Developing an Integrated Care Pathway
for Total Knee Replacement Patients
in an Acute Orthopaedic Setting

An action research project

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DECLARATION

I hereby declare that the following is entirely my own work carried out in partial fulfilment of the Masters in Health Services Management.

Lillian Zahra

May 2009
I would like to express my deepest gratitude and appreciation to my supervisor Dr. Kenneth Grech, M.D., MSc. (Lond), MBA, DLSHTM for his precious support and guidance throughout this study. I would also like to thank Ms. Isabelle Avallone S.R.N., B.Sc (Hons) Nursing, MSc for her advice and Dr. Neville Calleja M.D., M.Sc for being my source of reference in statistics. Sincere thanks also go to Mr. Reginald Aquilina Practice Development Nurse, BSc Nursing, Diploma Adult Training & Development for his continuous support and advice.

Above all, I would like to express my heartfelt appreciation to the Medical and other health care professionals of the ward where the study was carried out for their constant motivation and interest in the subject. Without their cooperation and support this study would not have materialized.
DEDICATION

To my husband Raymond and my daughter Julia, for their constant love and support.
Executive Summary

This study explored the need of enhancing clinical documentation through the integration of Multidisciplinary notes using an Integrated Care Pathway (ICP). An Action Research approach was used and different members of the Multi-disciplinary team, including nurses, doctors, occupational therapists, physiotherapists and social workers participated. There were twenty eight participants, each involved in all stages of the process leading to the introduction of an ICP for Total Knee Replacement patients (TKR).

The Action Research process included an audit of thirty (30) traditional patient histories prior to the introduction of the ICP, using the Dudley NHS Trust, Multidisciplinary Audit Forms of Documentation. A Nominal Group Technique (NGT) session carried out before the introduction of the ICP identified the factors that hinder effective documentation and identified the need of introducing an ICP. The Clinical Pathways Education Package was administered to increase the knowledge of participants in relation to ICPs. The outcomes of this programme were measured using a Pre-Post test questionnaire which identified an enhanced level of knowledge related to ICP after the training programme. The ICP was then constructed based on standardized ICPs for TKR with adaptations according to feedback received from the participants. A second NGT carried out five months after the introduction of the ICP, identified that the majority of the participants were satisfied with the use of the ICP and several suggestions were recommended on how to improve the ICP. Another documentation audit on thirty ICPs was carried out after the introduction of the ICP and this revealed a statistically significant improvement in documentation when compared to the previous audit of the traditional patient histories. The areas where notable improvement was registered included easy access to notes, reduction in duplication, improvement in the legibility of the notes, enhanced discharge planning and patient involvement.

The strengths and weaknesses of this study were discussed and recommendations for practice, education and further research were suggested.
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Chapter 1

Introduction
1.1 Background to the study

As early as the 1860s, Florence Nightingale acknowledged the importance of documentation and was influential in spurring the need to collect data for the care of the individual, as well as organising the systematic data collection for larger groups of patients and analysing this data statistically (Nightingale, 1860; Nightingale, 1863). Although it may seem obvious that patient documentation is an integral part of clinical practice, notes of the different care professionals remain separate with a professional or treatment orientation rather than a patient focus. At present, there is also duplication and lack of appropriate and accessible information (Hellesø & Ruland, 2001). Although there has been a move towards placing the patient as the focus of health service activity, the organisation and structure of records have not developed to reflect this (Williams, Roberts & Rigby, 1993). Dissatisfaction and concerns about the quality of nursing record keeping with current formats of documentation have been identified (Caldwell, Komaromy & Lynch, 2000).

Consequently, developments in documentation that combine multi-professional notes, such as Integrated Care Pathways (ICPs) are now considered throughout the healthcare setting as an important tool in the documentation system of the multidisciplinary team. ICPs are one of the latest developments which amalgamate all the anticipated elements of care and treatment for a particular condition or disease, forming the actual clinical documentation (College of Nurses of Ontario, 2002; Panella, Marchisio, Di Stanislao, 2003; Björvell, Wredling & Thorell-Ekstrand, 2003). They are seen internationally as a means to improve quality of care, as evidenced by several studies across different countries (Ellershaw, 2001; Ignatavicius & Hausman, 1995; Olsson, Karlsson & Ekman, 2006; Bragato & Jacobs, 2003; Every, Hochman, Becker, Kopecky & Cannon, 2000; Munoz et al., 2006). ICPs are considered as cost-effective tools in the USA since they can assist in reducing length of stay while in UK they are seen as a valuable way to implement clinical governance, and best practice (Bragato & Jacobs, 2003). ICPs have been introduced in different clinical settings and one of the specialities where successful implementation was achieved was in Orthopaedics (Darer, Pronovost & Bass, 2002).
1.2 Purpose of the study

This dissertation originates from the interest locally and throughout the world within the health care sector to improve the quality of the healthcare professional documentation and terminology. It is the purpose of this study to develop, pilot and implement an integrated care pathway for a Total Knee Replacement patient. The aim is to streamline documentation, promote multi-professional working and communication, as well as enhance audit and research activities. It will also aid in improving the managerial tasks of educating the staff on better resource and bed utilisation, thus potentially reducing expenditure (Jones, De Luc & Coyne, 1999).

