with details of actual treatment / care provided daily and patient response as would be found in the paper clinical record. None were found to operate within acute in-patient psychiatric hospital settings.

### ***WISDOM***

One joint Health Research Board and Health Service Executive project known as WISDOM is at the design 'proof of concept' stage with some early elements having been implemented and being tested in the HSE West Region, i.e. Donegal region (Geographical North West). This is a web based information system designed to assist the co-ordination of service provision across mental health services between mental health professionals in line with the strategic vision of the Department of Health and Children - A Vision for Change publication (Government of Ireland, 2006). It was conceived as a patient administration system, it does not hold clinical data but it is anticipated that future phases will include an EPR. Presently the system has the following modules: patient management module (demographics, medical / psychiatric history, alerts, risk assessments), letters module, messages module (create and accept referrals within Wisdom), scheduler (create, view update appointments) and a reports module.

This early stage however does not currently document the planning of and provision of care or record treatment administered. The elements were piloted, significant levels of consultation occurred prior to the

pilot roll out, but a Benefits Analysis / Realisation plan was not performed with system users in advance.

Nationally some attempts towards building infrastructure to support a national EHR have begun at three regions - North West, North East and Midlands, see Appendix 1; but again these are at the level of patient administration system utilising the Integrated Patient Management System (iPMS) from ISOFT (Hurl and Kenny, 2009). However as the report author puts it there is 'a long distance to travel' before a national EHR is operational (Hurl and Kenny, 2009:6).

Regionally elements of Electronic Patient Records have been introduced in mental health services, some by health boards prior to the establishment of the Health Service Executive, (for example Tullamore community mental health services), but again these are very limited in scope, users, access and none were found in operation within psychiatric hospital settings. Of those that were implemented whilst consultation occurred at design / development / system requirement specification stage, no benefits analysis occurred.

#### **4.1.2. England**

England is regarded as a world leader in relation to Electronic Patient Records with 100% computerisation of primary care and 4% of budget being spent on IT infrastructure (Arnold et al., 2008, Bainbridge, 2008). The English approach has been to invest heavily in creating the necessary standard based architecture, with a focus on connectivity and interoperability as a means to develop a national Electronic Patient Record. This is being delivered by the Department of Health agency known as NHS Connecting for Health through the National Programme for IT (NPfIT) (NHS, 2010).

The immediate emphasis is on populating patient information systems to produce a Summary Care Record which provides basic demographic information and details such as allergies, current

medication and prior adverse reactions and is available nationally through a centralised database known as the National Spine. This information is largely drawn from primary care (General Practitioner) records and is for use in the event of emergencies such as presentations at Emergency Departments or when requiring attendance by an on call doctor.

A larger conglomerate record with information from GP, hospital and other specialist care known as the 'Detailed Record' will be created over time as information is added will be held locally for use by those providing regular care (NHS-Direct, 2010). These two records will constitute in time the Electronic Health Record.

Electronic Patient Records in mental health were discovered by a literature search or enquiry phone calls to NHS Direct, National Programme for IT and the Department of Health. Two such are at Calderdale and Huddersfield and Cornwall. However further enquiry revealed these are largely implemented in community mental health settings or at pilot stage only. A new programme, Prison Health IT, has been commissioned and will include mental health records but is a long way from implementation as not even the infrastructural fundamentals are in place.

#### **4.1.3. Scotland**

There are many innovations in e-health in Scotland focused mainly on primary, general or emergency health. One Electronic Patient Record exists in Scotland which is fully integrated and utilised across hospital and community mental health care in Ayrshire and Arran. This EPR evolved from a bespoke community mental health patient administration system to a primarily clinical EPR incorporating PAS to meet the expressed needs of mental health professionals across both community and inpatient settings. The web based system is standard based and links General Practitioners, a range of community facilities

including centres / day hospitals, crisis intervention teams, doctor on call and acute psychiatric in-patient care hospitals. The system includes national care pathways, is recovery focused, utilises a recovery model (modified Tidal Model), recognised assessment tools and incorporates patient inclusivity through innovative modules such as patient diaries and recovery templates which are completed by the patient and entered directly into the EPR. Patient information is recorded in real time and use is made of tablet PCs to record patient data through wireless networks. The emphasis is on having readily available, meaningful information to professionals and all patient data is entered electronically (Personal communication 2, March 2010).

The evolving nature of this development was such that formal benefits analysis was not performed but a group of user innovators and champions liaised with the vendors and other users to design the system to meet the needs of clinicians.

#### **4.1.4. Wales**

The Welsh National Assembly has approached the procurement of an Electronic Health Record implementation in a different way to England. Smaller regional implementation built on interoperability, connectivity standards but reflecting local needs and incorporating local knowledge have been developed and are now being piloted (Informing Healthcare, 2010). The learning accrued from each implementation informs the following EPR implementation rollout.

Known as the Single Health Record there are four parts to this EHR; the Individual Health Record (Primary Care and accessible for use in Emergencies) and the Welsh Clinical Portal (hospital care provision records including demographics, tests, investigations, results, referrals, discharge summaries and incorporating elements of the primary care record). There is also a patient portal 'My Health Online' and an electronic referral system adapted from a successful Scottish system (Informing Healthcare, 2010).

In summary, several local and regional innovations in patient information / administration systems are being rolled out in Wales but no Electronic Patient Records in psychiatric hospitals was discovered in the literature review and in contacts with the Welsh National Assembly and NHS Wales.

The next section provides a (non exhaustive) overview of EHR/EPR implementation initiatives in Europe and the USA. The purpose is to provide the reader with a sense of how widespread is the adoption of EHRs worldwide and to determine how widespread is the practice of planning for benefits realisation rather than just financial or cost / benefit planning.

#### **4.1.5. Europe**

It is obviously beyond the scope of this study to outline in detail the extent of EPR/EHR activity in each European country (most if not all are engaged in eHealth initiatives including EHR infrastructural development and implementation); however some broad statements can be made. The Electronic Health Record is deemed by many as a vital component of safe health care provision in Europe with demonstrable and measurable benefits (Dobrev et al., 2009b). Most European countries have initiated Information Technology solutions in health management, many are quite advanced; this includes the process of enhancing interoperability between local / regional Electronic Patient Records. There is thus a European drive, supported and funded at European Commission level (such as the Smart Open Services for European Patients epSOS project involving 12 EU states aimed at establishing a ‘borderless electronic health record’) or ‘pan-European’ electronic patient record (Hoeksma, 2008).

Amongst the listed benefits of Electronic Patient Records are the capability of providing in-built clinical decision support systems (thereby proactively contributing to reductions in medical errors/omissions); changing practice such as reduced or eliminated chart pulls (saving time and therefore money), having on demand and available records 24/7 at the point of care (consequently improving the quality of healthcare and reducing costs) (Zaroukian, 2009). Thus EPR/EHR use in Europe is now widespread at varying levels from local/regional EPRs (France, Belgium, Netherlands, Greece, Spain, Germany, ) to national EHRs or national implementations of EHR elements (Malta) and even international EHR data exchange (Baltic e-health: Estonia, Norway, Denmark, Finland, Lithuania).

A brief outline of the EPR/EHR progress in three European countries follows as exemplars of the IT initiatives to achieve benefits from IT / EPR use.

#### **4.2. Estonia**

Estonia has a population of 1.32 million people and enjoys a high rate of broadband connectivity, internet use and e-services such as e-election, e-schools and e-tax (Tiik and Ross, 2008). The Estonian eHealth approach, adopted in 2005, has been to develop IT on three levels concentrating initially on IT infrastructure, standards and registries (Parre, 2010). Then moving to level 2: classification of primary patient information used by GPs which is essential in an epicrisis and ensuring availability and re-use of information such as national digital imaging, electronic prescribing, laboratory information and disease surveillance (Parre, 2010). And finally moving to level 3: medical statistics, encoding and national directories (Parre, 2010). In this regard it is broadly similar to the approach taken in England.

The existing systems were not interoperable due to individual health service provider e-registration systems (or no e-registration systems) and this required the development of national registration /accession numbers known as digital registration cards (Tiik and Ross, 2008).

Presently Estonia's e-health system (Digilugu) has a number of features operating at a national level such as citizen identification cards, e-prescribing, picture archiving and communication system (PACs), digital registration, out patient referral and aspects of a national patient administration system (PAS) including: central waiting list, and e-prescribing (Tiik and Ross, 2008). By law all health care providers must use the electronic patient record which is one of a range of interoperable eHealth services.

Estonia aims to develop a longitudinal EHR (birth to death) consisting of primary information with links to other sources of health information by linking existing GP and hospital IT systems and affording the doctor the possibility of viewing the patient's entire health history and in emergencies providing vital information to emergency technicians / ambulance crews and hospital personnel (Parre, 2010).

In regard to this research what is significant is that information is still electronically recorded in the main at primary care levels, psychiatry remains one of the specialities which is not recorded or available electronically and therefore benefits analysis (in the context raised by this study) could not be established in relation to Estonia.

### **4.3. Czech Republic**

IZIP is the planned nationwide web-based EHR in operation in the Czech Republic since 2003. This EHR incorporates records from GP visits, vaccination history, dentist and specialist treatments, laboratory and imaging results, hospital medical / surgical procedures and reports with reported additional modules pending to include e-prescribing, emergency service support and secure messaging (Mladek et al., 2006). IZIP was awarded the World Summit Award as one of the top five e-health projects in the world and reverses the norms in relation to healthcare records in that the citizen owns and has automatic access to medical records (although cannot alter the record) and the citizen allocates access rights to the health care professionals (Mladek et al., 2006). Arising from legislation passed in 2007 this ownership now means more than just obtaining data from medical professionals but now permits full viewing of the actual record (Bryndová et al., 2009). The system has been proven to provide both economic and social benefits (Stroetmann et al., 2006). However as of 2007, 1 million patients of the 10.33 million Czechs were participating in this project (Mládek et al., 2007), the system currently does not incorporate mental health care and the use of IT in health is described as generally underdeveloped (Bryndová et al., 2009).

Although attitudes towards mental health care are changing in the Czech Republic since the fall of communism, this change is happening slowly (Krosnar, 2008). Mental health care provision to those with chronic conditions is “insufficient;” prolonged or even life long inpatient care is not uncommon and mental health generally has not been a high priority (Bryndová et al., 2009: 88). A lack of health funding and the least amount of spending on health in 27 EU countries and over reliance on in-patient treatments with too few beds and lack of community psychiatric facilities means this area of health care lags behind that of other European countries (Krosnar, 2008).



Some psychiatric records are maintained in limited numbers by Child and Adolescent psychiatrists however this study author failed to establish any evidence of Electronic Patient Recording of adult psychiatric in-patient care and therefore, like so many of the commendable EPR/EHRs cited, IZIP does not suffice to meet the criteria in regard to this study.

#### **4.4. Sweden**

In Sweden primary care services are 100% electronic and 80-90% of hospitals are digitalised also but without interoperability between systems (Elfgren, 2009). Sweden is (from 2009) following a similar pathway to other northern European countries, there are now advanced plans and a regional pilot in place towards a national Electronic Patient Record, beginning with a National Patient Summary which is in many ways very similar to the UK's Summary Care Record (Elfgren, 2009). Again the emphasis here is on information retrieval critical to know in case of emergency not detailed medical / psychiatric records.

One system in Sweden meets this study criterion on EHR scope and application to psychiatry and this is the system in use in Våxjö and Ljungby which is a public health system operated across the regional healthcare authority of Kronoberg (Dobrev et al., 2009a). This system operates across three mental health units, two hospitals, thirty one healthcare centres, and twenty five dental care centres (Dobrev et al., 2009a).

Benefits realisation in this instance was assured by the approach taken described as a *Plan-Study-Do-Act* iterative approach which entailed small changes being introduced following detailed planning then studied, evaluated and then acted upon on a larger scale to ensure the process was standardised (Dobrev et al., 2009a).

Planning began in 1993 with the implementation of a pilot patient administration system in one local GP practice as a forerunner to a

county wide EHR system but this system was not possible to integrate into a county wide application so the plan was revised and in 1999 a new EHR process began - eventually leading, in 2000, to a regional Patient Administration System (Cambio 2000) and in 2004 the EHR introduction was phased in (Cambio Cosmic) which stands for “Compliant Open Solutions for Modern Integrated Care” with Cambio Spider introduced as the business logic; roll-out concluded in psychiatry in 2006 (Dobrev et al., 2009a).

Implementation was through a hybrid system of bottom up and top down development (with assured management commitment at all levels) although support was received from the EHR vendor, the specification and implementation was organised by Kronoberg county councils healthcare and IT professionals working together through Implementation, Project and Maintenance groups (Dobrev et al., 2009a). This included processes such as detailed mapping of existing workflows, analysis of how the EHR would contribute to supporting everyday work, conversion planning and training followed by aftercare and support (Dobrev et al., 2009a).

This is thus a demonstrable example of Benefits Realisation planning which involved stakeholders and involved learning at many levels and has been successful within a mental health inpatient setting.

## **4.5. USA**

This section provides a detailed description of electronic health records in America for two reasons: because the health care system in the USA is so different to that of most of Europe and specifically because of the array of vendor products available in the USA and the unique issues this presents.

### **4.5.1. Background**

President George Bush called for the ‘widespread adoption of EHRs’ in 2004. Since then the United States has actively promoted the widespread adoption of electronic health data sharing and recording and to this end has introduced many organisational, administrative and legislative initiatives. The goal is to achieve a national EHR.

It is important to understand the American health care system in order to comprehend the issues with regard to a national Electronic Health Record. The US health care system is composed of for-profit health providers including private insurance companies, private hospitals and treatment facilities and non profit hospitals and health care centres and the US government programmes such as Medicare and Medicaid services in addition to the US military services and programmes (Arnold et al., 2008).

In 2008 it was written of America that, there was no national / universal health care system in the US and the system was described as ‘maybe the most complicated’ among developed countries (Arnold et al., 2008). This coupled with lack of infrastructure, a capitalist driven ‘explosion’ of disparate EPR systems, interoperability issues, misgivings about privacy/security, high costs and poor funding initiatives, means achievement of a national EHR is not imminent in the USA (Arnold et al., 2008). These facts were true until 30<sup>th</sup> March 2010 when President Barack Obama signed the Health Care Reconciliation and Education Act into law. This Bill, when fully

phased in by 2014, will bring the right to health care for 32 million uninsured Americans (Pelosi, 2010). This is an enormous step towards universal health care in America, it will provide cover to 94% of eligible non elderly Americans by 2014 (AP, 2010).

But how is / will this healthcare be recorded?

The Department of Defence uses a web based Electronic Health Record known as: Armed Forces Health Longitudinal Technology Application (AHLTA) (launched in 2005). This EHR is one of the largest deployed EHRs in the world, captures 120,000 encounters daily (Miller, 2009), has 9.4 million beneficiaries (McEvoy, 2009) but is criticised as being too centralised and too slow (Miller, 2009) and a cause of physicians avoiding EPR use due to its poor reliability and performance (McEvoy, 2009); with concerns also expressed around data security, perceived poor usability and lack of efficiency (Beldon et al., 2009), frequent downtime, duplication and poor reliability (McEvoy, 2009).

On the other hand the Veterans Administration, has implemented, maintained and won awards for its Electronic Patient Record system Veterans Health Information System and Technology Architecture (Vista) since the late 1970s, providing care to over 4 million veterans and their families (Brown et al., 2003). The initiative began with single EPRs in hospitals and centres and gradually linked these EPRs to become interoperable across states to where it is now approaching an almost nationwide ex-military veterans, health information system (Brown et al., 2003).

The military's task is to create worldwide accessibility to data and ensure system interoperability (Eilenfield and Carraher, 2006), but with this is the necessity for greater speed, intuitive systems and reliability if users are to truly realise benefits and not be frustrated by under-performance as is the case with AHLTA where in some

situations it can take upwards of 20 seconds merely to upload or refresh a page (McEvoy, 2009).

Outside of military settings, Electronic Patient Records now exist in many health enterprises such as university hospitals, privately owned and managed hospitals and services, general practitioner and community settings. Several of these are sighted as exemplars which could serve as pillars of which to base a national EHR for example, Partners in Massachusetts, Mayo in Minnesota, Intermountain in Utah, Geisinger in Pennsylvania, Kaiser on the West Coast and Vista the Veterans Administration EHR, (Mongan, 2008).

However, Arnold et al, (2008) expressed criticisms and reservations as follows: lack of infrastructure, interoperability issues, misgivings about privacy/security, perceived poor remuneration and high costs of investment in EPRs on behalf of private physicians, and poor funding initiatives, means achievement of a national EHR is not imminent in the USA. He further argued that America lags behind many countries in Europe with regard to a comprehensive Electronic Health Record (Arnold et al., 2008, Beldon et al., 2009) and without national coordination the expectation of private health care providers, private insurers and public hospitals / ambulatory clinics and emergency departments developing a nationwide EHR are optimistic and perhaps unrealistic; the effect is to see a poor response to the hoped-for widespread EHR adoption.

However the importance placed on Electronic Health Records contribution to patient outcomes is evidenced in the Bill to promote utilisation of health information technology, the *Adopt HIT Act 2007*, which provided tax incentives to adopt information technology use in health care; and the American Recovery and Reinvestment Act 2009 (ARRA). The American Recovery and Re-investment Act was signed into law on 17<sup>th</sup> Feb 2009 and includes provision of \$147.7 billion for health care. Within ARRA the Health Information Technology for

Economic and Clinical Health Act'' (HITECH) includes \$19 billion which is allocated to introduce and modernise health information and technology systems over 6 years with \$17 billion of this money ring-fenced for meaningful use of Electronic Health Records (Perdue, 2009).

Other initiatives concentrating on the expanded use of information technology include the Federal Health Architecture, an enterprise which aims to build an interoperable (private sector & government) federal health information technology environment to support improved and better care, efficiency and overall improved direct patient care and better population health in the USA (HIT, 2009). There is also a new portal *HealthIT.hhs.gov*, created to provide a central repository of information regarding health information technology initiatives, and there is the Office of the National Coordinator for Health Information Technology (ONC) and the Agency for Healthcare Research and Quality (AHRQ). Additionally the Nationwide Health Information Network (NHIN) is central to the US health information technology strategy and encapsulates protocols, specifications, legal agreements and standards whilst CONNECT is a Federal Health Architecture initiative to provide federal wide links to the NHIN (*HealthIT.hhs.gov*, 2010). CONNECT provides open source software solutions (using the NHIN specifications) to enable federal and private interoperability (*HealthIT.hhs.gov*, 2010).

All the above are positive and important initiatives destined to improve health care through the meaningful use of appropriate technology, whilst ensuring data integrity, safety, building the required infrastructures and attempts at standardising.

#### **4.5.2. Summary**

Electronic Health Records in Europe and in the USA have often arisen from local initiatives which expanded to become regional and connected enterprises. Europe leads the way in establishing standards based criteria for large scale (national / international) interoperable EHRs.

However, in the USA a large array of vendors, lack of agreed / enforced standards and infrastructure and a multitude of legacy systems are in operation. Unlike elsewhere, (such as Canada, England, Australia and other countries in Europe and Asia) where co-ordination is on a national level; in the US there has been no one agency responsible for implementation on a federal level (Arnold et al., 2008) but this is changing; particularly in relation to the American Recovery and Investment Act.

What is clear from the literature is that the concentration of EHR / EPRs in public or private healthcare provision have frequently arisen from initial patient administration systems (most often in primary care settings and secondarily in acute general hospital settings), with clinical components added, gradually increasing to regional or enterprise wide solutions. Whilst there is a growing move towards interoperable IT enabled EHRs these are largely targeted at epicrisis for use in acute medical / surgical situations with a strong focus on security of accurate diagnosis due to having full and relevant key information to hand.

Nationwide EHR/EPRs occur after extensive planning, systematic, strategic, infrastructural consultations, engagement and implementations; however, few EPR examples are to be found in the area of in-patient psychiatric treatment. EHR benefits are expected to arise from EHR implementations and the economic and social benefits are increasingly well known, better documented and proven but benefits realisation planning with the eventual users, to ensure

harvesting the expected benefits, is a growing but irregularly cited concept. The experience of users of some systems indicates that the absence of benefits realisation planning with users has led to implementations that frustrate and do not satisfy users.

This chapter outlined in brief some European and American approaches to national EHRs or regional / local EPRs specifically seeking to identify the application of Benefits Realisation planning with the end users of the system, to ensure the system is utilised, particularly in relation to psychiatric in-patient care. The findings demonstrated that whilst this is beginning to be recognised and utilised as a meaningful approach (Scotland & Sweden) it is uncommon or not routinely documented.

The following chapter considers explicitly the methodology chosen for the dissertation study and the rationale for choices made.



## **Chapter 5 Methodology**

### **5. *Action Research***

The methodology utilised for this study is Action Research. This chapter begins with a definition of Action Research and provides a rationale for this choice. A short exposition of the philosophical underpinnings of Action Research and of how this differs from strongly positivist research paradigms is discussed in relation to empowerment. Some examples of the use of Action Research in comparable but non identical research situations are provided as evidence of the suitability of this research method to this study.

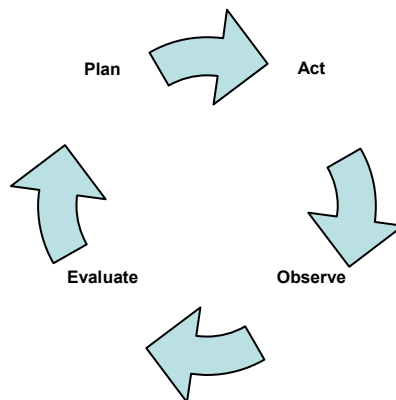
#### **5.1. *Action Research Definition***

There are many definitions of Action Research but a short one used in this research is: “The systematic study of attempts to change and improve practice by groups of participants (O'Brien, 1998, Baskerville, 1999, McNiff, 2002) by means of their own practical actions and by means of their own reflections upon the effects of those actions,” (Ebbutt, 1985:156).

In the context of this study this entailed the action research group considering the business drivers for change and how practice would alter as a direct result of moving from documenting nursing care on paper to documenting care electronically and the role of IT in this. So how is Action Research conducted? This is described in the next section.

## 5.2. *Action Research description*

Action research is a cyclical process generally described as having either 4 or 5 steps (O'Brien, 1998, Baskerville, 1999, McNiff, 2002, Coghlan and Coughlan, 2008, Coughlan and Brannick, 2010). The cycles therefore are variously described as Diagnosing / Action Planning, Act /Action Taking, Evaluating, and Specifying Learning (Susman and Evered, 1978) or Plan, Act, Observe, Reflect (Carr and Kemmis, 1986).



Thus in the context of this research the Nursing Action Research Group met on six occasions prior to the release of a new EPR element to analyse and plan how benefits would be realised. Reflection, a central part of the Action Research process, occurred throughout each process stage. During the implementation of the Mental Health Information System new EPR viewer the Action Research Group acted and observed the effects on practice of the new element. And finally the group met to evaluate the benefits of Benefits Realisation Planning to the entire process.

## 5.3. *The Action Research Cycle*

In practice these cycles are implemented in a spiral repeated many times. Each cycle is subjected to participative, critical reflection as the emerging data is challenged to ensure veracity.

In effect there are always two concurrent cycles in operation, one cycle focused on the project and the other a cycle of reflection (and action)

on the Action Research cycle itself (Coughlan and Brannick, 2010). These simultaneous cycles inform and shape each other and have been described as **core** action research (focused on the group / organisational aims) and **thesis** action research (focused on the research / academic or meta learning) (Zuber-Skerrit and Perry, 2002).

#### **5.4. Why this methodology?**

Implementing an EPR in an acute psychiatric hospital involves changing behaviours and will invoke many emotions and responses in those whose practice is affected.

Action research is described by Bowling (2002) as being reflective, critical, and being a ‘bottom up’ and ‘collaborative approach’ to investigation. Additionally Meyer (2006), Waterman et al (2001), Hart and Bond (1995) define the purpose of Action Research as being to improve through change. Involved stakeholders can lead and support change (Dick, 2007). Lynch (2000) speaking, on equality studies, suggests that the aim of academic dialogue is not just to illustrate and elucidate but to initiate change. This is certainly true of Action Research and is a reason in itself for choosing this methodology as the intention is not just to explore and describe but to understand and alter for greater benefits realisation.

According to Hart and Bond (1995) Action Research has distinguishing criteria of which the following make it the methodology of choice for this piece of research:

“Action research is

- Problem focused, context specific, and future oriented
- Involves a change intervention
- Aims at improvement and involvement
- Involves a cyclical process in which research, action and evaluation is interlinked.”

Meyer (2006) argues that an underlying principle of Action Research is democracy; aiming as it does to both investigate and change things in a collaborative manner; she emphasises the point of the research is to achieve a change improvement.

This approach is therefore coherent with the objectives and context of the research question posed namely determine the benefits of benefits realisation planning. The purpose of this research is essentially to ascertain if business benefits analysis helped and what benefits (if any) end users derived from a pre-implementation analytical process of determining how they would benefit from a business/ IT implementation and radical changes to work flow and practices.

### **5.5. A short history and background to Action Research**

Action Research originated in the 1940s, from roots of social psychology arising out of two independently created versions; a field theory version originated by Kurt Lewin and an operational research version (psychoanalytical) developed within the Tavistock Clinic (Clark, 2000); which merged when Lewin joined the Tavistock, (Baskerville, 1999).

Most often described as philosophically *post-positivist* there are many models and numerous descriptions of Action Research but the main distinguishing feature is the underlying principle of the Action Research approach which is to do research *with* people rather than research *on* people (Meyer, 2006).

Three main types of Action Research are described in the literature:

Technical-scientific and positivist;

Mutual-collaborative and interpretivist and

Critical and emancipatory action research (Whitelaw et al, 2003).

The type of Action Research employed may vary according to the purpose, size of population and political or other focus for the research (Waterman et al, 2001).

Technical-scientific is a common consultancy approach taken and it is a top down approach. In this method the participants may be viewed as domain experts but not as sufficiently expert in research Meyer (2006). An immediate dissonance arising in relation to using this type of research in relation to this research study on benefits realisation is that it is once again a top down approach and may lead to lack of user buy-in, if a view is taken that it was less than wholly collaborative.

Mutual-collaborative and interpretivist Action Research is more inclusive and involves collectively gaining an understanding of the domain, the problems and potential solutions, implementing change and evaluating outcomes (Meyer, 2006). This approach is the one favoured by the author as it adopts an ideographic viewpoint, that is, it engenders an inherent recognition and consideration of the social values and context of the organisational environment (Baskerville, 1999).

The third approach, Critical and Emancipatory Action Research is concerned with inclusively researching and critically evaluating social / organisational situations within a developing awareness and acknowledgement of where the power rests with an express purpose of developing empowerment / emancipation (Meyer, 2006). Lynch expresses this clearly when she states the goal of critical theory is not just to generate theoretical knowledge but to ensure people “*know and understand their own oppressions more clearly so that they can work to change them,*” (Lynch, 1999:51). Critical and emancipatory research was not chosen for this research as there was not a perception of oppression but rather of a need to explore the pathway chosen by the organisation as a whole to better understand the effects of the

chosen direction on practice. More on this on the section below entitled Power.

## **5.6. Insider Action Research**

Action research is a methodology that incorporates taking action and generating knowledge about that action and *insider* action research is a collaboration between practitioners and researcher that utilises ‘understanding in use’ rather than ‘reconstructed understanding’ (Coughlan and Brannick, 2010). The point has been made that most research including qualitative research is not participative with research being viewed as the responsibility of the researcher (Dick, 2007).

Formerly subjective, involved engagement by insider researchers was frowned upon as being less scientific and regarded with suspicion but the theory and practice of Action Research has expanded to where it is viewed as entirely appropriate when members of a group or organisation wish to study their actions in order to improve, change or increase understanding (Lynch, 1999, Coughlan and Brannick, 2010). It may be argued that those affected by a decision have a right to influence the decision (Dick, 2007); the participative, collaborative nature of Action Research may not reverse corporate decisions but may influence their outcomes or implementation (Khresheh and Barclay, 2007). This aspect of influence on decisions is considered in more detail in the paragraphs on Power below.

Other studies applying similar insider Action Research methodology to that of this research include the study of *Improved clinical record keeping* in Jordan and *Professional knowledge development in mental health* in Norway (Khresheh and Barclay, 2007, Vatne et al., 2008). Hence the use of this methodological approach was deemed suitable to this study.

### **5.7. Assumption**

An underlying assumption of this research is that the decision to implement an electronic patient record was made by the organisation in a top down fashion and that clinicians, more particularly – nurses, were not a part of this original decision making process. An hypothesis arises therefore that high level decisions, made without consultation and collaboration with those directly affected by the impact of the decision, may meet with barriers or resistance when it came to implementation.

### **5.8. Power**

The focus of this research project relates to an already made strategic decision by hospital administrators. There is no suggestion of oppression but rather of strategic progress, development and change for improvement. Therefore there was no intention to pursue the research from the viewpoint of the oppressed. However an awareness and discourse on power by the group was inevitable and essential in the light of the group's role within the organisation as both harbingers and subjects of organisational change. As Meyer expressed it research itself is not apolitical - it is influenced by those in power' (Meyer, 2006).

The Action Research group itself was a group of nurses at various hierarchical levels (administrative and managerial power) within the organisation. It was therefore an imperative that the group consider the power relationships amongst its own membership in addition to that of the project sponsors.

The group had to establish its operational ground rules and establish methods to ensure consensus, empowerment, principled decision making and validation methods.

It is the collaborative, co-researcher status of Action Research group members that brings the inherent principles of Action Research to life. This participative Action Research approach shifts the balance of power from subjects being studied by the researcher to co-researchers bringing what Baskerville calls 'situated practical theory into the research process,' Baskerville (1999: 11). It is also true that the study author is a nurse with a senior position within the organisation; with a known pro-Information Technology stance.

These facts were considered by the group in terms of determining the group's modus operandi, consensus and decision making procedures with the explicit agreement that each group member had an equal voice and the principal researcher was an equal but non-dominant member of the group. The principal researcher may exert a co-ordinating and leadership role but in Action Research, unlike traditional research, the researcher is not an external, objective, unbiased expert (Clark, 2000). Rather the researcher is very deliberately an insider with a belief that familiarity with the subject leads to greater insight (Waterman et al., 2001a). The fact of this recognition leads to the group being empowered. The principal researcher does not hold the power of censorship or veto; the Action Research group is responsible for planning, moulding, noting, scrutinising, acting and operationalising the findings of the emerging theory and constructs (Lynch cited in Coughlan and Brannick, 2010).

Another important cognition is that even an empowered and 'emancipated' Action Research group may be limited in terms of the possibility for action (McNamara and O'Hara, 2000). It is important to understand not only who holds the power within organisations but also to realise that there may not be the same level of interest or the same expectations from those with different roles or at alternate managerial levels (McNamara and O'Hara, 2000). There is undoubtedly an end-product envisioned by the project sponsor but this end-point may not encompass the emerging vision of the potential benefits perceived or



desired by the Action Research group or the means to achieve these aims.

Thus the strength of Action Research is that the underlying collaborative and democratic principles include the understood realities or situated theory / learning referred to above and offers an avenue to the empowered group to process this knowledge within the research. The power resides in the group's design and ownership of both the research process and the freedom to utilise the research findings during the research undertaking. This radically differs from traditional research which is often an indirect process, externally processed by a 'research on' rather than 'research with' approach and is reliant on the will of those seeking to implement research findings to search out, analyse, understand and then implement research into practice (Clark 2000).

### **5.9. Research: Positivist and Post-positivism**

Traditional positivist methodologies have both proponents and critics (Coughlan and Brannick, 2010). The use of a positivist approach in settings related to social enquiry may be criticised from several points of view. It is arguable that social systems are complex and cannot be fully understood through employing a reductionist approach but rather require the researcher to grasp the whole picture, the full context and the breath of the social process at work (Baskerville 2009). Action Researchers uphold this view and believe that social systems are best studied by planning and introducing change and observing and evaluating the impact of this change (Baskerville 2009).

### **5.10. Validity and reliability in Action Research**

Action Research has been criticised as not truly being research mainly in relation to the issue of reliability and validity (Clark, 2000). Validity refers to the accuracy of measuring what is intended to be measured, and reliability refers to the consistency with which, given the same or very similar circumstances, the same results would be produced by the instrument of measurement (Carter and Porter, 2000). Waterman asserts that validity can be established through the analysis of three properties of Action Research: Dialectal, Critical and Reflexive validity (Waterman cited in Clark, 2000).

Dialectical validity is demonstrated in the iterative cycles of Action Research where theoretical and implicit assumptions are confronted by the group in numerous ways including testing assumptions through actions and reconciling multiple viewpoints (Dick, 2007).

Critical validity encompasses the intentions, ability and consequences of Action Research and is concerned with justice, emancipation and a drive to improve and make better (Clark, 2000, Meyer, 2006).

Reflexive validity is acknowledged as central to all forms of Action Research as it is through reflection on implicit assumptions, outcomes of actions, evidence of success and ‘disconfirming’ evidence that actions and theory are refined and made explicit (Dick, 2007; Meyer 2006; Clark, 2000).

### **5.11. Technically disenfranchised**

One of the issues arising from the literature in connection with health informatics and EPRs is the notion of being technically challenged or even disenfranchised (McNiff, 2002). This may arise when IT ‘solutions’ are imposed, perhaps without sufficient, agreement, training or preparation, leading to barriers or resistance to utilisation. There are many reasons why practitioners may fail to fully utilise IT (lack of familiarity with computers, poor data entry interfaces, poor input / retrieval skills, poor typing skills, anxiety about technology). A

task for the Action Research group was to explore and comprehend the attitude of the group towards the move to electronic recording and to reflect on the perceived attitude of other users of the same grade. This was facilitated by means of an initial and summative questionnaire and by stakeholder mapping and analysis.

### **5.12. Epistemology**

Epistemology in relation to this study is concerned with what can we know of how, what and why nurses in this study communicate, utilise and record information. Some immediately apparent answers on the *why to* record includes compliance with expected governance standards. Standards are imposed by external bodies such as Irish legislation, and regulatory bodies such as the Nursing Board (An Bord Altranais) and the Mental Health Commission (regulations, rules and codes of practice) and the policies of the hospital itself; each coalescing to provide strong regulatory guidelines (MHC. and La-Touche-Bond-Solon., 2001, ABA, 2002).