The need for this study was felt by the researcher due to the current situation in the orthopaedic unit where the researcher is the manager. There is a lack of interprofessional co-ordination and planning with regards to the whole set of activities and services that each professional must carry out when caring for a Total Knee Replacement (TKR) patient. There is no structured multidisciplinary care plan which specifies elements of care, the forthcoming sequence of events and the expected patient progress over time. Such lack of a co-ordinated approach can lead to gaps in patient care which may occasionally endanger the patient's wellbeing and continuity of care. Considering that these operations are high risk Orthopaedic interventions that can lead to a number of potential complications, the issue of proper documentation to ascertain continuity of care is thus fundamental.

Currently the number of TKR procedures carried out in the orthopaedic unit at Mater Dei Hospital is of a high volume and is constantly on the increase as confirmed by the data collected from the Surgical Operation Register of St. Luke's Hospital and Mater Dei Hospital. In 2004 the total number of knee replacement operations, including 8 bilateral knee operations, was of 175, followed by 128 (8 bilaterals) in 2005, 229 (26 bilaterals) in 2006, 223 (18 bilateral TKR) in 2007 and 226 (16 bilateral TKR) in 2008. At present the demand for TKR operations is on the increase and there is an approximate waiting time of six years. These high risk and high cost surgical procedures require the co-operation of several professionals in planning the different lines of action against a set time plan by each professional.
This research study was chosen because the author, as manager of an orthopaedic ward, has a particular interest in encouraging the implementation of integrated documentation to improve the structured communication between health care professionals. ICPs can also lead to a predictable clinical course and reduce the average current length of stay locally, where at present it is longer when compared to several quoted publications (Panella et al., 2003; Bragato & Jacobs, 2003). It also involves many different care disciplines and therefore is a tool for improved integration between the groups.

The researcher is aware that substantive training is required for all staff (Ellis & Johnson, 1999) who will be using the pathway, and also intensive research is needed by the researcher herself. At present, there are no care pathways being used in any area of care in the local acute hospital at the time of the study. Thus, the researcher has no local clinical reference area to refer to as a point of reference.

1.3 Definition of terms

The following descriptors are the operational definitions of the terms used in this thesis.

- 'An Integrated Care Pathway determines locally agreed, multidisciplinary practice based on guidelines and evidence, where available, for a specific patient/client group. It forms all or part of the clinical record, documents the care given and facilitates the evaluation of outcomes for continuous quality improvement.' (National Pathways Association, 1998).

-Variance identifies any deviation from an activity outlined on the ICP, allowing for analysis and monitoring of care provided in terms of effectiveness of interventions and may be positive or negative. It represents the difference between what is expected to occur during the patient’s episode of care and what actually occurs.
- Audit is part of an ongoing process of quality improvement providing possible comparisons over time between clinical practice, thus making it possible to evaluate the effects of quality management and to change certain behaviours of the health care professional.

- Multidisciplinary team comprises members with varied but complimentary experience and skills from two or more departments working together to handle a situation that requires capabilities, knowledge, training and capabilities which are not available from any one source that contributes to the achievement of the organization's specific objectives.

This dissertation presents the Literature review followed by an explanation of the methodology used in the research process. The findings are presented in writing using tables and charts to elaborate on the results. In the Discussion section the findings are discussed in relation to the existing research and relevance to practice is indicated. The strengths and limitations of the study will be elucidated and recommendations for further research will be proposed.
Chapter 2

Literature Review
2.1 Introduction

Documentation is of crucial importance for the quality of patient care and the development of the healthcare professional knowledge base, as well as being the prerequisite for quality assurance (Nilsson & Willman, 2000). Patient documentation is an integral part of clinical practice as all health care providers need ongoing access to patient information to provide safe, timely and effective care and treatment. Clear, complete and accurate documentation provides a reliable permanent record of patient information and demonstrates accountability, whilst giving credit to providers for their professional practice. Information from the health records is often used to evaluate professional practice for quality improvement practices, and is used to reflect on the providers’ practice and make changes as required (College of Nurses of Ontario, 2002).

This chapter analyses literature consisting of the following chapters, namely, the importance of documentation, the evolution of ICPs, defining an ICP, legal issues, critical analysis of the effects and outcomes of ICPs, patient and healthcare workers’ attitude to ICPs and ideal clinical settings for developing an ICP.