Nurses are socialised into a profession and this process of socialisation includes communication frameworks which include formal and informal practices pertaining to verbal and written communication of patient care for example, through verbal nursing handovers, ward diaries and communication books. An assumption made at the outset was that the generation of a Benefits Analysis, which included consideration of practice changes in the area of recording, would lead to a discourse on the area of alterations in how, what and why information is communicated and recorded. Therefore it was assumed that the Action Research group would explore in part the existing communication processes and how this would alter in relation to recording electronically.

Nursing is a highly interactive, communication intensive field of practice within healthcare. Nurses spend a greater amount of time with

patients than other care professionals and co-ordinate this care provision through formal and informal communication with other professionals (McCabe and Timmins, 2006).

Existing communication processes include but are not limited to nursing verbal handovers (meetings occurring at routinely scheduled frequencies), formal meetings and informal verbal communications. Current practice is to record nursing care by hand-written entries of observations, interventions and procedures on paper files and charts etc.

Thus clinical records may be utilised by nurses providing direct patient care and those with responsibility for assuring nursing best practice, those assessing compliance with standards (nursing audits), those examining records for specific purposes (for example after critical incidents with regard to risk assessment/management); and those seeking summative information (such as statistical overviews of admission / discharge rates per month etc).

It was important to gain understanding of current processes in order to gauge the impact electronic recording could be perceived to have on nursing communication and to put this into context. This was expressed as an anxiety that other multi-disciplinary but non nursing team members might begin to communicate electronically to the detriment of verbal means of sharing information. There is more on this in chapter seven.

The next section explains more about the group.

### **5.13. Population**

The population in this study consisted of the nursing department. Most but not all nurses will engage with the MHIS once implemented. Clinically practicing nurses will have constant daily interaction with the system as they record patient interactions and progress etc.

Nurses with administrative or strategic roles will also utilise the MHIS but at dashboard level (summative business intelligence), obtaining non patient-specific clinical information, and patient specific information only on a need to know basis.

Some nurses in non-clinical and non-administrative roles (such as educational roles), have no access to the system other than non-live teaching versions maintained in a separate database and these nurses were excluded from the study.

### **5.14. Exclusions**

Obviously an Electronic Patient Record is utilised by more than just the nursing department. Other clinical users include psychiatrists, psychologists, occupational therapists, phlebotomists, hospital pharmacists, laboratory technicians, medical secretaries, receptionist, mental health act administrator, sessional therapists, external medical consultants, agency nurses, locum doctors and nurses engaged in non-clinical but educational roles. For the purposes of this research all non nurses and all nurses who will not have access to the live MHIS were excluded.

The rationale for exclusion from the study population of non-nurses and non-users was the Action Research group's focus on the next element of the MHIS implementation to be released and its impact on nursing practice. Therefore those excluded were outside the research remit.

### **5.15. Sample**

Purposive sampling is a method commonly used in qualitative research to ensure that those selected are appropriate to answer the research question (Parahoo, 1997). The nursing population, as outlined above, comprises nurses at various grades and with widely varying roles. The nurses' concerned included Clinical Nurse Managers levels I and II, Clinical Nurse Specialists, Senior Nurse Managers and an Assistant Director of Nursing.

### **5.16. Recruitment**

The entire eligible nursing population (n=156) was contacted by e-mail informing them of the study and attaching a cover letter outlining the purpose, methodology, frequency and venues for the study. The intent was to obtain respondents who were representative of each nursing grade and role in order to ensure they were a representative sample of each strata of the nursing work force who would engage with the MHIS.

It should be noted that of those contacted, a small minority (n=6) are contracted solely to work on night duty or weekends only and it was therefore unrealistic to expect them to respond to an invitation to participate given that the benefits analysis development would occur on day duty; others were on maternity leave but all were afforded the opportunity to participate nevertheless.

Those who responded (n=8) were then provided an information pack by return e-mail, which was offered again in hard copy at the first meeting (Appendix 2). The Information Pack contained a Letter of Information, Consent Form, Definition / explanation of Action Research, Guide to Questionnaire completion, Questionnaire, Definition of Benefits Analysis, Schedule of meetings (preliminary), Stakeholder maps / analysis tools.

### **5.17. Data Collection**

Data collection involved several methods. No suitable questionnaires were discovered following a literature search therefore a seven item qualitative and quantitative questionnaire was developed (see Appendix 3) and utilised to provide a baseline and summative snapshot of knowledge and attitudes towards the MHIS amongst the Action Research group. The design specifically avoided demographics as due to the small numbers comprising the Action Research Group it was important to preserve anonymity. The questionnaire was piloted prior to utilisation with non-clinically practising nurses (n=3) who were not engaged in the study. Piloting of the questionnaire led to two revisions and two questions being removed (to avoid duplication).

Other methods of data collection were: recording on a flip chart throughout meetings, strict minute taking, use of post-its for reflections by the group during the meetings, consistent use of memos, completion of stakeholder maps and stakeholder analysis (on paper) and maintenance of a reflective diary throughout the process.

### **5.18. Research analysis**

Data analysis and interpretation are essential to all research and it is imperative to have a clear analytical methodology in Action Research in order to ensure that both *action* and *research* occur and to move beyond problem solving to generation of knowledge through research (McKay and Marshall, 2001, Coughlan and Brannick, 2010). The study utilised a recognised but eclectic mix of analytical methods based on established Action Research methodologies and recommended research strategies. These methods including the six generic data analysis steps as advocated by Creswell, outlined below, (Creswell, 2003: 190-197), a mutual collaborative approach to the research (Whitelaw et al., 2003) which is a central tenet of Action Research, iterative dialectical, critical and reflexive validation methods

(Waterman et al., 2001b) and some definitions of the coding borrowed from Glaser and Strauss Appendix 2.9 (Glaser and Strauss, 1967).

Creswell described six steps common to most research, these are:

1. Organise and prepare data for analysis (type up notes, sort into types)
2. Read all data (obtain general sense & reflect on meaning. Emerging Ideas? Tone? Depth, Credibility, Use of information? Memos)
3. Coding / detailed analysis
4. Description of setting / people / categories / themes = include multiple perspectives of individuals, diverse quotations, specific evidence.
5. Qualitative narrative – findings (detailed discussion of several themes with illustrations, multiple perspectives)
6. Interpretation of the data (lessons learnt, personal interpretation, comparison with the literature, confirm / refute, generate new questions)

Each of the six steps above was employed throughout the study analysis. In addition the analysis of each process and outcome were validated by the group using a process of rapid appraisal. This entailed checking focus / adherence to purpose, reflecting on and questioning the process whilst engaging in the process by the group throughout and following each meeting. Rapid appraisal also included ensuring that the minutes of meetings and documented reflections were shared between the group within 48 hours of meetings. Each process: meetings, questionnaires, benefits analysis, stakeholder mapping and stakeholder analysis, was open coded, categorised into more abstract themes for analysis and validated by the Action Research group. There is more on this in the next chapter which describes in detail the group membership, processes and outcomes.



## **Chapter 6 The Research**

### **6. Structure:**

This chapter describes how the research proceeded. A group was formed entitled the Nursing Action Research Group. This group met on six occasions prior to the introduction of the new EPR element to agree on purpose and working strategies and to develop a Benefits Realisation Plan. The Group met one further time to evaluate the entire process.

Two sections are presented in this chapter. The first section deals with group membership and formation, establishing ground rules, purpose, baseline knowledge and attitudes; explaining and describing the methodology and outlining the purpose of the endeavour processes referred to as: –Forming, Storming, Norming and Performing (Tuckman, 1965). This is followed by the second section which is a brief description of the work accomplished each week.

### **6.1. Section 1**

The Research Project entailed the co-operation and participation of hospital staff, nurses, and therefore was subject to ethics approval by the Ethics Committee. Once approval was received the group were recruited. Recruitment was by a single e-mail which outlined the proposed research and purpose, the commitment required of the group and sought expressions of interest. The e-mail was sent to all nurses within the hospital of all grades and on all wards, including the small number of those who work permanently on night duty and included a letter of information as an attachment. Nurses who responded received a rapid acknowledgement which repeated the dates, times and venue for each meeting.

Seven meetings occurred in the first action research cycle over January – April 2010. The next section outlines the group composition and describes the agenda and content of each meeting.

## **6.2. The Action Research Group**

In all eight nurses responded to the invitation to join in the research.

These included:

One Assistant Director of Nursing

One Senior Nurse Manager

Four Clinical Nurse Manager II grades, (two of whom were Clinical Nurse Specialists)

One Clinical Nurse Manager I

One staff nurse

Three further nurses contacted the principal researcher to explain commitments / or work schedule issues (annual leave or night duty rotation for example), which impacted on their ability to commit to participation. One of these offered to attend when available (approximately 50%) of the commitment requested but this offer was declined by the principal researcher on the grounds of continuity for the group and ability to grasp and keep up with the research process.

The group cohort provided at least one nurse from each strata of the nursing hierarchy (with the exception of the Director of Nursing) which was desirable in relation to having appropriate representation. As the Director of Nursing was acting as the research sponsor, it was appropriate that the Director was not involved in the actual research process.

The composition of respondents who joined the group did mean however that the Action Research Group was weighted predominantly with nurses whose primary role included management functions in addition to clinical role rather than the sole care-provider role of staff

nurses. That stated, five out of the eight respondents would use the MHIS EPR to input and record patient care delivered directly in the course of their daily nursing practice and the remaining three would use the MHIS alert or summary interfaces. The group convened on six occasions weekly during the first phase of the Action Research cycle and on a seventh occasion following an MHIS implementation to evaluate the first cycle.

### **6.3. Section 2 Week 1**

On week one a prepared Agenda (see below) set out the proposed fundamentals and operation of the project and an information pack was provided by the principal researcher to each member of the group present, Appendix 2. Three members had sent their apologies and one further member was absent for this first meeting.

#### Agenda Week 1

- Purpose, Motivation and Overview of tasks and processes
- Scope of MHIS: short presentation
- Tasks per week and how to achieve them, a discussion on methods: brainstorming, post its, key concepts, process recording, validation -discussion
- Group Ground rules, how to achieve consensus and agree decisions, roles: time keeper, process monitor / recorder, secretary, researcher, ethics, publication
- Questionnaire
- Choosing and Defining a *Business Benefits Analysis* - handouts and discussion
- Benefits Management ~ *MHIS Driver Analysis & Project Objectives* Steps 1 and 2 of the model
- Tasks for next weeks meeting

The information pack, Appendix 2.1 - 2.9, contained the previously circulated Information sheet, a Consent form (which each member duly signed and returned), a written Rationale for the research, a description of Action Research from the literature, a visual guide to the Benefits Analysis Model, Questionnaire 1 and a pack of post-its to capture reflections as they occurred to group members during meetings. The pack was presented in a polythene pocket for convenience and with a request to bring the items weekly.

The principal researcher outlined to the group the tasks ahead and the proposed methodological means to achieve the stated aims. The Cranfield Benefits Analysis Model was presented and a list of the definitions for each stage was read through. A prepared exemplar, based on an existing implementation project within the hospital, was provided and presented to enhance an understanding of the concepts. The principal researcher invited questions and discussion in order to stimulate group interaction, clarify tasks and processes and achieve consensus on the way forward.

The next step involved a consideration of how the group would perform and the generation of rules to govern this performance. The group set out these Ground Rules on a flip chart.

Establishing functional ground rules at the outset of an enterprise is considered good practice as it provides an agreed framework as to how the group will work before work commences and allows for alterations to this mechanism by the group should this be necessary (CHCM, 2010). This is consistent with the research methodology selected. The ground rules consisted of the following points:

1. Meetings starting time: 14.00, wait maximum of 5 minutes then commence meeting
2. Finish time 15.00
3. Phones: on silent
4. Pagers: remain on

5. Decisions / consensus: in the event of a lack of consensus following discussion ten further minutes will be allowed for debate and then the group will agree to disagree.
6. Each meeting will appoint someone as time keeper / process recorder to ensure the meeting is moving along in the right direction
7. Confidentiality: what is discussed and who said certain things within the meeting will remain confidential to the Action Research Group.
8. At the conclusion the Group will decide how the findings of its work will be disseminated and to whom.
9. The findings will not be published without the entire Group's consent.

The letter of information also contained some understandings and rules which were accepted at the outset, these included:

1. "It is further understood that not all participants will be available for all meetings on every occasion.
2. Participants who do not attend meetings on two consecutive occasions, without notifying the principal researcher, will be deemed to have effectively withdrawn from the study and will not receive minutes of meetings unless they re-attend the meetings in person."

#### **6.4. Process**

Having agreed how the group would operate in principle a discussion followed on the purpose of the project and agreement was sought and obtained on the proposed methodology. This entailed recognition and discussion of the impending change in practice i.e. the necessity to electronically record nursing activities in relation to patient care provision. Central to the exploration of the impact this change would have on nursing practice was the generation and evaluation of a Benefits Analysis as a model and means of charting a course through the drivers, objectives, enablers, expected benefits and IT enablers of this change. Due recognition was paid to the fact that whilst it is

possible to have a plan, Action Research is a flexible and dynamic process and plans might change during the course of the research (Clark, 2000).

The methodology overviewed, explained in brief and agreed and with an early group understanding developing of the processes involved, the Action Research Group were then asked to complete Questionnaire 1 which was designed to gather baseline information on the knowledge and attitudes of group members towards the impending EPR to be introduced see description below and Appendix 3.2.

#### 6.4.1. Questionnaire 1 Description

A literature search had not discovered any questionnaires deemed suitable for the purpose of this study and therefore the questionnaire employed was designed, piloted and amended, according to feedback received, and, following submission to and approval from the Provincial Ethics Committee, was utilised in the cohort of respondents forming the action research group. A deliberate construct of the questionnaire was the avoidance of demographic questions such as age profiling in order to ensure the anonymity of group members.

The questionnaire consisted of eight questions. The questions were designed to elicit knowledge of the impending EPR and of attitudes of the group towards this. Seven were open qualitative questions and one was a closed quantitative question. The open questions included questions designed to gain a view of the broad and specific knowledge of the EPR and its elements, and general and specific attitudes towards EPRs and benefits, and views on the short and long impact of the EPR on each individual's practice. The closed question simply sought a yes or no answer to the question: *In your view will the MHIS be of benefit to you?*

This was followed by a brief overview of the MHIS components already implemented and those planned for release in 2010. Then the group began the process of completion of the benefits analysis.

The Cranfield model has the following steps: a Business Dependency Network which dynamically links the model concepts of understanding the organisational / business drivers and objectives, considering the expected benefits and the long term changes necessary to realise these benefits and also the shorter term enablers (for instance demonstrations, awareness sessions, training) and the role of information technology in achieving this, see Chapter 2 Table 2.3 for an example. Further stages in the model include the generation of Stakeholder Analysis and Stakeholder Maps to identify areas of commitment and resistance and means to address these, Appendices 2.6-7. The model author uses the term “dis-benefits” as a way to define drawbacks and lack of benefits from IT or other changes.

The method utilised to develop the Benefits Dependency Network was brain storming, ideas were recorded directly onto the flip chart and the groups’ thoughts, discussion and reflections aired openly at the time or noted on the post-its for later debate.

Step 1 of the model was a determination of the ‘Drivers’ for the MHIS Electronic Patient Record. Drivers are defined by the model author as: *A view (usually held by senior management) as to what is important for the business -at a given time – such that changes must occur* (Peppard, 2009). The first meeting concluded at the end of the hour. The group requested a copy of the definitions be e-mailed with the minutes as these were not included in the information pack.

The research methodology approach incorporated rapid appraisal by the group of each step of the research process. This meant that the minutes of each meeting were rapidly typed and circulated (within 24

hours) for validation. Chapter 8 details the findings of the research generated from the questionnaires, meetings, model and analysis.

Action Research methodology also includes reflection on the process. To this end the principal researcher maintained a reflective diary which commenced prior to the formation of the group and was maintained throughout the process. The Action Research group were equally encouraged to reflect on the process and document these reflections (on post-its during meetings if not shared aloud at the time) or to share with the group and enhance the outcome at future meetings or through feedback through the principal researcher.

Subsequent meetings began with the Ground Rules displayed as originally written on the flip chart. The minutes of each meeting also outlined the plan scheduled for the subsequent weeks meeting and highlighted actions outstanding and who was responsible i.e. Principal researcher or Group member (no names of the actual members were used).

## **Week 2**

There was one member absent for this meeting but the group included three members who had sent apologies for the first meeting. These members were asked to sign the consent form immediately and to complete and return the questionnaire after the meeting. The group revisited the ground rules which were accepted by all with one change to the rules, the group found it unnecessary to include the role of time keeper and process recorder and so this was dropped.

Information packs were distributed to those who were absent for the first meeting. The purpose and methodology was rapidly re-explained (all present had read the information sheet including those just joining). A second run through the Benefits Model with more detailed explanation of the definitions of each stage of the model was supplied



and appreciated by all and the group re-considered the EPR Drivers with many new items being added. When saturation of ideas regarding Drivers was agreed the group moved on to identifying the 'Objectives', defined by the model author as: "*Organisational target for achievement agreed for the project in relation to the drivers and envisaged changes*"(Peppard, 2009).

The group produced a short list of objectives before the meeting time elapsed.

### **Week 3**

The meeting began with the Ground Rules visibly displayed but not referenced verbally. One member was absent. A very brief reprise of the minutes supplied validation of their accuracy. Definitions of the model were presented with additional examples and the group moved rapidly into identifying the next stage in the model 'Benefits', defined by the model author as: *Organisational target for achievement agreed for the project in relation to the drivers and envisaged changes* (Peppard, 2009).

A slight deviation in method this week saw the group provide two simultaneous lists *Benefits* and *Challenges*. The purpose here was to acknowledge and explore any underlying anxieties that the EPR was being *steam-rolled* in by management and those difficulties or challenges would be overlooked or ignored. Not all group members had returned the questionnaire and this was requested as a matter of urgency.

The group progressed forward to consider the next model stage – Business 'Change' defined by the model author as: *A permanent change to the business, such as an organisational change, a shift in roles / responsibilities, or the adoption of new processes and procedures* (Peppard, 2009). Again brainstorming led to rapid idea generation which was openly recorded on the flip chart. This

concluded the third session. Four group members gave apologies for the next meeting in advance.

#### **Week 4**

Four group members had sent apologies and five in total were absent on the day; despite this the group proceeded as planned. This week saw the mapping of the 'dependency network' begin (Peppard et al., 2007). The principal researcher had taken all the ideas generated through brain storming and inscribed them verbatim under the model headings as on the flip chart, separately on post-its. Five flip chart sheets each inscribed with a model heading and author definition (*Business Driver, Business Objective, Business Benefit, Business Change, Business Enabling Activity, IT enabler*) were placed in a line along the boardroom table. The group set about the two tasks of placing the ideas under the appropriate headings on the sheet and secondly to consider in the light of increased familiarity with the model concepts linking where each should go to connect with its dependent process.

#### **Week 5**

One member was absent; the Group proceeded with mapping of the dependency network, a final stage of model completion, which meant connecting *benefits* to necessary *changes*, considering *enabling activities* and the *IT* contribution to benefits realisation.

Week 5 had been proposed at the outset as the point between completion of the model, implementation of the MHIS element, described in Chapter 2, and a final meeting three weeks after implementation to evaluate the utility of the Benefits Realisation Model. However, the group decided that a further 6<sup>th</sup> meeting was required in order to complete the Benefits Dependency Network and

Stakeholder Mapping / Analyses. Equally due to absenteeism the validation of the 1<sup>st</sup> questionnaire had been delayed and needed to occur in order to complete the first Action Research cycle. All questionnaires had now been returned. It was agreed that these would be compiled and substantively coded by the principal researcher and returned to the group electronically for validation at the next meeting. It was further agreed at this time that the repeat questionnaire would not proceed until after the implementation of the next MHIS element.

## **Week 6**

Three members were absent. The Benefits Dependency model had now been completed and the Stakeholder Map and Stakeholder Analysis were completed at this meeting Appendix 2.6-7 and 4.1-2. The initial questionnaire results were accepted and validated. It was agreed that the principal researcher commence the process of open coding of the questionnaire results, benefits analysis, stakeholder map/analysis, group meetings, reflections and Action Research process. These findings to be returned to the group for validation in accordance with the agreed principles of dialectical, critical and reflexive validation (Waterman et al., 2001b). The group re-considered the four stages of Action Research, *plan, act, observe, evaluate*.

Plan: the Group had met and agreed on purpose, formulated a working strategy and agreed ground rules.

Act: the group had completed a benefits realisation plan, questionnaire on attitudes and knowledge of the impending Electronic Patient Record and now agreed the following actions:

- the principal researcher to begin coding and return results for validation.
- The other group members to participate in the MHIS release process (attend and promote attendance at demonstrations / training), which was now imminent.
- Observe staff engagement and interaction with the MHIS

- Consider as ‘informed observers’ staff interaction with the EPR for example, use of, resistance to, difficulties with, awareness of means to enhance skills in utilisation, avail of practice opportunities;
- Observe ward PC use and the demands on ward PCs
- Observe and consider own use of the EPR
- Reflect on the Action Research process

Progress: summary of progress at end of week six

No members of the group had withdrawn from the research. The group had achieved all the tasks determined at the outset enhanced understanding of the MHIS and its potential impact on practice, generation of a benefits analysis and benefits dependency network, development of a stakeholder analysis and maps. However due to shifts, time off and ward demands for cover the small group of nine, eight plus the principal researcher, had experienced large fluctuations in attendance (see Figure 1 below). At no time had all group members been present for a meeting. The implications of non-attendance were that group members were sometimes asked to complete tasks (such as questionnaire/ stakeholder analysis / maps) outside of group meetings. This was outside of the initial ground rules / agreement and increased the workload of those already contributing to an extra process within working time or sometimes personal time.

The summary feedback however at week six was positive with an articulated view that the process was cohesive, professional and collaborative however it must also be pointed out that only 50% of the Action Research group were present for this meeting. The group had therefore completed or formulated actions for the following Action Research cycle steps: Plan, Act, and Reflect with formal evaluation to occur at the seventh meeting.

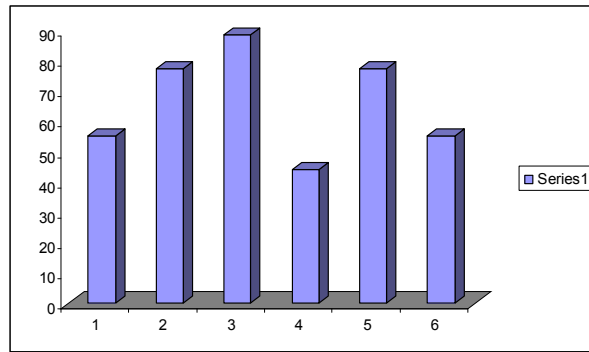


Figure 1 attendance for 1<sup>st</sup> 6 weeks

The next chapter details the findings of the study and an evaluation of the perceived value of undertaking a benefits analysis prior to implementing elements of an EPR.

## ***Chapter 7 Findings***

This section discusses the findings of the Action Research Group in relation to the research processes. It falls naturally into two intertwined units, the first being empirical findings on the basis of action processes and the second unit being on the findings from reflections on the processes and validation of these reflections.

### ***7. Overview of research findings***

The research was conducted over one action research cycle. The cycle included group formation, group norms being established which included agreeing ground rules and purpose and agreeing the timing, duration and frequency of meetings. In cycle one the group completed the following processes: two questionnaires, one before and one after an EPR implementation, a benefits analysis, a stakeholder map and stakeholder analysis and numerous scheduled meetings. The group met seven times in total, six times before the implementation during which they held discussions, brain stormed ideas, reflected and developed the analysis and mapping as indicated above. The first six meetings coincided with the implementation stage of the process when the MHIS EPR element described in Chapter 3 was released into the live environment.

This first cycle concluded when questionnaire two was completed and the group met and evaluated the process three weeks following the EPR element release into the live environment. Thus the group had performed one complete cycle of the Action Research Process, Plan, Act, Reflect and Evaluate.

The data analysis proceeded in accordance with the six generic data analysis steps and coding process as outlined in Chapter 5.

The data from each process (questionnaires, meetings, benefits and stakeholder -mapping / analyses and reflections) were typed, organised and open coded (each sentence, incident, phrase organised into basic codes) and returned to the group for validation. The following definitions were provided to the group as an aid to transparency in making the research framework explicit:

*Open coding:* Each sentence / incident is coded into as many substantive codes as possible to ensure detailed theoretical coverage and comprehension of the underlying process

*Substantive codes:* coding of the actual substance of the data

*Categories:* codes condensed into a higher level of abstraction (for example classes of objects, events, phenomena with shared characteristics with unique definition)

*Properties:* are the characteristics of the categories. Studying the properties exhibited in different occurrences of the category may refine the definition of the category or generate new categories (Glaser and Strauss, 1967).

During the interval between the first six meetings and the release into the live environment of the EPR element, the principal researcher continued the research process of coding and detailed analysis of data generated by the group in accordance with the steps of Creswell (2003) which was then returned to the group for validation. All data was open coded and was read in detail for a general sense of meaning as the steps in the process occurred. The final meeting was recorded in minute form and returned to the group for validation; no new themes emerged from the final meeting and the results are presented in the evaluation section below.

Data was continuously read through and compared with the findings of the other steps in the process as each step was completed. Memos and reflections were written as they occurred. These processes led to the comparative matrix listed in Table 4 (next page). Use of multiple

approaches led to the possibility of triangulation of the perceptions of the effects of EHR/EPRs on practice. The MHIS Electronic Patient Record was consistently perceived as providing benefits through processes investigative processes including questionnaires, meetings, stakeholder mapping and analysis, reflections and discussion. These benefits included in abstract form the concepts of improved speed, quality, security and improved access and communication. It was also the Group's view that the EPR would cause some dis-benefits or unwanted effects. These benefits and dis-benefits are described more fully in this chapter under the heading Empirical Findings.



**Table 7.1 Benefits identified through research and analytical processes**

<b>Processes</b>	<b>Process 1</b>	<b>Process 2</b>	<b>Process 3</b>	<b>Process 4</b>	<b>Process 5</b>	<b>Process 6</b>
	<b>Meetings</b>	<b>Questionnaire/s</b>	<b>Benefits Analysis</b>	<b>Stakeholder Map</b>	<b>Stakeholder Analysis</b>	<b>Reflections / discussions/ Evaluation</b>
<b>Substantive codes</b>	Substantive coding occurred in relation to each of the processes above and examples are available in the appendices with a full explanation of theme development in this chapter.					
<b>Themes</b>	Time Benefits Speed Endorsement Quality Security Communication	Time, Benefits, Speed, Fully electronic, Communication, Effectiveness, Dis-benefits	Time, Benefits, Speed, Security, Quality, Communication Dis-benefits	Time Benefit Speed  Efficiency Access Dis-benefits	Time, Benefits, Speed,  Accessibility, Endorsement, Access, Dis-benefits	Benefit, Dis-benefits, Endorsement Increased Understanding
<b>Meaning</b>	The meanings and analysis of the themes will be presented below in this section and also in terms of learning in the discussion section.					

### ***7.1. Description of setting, people, processes, and categories***

As described in detail in Chapter 6, the study occurred in a psychiatric hospital on Dublin's east coast. The Nursing Action Research Group met initially over six consecutive weeks from January to March 2010 then a break in meetings occurred until April, while awaiting the next EPR implementation. All meetings occurred in the same boardroom, at the same time weekly and with one exception on the same day each week. The time chosen was 14.00 as generally after lunchtime is the best time for clinical staff in terms of ward and administrative workflows. A flip chart on an easel and coloured pens were used to rapidly capture ideas generated at brainstorming and post-its were available to capture thoughts / reflections which arose but were not expressed during discussions / debates.

After the new MHIS element was implemented the group reconvened to discuss the Nursing Action Research Group's plan, observations, reflections and actions and to evaluate the process and model.

The research involved a cohort of 8 nurses of various grades from Assistant Director of Nursing to staff nurse which was representative of all nursing grades in the hospital with the exception of the Director of Nursing grade.

## **7.2. Empirical Findings**

A brief outline of the themes arising from each of the process steps follows.

### **7.2.1. Process 1 ~ meetings**

A central process to the research was the weekly meetings. This brought the group together and facilitated the group processes of forming, storming, norming and performing which are developmental processes widely understood to occur in every group (Tuckman, 1965). At the first meeting the group considered and articulated the purpose of the meetings. The purpose was two fold: to consider the changes occasioned to nurses by moving to electronic recording and the benefits or dis-benefits of this; and to facilitate a research project. The group generated and agreed ground rules which covered how the group would perform and strategies to enable consensus in the event of disagreement. The ground rules included standard issues such as start / finish times, frequency of meetings and rules relating to pagers and mobile phones, attendance and the commitment expected. The group also considered the role of the principal researcher which was proposed and accepted as an equal but non 'expert' member of the group.

An outline of the Action Research process led to agreement of the methodological approach as to how to examine the change in practice and how to move from problem solving or mere heightened awareness to research. This methodology had been proposed in the initial recruitment drive and letter of information. The systematic steps to considering the purpose and drivers for the change in practice and the impact this would have on nursing practice in terms of benefit or drawbacks 'dis-benefits' and the role of IT as an enabler were considered. The Cranfield Benefits Analysis Model was accepted, as proposed, as an appropriate and systematic means to establish benefit

realisation dependencies. A plan / outline agenda of each week's business was presented by the principal researcher with the proviso that the group would determine its own course and the plan could change.

Many though not all of the group were new to research; an information pack was provided which provided an outline guide to the key concepts of Action Research and how the research might progress as well as formal copies of the original information letter and letter of consent (Appendix 2). The pack included information on the proposed methodology (action research), the components of the Benefits Analysis Model, some definitions and a pack of post-its to capture individual reflections should they occur during group debate.

The systematic, planned approach of information gathering and generation through following the model steps at weekly meetings and the use of brain-storming, provided a forum for questioning and discussion, rapid feedback and appraisal and was positively evaluated by the group. Comments on the meetings as a process included: *"it made me really think about the process and the changes," "increased awareness of changes and benefits," "not as scary," "allowed discussion," "I am a novice to research, now I have (a) greater understanding –even (of) the problems, very helpful being able to question," "better we did it as a group, more cohesive and collaborative," "it's more critical, more thought through"* (as part of a group debate). Thus the actual group process of meeting was deemed in itself to be helpful in that it safely permitted questioning, deepened understanding, stimulated critical debate and reduced fears for some group members.

Observations by the principal researcher included that of the deep sense of *commitment* by the group members who came into meetings on days off, sent apologies in advance if not able to attend (as requested), provided explanations if absent and made large efforts to

be present for meetings; even attending when physically unwell in one instance. The group quickly gelled and worked well together - all members contributed. The tone of the group was assertive (respect for self and others) and ideas generated were defended when challenged, with concepts clarified and shaped by this process. Quieter group members assimilated this freedom and became more articulate - demonstrating increased willingness to express and justify their views.

An example of this assertiveness was the generation of 'reduced duplication' as a 'benefit'. In this debate it was hotly contested that ill considered beliefs that there would be *less duplication* as a result of EPR recording could be erroneous and the challenge was made to define exactly *what* would be less duplicated. One example of reduced duplication was the lack of need to repeatedly ask the same questions of patients and repeatedly document the same replies. What was important here was the challenge to accurately define underlying assumptions within the freedom of the group, to promote debate and achieve consensus on answers / decisions.

Commitment and energy were important considerations for the group functioning. Central to Action Research is the need to reflect on actions and the research process concurrently. For instance a memo to self by the principal researcher in relation to week two included the observation:

*\*Reflective note: "at this point the group was tired and complained that the concepts of drivers / objectives overlapped and could therefore be considered the same"*. The significance of this was taken on board by the principal researcher as requiring

- (1) Clarification of definitions and
- (2) Improved management of group energy for the next meeting.

The third meeting consequently saw the pace quicken and in a slight deviation from the model the group examined both 'benefits' and

‘challenges’ simultaneously. The contemporaneous reflective note from the principal researcher records:

*\*Reflection: “this proved to be a helpful strategy as the group instinctively voiced both enthusiasm and concerns and this pro-offered a means to chart these in a natural sequence rather than trying to separate thought processes as they occurred”.*

The fourth meeting saw another change in practice and had the group on their feet, physically interacting with the model on large sheets spread across the boardroom table and the reflections of the principal researcher following the introduction of this strategy are significant as the principal researcher’s immediate and subsequent reflection indicate:

*\*Reflection: “This proved to be a very lively session. Many ideas were generated and debate flowed.”*

And:

*\*reflection: “this approach proved positive as it had the group physically on their feet and engaged; it inspired debate and consensus and ideas (substantive codes?) moved from sheet to sheet. It also increased a deepening understanding of the model concepts and participation and ownership of the Action Research process.”*

*And*

*\*reflection: “this session also provided an opportunity to question and challenge. Perhaps (because of) the smaller numbers present and the physical movement, the freedom of not being seated, the group exercised a renewed freedom from narrow focus on task performance (Benefits Dependency Network generation) to researching a combined understanding of the significance and underlying assumptions behind the impending EPR.”*

Themes arising from the group are reported in each of the subsequent processes to follow. What strongly emerged from the meetings were the themes of Time, Benefits, Speed, Endorsement, Quality, Security and Communication. The group gave most time to debate and

development of each of these. For example the substantive code of ‘access’ subsumed into the theme ‘Benefits’ was interesting. This was largely seen as something positive as in: *“improved access,” “24 hour availability of records,” “increased accessibility (to patient record) especially important in cases of serious incident – sudden death,”* and *“portable device access and use.”* But ‘access’ was also seen as something which could be a dis-benefit – as in insufficient PC access: *“some wards are already like internet cafes,”* i.e. very busy and difficult to gain access to a PC. Quality assumed a similar duality. It was seen largely as something that would improve with the EPR – *“maintain accreditation,” “improved standards,” “improved legibility & brevity,” “prompts to complete actions & alerts to prevent adverse events,”* yet it was asserted that quality could suffer for instance if verbal communication such as handover of medical decisions to nurses following ward rounds did not continue or was replaced by being electronically documented in real time.