2.2 Literature Search

The Literature search strategy included the use of various data bases, namely, CINAHL, Cochrane Library, Institute of Health Care Library and various Orthopaedic journals. The literature incorporates key studies and articles from the years 1992 to 2008 and includes both quantitative and qualitative research studies, as well as journal reviews. Various journals were used including The Pharmaceutical Journal, British Medical Journal, Journal of Integrated Care, Journal of Advanced Nursing, Journal of Clinical Nursing, Scandinavian Journal of Caring Sciences, Nursing Standard, Annals of Internal Medicine, Journal of Health Organization and Management as well as theses and books.
In addition, a manual search was carried out in journals and books on ICPs and documentation at the IHC library locally.

The studies were carried out in different countries including United Kingdom, Scotland, United States of America, Sweden, Switzerland, Asia, Singapore, France, Malta, Israel and New Zealand. A detailed analysis of the main studies referred to in the literature with a critique in relation to their validity and credibility may be found as Appendix 1. The key words used for the search included: ‘Integrated Care Pathways’, ‘Multi-Disciplinary Documentation’, ‘Continuity of Care’ ‘Total Hip Replacement’ and ‘Total Knee Replacement’.

2.3 The importance of documentation

The content of patient records is a multi-professional responsibility; however, unless clinical documentation is satisfactory and adequate there is the obvious risk that patient safety, security and well-being will be compromised. Helleso and Ruland (2001) claim that at present there is a lack of appropriate and accessible information due to the fact that healthcare professionals collect and record the same data several times and in different places. Moreover, Caldwell, Komaromy and Lynch (2000) further highlight dissatisfaction and concerns about the quality of nursing record keeping with current formats of documentation.

Conversely, good multi-professional documentation contributes to effective holistic care, patient security and cost-effectiveness whilst ensuring the most effective way to achieve a truly holistic patient assessment (Kinsman, 2004; Calligaro, Doerr, McAfee-Bennett, Mueller & Dougherty, 2004). Collaboration will help in the delivery of seamless care which reduces fragmentation, improves coordination and efficiency by reducing duplication, repetition and wastage of resources (Clegg & Meston, 1999).
Modern documentation systems include, ‘Charting by Exception’, ‘Focus Charting’, ‘Soap/Soapie(R)’, ‘Narrative Documentation’, the Critical path and Variance Analysis. Designed to address the need of cohesive and accessible records and documentation, Integrated Care Pathways (ICPs) are one of the latest developments which amalgamate all the anticipated elements of care and treatment for a particular condition or disease, forming the actual clinical documentation (College of Nurses of Ontario, 2002; Panella, Marchisio & Di Stanislao, 2003; Björvell, Wredling & Thorell-Ekstrand, 2003).

However, although the goal of seamless care across diverse disciplines implies a non-fragmented patient record with an optimal and effective patient focus healthcare delivery Williams, Roberts and Rigby (1993) indicate a number of issues that need to be resolved to obtain this goal. To mention just a few issues, there is a need to address the language of the dynamics of care, how to achieve a common understanding of responsibilities, language and common methods of recording. There are also ethical and managerial issues to be addressed if the integrated patient record is to comprise a complete health and illness history. Brett and Schofield (2002) as well as Bryson and Browning (1999) emphasize the need to invest in staff training and education to successfully implement ICPs as the new method of documentation.

The importance of education and staff training has also been suggested locally by Walters (1994) in her study related to nurses’ attitudes towards care plans. In this study, which was carried out in a local general hospital in Malta, the author identified that nurses had a lack of knowledge in relation to care plans.

2.4 The Evolution of Patient Documentation

2.4.1 Early Development of documentation

As early as the 1860s, Florence Nightingale was influential in spurring the need to collect data for the care of the individual, as well as systematic data collection for larger groups of patients and to analyse this data statistically (Nightingale, 1860). She
acknowledged the importance of documentation in order to allow among other things, comparative examinations (Nightingale, 1863).

The initial trigger to the development of ICPs originated in areas other than Healthcare settings. As early as the 1950s the need was felt to develop methods for planning, coordinating and integrating tasks or activities along a time allocation. The critical path method (CPM) was developed by Du Pont mostly as a network approach to project management. At that time the US navy developed a programme evaluation and review technique (PERT) to manage their Polaris missile development programme. During the 1960s these scheduling techniques were applied to many construction and project management applications (Bragato & Jacobs, 2003).

In Healthcare, the care pathway development did not normally adapt the formal techniques of PERT and CPM but adapted the time-task matrix approach of the Gantt charts, developed by Henry Gantt in the early 1890s. The important contribution of the Gantt chart is that it indicates which activities must be completed before subsequent ones can be started (Bragato & Jacobs, 2003). Initially, during the 1960s, nursing care was influenced by the industrial principles of assembly lines that led to the provision of task allocation. The disadvantage of this system was that the nurse focused on providing impersonal care based on the task rather than patient orientation (Gardell, 1977). This led to a deficit in the documentation systems which tended to be unstructured and orientated around the medical model.

2.4.2 The Kardex system

Over the years the documentation of patient care became more important, especially with the introduction of the Kardex system and the Nursing Process Model in the 1970s where patient care moved from task-oriented to patient-focused care. However, the Kardex system was a temporary means of documentation which did not give a complete picture of the patient’s nursing needs because the notes were written in pencil and erased when the intervention was completed (Gardell, 1977; Björvell, 2002; College of Nurses of Ontario, 2002). By 1986 it became evident that the
Kardex system no longer fulfilled the requirements of a patient record since documentation of the patient’s care plan should be kept as part of the permanent record and not erased. The nursing papers were moved from the Kardex and joined with the rest of the patient record so as to create a more integrated patient documentation and increase the complete picture of the patient’s needs of treatment and care (Björvell, 2002).

2.4.3 The VIPS model
Across the Swedish healthcare system, the VIPS model which is a Swedish acronym for Well-being, Integrity, Prevention and Security, was introduced and is based on the Nursing Process model designed in the mid-1980s. This model developed in 1991 by Ehnfors, Thorell Ekstrand and Ehrenberg, has now replaced the Kardex model and it gives structure and integrity to nursing documentation whilst decreasing fragmentation (Björvell, 2002). In a study by Darmer et al. (2004) it was found that the implementation of the VIPS model had a positive impact on nursing documentation, and that it increased the nurses’ understanding of the nursing process.

2.4.4 Early stages of ICP
In the 1980s, in the U.S. the idea of critical pathways was applied to the healthcare environment in the form of clinician-directed, patient-focused, case management plans in response to escalating health care costs and increasing consumer demands for evidence-based plans of care (Pearson, Goulart-Fisher & Lee, 1995). ICPs were applied to meet the need for interdisciplinary care provision and the demand for higher quality patient care (Cheah, 2000).

The concept of an ICP can also be traced back to the origin and use of the Nursing Process model. During the 1980s and early 1990s, major health-related organisations in some western countries began to develop standards, laws and regulations outlining the Nursing Process as a tool for proper nursing documentation. The American Joint Commission on Accreditation of Hospital Nursing Service Standards (Fonteyn & Cooper, 2006) and the United Kingdom Central Council (1993) have promoted the
use of the Nursing Process in nursing care. This led to the development of a standardised approach to care which later led to the development of ICPs.

By 1994, 60% of U.S. hospitals were in the stages of pathway development and commentators were predicting that by the year 2000, ICPs would be essential to the survival of healthcare organizations. Despite caution due to lack of robust research into their use, the widespread adoption of pathways continues. In 1998 a U.K. survey found that 80% of trusts were using ICPs to some degree in delivery of their patient care (Bryson & Browning, 1999).

2.4.5 The Local documentation system

In the local situation, where the researcher is conducting the study, the development of documentation has been slower in materialising. Until the late 1980s, task allocation was still prevalent with one nurse in the ward writing the nursing reports of all patients. This system is still utilised in certain wards but has been replaced by the patient allocation system in the majority of wards in Mater Dei Hospital. There is still no structured approach to report writing or documentation and each profession had its own documentation system. Poorly designed documentation can lead to liability issues in case of litigation (B. Gafa, personal communication, May 18, 2009). The present notes are fragmented and each profession holds on to its own documentation system without making it accessible to the team. Since Multi-disciplinary team meetings are not normally held in the clinical setting, the individual documentation of the care professionals is not adequately shared. However, by the beginning of the 1990s the first Assessment Sheet on admission was introduced in the Orthopaedic Unit, giving rise to the partial introduction of the Nursing Process. This Assessment Sheet is presently being introduced slowly in the Medical and Surgical Wards and individual training is being provided to the nurses across the hospital. Multi-disciplinary meetings have also been introduced informally in some of the clinical settings in the orthopaedic and surgical settings. However, the issue of integrated care documentation still leaves much to be desired and at present ICPs are not being utilised in any of the local acute hospitals and rehabilitation centres.
2.5 Defining an Integrated Care Pathway

An integrated care pathway (ICP) is a multidisciplinary outline of anticipated care, placed in an appropriate timeframe that formalizes multi-disciplinary working and enables professionals to examine and address how they work. ICPs consequently help a patient with a specific condition or set of symptoms to move progressively through a clinical experience to achieve positive outcomes (Vecchiato, 2005; Middleton, Barnett & Reeves, 2001). Currie and Harvey (1998) define care pathways as a set of proposed rather than prescribed activities, form all or part of the clinical record, documents the care given and facilitates the evaluation of outcomes for continuous quality improvement.