A similar concern was that of the electronic diary (welcomed as helpful) but a concern was expressed that *“people making appointments for others without checking first”*) would lead to dis-benefits. As can be seen from these examples many substantive codes exhibited qualities lending them to more than one theme; for example, ‘quality’ and ‘communication’ themes. The final categorisation was decided on analysing what was key at the time and in the context in which the substantive code was expressed. Thus in the ‘diary’ example above was given the substantive code of communication and classified under the theme of the same name.

As these themes are echoed in the other processes they will be considered in more detail as they arise below.

### **7.2.2.Process 2 Questionnaire**

Themes arising from Questionnaire 1 were:

Time, Benefits, Speed, Fully electronic, Communication, Dis-benefits  
(See Appendix 5.0 for substantive codes and 5.1 for categories)

Time arose as both a benefit and as a dis-benefit with the greatest weight and frequency of mention being the perception of the EPR as of benefit in relation to time. Time Benefits: Comments included: *“improved” / “better” - time management*, *“less time spent on documenting”*, *“more time with patient”*, *“less duplication = better use of time”*, *“saving time.”*

Benefits were multiple and included: *“Quality improvement, “paper-light, “increasing effectiveness”, “increasing access /improved access /ease of access,” “benefits” to staff included: (“decreased errors, improved legibility, brevity, audit functionality”)* / *“benefits” to patients included: (“decreased errors, “improved care delivery, “improved documentation”*), and widespread endorsement for the EPR.

Dis-benefits: - themes relating to Dis-benefits included Time: *“Time consuming changing systems, procedures and motivation of staff,” “time learning the new system,” “time consuming difficulties with the change over to the computer system,”*

Technical: *“technical difficulties”, “computeritis,”*

And Speed: *“may initially slow down processes,” “time consuming to add entries,”* speed was therefore a theme which occurred both as a benefit and dis-benefit.

Speed and ease: These themes occurred separately but also frequently in combination: *“all relevant information will be accessible at a glance,” “easier access,”” “Easy reading, however time consuming to add entries,” “Easy to find relevant information.”*



Fully electronic: was a concept that arose very significantly (high frequency) in the first questionnaire. There was a repeated assertion or expectation that *“everything will be electronic,” and that the hospital would be paper-light* (if not paperless).

Communication: This was a consistent theme also *“Improved: legibility,” “alert systems,” “better communication,” “effective practice in good communication,” “communication pathways will be more continuous and clear.”*

Thus the initial questionnaire demonstrated a significantly more positive than negative outlook on the EPR introduction into the hospital with seven of the eight respondents answering yes to question 4 “In your view will the MHIS be of benefit to you?” Overall the questionnaire indicated there was a sense of support for the introduction of electronic recording.

The repeat questionnaire at the end of the process was completed by 50% of the Action Research Group and produced no new themes but as anticipated showed an acknowledged increase in awareness of both the motivation for and knowledge about the EPR. Additionally there was an increase in positive attitude towards the EPR as revealed in comments such as *“beneficial to me as a manager to ensure completion of documentation (by junior staff),” and “will improve both efficiency and effectiveness.”*

### **7.2.3. Process 3 Benefits Analysis Model**

The Benefits Analysis produced by the Action Research group, Appendix 4.1, developed the following themes arising from the model’s six headings of *Drivers, Objectives, Benefits, Changes, Enabling Activities and IT Enablers*:

Time, Benefits, Speed, Security, Quality, Change, Communication, Dis-benefits.

Time was seen as a major benefit: improved time management, more time with patient, reduced time looking for charts, real time documentation (do once only) and use of portable devices. There was also a view of Time being negatively impacted: “*some processes slower initially then faster*”, “*slower data entry*”.

Security: was raised as a Driver, Objective and Benefit which was enabled by IT functionality: substantive codes included “*every viewing of the EPR recorded,*” (i.e. contributing to a visual deterrent to inappropriate file access/viewing) and “*visible accountability.*”

The theme of Quality arose from substantive codes such as “*improved legibility*”, “*speedy reports*”, “*accreditation*”, “*improved care*”, “*inform and improve practice*”, “*concise records*”, and “*policy awareness*”, “*increased productivity*” and a range of IT enabled improvements such as “*practitioner signed care plans – automatic*”, “*every entry recorded*”, “*visible accountability – was it done or not.*”

Communication as a theme arose from “*recording in real time – (vital signs / ward rounds)*”, “*quick reports*”, “*improved legibility*”, “*patient history available at the time*”, and “*instant info.*” Thus these themes were echoed in completion of the other research processes (meetings, benefits analysis etc).

Discussion on these themes provided greater depth of understanding. Communication for instance was seen as being enhanced by the EPR in terms of speed, legibility and availability but a concern also existed that required verbal communication must not change. It was not deemed sufficient or acceptable for instance for doctors / clinicians to remotely alter patient care instructions in the EPR and assume this would be noticed / acted upon by another discipline; the continuity of verbal communication was seen as an imperative.

Dis-benefits identified in the benefits analysis included the following substantive codes: “*Speed*” (some processes slower initially then faster); “*training*” arose throughout many processes as a substantive

code indicating the requirement for training as essential. *“Lack of IT skills”* was also cited as a dis-benefit in relation to the requirement to record electronically record information *“will be very difficult / challenging for some,” “could we provide IT skills / typing skills training?”*

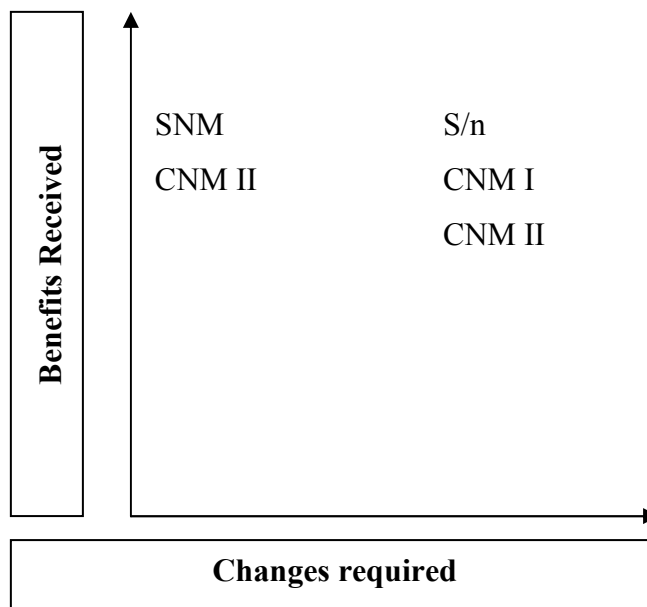
In summary the benefits analysis process stimulated discussion on many processes including positive benefits and disadvantages of EPR to some users and generated themes echoed throughout the other processes.

The steps in analysis continued from completion of a Benefits Analysis to development of a Benefits Dependency Network by adding to the model an awareness of the levels of stakeholder commitment and anticipated resistance which is described below.

#### **7.2.4. Process 4 Stakeholder mapping**

All eight participants were asked to complete “Stakeholder Analysis of Commitment” and “Stakeholder Map” sheets (Appendix 6) which were distributed in advance of the fifth and the sixth meeting. One follow up e-mail reminder resulted in five Stakeholder Maps and Stakeholder Analysis being returned in total. This provided representation of staff nurse, CNM I & II and Senior Nurse Manager (CNM III) grades. One participant verbally completed this request with the principle researcher. In total this meant 62.5% of the group returned a completed Map and Analysis.

The Stakeholder Map asked for a visual indication of where the Action Research participant and colleagues of the same grade in his or her judgement perceived themselves to be in relation to changes required in relation to anticipated benefits from the EPR. It was made explicit that individuals might choose to represent divergent views from their colleagues by indicating their nursing grade in more than one quadrant see Figure 7.1 next page.



**Figure 7.1 Stakeholder map** Source: (Peppard, 2009)

*Q: Where are you and your colleagues of the same grade/role on this map?*

Legend: Nursing grades

SNM: Senior Nurse Manager, (Clinical Nurse Manager Grade 3),

CNM II: Clinical Nurse Manager Grade 2, CNM I: Clinical Nurse

Manager Grade 1, S/n: Staff nurse

The findings from the ‘Stakeholder mapping’ by nurses of their perception of changes required in relation to gains derived indicated a clear distinction between clinically practising nurses and nurses at the more senior managerial levels. Nurse Managers (grade II and I) and staff nurses perceived they and others of their grade would have the most changes to make in order to receive the most benefits. Senior Nurse Managers on the other hand perceived they would have to make small change but would derive large benefits. No results were received for the Assistant Director of Nursing grade. All results were the perceptions of benefits to a particular nurse grade from the perspective of someone employed in that grade. Thus the outcome was of perceived high benefit for all but with significantly more changes required from those at lower administrative levels.

### **7.2.5. Process 5 Stakeholder Analysis**

The ‘Stakeholder Analysis’ of Action Researchers who responded, as individuals and representatives of their grade, revealed that all involved had a commitment to the EPR and would allow, help and make it happen (Appendix 6). Comments written included: “*all for it,*” “*need to do it,*” and “*it’s the way of the times, we should be advancing.*” Themes arising from the Stakeholder Analysis were: Time, Benefit, Speed, Access, Dis-benefits. Dis-benefits raised substantive codes as concerns “*lack of IT skills,*” “*training,*” “*change in professional behaviour,*” “*lack of access to PCs,*” and some recurring themes such as “*Time taken from nurse –client interactions,*” “*time will be an issue at first while staff get used to the system.*”

The sliding scale and comments under the commitment section of this analysis indicated that nurses at all grades, even those who expressed concerns, articulated a commitment to ‘*allow, help or make the EPR happen*’ and wrote of their “*endorsement*” of the project. They evinced a perception of commitment to the EPR introduction as “*part of my role,*” and “*expect this as part of my duties and responsibilities.*”

In comparing this with other processes this indicated a strong overlap with the themes arising from Processes 1 (meetings) and Process 2 (questionnaire 1).

In summary the themes arising from the Action Research Group mirror those found in the international literature , such as improved safety, quality, efficiency, productivity; reduced errors / adverse drug reactions / risk reduction and increased speed in referral / information retrieval (see Chapter 2: Benefits and Table 7.2 below).

**Table 7.2 Benefits of Electronic Patient Records/Electronic Health Records / integrated Clinical Information Systems**

<b>Benefits</b>	<b>Author</b>
Medication safety: drug allergy detection, reduction in prescribing errors such as excessive dose, reduction in incomplete or unclear orders, increase in pharmacy interventions such as detection of drug levels outside of therapeutic range	Mahony et al, 2007
EHR/EPR benefits fall under some of the following headings and include Information: more appropriate, better focused, faster access, different form, structure, flow or presentation, Time: saving, improved productivity for doctors and medical secretaries, improved access to research knowledge anytime and anywhere, real time clinical audit of outcomes and quality, faster compliance with new clinical guidelines and organisational protocols. Productivity gains, avoidance of unnecessary interventions, time savings, improved communication, and reduced duplication. Citizens: improved quality of care	Stroetmann et al, 2006
EHR and e-Prescribing benefits share similar broad categories, some examples: risk reduction, increased effectiveness, lower administrative costs, improved time management for citizens and healthcare providers, improved compliance with clinical guidelines, improved prescribing, reduced drug costs, improved billing, reduced waiting times and smoother transfer between services	Dobrev et al, 2009
The benefits of the Summary Care Record UK are proposed as life saving information about allergies, adverse drug reactions and prescriptions with Benefits of the Detailed Care Record including increased efficiency regarding information sharing and processing, underpinning integrated care and reducing medical errors	Barron et al, 2006

### **7.2.6. Organisational direction and group power**

The stakeholder analysis clearly identified that there was strong support for the introduction of the MHIS EPR and that staff at all levels who responded saw it as a part of their role to allow, and to make happen, the implementation of electronic recording through EPR use. Thus the Action Research Group of staff were aligned with the organisational direction and intended to utilise the power conferred by their organisational role to facilitate the achievement of the strategic objectives. In addition the benefits analysis and meetings validated this finding through group comment and discussion. This refuted the underlying assumption that non negotiated strategy would be resisted. Resistance and dis-benefits were perceived on behalf of self and others but these were largely perceived as short term and would improve in time with familiarity and use.

### **7.2.7. Analysis**

Most substantive codes were classified into specific or general themes depending on the specificity of their properties such as ‘benefits’ or ‘speed’ (general) or ‘endorsement’ (specific) and these have been commented on above.

Some substantive codes however, did not fit into any theme either within the process at which they were generated or within any subsequent process or overall sense. Some examples of these include: ‘*Solicitors*’, and ‘*environment*’ these were returned to the group for comment/ clarification.

This second round of clarification proved helpful. The group reflected on the ideas generated through brainstorming and refined their thinking in this regard so for example “*solicitors*” was subsumed under the codes and theme relating to access rights and “*environment*” classified as a general benefit in regard to ‘saving paper / reducing the

carbon footprint' although there was debate that the increase in PCs and increased demand on electricity negated this supposed benefit!

### **7.2.8.Process 6: Reflections on the Action**

#### ***Research cycle during the Action Research cycle***

Reflection on the processes and learning was encouraged and facilitated from the start, however the group processed most through thinking and commenting aloud during the meetings and through the documentary processes of questionnaires and stakeholder mapping and analysis.

One reflection by the principal researcher may be summed up in the phrase "*objection your honour, the principal researcher is leading the witness.*" This reflection was born from two observations by the principal researcher in relation to the commitment of the group, firstly staff attending meetings even on their allotted day off. The speculation arose *is the Nursing Action Research Group committed to the process and purpose or to the principal researcher?*

The second observation arose during the generation of the benefits analysis. The principal researcher was architect and proponent of both Action Research and Benefits analysis as research methodologies which were willingly accepted by the group. This was based on an Action Research cycle of

1. Plan / Diagnose,
2. Act,
3. Observe and
4. Evaluate.

However during the course of the first cycle, especially the first three meetings, the research process appeared to be led too much by the principal researcher; in effect on reflection it was too pre-planned, too directed by the principal researcher and not participative enough in



terms of the Action Research group determining its own methodologies and course.

This dilemma arises from the interpretation of early forms of action research. The term Plan or Diagnose as the first step in Action Research was perhaps taken too literally and based on a connotation from medical practice permitting data collection strategy planning prior to action (Coughlan and Brannick, 2010). The underlying assumption here is of diagnosis (problem) followed by intervention (action) to achieve a desired outcome. However a newer assumption is that organisations are socially constructed with multiple truths / meanings and many ways of achieving outcomes (Cambell, 2000). This renewed understanding has led to a restructuring of the Action Research concept this year and a replacement of the term '*diagnosis*' with the term '*Constructing*' (Coughlan and Brannick, 2010). The authors argue that the initial planning stage i.e. Constructing, should be collaborative and not decided in advance by the principal researcher (Coughlan and Brannick, 2010).

This was a little of the chicken and egg syndrome. The enterprise had been envisioned from the outset as having two purposes, consideration of a change process and the benefits / dis-benefits thereof, described in the literature as *core* action research (Zuber-Skerrit and Perry, 2002). And the second purpose was researching the research cycle while it was occurring as part of an academic endeavour; described as the *thesis* action research cycle (Zuber-Skerrit and Perry, 2002). The study required an initiator / leader and a direction to follow on commencement. The recruitment and information letter had stated these joint purposes clearly and respondents had joined the group readily and voluntarily. The vision from the outset had been the use of a *Mutual-Collaborative* and insider approach to Action Research (research with people) rather than the *technical scientific and positivist* (a consultancy) approach of having an expert outsider do the research

(research on people). Had the principal researcher unwittingly drifted into a consultancy approach from the start?

The questions required answers. The motivation of the Nursing Action Research group needed to be understood in order to grasp the impact this had on the findings and to ensure the adherence to the concept of *research with* rather than *research on* paradigm.

The dilemma was put to the group. The answer derived was that the group felt strong leadership was required at the outset and the group commitment and motivation had been inspired and maintained because of this leadership and commitment to the process and to the principal researcher.

Commitment to the process and the learning derived from being a member of the group was highly valued as was the open, consistently participative approach maintained throughout the process. As one group member put it, *“for me it was both <commitment to the researcher and the research process>, dates had been given out in advance so once I had committed to the process coming in on a day off was part of the process.”* This view was echoed by other members.

### **7.3. The strength of Action Research**

The group endorsed Action Research as an appropriate methodology for this study as it was truly participative and inclusive. Analysis on evaluation included comments such as *“I think the benefit of a small group was that it allowed more freedom for expression and debate / argument. It was very inclusive and participative and the processes became clear. It was good to be a part of the study; valuable.”* And, *“It was good, <it> gave freedom to debate/ argue, small group was better, in a bigger forum information might get lost”, “or not be heard/ acknowledged,”<added by another member>. “I know more about Action Research, the process was very open and organised, it was very directed at the start but once we got going it took off.”*

## **7.4. Outcomes**

The findings of the Action Research Group were that Benefits Analysis / Benefits Realisation planning was deemed “*useful - a chance to explore the MHIS; identified the challenges and benefits;*” and “*It contributes to buy-in, we may not have had control over the decision to go electronic but may have control over <the manner> of use <through> feedback to and liaison with the development team, increased understanding, engagement and inclusion as the system is designed.*” The Benefits of the Benefits Analysis process also included “*the collaboration was very beneficial, being a part of the group was very helpful,*” and “*it was good – especially the more active sessions, linking the Benefits Analysis model together.*” “*Engagement creates buy-in - it’s always good to get people involved.*” “*The process explained the rationale <for the EPR> and involved us in decisions.*”

The benefits of electronic patient records as identified by the group were in line with those found in the international literature, see Tables: 2.1 page 13, 7.1 page 80 and 7.2 page 93 and may be described under the broad categories of improved quality, improved time management, increased speed, greater access and availability, reduction in errors, improved communication and practice improvements.