The escalating importance of ICPs in relation to the rising healthcare costs is shown by the development and implementation of ICPs throughout most hospitals in USA and Europe since the 1980's. From the literature review, it is evident that ICPs are becoming important in the provision of efficient and effective health care and are a method of ensuring that professional practice is evidence based.

Studies on ICPs carried out by various authors during the 1990-1999 have shown that ICPs are being developed as a method of controlling costs, ensuring professional audit, continuity of care and clinical risk management (Dowsey, Kilgour, Santamaria, & Choong, 1999; Barker & Frosdick, 1999). Consequently, ICPs are now considered as an important tool in the improvement of the standards of documentation system of the multi-disciplinary team (Ellershaw, 2001; Kent & Chalmers, 2006).

2.6 Various examples of implemented ICPs in the literature.

*William Beumont Experience:* Critical pathways were developed and implemented in William Beaumont hospital, Royal Oak, Michigan, for lumbar laminectomy with the collaboration of the orthopaedic physicians. Other disciplines were also involved to fine tune the ICP, while the Legal Department reviewed the wording and legal aspects. The
JCAHO (Joint Commission for Accreditation of Hospital Organisations) approved the critical pathway as meeting its standards for documentation (Mosher et al., 1992).

**The Scottish Experience:** Through a project led by a multidisciplinary steering group, ICPs were implemented in the trauma and elective orthopaedic units in Scotland (Bragato & Jacobs, 2003), replacing the traditional patient notes. ICPs emerged as an important management device by reducing the average length of stay, identifying bottlenecks situations and reducing documentation time. It also led to easier induction for new staff members and enhanced patient empowerment.

**The Melbourne Experience:** A 12 month randomised prospective study was carried out in St. Vincent's Hospital in Melbourne to compare patients on ICP for hip and knee arthroplasty with those on an established standard of care (Dowsey et al., 1999). It was found that clinical pathways patients had shorter length of stay, earlier ambulation, a lower readmission rate and closer matching of discharge destination.

**The Ashford Experience:** The benefits that derived from working with care pathways are shown in the experience of Ellis and Johnson at Ashford Hospital in 1992 with the introduction of a prostate surgery pathway and hip replacement (Ellis & Johnson, 1999). The positive outcomes included educational and audit advantages, care improvement, cost containment and clinical governance enhancement (Bryson & Browning, 1999).

Consequently, studies have indicated that ICPs are not only effective to enhance clinical care but also to address the audit and legal requirements of documentation.

**2.7 Legal issues:**

In the past few decades, the nursing profession has witnessed a change towards more independent practice with explicit knowledge of nursing care. With this change has come the obligation to document not only the performed medical and nursing interventions but
also the decision processes, explaining why a specific nursing action has been prompted (Björvell, 2002). ICPs also play a key part for mental health nurses, as a therapeutic tool, a means of engaging the client, their relatives and others in planning, setting and meeting goals in care. The nurses have a professional responsibility and are accountable for written care plans and for the care planning process. The importance of the care plan as a legal document is emphasised and standards for record keeping reinforced as a routine component of professional practice (Tunmore & Thomas, 2000; Dion, 2001).

Documentation may be used in legal proceedings including lawsuits, coroner's inquests and hospital discipline hearings and therefore, healthcare workers should be aware of legislative requirements regarding documentation. Clinical paths can be powerful mechanisms to prevent malpractice litigation, becoming a welcoming tool for preventing legal liability and enhance legal advantages (Clegg & Meston, 1999). Good or best practice may have been adhered to under traditional systems, but with ICPs best practice is recorded and individually signed for (Bryson & Browning, 1999). This is a key element because cohesive records of the Multi-disciplinary team (MDT) are not only effective in the hospital setting but are also the best possible evidence in court (B. Gafa, personal communication, May 18, 2009).

They provide a vehicle to strengthen the relationships between patients and healthcare professionals, to improve the flow of information among the providers, to decrease fragmentation and to enhance documentation (Forkner, 1996). Apart from the benefit of integrated care documentation in the improvement of the structured communication between healthcare professionals, an opportunity is provided to involve the patients in the decision making process of their own care (Campbell et al., 1998; Kinsman, 2004).
2.8 Audit and variance

2.8.1 Audit

Audit is part of an ongoing process of quality improvement providing possible comparisons over time between clinical practice, thus making it possible to evaluate the effects of quality management and to change certain behaviours of the health care professional (Webb & Pontin, 1997).

Lack of integrated documentation and absence of audit of clinical practice prevents the improvement of working practices and quality of care, and is also a drawback when allocating resources and effectively controlling costs as there is no way of knowing whether the current practice is up to international standards (Tapp, 1990). ICPs are promoted as process tools to facilitate the implementation of Total Quality Management or Continuous Quality Improvement systems (Cheah, 2000).

Health records are a valuable source of data for health research. Through research, healthcare professionals can improve their practice by assessing their patient’s interventions and outcomes, as well as identifying care and documentation issues. The use of the ICP as an audit tool can provide a framework on which to base unit teaching sessions aimed at supporting staff and developing their care planning skills (Kirrane, 2001).

Gathering the correct data from health records is fundamental to planning the health services, the type and amount of care clients need, the care and services provided and the efficiency and effectiveness of that care. All of these factors affect funding and resource allocation. With the information and activity data provided, they can establish measurable criteria for monitoring of both planners and providers of care (Wilson, 1998). Audit groups will enhance ownership and enable the dissemination and implementation process as well as challenge the criticism that standards and guidelines can stifle innovation and change, by periodic review of the ICPs (Thomson, Lavender & Madhok, 1995). The healthcare provider has an obligation to
maintain documentation which is clear, concise, comprehensive and accurate, true and honest. JCAHO require that the patient plan of care should have an integrated interdisciplinary structure (Owen, 2005; College of Nurses of Ontario, 2002). In line with this, the Copenhagen University Hospital decided to adhere to the standards of the JCAHO in 2000 (Darmer et al., 2004). These standards require systematic assessment of patient care needs and include the use of written nursing care plans. Continuity of care should also be achieved through the documentation by bridging discrete elements in the care pathway (Haggerty et al., 2003). Rather than documenting the prospective planning of nursing care, the traditional system documents the given care retrospectively, which is primarily the medical care ordered by the physician. Thus, contrary to ICPs, the documentation in traditional systems is normally limited and does not cater for a pro-active and systematic approach to care. This lack of systematic documentation in the unit is thwarting the possibility to carry out proper audits.

2.8.2 Variances

Any event deviating from the predicted pathway is documented as a variance. Individualized patient care means that these variances are to be expected and that the ICP is a dynamic tool which should be regularly updated (Panella et al., 2003). Variances may occur for a number of reasons, including coexisting disease complicating patient care, social circumstances, lack of resources, clinical decision not to follow the pathway or changes in technologies or techniques (Johnson, 1994). However regular analysis of variations in an audit setting can be used to review, update and improve clinical and organizational practices by incorporating any new changes within the overall pathway template, thus completing the audit cycle and ensuring that quality of patient care is constantly maintained (Barker & Frosdick 1999; de Luc, 2000).
Campbell et al. (1998) further suggest that the multidisciplinary teams should discuss the significance of these variances when updating the ICP. The identification of factors that contribute to variance and interventions to improve those factors are the key features in process improvement (Every, Hochman, Becker, Kopecky & Cannon, 2000). Consequently variances assist in preventing the ICPs to be considered as being 'cookbook medicine' or a static tool that may lead the professionals to loose their skills and autonomy (Bryson & Browning, 1999). One solution for this is to build some degree of variability into the protocol to accommodate such individuals and to address their concerns at regular meetings of the design.

Variance analysis provides a window of opportunity to identify the reasons for any omissions. It will also influence the quality criteria based on aligning clinical processes, providing an excellent risk management tool for clinical governance to ensure that the standards set in the ICP are in place and monitored for continuous quality improvements (Wilson, 1998). Variance analysis may also indicate the need for the staff to be given additional education (Ignatavicius & Hausman, 1995).

Exposure to liability is magnified by poorly designed documentation instruments that can lead to careless recording, which may imply sloppy disorganised care even if no negligence has occurred. ICPs coupled with variance charting reduce the chance of documentation errors and possibility of litigation. The proper use and auditing of variance sheets may prevent the healthcare worker from being unjustly incriminated for negligence. By clearly recording clinical decisions made outside the defined pathway, the rationale for this deviation from the ICP is made obvious (Forkner, 1996). On the other hand, providers who deviate from the path erroneously or who are not prudent about deviating are at a definite legal risk.
2.9 Critical analysis of the Effects and Outcomes of ICPs

2.9.1 Clinical governance, patient outcomes and best practice

Since the first introduction of ICPs in the UK in 1992, pathways are seen as a tool to implement clinical governance which can improve the quality of care, streamline the care given and ensure that clinical care is based on the latest evidence and research. In this way, ICPs underpin the Clinical Governance initiative of the NHS, as they provide a way to address the concerns with integration, modernisation and best practice evident in the policy documents (Bragato & Jacobs, 2003; Pool, 1999; Riley, 1998; Martin, 2000).

Ellis and Johnson (1999) accentuate the benefits of ICPs after their first hand experience at Ashford hospital where they designed an ICP for patients having prostate surgery. Their results showed that ICPs are appreciated by the patients, nurses, doctors and managers whilst leading to improved care, and enhanced clinical governance. The implementation of ICPs as the new method of documentation in Oakdene Unit by Brett and Schofield (2002) helped the unit to meet the clinical governance requirements. The use of ICPs for dying patients also has the potential to improve care by promoting best practice and standardizing care. In addition, these pathways may improve documentation and provide a mechanism for measuring and improving patient outcomes (Roberts et al., 2004; Luhrs & Penrod, 2007).