The value of Benefits Analysis / Benefits Realisation planning were identified as providing a clearer sense of the rationale for introducing this change in practice and of how these benefits would be gained. Additional benefits included increased personal motivation to use the system and to encourage and indeed direct use of each element of the Electronic Patient Record by staff as the elements came on stream and to actively support the implementation process.

### **7.5. Ideographic viewpoint**

The six processes employed provided triangulation of data gathering with substantive code reproduction appearing and re-appearing in each of the processes, generated articulation of the social and professional values deemed essential to the group such as verbal communication, accessibility and time with patients, helped clarify the research processes to the group and as one group member articulated “*The group got to focus on Benefits to Nurses, nursing specific issues, this was really important.*” Other gains included willingness to attend and encourage others to go to demonstrations of the new elements prior to release, embracing training, overcoming personal reluctance to change / anxieties about getting things wrong and commencing use of the EPR to achieve the identified benefits.

Secondary research questions

- What are the benefits identified if any?
- Was the process deemed of value by the action research group?
- Would the action research group recommend this as an approach to others?

### **7.6. Benefits**

The group identified the benefits of Benefits Analysis as improved awareness of the rationale for an Electronic Patient Record, increased awareness of the changes required, the scope, actions required to enable the process to succeed and contribute to buy-in, increased learning and commitment to the project and importantly it maintained an intra-disciplinary focus.

### **7.7. Value**

Each member of the group felt they had learned and gained from participating in the generation of the Benefits Analysis and participating in the Action Research Group. *“I know more about Action Research, the process was very open and organised ...;.”* And *“a chance to explore the MHIS, identified the challenges and benefits;”* ... and *“it increased understanding and engagement.”*

### **7.8. Recommendations**

The group recommended both the process and use of the Benefits Analysis Model. One comment (slightly paraphrased) sums it up as *“It would be a good process to involve others in, perhaps to share the information at intervals from the working group because peoples expectations are changed by engagement, ultimately fears / anxieties are changed by information and training.”* The Nursing Action Research Group had not determined at the outset to disseminate information to the organisation throughout the research. Several members received enquiries as to the group’s purpose and progress during the course of the study. Sharing of information at regular intervals with the wider organisation was one of the Group recommendations as a way of engaging, changing expectations of users, aiding the buy-in process and ultimately passing on the benefits to the organisation which did not occur in this case during the first Action Research cycle. The group further recommended benefits realisation planning to others considering major IT implementations in health care settings.

## **7.9.      *Limitations***

The Action Research group was a small homogenous group of nurses' representative of each nursing grade in one psychiatric hospital and therefore the findings are entirely reflective of and pertinent to this group. The principal researcher was in-experienced in research and was learning with the group as the research occurred. However, the Nursing Action Research Group became a cohesive work group, completed processes agreed at the outset and through feedback, reflection and discussions generated research findings validated by the group as a whole.

The approach and the findings, whilst not generalisable, may be of interest to others contemplating the introduction of comprehensive changes particularly those involving the introduction of information technology in health care.

Due to time and the study limitations only one Action Research cycle is presented here but it is hoped this presents a clear picture of what can be achieved rapidly through advanced planning and an inclusive methodological approach.

Further Action Research cycles would continue to explore the methods to continuously enhance the benefits derivable from Electronic Patient Records and to study the dis-benefits identified. Dis-benefits were identified by the Group, such as potential and actual insufficient PC access, reduced time for nurse-patient interactions due to computer use and time spent learning. Future Action Research cycles could explore whether these dis-benefits are self-resolving, with burgeoning system familiarity, or investigate means towards resolution.

## **7.10. Discussion**

The decision to invest time, staff resources and effort into a project such as Benefits Analysis for an organisational strategically planned project is a significant one as it bears a cost and the groups findings may impact on the organisations planned direction. The Group's findings in relation to expected EPR benefits were consistent with that of the literature. The benefits of the benefits analysis process was a developed deeper group awareness of the benefits which may be derived from EPRs, of the change processes, of a heightened sense of inclusion and increased awareness of the business drivers and objectives for the change and a commitment to contribute to the achievement of the objectives.

This group brought and raised concerns as well as hopes in relation to using IT during the research process. The process assuaged some anxieties and clarified some issues and provided deeper understanding of some fundamental issues such as what the drivers, objectives and expected benefits of changing to Electronic Patient Record usage from recording on paper and the role of IT in this process.

On evaluation many of the group had already, as a result of the process, changed personal behaviours towards electronic recording and were also influencing change in the behaviour of other peers and colleagues around and subordinate to them. This included personal use, directing staff to utilise the system, offering support or facilitating training, increased awareness of the long term gains and not accepting avoidance of use in the pathway towards achieving objectives.

Noticeably some Group members voiced a change in their own attitude towards IT in general and the MHIS EPR in particular and acknowledged this change in attitude as contributing to a change in their personal and managerial behaviours towards others. This was expressed as knowing more, enhanced understanding of the benefits,

feeling less anxious and more positive, viewing Electronic Patient Records as the future and seeing promotion of the EPR as part of one's role in the organisation.

The dual processes of undertaking Benefits Realisation planning and Action Research were both challenging and rewarding to the group and ultimately evaluated as a constructive, inclusive and worthwhile activity and one the group would recommend to others.

### **7.11. Conclusion**

Benefits Analysis and Benefits Realisation planning is a concept gaining popularity but by no means a universally employed or routine activity in Ireland, Europe or the USA. The benefits however of engaging in Benefits Realisation planning are demonstrated in this small study as generating increased awareness, understanding, engagement and commitment to support the corporate direction initiated. This was achieved within the course of one Action Research cycle, further iterations and learning it is suspected will contribute to increased wide scale engagement, buy-in and achievement of the planned Electronic Patient Record benefits.



## **7.12. Summary**

The smooth introduction of an Electronic Patient Record to entirely replace paper based clinical recording into a psychiatric hospital is both a daunting and exciting challenge. Clinical and other users may not have been engaged in the initial decision making process and yet their use of the new system is imperative to its success. Although the benefits of Electronic Patient Records are well established in the literature and practice it is also well known that many IT driven projects fail to reap the expected benefits.

This study charts the processes and outcomes involved in Benefits Realisation planning amongst a group of nurses at various clinical and administrative grades utilising Action Research methodology. The final evaluation is that this was a meaningful activity to the group which changed their attitudes and behaviours, enhanced understanding and provided a clear commitment to support the organisational strategic direction of introducing Electronic Patient Recording. The Nursing Action Research Group recommended Benefits Realisation Planning as an approach worthy of consideration by others contemplating major changes involving the utilisation of IT.

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## Appendix 1.1 HSE EPR beginnings

<b>Dublin North East</b>	<b>Cavan/Monaghan Louth Meath</b>
<b>Dublin Mid Leinster</b>	<p><b>Laois/Offaly</b></p> <p>1. Laois/Offaly – trial on iPMS Maxims complete EPR for 1 month in 2002 but not continued due to costs of vendor package (70k). No Business Benefits Analysis performed before pilot system launched. The system was populated with real but anonymised patient data and piloted with a view to providing a regional EPR. Outcome: staff felt demoralised after major effort, launch, learning and expectation to have the project stopped due to financial costs / leadership and political will to continue the implementation which should have been planned for at the outset.</p> <p>2. (Offaly) ComCar [community care] Benefits analysis ✓ This system described as an EPR provides Patient: Demographics, Assessment (psychiatric), Referral, Documentation [assessment, advice given, care provided, actions arising / outcomes (admission, referral [names &amp; disciplines], out patients appointments, records clinical referrals / multidisciplinary discussions / decisions, ICD 10 diagnosis and appointments). Limitations: used by liaison team only (3 people). Not integrated into hospital records. Not linked to any other modalities (lab results, medication, in-patient care/treatment) Some hospital records are computerised but these are on a separate system, not interoperable and may only be accessed separately, not through ComCar.</p> <p>3. Laois / Offaly Care Programming Approach As described (personal communication) this is more an Information System than an Electronic Patient Record. Again a local application run on an Access database which captures, patient demographics, diagnosis, needs analysis and corresponding plan of care and prescribed medication. It does not include referrals, appointments, laboratory results, or day to day treatment / care. Interaction is largely read only with information input done manually by a (0.5 wte) administrator. The information is utilised by all the community mental health nurses and key workers</p>

	<p>St Vincent’s Hospital Fairview, Assessment, Admission, attendances, diagnosis, Discharge (Make contact with Ger Fitzpatrick IT)</p> <p>Central Mental Hospital reported having an electronic Information System which records assessments, reports and results including blood results (currently).</p> <p>Cluain Mhuire Mental Health Services &amp; St John of God Hospital use the MHIS (as described throughout the dissertation)</p>
<b>South</b>	<p><b>Kerry</b>  <b>West Cork</b>  <b>South Lee</b>  <b>North Lee</b>  <b>North Cork</b>  <b>Waterford</b>  <b>South Tipperary</b>  <b>Carlow/ Kilkenny</b>  <b>Wexford</b>                  No EPRs reported</p>
<b>West</b>	<p><b>Donegal</b>  <b>Sligo / Leitrim</b>  <b>Mayo</b>  <b>Roscommon</b>  <b>Galway</b>  <b>Clare</b>  <b>North Tipperary/East Limerick</b>  <b>Limerick</b>                  Donegal – WISDOM – funded by HRB trial EPR being reviewed by HSE                  Benefits analysis (no, some consultation with staff and ground up development)                  Demographics (patients and staff on Db), assessment, appointments</p>

## **Appendix 2.1 Letter of Information**

**Title of Study:** The benefits of a Business Benefits Analysis: an Action Research study of the process and outcomes of performing a Benefits Analysis in relation to one element of an Electronic Patient record in a Psychiatric Hospital.

**Name of Researcher:** Peter Donnelly  
Research Collaborators: No external collaborators (external supervisor)  
(Respondents to the Research invitation are deemed internal research collaborators as this is a central tenet of Action Research).

**Timeframe & duration of research:** Jan 2009 – May 2009

**Requirements of respondents:** six meetings (of one hour duration) will be arranged in relation to the Research topic and respondents are asked to attend all of them or as many as possible. Five of the meetings will be at weekly intervals with one further meeting to occur 3 weeks after the implementation of the ‘Assessment’ element of the MHIS.

### **Purpose:**

The objectives of this study are to determine if completing a benefits analysis assists nurses, specifically in relation to the implementation of one *element* of the Mental Health Information System (MHIS).

### **Objectives**

The introduction of Electronic Patient Recording will lead to a significant change in nursing practice, is a business benefits analysis of assistance in planning and clarifying nursing expectations of the changes in practice required? What is the impact? Is the impact positively or negatively evaluated by the group?

### **Use:**

The process of this research and the production of a Business Benefits Analysis may be useful to the Action Research Group in informing practice in relation to both the MHIS element being implemented within the time frame (Assessment) and other MHIS elements pending implementation.

### **Research Method: Action Research**

Brief explanation follows (Action research is “the systematic study of attempts to change and improve practice by groups of participants by means of their own practical actions and by means of their own reflections upon the effects of these actions” Ebutt, 1985, 156 as cited Clark, 2000).

**Data Protection:** Data collection, storage and analysis will be in line with the Data Protection (& Amendment) Acts and Best Practice in Scientific Research.

**Data collection method:** No audio or video recording will occur. Data will be collected in two formats: by recording meetings and through 2 questionnaires  
Verification of accuracy of minutes will occur in two ways  
1. Through circulation of typed minutes in advance of subsequent meetings and  
2. at commencement of each subsequent meeting.

**Data analysis:**

Questionnaires (analysed using Quasar II software)

\*Action Research process:

**Confidentiality:**

The process of Action Research will include six meetings of one hour each. The respondents will effectively become the Action Research group. The first meeting will establish Ground Rules which will include rules on Confidentiality to be agreed to and adhered to, consensually, by all. The Researcher is a part of this group and will be equally bound by the rules agreed.

Throughout the research process the researcher will ensure that all contributors input is anonymised (known only to the group); findings, conclusions and recommendations will not identify any group member.

Additionally the Researcher undertakes that no part of this research will be published or presented in any manner other than in relation to the MSc Dissertation for which the study was undertaken, without the express and written permission of all members of the Action Research group.

**Choice:**

You are invited to participate in this study. It is your choice to accept or decline. Accepting or declining the invitation will have no impact (positive or negative) on your current or future role / employment.

If you choose to participate in the study you may withdraw at any time without explanation.

It is further understood that not all participants will be available for all meetings on every occasion.

Participants who do not attend meetings on two consecutive occasions, without notifying the principal researcher, will be deemed to have effectively withdrawn from the study and will not be circulated minutes of meetings unless they re-attend the meetings in person.

Should you choose to participate in this study your commitment to the study will have no negative impact on service provision or care.

**Ethics:**

This study could not occur without the permission of the St John of God Provincial Ethics Committee and the approval of the University of Dublin - Trinity College Ethics Committee; both of which have granted permission.

The principles for ethical research will be closely followed throughout.

This letter is for information only. A separate consent form is attached which must be signed and dated should you wish to participate in the **proposed study**.

Many thanks,

Peter  
Peter Donnelly  
Principle Researcher / MSc Student

For further details

Contact details:

Peter Donnelly, Principle Researcher / MSc Student  
Kilcronee Corridor, St John of God Hospital 2771575  
[peter.donnelly@sjog.ie](mailto:peter.donnelly@sjog.ie)

### **Appendix 2.2 Consent Form**

**Title of Study:** The benefits of Benefits Realisation Planning.

**Name of Researcher:** Peter Donnelly **Contact** [peter.donnelly@sjog.ie](mailto:peter.donnelly@sjog.ie)

**Tel:** 277 1596 **Timeframe & duration of research:** Jan – May 2010

- I have read the Information letter.
- I understand the purpose of the study.
- I have had the opportunity to ask questions and clarify details in relation to the research and my role within the Action Research group.
- I know that I can cease participation in the Action Research group at any time without explanation.
- I know that Participants who do not attend meetings on two consecutive occasions, without notifying the principal researcher, will be deemed to have effectively withdrawn from the study and will not be circulated minutes of meetings unless they re-attend the meetings in person.
- I understand the results of this study may not be published, form part of a presentation or report without my written permission.
- I will not be identified individually in any way other than nursing grade of the participant Action Research Group.
- I understand that data will be stored securely throughout the Research period and then destroyed within 13 months.
- I am aware that no video or audio recording will be used but meetings will be minuted and subject to verification by the Action Research group at subsequent meetings to ensure validity.
- I understand that choosing to participate in this study does not affect my current or future role positively or negatively.
- My participation in this study does not compromise service provision or care.
- I agree to participate in this study.

Print Name:	Signed:	Date:

## **Appendix 2.3 What is Action Research?**

### Objectives:

The objectives of this study are to determine the benefits of performing a Business Benefits Analysis prior to implementation of one *element* of the Mental Health Information System (MHIS). The question is: can a Business Benefits Analysis aid the process of user acceptance, contribute to the use of electronic patient recording and the changes in practice EPR necessitates and provide benefits to the end users as determined by the end users?

### Methodology

Action research is the methodological approach of choice for this research.

Action Research is “a critical, self-reflective, bottom up and collaborative approach to enquiry,” Bowling (2002, 367). Action researchers collaborate with participants in both the research and the change processes with the aim being to improve practice Meyer (2006). According to Hart and Bond (1995) Action Research has 7 distinguishing criteria of which the following make it the methodology of choice for this piece of research, it is:

“Problem focused, context specific, and future oriented

- Involves a change intervention
- Aims at improvement and involvement
- Involves a cyclical process in which research, action and evaluation is interlinked.”

It is viewed also as being inherently democratic (ibid).

Those nurses who respond and consent to be included in the research will become the Action Research group and collaboratively contribute to the research process and outcomes.

### Relevance

St John of God Hospital has set an objective of implementing an Electronic Patient Record which will be adopted and utilised proficiently by all clinicians within the hospital to record all patient care. Internationally there is strong evidence of the benefits of Electronic Health / Patient Records but there is also evidence of under-utilisation, of clinician reluctance to adopt e-health solutions and of failure to reap the promised benefits offered by EPRs. This research explores the approach of engaging end-users to define what benefits they will obtain (for one element of the EPR) and evaluates the success of this approach. The methodology is inclusive and the findings will be of direct value to the organisation and perhaps other organisations similarly contemplating or in the process of implementing an EPR.