In a 3-year project in Scotland, which led to the successful implementation of over 100 ICPs the researchers reported increased adherence to guidelines and best practice statements as well as improved standards of documentation after the introduction of the ICPs (Kent & Chalmers, 2006). Panella et al. (2003) studied the adoption of six ICPs over a period of 2 years in a variety of Italian health care organizations in 2000-2002 and concluded that they added permanent value to organisations as a whole. ICPs supported and reinforced risk management and utilization management, whilst also helping to promote evidence-based medicine. Additionally Mosher et al. (1992) successfully developed and implemented ICPs in an orthopaedic unit. The researchers
stated that physicians, patients and nurses at the Michigan Hospital where the trial was carried out commented about the positive results and outcomes following the introduction of the ICP.

Thus, care pathways are seen internationally as a means to improve quality of care, as evidenced by several studies across different countries (Ignatavicius & Hausman, 1995; Olsson, Karlsson & Ekman, 2006; Bragato & Jacobs, 2003; Every et al., 2000; Munoz et al., 2006). Although they are usually locally developed, ICPs incorporate national best practice guidelines as part of a wider quality assurance programme (Cheah, 2000).

In contrast, several authors point out that there is lack of systematic research to state with any degree of certainty what effect ICPs have on patient outcomes and professional nursing care (Currie & Harvey, 1998; Sulch, Evans, Melbourn & Kalra, 2002). In a review of patients with stroke by Kwan and Sandercock (2003) patient satisfaction and quality of life were significantly lower in patients with clinical pathways. Similarly, Nanly, Chen, Lee, Chung and Lin (2004) evaluated and compared the quality of nursing care pre and post implementing the clinical pathway on patients randomly selected from four orthopaedic units. In their study there were no significant differences in the quality of nursing care with pathway implementation.

In a 3 month study in Suffolk, Crawford and Shanahan (2003) also noted that the quality of medical notation in an ICP resulted in poorer quality of documentation when compared to the traditional medical record keeping. Syed and Bogoch (2000) argue that ICPs require additional documentation that places extra demands on heavily burdened caregivers.

Dy et al. (2005) also argue that the success of quality improvement effort may depend as much on the circumstances under which they are undertaken as on the particular quality improvement method chosen. Bragato and Jacobs (2003) researched the implementation of ICPs in two orthopaedic units in Scotland for trauma and elective patients, and concluded that although the initiative was a success in both units, it was
more difficult to implement ICPs in a trauma rather than in an elective unit. Collins and Leahy (2008) agree with this observation, and comment that ICPs may not be suitable to emergency transfers due to their unpredictable nature.

2.9.2 Continuity of care and Multi-disciplinary teamwork

Team work and the multidisciplinary approach are essential components of future quality improvements (Wright, Smith & Jackson, 1999). Clinical involvement and ownership and a 'bottom-up' approach when developing and implementing ICPs are as essential for their success as a managed approach (Bryson & Browning, 1999). ICPs enhance clinical governance and multi-disciplinary team work (Lowe, 1998), facilitate discharge planning, minimise duplication in documentation, standardise and streamline clinical processes and produce measurable outcomes to improvements in patient care (Bragato & Jacobs, 2003; Forkner, 1996). ICPs move with the patient across different sectors of care and are shared by different professional groups also involving social care providers, thereby breaking down any boundaries in care delivery (Wilson, 1998). In addition ICPs reinforce the concept of collaboration among caregivers and permit the evaluation of outcomes according to the impact of each provider and setting of service (Hoxie, 1996). Furthermore as shown by Wright, Smith and Jackson (1999) during workshops held to define the key principles of clinical governance in the NHS between 1998 and 1999, teamwork and multidisciplinary collaboration are essential components of future quality improvement.

However, not all studies found a positive relationship between ICPs and multidisciplinary teamwork. As an example, in a randomized controlled trial of an ICP introduced in a stroke patient rehabilitation centre, Sulch et al. (2000), concluded that the ICP offered no benefit over conventional multidisciplinary care already present on the unit.
2.9.3 Discharge planning

Discharge planning is a multidisciplinary team function and Heymann (1994) recommends that this necessitates the input of multiple care providers such as doctors, occupational therapists, physiotherapists and social workers. Implementation of the ICP helps to establish a patient-focused model of care, aids integration of services and helps to coordinate care more effectively within and across all organisational boundaries (Kitchiner & Bundred, 1999; Nanly et al., 2004; Panella et al., 2003). When developing an ICP, the Discharge Process construction should involve the multidisciplinary team and should incorporate patient and staff views in its design and this should facilitate discharge planning (Lowe, 1998). In a study by Tzu-Ting and Su-Hwa (2005) a discharge planning intervention for older patients with hip fractures improved physical outcomes, quality of life, decreased length of stay and the rate of readmission.