## Appendix 2.4 Benefits Analysis Definitions & Examples

Definitions:	Example
<b>Business Driver:</b> A view (usually held by senior management) as to what is important for the business -at a given time – such that changes must occur	Competitive forces, Regulatory requirements Ex: Service user satisfaction, risk reduction, reduce bureaucracy
<b>Objective:</b> Organisational target for achievement agreed for the project in relation to the drivers and envisaged changes.	To improve / reduce .....  Ex: Reduce risk, reduce time looking for / filing records, improve service user satisfaction
<b>Business Benefit:</b> An advantage on behalf of a stakeholder group / an advantage derived from a business change	Reduction in / improvement in  Ex: Reduce time to complete reports / admissions / discharges. Reduced duplication / errors / omissions
<b>Business change:</b> A permanent change to the business, such as an organisational change, a shift in roles / responsibilities, or the adoption on new processes and procedures. Operate in a new way	Identify: evidence of achievement; change responsibility  Ex: creation of patient, clinician and employer centric views; workload management, self service capability.
<b>Enabling activities:</b> Short term business changes, or one-off activities, that enable the planned business changes to take place.	Ex: Configure new process model, define new work practices,
<b>IT Enablers:</b> IT Functionality that will support the delivery of the business changes	Develop and implement new system Ex: EHR, EPR, Dashboards, Clinical Decision Support, compliance .....

### **Appendix 2.5 Meetings Schedule - Business Benefits Analysis**

Stakeholders (Nursing) MHIS 2010 implementation (Admission, Assessment & Progress recording)  
Introducing Electronic Patient Recording in an Acute Psychiatric Hospital setting in Ireland

<b>Week</b>	<b>Agenda</b>	<b>Process Recording (stages ~ Outcomes)</b>
<b>1</b>	<ol style="list-style-type: none"> <li>1. Purpose &amp; Overview of the task and processes</li> <li>2. Scope of MHIS (short presentation on handout)</li> <li>3. (Tasks per week) &amp; how to achieve them ~ methods (brainstorming, post its, key concepts, process recording, validation),</li> <li>4. Group Ground rules, Achieving Consensus / decisions methods, roles: (time keeper, process monitor / recorder, secretary, researcher, ethics, publication),</li> <li>5. Questionnaire</li> <li>6. Defining a <b>Business Benefits Analysis</b> (handouts &amp; discussion)</li> <li>7. Benefits Management ~ MHIS <b>Driver Analysis &amp; Project Objectives</b> (Steps 1 &amp; 2)</li> <li>8. Tasks for next weeks meeting</li> </ol>	<p><b>Group processes:</b> Forming, Storming, Norming, Performing, Parting</p> <p>Group tasks (Agree ground rules, agree/accept group roles, complete Questionnaire 1, commence Business Benefits Analysis, Individual reflection / preparation for next meeting).</p>
<b>2</b>	<ol style="list-style-type: none"> <li>1. Questionnaire 1 findings ~ group validation</li> <li>2. Recap on MHIS <i>Driver Analysis &amp; Project Objectives</i> ~ group validation</li> <li>3. <del>(K)</del> Benefits Dependency Network (<b>Benefits Realisation Plan</b>) <b>Changes and Enabling Activities</b> (Steps 3 &amp; 4)</li> <li>4. Tasks for next weeks meeting (<b>Nursing Stakeholder analysis</b>)</li> </ol>	<p>Group validation of previous weeks meeting and questionnaire findings</p> <p>Progress Business Benefits Analysis ~ Development of Benefits Dependency network</p>
<b>3</b>	<ol style="list-style-type: none"> <li>1. Recap on steps 3 &amp; 4 (changes &amp; enabling activities) ~ group validation</li> <li>2. Progress &amp; consolidate Steps 3 + 4 Practice Changes &amp; Enabling Activities</li> <li>3. <b>Nursing Stakeholder analysis</b></li> <li>4. Consider <b>IT functionality</b> (Step 5)</li> </ol> <p>Tasks for next week</p>	<p>Group validation of previous weeks meeting</p> <p>Progress Business Benefits Analysis ~ Complete stakeholder analysis</p> <p>Consider and map IT role in delivering benefits</p>

4	<ol style="list-style-type: none"> <li>1. Recap from last week ~ group validation</li> <li>2. Consolidate Steps 2-5 <b>Objectives, Benefits, Changes, Enabling Activities, IT Enablers</b></li> <li>3. Consolidate Stakeholder analysis</li> <li>4. *IMPLEMENTATION COMMENCES FOLLOWING THIS MEETING</li> </ol>	<p>Group validation of previous weeks meeting Consolidation</p>
5	<ol style="list-style-type: none"> <li>1. Questionnaire 2</li> <li>2. Implementation evaluation</li> </ol>	<p>Group validation of previous meeting Completion of Questionnaire 1 for second time Evaluation of BBA process Evaluation of Action Research Process</p>
6	<ol style="list-style-type: none"> <li>1. Questionnaire 2 findings ~ group validation</li> <li>2. BBA evaluation</li> <li>3. Process evaluation ~ Group feedback</li> </ol>	<p>Group validation of previous weeks meeting</p>
<p>*Additional 2 weeks to complete process if / as required</p>		

**(X)** Purpose

Establish Dependencies i.e.: what needs to happen to obtain the hoped for benefits. Dependencies between: Benefits & Change

## Appendix 2.6 Stakeholder map

### Instructions for completion of Stakeholder Map

Please consider carefully the next 2 documents.  
 Your views are an important part of the analysis.  
 Please do not identify yourself (other than by grade) or anyone else.

**Stakeholder Map:** Please indicate (by use the abbreviations for your grade) where you see yourself / your grade generally on the stakeholder map in relation to the degree of benefits received / change required as a result of MHIS EPR introduction.

Please note: if you feel your personal view is divergent from that of your peers please make two entries for example

	CNM I
	CNM I

### Stakeholder Map

<b>Benefits received</b>		
	<b>Changes required</b>	

Q: Where are you and your colleagues of the same grade/role on this map?

Grade/role	Abbreviation
Staff nurse	S/n
Clinical Nurse Manager 1	CNM I
Clinical Nurse Manager 11	CNM II
Clinical Nurse Specialist	CNS
Senior Nurse Manager	SNM
Assistant Director of Nursing	ADoN

**Appendix 2.7 Stakeholder analysis of MHIS Admission, Assessment & Progress notes recording in MHIS Electronic Patient Record**

Stakeholder group	Perceived Benefits / Concerns	Changes needed	Perceived Resistance	Commitment (Current & Required)				
				Anti	None	Allow it happen	Help it happen	Make it happen
ADoN								
SNM								
CNM II / I								
Staff Nurses								

Stakeholder Analysis source: Peppard 2009

Purpose: To Establish dependencies:

Identify stakeholders whose commitment / action is needed to achieve objectives

Determine the perception and views of each stakeholder group representative

Gain understanding of the motivation to resist or change amongst stakeholder groups

Gain understanding of the actions required to ensure the commitment of stakeholders to achieve the objectives

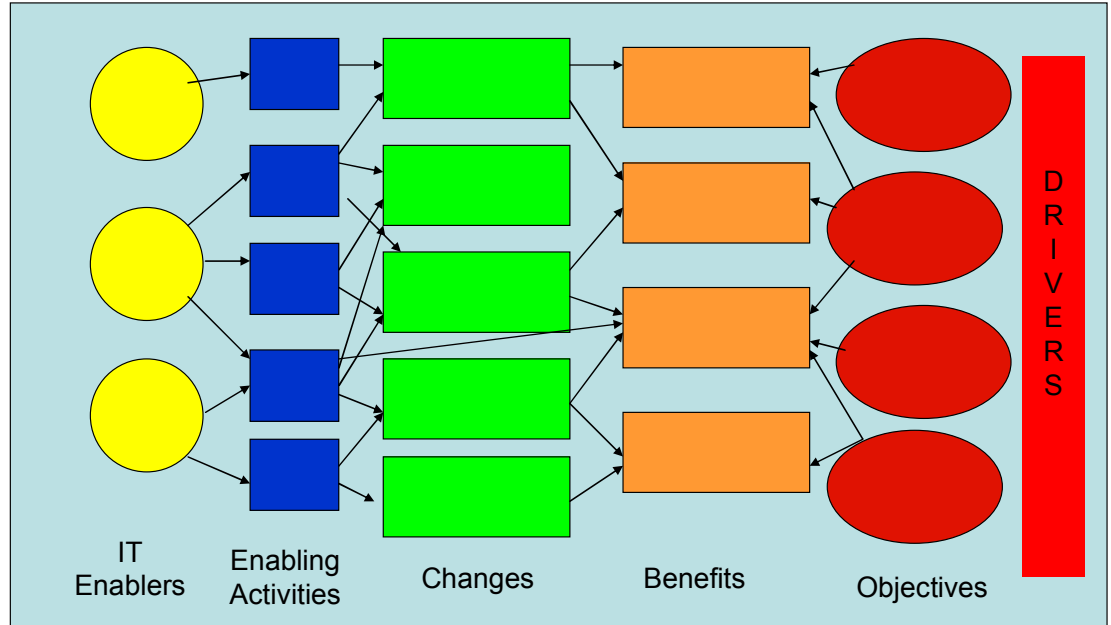
Develop action plans to deliver the appropriate level of stakeholder involvement commitment

Source: Peppard 2009

## Appendix 2.8 Benefits Dependency Network

# Benefits Dependency Network

J. Peppard 2009



Benefits Dependency Network, source: Peppard, 2009

### ***Appendix 3.1 Guide to Questionnaire***

#### **MHIS Action Research Group: A guide to the MHIS Survey questionnaire**

Dear MHIS Action Researcher,

Many thanks for taking the time to complete this short questionnaire which is designed to ascertain your current knowledge of and attitudes to the impending MHIS implementations over this year 2010. The questionnaire will take approximately 6-10 minutes to complete.

Please note this questionnaire is completely anonymous. You will not be identified in any way having completed the questionnaire and you should not identify yourself in any way on the document.

The questionnaire is part of a research study on the benefits of a Benefits Analysis.

The questionnaire results will be compiled by Peter Donnelly (principal researcher) and the findings returned to the group for validation.

The questionnaire will be repeated at the second last meeting of the Action Research Group

Please read through the questionnaire first before answering.

Thank You

## ***Appendix 3.2 Questionnaire***



### **Survey: MHIS Survey Jan 2010 V2**

Date Range: 18/01/2010-22/01/2010

Survey of knowledge and attitude to the MHIS Electronic Patient Record



MHIS Survey Jan 2010 V2

1

What do you know about the impending MHIS (electronic patient record) to be introduced in 2010?

Please write in your answer:

N/A?

2

Please describe any specific aspects of the MHIS to be implemented in 2010 which you know of.

Please write in your answer:

N/A?

3

Please outline your views on the MHIS electronic patient record

Please write in your answer:

N/A?

4

In your view will the MHIS be of benefit to you?

Please select an answer:

Yes

No

N/A?

5

If you answered yes to question 4 what will the benefits of the MHIS to you be?

Please write in your answer:

N/A?

6

If you answered no to question 4 why in your view will the MHIS not be of benefit to you?

Please write in your answer:

N/A?

7

Please describe your views of the short term impact of using the MHIS on your nursing practice.

Please write in your answer:

N/A?

8

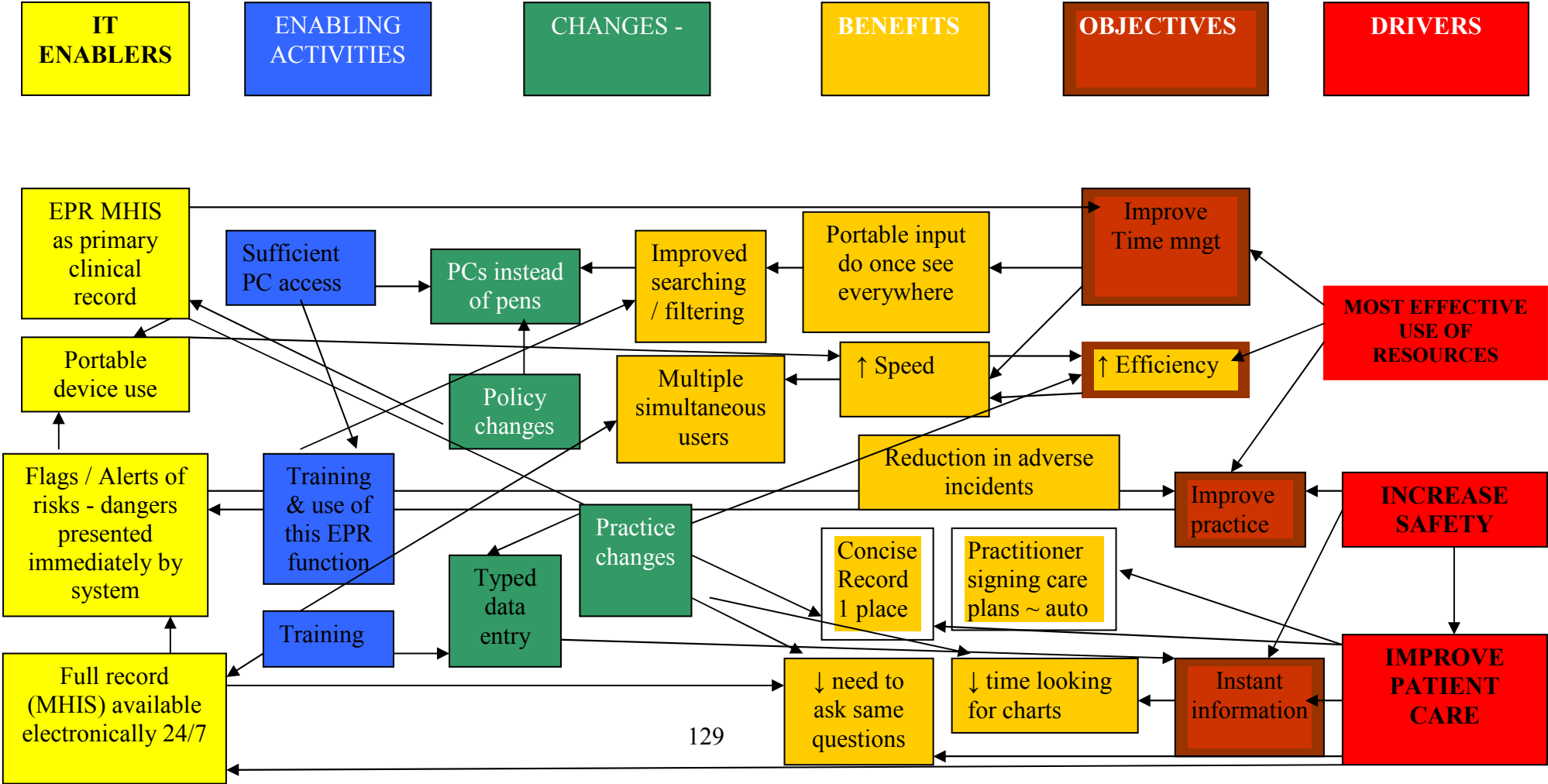
Please describe the long term impact of using the MHIS on your practice

Please write in your answer:

N/A?

See **Appendix 4.1** on next page

**Appendix 4.1 Benefits Dependency Network**  
 (Extract from Nursing Action Research: based on Peppard 2009)



## **Appendix 5.1 Questionnaire 1 substantively coded**

**1**

What do you know about the impending MHIS (electronic patient record) to be introduced in 2010?

1. All records will be transferred from paper based to electronic (all-e)
2. I am aware that it will occur in stages, (phases)
3. currently part of the system (e.g dashboard) is being used hospital wide
4. goal of which is to transfer patient records to electronic system e
5. pt care from admission to discharge documented electronically (all-e)
6. assessments (EPR elements)
7. lab tests
8. care plans
9. progress notes
10. discharge plans
11. referrals to other teams / programmes (e-referrals)
12. Plans to improve patient record system (improve / enhance)
13. Everything to do with a client will be computerised and (all-e)
14. all relevant information accessible at a glance (accessible)
15. Very little (?)
16. Assess to patient information (? Should be access)
17. Prescribing medication and
18. bloods by medical team (EPR elements) (CPOE)

[ ] N/A?

**2**

Please describe any specific aspects of the MHIS to be implemented in 2010 which you know of.

1. Lab component and (EPR elements)
2. progress notes
3. Development of nursing profile (e.g care plan, admission) (specific IT functionality)
4. change of viewer to more attractive / user friendly profile (IT functionality)
5. phased introduction of pharmacy / prescribing (medication)
6. <phased introduction of > admitting a patient
7. hoping it will be user friendly (hope & easy to use)
8. Blood requests and results (EPR element)
9. Prescriptions
10. Full assessment
11. Bigger emphasis on non-paper recording (all-e)
12. My views regarding the MHIS, is that patient's notes will be more accessible, easy to gain up to date knowledge / report of patients. That I can add what I need for others to know. (Accessible, ease)

13. Effective – useful tool for (**effective**)
14. gathering relevant information about
15. individual patients

N/A?

**3**

Please outline your views on the MHIS electronic patient record

1. May initially slow down patient care processes (**Time / speed**)
2. Eventually will provide benefits and decreased errors ( )
3. I believe it is a viable, realistic way forward (**endorsement**)
4. to improve the delivery of patient care (**patient - benefit**)
5. <improve> documentation (**benefit**)
6. that does require a sensitive approach not to overlook the human touch to admission process (**humanity**)
7. If computers are accessible, then it will benefit everyone
8. Easy reading however **time** consuming to add entries

N/A?

**4**

In your view will the MHIS be of benefit to you?

Please select an answer:

Yes 7

No 1 (note yes & no ticked by 1 respondent with a response made to Q5 & Q 6)

N/A?

**5**

If you answered yes to question 4 what will the benefits of the MHIS to you be?

1. Improved legibility (**benefit**)
2. Improved alert systems (**benefit**)
3. Decreased errors (**benefit**)
4. A uniformed approach to patient care (**benefit?**)
5. May lead to an increase in efficiency in carrying out admission process, (**benefit**)
6. Allowing more contact with patient care it will (**Time**)
7. Decrease length of note writing as (**brevity**)
8. Readers will keep note taking brief (**brevity**)
9. It will have a record/ audit / statistic profile (EPR element)
10. Improved communication between MDT teams (**communication**)
11. Improved continuity of care (**benefit**)
12. "See at a glance" all assessments and tests (**Speed**)
13. Saving time (**time**)
14. Paperless office (**all-e**)
15. Easier access to relevant information (**easy / access**)
16. Again, information will be on the computer and easy to find (**easy**)

17. Referral may be made through this system (EPR element)
18. More valuable member of team (?)
19. Better communication (**communication**)
20. I can / will be able to write my notes, (EPR element)
21. it will be paperless more compact (**all-e**)
22. More efficient way of providing general information about patients (**efficiency / benefit**)

[ ] N/A?

**6**

If you answered no to question 4 why in your view will the MHIS not be of benefit to you?

I think where this will become problematic is the access to computers

[ ] N/A? 3

**7**

Please describe your views of the short term impact of using the MHIS on your nursing practice.

1. Increased time needed to input pt care details (**dis-benefit**)
2. Technical difficulties with the programmes (**dis-benefit**)
3. Time consuming difficulties with changeover to computer system
4. Users overcoming the initial "computeritis"
5. Changing users (staff) perceptions of its efficiency and (**Change**)
6. perceptions of that "we will be in the office typing all the time" (**change**)
7. less or no time "doubling up" writing information times over (**duplication**)
8. able to access information quicker e.g. office downstairs –charts up on wards or in records <office> (**access / speed**)
9. I imagine there will be difficulty initially as everyone will need training (**dis-benefit / training**)
10. The short term impact will be the time learning the new system
11. New change is always difficult @ first
12. Time consuming – changing systems /
13. procedures and
14. motivation of all nursing staff (**change**)

[ ] N/A?

**8**

Please describe the long term impact of using the MHIS on your practice

1. Improved legibility (**benefits - IT**)
2. Improved alert systems (**benefits = IT**)
3. MHIS would improve patient treatment that they receive when admitted to hospital (**benefit**)

4. ease of access to records (**ease / access**)
5. Decreased errors due to legibility (**benefit**)
6. Hopefully a more productive and
7. effective practice in good communication and
8. valued by team members (?)
9. Ensure that all areas of the admission process have been completed / addressed due to red, amber, green codes (**Benefit**)
10. allows less time spent on documentation &
11. more time with patient
12. Increased involvement of patients within their treatment plan and (**benefit - patient**)
13. improve delivery of care as (**benefit**)
14. **communication** pathways will be more continuous and clear
15. Stream lined, more efficient documentation of pts journey with the service
16. Less paper work (?)
17. better time management
18. access to all clients history and records
19. blood results
20. investigations
21. prescriptions etc
22. The more I use this system the easier it will become (**easy**)
23. all notes / reports / etc will be easily looked at and (**all-e**)
24. it will be paperless therefore (**all-e**)
25. less cluttered
26. Improve **time** management of all nursing staff
27. improve practice and (**benefit**)
28. **access** to new skills

## Appendix 5.2 Questionnaire 1 ~ Categories

### MHIS Questionnaire Survey Jan 2010

Some Research processes explained:

**Constant comparative method** – generation of theory at sufficient level of abstraction and detail to explain the variation in the observed data.

**Coding:**

**Open coding:** Each sentence / incident is coded into as many substantive codes as possible to ensure detailed theoretical coverage and comprehension of the underlying process.

**Substantive codes:** coding of the actual substance of the data

**Categories:** codes condensed into a higher level of abstraction (for example classes of objects, events, phenomena with shared characteristics with unique definition).

**Properties:** are the characteristics of the categories. Studying the properties exhibited in different occurrences of the category may refine the definition of the category or generate new categories.

Core categories: categories condensed together. Core categories form the centre of the theory and explain the variation in behaviour seen in the data.

Saturation: examination of the data reveals no further properties or categories

Answers	Substantive codes	Category	Core category Theme
1. What do you know about the impending MHIS (electronic patient record) to be introduced in 2010?			
All records will be transferred from paper based to electronic	All paperless	Entirely electronic	electronic
I am aware that it will occur in stages,	Awareness / stages	Phases	
currently part of the system (e.g dashboard) is being used hospital wide	Current partial usage	Phases x2	Phases
goal of which is to transfer patient records to electronic system	e-goal		Paper-light-electronic x2
pt care from admission to discharge documented electronically	All paperless	Entirely electronic	Paper-light-electronic x3
assessments	EPR element	Entirely electronic	Paper-light-electronic x4

lab tests	EPR element	Entirely electronic	Paper-light-electronic x5
care plans	EPR element	Entirely electronic	Paper-light-electronic x6
progress notes	EPR element	Entirely electronic	Paper-light-electronic x7
discharge plans	EPR element	Entirely electronic	Paper-light-electronic x8
referrals to other teams / programmes	EPR element	Entirely electronic	Paper-light-electronic x9
Plans to improve patient record system	EPR element	Improve	Quality Improvement x1
Everything to do with a client will be computerised and	e-record	Entirely electronic	Paper-light-electronic x10
all relevant information accessible at a glance	access	Speed / access	Speed x1
Very little	Little knowledge	Knowledge	
Assess to patient information	? not corrected in feedback ? should have been <i>access</i> ?		
Prescribing medication and	EPR element	Entirely electronic	Paper-light-electronic x11
bloods by medical team	EPR element	Entirely electronic	Paper-light-electronic x12
[ ] N/A?			
2			
<b>2 Please describe any specific aspects of the MHIS to be implemented in 2010 which you know of.</b>			
Lab component and	EPR element	1	Lab results
progress notes	EPR element ditto	1	
Development	Disciplinary	1	Discipline



of nursing profile (e.g care plan, admission)	profile	1	specific profiles
change of viewer to more attractive / user friendly profile	upgrade	1 1	Interface upgrade
phased introduction of pharmacy / prescribing (medication)	EPR element	1	Phase / pharmacy
<phased introduction of > admitting a patient	Phased implementation	2 & Phased implementation	Phases x2
hoping it will be user friendly	hope		
Blood requests and results	EPR element	2	Lab results
Prescriptions	EPR element	2	Prescriptions
Full assessment	EPR element	1	Assessment
Bigger emphasis on non-paper recording	e-record	Entirely electronic	Electronic
Effective – useful tool for	effective	Useful / effective	Effectiveness x1
gathering relevant information about individual patients	Relevant Patient data		
[ ] N/A?			
<b>3 Please outline your views on the MHIS electronic patient record</b>			
May initially slow down patient care processes	Speed	Speed	Time x2
My views regarding the	More access,	Access/ beneficial	Access, ease

MHIS, is that patient's notes will be more accessible, easy to gain up to date knowledge / report of patients. That I can add what I need for others to know.	Easy & functional		
Eventually will provide benefits and decreased errors	Benefits (in time) Reduced errors	Beneficial	Beneficial x1
I believe it is a viable, realistic way forward	Achievable Improvement	Beneficial	Endorsement
to improve the delivery of patient care	Care improvement	Beneficial to patient	Patient benefits 1
<improve> documentation	Improved documentation	Beneficial	B x3
that does require a sensitive approach not to overlook the human touch to admission process	Social need		Sensitive human touch
If computers are accessible, then it will benefit everyone	benefit	Beneficial	B x4
Easy reading however time consuming to add entries	Speed	Speed	Speed x2
<input type="checkbox"/> N/A?	0		
<b>4. In your view will the MHIS be of benefit to you?</b>			
Please select an answer:			
<input type="checkbox"/> Yes: 7			

[ ] No: 1 (note: yes & no ticked by 1 respondent with a response made to Q5 & Q 6)			
[ ] N/A? 0			
5			
<b>5. If you answered yes to question 4 what will the benefits of the MHIS to you be?</b>			
Improved legibility	Communication benefit	Communication	Communication x1
Improved alert systems	Communication benefit	Communication	Coms x2
Decreased errors	Safety benefit	Beneficial	Errors B x5
A uniformed approach to patient care	Consistency benefit	Standardisation?	Standard
May lead to an increase in efficiency in carrying out admission process,	Benefit == improved efficiency	Beneficial	Efficiency x2
Allowing more contact with patient care it will	Patient Benefit	Beneficial	Contact
Decrease length of note writing as	Practitioner benefit	Beneficial	Brevity (B x8)
Readers will keep note taking brief <ul style="list-style-type: none"> <li>this was discussed in another format at a later BA meeting</li> </ul>	Communication benefit	Beneficial	Brevity (B x9)
It will have a record audit / statistic profile	Security / Quality benefit	Beneficial	Audit (B 10)
Improved communication between MDT teams	Communication benefit	Communication	Coms x3

Improved continuity of care	Patient benefit	(Patient) Beneficial	Pt B x2
“See at a glance” all assessments and tests	Speed	Speed	Speed x3
Saving time	speed	Speed	Speed x4
Paperless office	Entirely electronic	Entirely electronic	Paper-light-electronic x13
Easier access to relevant information	Easy & functional	Speed	Speed 4
Again, information will be on the computer and easy to find	Easy & functional	Speed	Speed 5
Referral may be made through this system	benefit	Beneficial	Referrals (B 11)
More valuable member of team	benefit	Beneficial	B x12
Better communication	Communication benefit	Communication	Coms x4
I can / will be able to write my notes,	functional		
it will be paperless more compact	Entirely electronic	Beneficial	Electronic (B x15)
More efficient way of providing general information about patients	Increased efficiency	Efficiency	Efficiency x2
[ ] N/A?	0		
<b>Q;6 If you answered no to question 4 why in your view will the MHIS not be of benefit to you?</b>			
I think where this will become problematic is the access to computers	Dis-benefit = PC access	Dis-benefit	Dis-benefits x1

[ ] N/A? 3			
<b>Q7. Please describe your views of the short term impact of using the MHIS on your nursing practice.</b>			
Increased time needed to input pt care details	Dis-benefit decreased Speed	Speed	Speed" x 6
Technical difficulties with the programmes	Dis-benefit = technical difficulties	Technological difficulties?	Technical difficulties (Dis-benefit x2)
Time consuming difficulties with changeover to computer system	Dis-benefit decreased Speed	Speed	Time
Users overcoming the initial "computeritis"	Dis-benefit = technical difficulties	Technological difficulties?	Dis-benefit x3
Changing users (staff) perceptions of its efficiency and	Negative perceptions	change difficulties?	Change 1
perceptions of that "we will be in the office typing all the time"	Negative perceptions	Dis-benefits	Dis-benefits x4
less or no time "doubling up" writing information times over	Benefit= Speed = reduced duplication	Beneficial	Benefits x 16
able to access information quicker e.g. office downstairs – charts up on wards or in records <office>	Benefit = speed	Speed Accessibility	Speed x8

I imagine there will be difficulty initially as everyone will need training	Dis-benefit Learning required	Enablers required	Change x2
The short term impact will be the time learning the new system	Dis-benefit reduced speed – learning req	Speed	Time x
New change is always difficult @ first	Dis-benefit change	Change difficulties	change x3
Time consuming – changing systems / procedures and motivation of all nursing staff	Dis-benefit reduced speed – change	Change difficulties	Time x2 Change x4
[ ] N/A?	0		
<b>Q8. Please describe the long term impact of using the MHIS on your practice</b>			
Improved legibility	Communication benefit	Beneficial	B x15
Improved alert systems	Patient benefit	Beneficial	B x 16
MHIS would improve patient treatment that they receive when admitted to hospital	Patient benefit	Quality improvement	Pt benefit x2
ease of access to records	Easy & functional	Beneficial	B x17
Decreased errors due to legibility	Safety benefit	Beneficial	Patient benefit x3
Hopefully a more productive and	Benefit = effectiveness	Beneficial	B x18
Effective practice in good communication and	Communication benefit	Beneficial - communication	Coms x5

valued by team members	User valued	Value?	Of value
Ensure that all areas of the admission process have been completed / addressed due to red, amber, green codes	Benefit = effectiveness	Quality improvement	flag Process completion (B x19)
allows less time spent on documentation &	Benefit = speed	Speed	Time x 1
more time with patient	Benefit = patient	Time with patient Beneficial	Time x2 (Patient benefit x4)
Increased involvement of patients within their treatment plan and	Benefit = patient	Beneficial	Patient involvement Patient benefit x5
Improve delivery of care as	Benefit = effectiveness	Quality improvement	Patient benefit x6
communication pathways will be more continuous and clear	Benefit = communication	Communication	Communication x 6
Stream lined, more efficient documentation of pts journey with the service	Benefit = efficiency	Benefit	Benefit 20 Efficiency
Less paper work	Benefit = less paper work	Beneficial	Benefit 21
better time management	Benefit speed	Time Beneficial	Time x2
access to all clients history and records, blood results, investigations, prescriptions etc	Benefit complete record access	Beneficial	Complete record B x22

The more I use this system the easier it will become	use facilitates familiarity		Familiarity leads to ease of use
all notes / reports / etc will be easily looked at and	Benefits:legibility? Information / info searching - finding	beneficial	B 23
it will be paperless therefore less cluttered	Benefit: precision	Beneficial	B x24
Improve time management of all nursing staff	Benefit speed / time	Speed Time	Time x3
Improve practice and	Quality improvement	Quality improvement	Improved practice
access to new skills	Benefit learning	Benefit	New skills

The findings:

The following themes emerged from the initial questionnaire

- All recording as electronic,
- Change
- Communication,
- Dis-benefits
- EPR as beneficial to patients
- EPR as beneficial to users,
- Phased releases
- Speed,
- Time

In response to question one: What do you know about the impending MHIS (electronic patient record) to be introduced in 2010?

Themes the following themes emerged:

based on practice and research

Evaluation of the model


Evaluation of the process


Evaluation of the impact



### Appendix 6.1 Completed Stakeholder Analysis

#### Stakeholder analysis of commitment to MHIS Electronic Patient Record

Stakeholder group	Perceived Benefits / Concerns	Changes needed	Perceived Resistance	Commitment (Current & Required)				
				Anti	None	Allow it happen	Help it happen	Make it happen
ADoNs								
SNMs	Information easily accessible	Training & education	None					
CNM IIs	Increased efficiency Improved alert system Ward diary improved i.e. appointments / prompts Improves gaps in recording Quicker results for lab tests Lack of IT skills will be a concern for some staff Adequate training in the system for staff	Managerial changes: full use of EPR, whiteboard, electronic diary, portable devices Training must be provided to all staff using the system The IT enablers must be in place to prompt / alert people Professional behaviour may need to	Potential decrease in efficiency in short/medium term until staff familiar with EPR Time taken from nurse client interactions. Some staff will avoid using the electronic system Time will be an issue at first while staff get used to the new	No objections	It will assist us in our role with regard to with admission procedure and record keeping	Fully endorsing the EPR system, looking forward to its roll out over next few years.	Will be fully involved with the EPR achieving its objectives and time scales	As a CNM 2 I would expect this as a part of my duties and responsibilities.

		change	system					
CNM Is	Uniform system of care Security / availability concerns Change in practice with under-developed skills	Change in attitudes and opinions of (the) system Better communication	Nothing wrong in the old system  Nurses not administration					
Staff Nurses	Increased efficiency; Accessibility; concise record; reduced duplication, increased security; concise history.	EPR Info groups	Personal due to computer use; not enough access; initial time wasting; no training.	Wrong use of funds. Use of nursing time; more work less pay.	“We’ll wait and see if it happens.”	“If that’s how its gong to be then we’ll need to do it.”	“It’s the way of the times we should be advancing.”	“All for it.”

Returned

S/n Map & Analysis ✓  
 CNM I Map & Analysis ✓  
 CNM II Map & Analysis ✓ x2  
 SNM Map & Analysis ✓  
 ADON x  
 Total 5/8 returns

## **Appendix 6.1 Completed Stakeholder Map Instructions for completion of Stakeholder Map & Stakeholder Analysis of Commitment**

Please consider carefully the next 2 documents.  
Your views are an important part of the analysis.  
Please do not identify yourself (other than by grade) or anyone else.

**Stakeholder Map:** Please indicate (by use the abbreviations for your grade) where you see yourself / your grade generally on the stakeholder map in relation to the degree of benefits received / change required as a result of MHIS EPR introduction.  
Please note: if you feel your personal view is divergent from that of your peers please make two entries for example

	CNM I
	CNM I

### **Stakeholder Map**

<b>Benefits received</b>	SNM  CNM II	CNM II  CNM I  Staff nurse
	<b>Changes required</b>	

Source: Peppard 2009

Q: Where are you and your colleagues of the same grade/role on this map?

Grade/role	Abbreviation
Staff nurse	S/n
Clinical Nurse Manager 1	CNM I
Clinical Nurse Manager 11	CNM II
Clinical Nurse Specialist	CNS
Senior Nurse Manager	SNM
Assistant Director of Nursing	ADoN