Adequate multi-professional integrated documentation implies the necessity for collaboration to improve discharge procedures resulting in earlier and more effective discharge. Nixon, Whitter and Stitt (1998) emphasised the need of assessing the patients for discharge on admission and to improve interdisciplinary communication to overcome the current problems where documentation is discipline-specific. Suggestions for improvement included multidisciplinary approach, social needs to be addressed from admission and greater level of patient and family involvement.

On the other hand, in an action research study carried out in an orthopaedic ward by Atwal and Caldwell (2002) on interprofessional collaboration in discharge planning, the findings did not concur with the above. Their hypothesis was that ICPs enhance and develop interprofessional collaboration and enhance non-verbal and verbal communication. In this study ICPs led to patient improved outcomes, however there was little evidence to suggest that interprofessional relationships and communication were enhanced.
2.9.4 Cost effectiveness, Resource utilization and Length of stay

As reported by Ellis and Johnson (1999) all areas of healthcare delivery in UK, including acute, community and mental health, are facing the challenges of providing evidence-based care with resources that are always scarcer and more expensive. Ellis and Johnson (1999), accentuate the benefits of ICPs after their first hand experience at Ashford hospital where they designed an ICP for patients having prostate surgery. Their study showed that ICPs not only enhanced patient care but it also helped to contain costs. In the nonrandomized prospective study by Olsson et al. 2006 the developed and implemented ICP halved the length of stay in patients with acute hip fracture and improved the quality of care.

Research in the US indicates that ICPs result in efficient resource utilisation whilst maintaining quality and managing costs. In a randomised controlled trial on 175 patients after hip or knee arthroplasty by Dowsey et al. 1999 it was shown that ICPs reduce the length of stay and encourage earlier ambulation without increasing complications or unscheduled readmissions. Olsson et al. (2006) carried out a prospective comparative study of Swedish patients with acute hip fractures in the orthopaedic department; the main outcome measured being the length of stay of patients. They confirmed that implementing an ICP was found to significantly reduce the length of hospital stay and improve the quality of care. There were fewer patients with complications, such as pressure wounds and medical complications and also no fracture related readmissions within 30 days from discharge. In their review on ICPs in surgery Collins and Leahy (2008) state that most ICPs to date in surgery have reduced hospital stay with associated cost savings without any detrimental impact on patient care.

However, not all literature provides a positive picture of the effectiveness of ICPs to reduce length of stay. In several other studies it was found that ICPs actually increased patient length of stay. In a prospective study by Roberts et al. (2004) on 369 femoral neck fracture patients admitted 12 months before and after implementation of a care pathway, it was found that the care pathway was associated with longer
hospital stay but improved clinical outcomes. In a study by March et al. (2000) evidence-based guidelines were used with a multidisciplinary approach to develop a care pathway for the care of hip fracture patients and this was implemented in 2 hospitals. Outcomes were defined in terms of mortality, new nursing home admissions, and length of hospital stay. Results were compared with data from four (4) other hospitals treating similar patients without a clinical pathway. In the hospitals using the ICP, the authors reported no significant reduction in mortality. Of note, there was a statistically significant decrease in acute hospital stay of one day (5 vs 6 days) in those patients admitted from a nursing home. However, these patients then required an increased length of stay at the rehabilitation hospital (21 vs 26 days). In a before-and-after study by Kwan, Hand, Dennis and Sandercock (2004) the authors provide evidence that introducing ICP for acute stroke patients may improve the quality of documentation, process of care and reduce the risk of certain post-stroke complications. However, there was no evidence of an effect on functional outcome or length of stay. Dy et al. (2005) in their qualitative cohort study of a group of critical pathways argue that the mechanism by which ICPs may reduce the length of stay is still unclear and that the effectiveness of ICPs may be limited to certain types of situations.

Another debated issue is the cost of developing and implementing ICPs. Since ICPs require time to develop to their full potential their dynamic nature require them to evolve continually (Herring, 1999; Ellis & Johnson, 1999; Kinsman, 2004). Syed and Bogoch (2000) argue that costs are increased by staff education programs, more documentation, and time requirements for review of practice and adjustment of guidelines. March et al. (2000) confirm this in their study where it is discouraging to note that upon completion of the study, pathway hospitals abandoned the use of the care pathway because of increased costs.

Notwithstanding this, the cost of development of ICPs can be recovered if the pathway leads to sufficient cost savings through decreasing length of stay in hospital and reduction of morbidity and mortality. Although a lot of time has to be invested in
developing the ICP, including the time for education and the ongoing evaluation, it seems to be time well spent, as supported also by other studies (Pollard & Hibbert, 2004; Foster & Harrison, 2000). Also, a study by Bragato and Jacobs (2003) identified that one of the main advantages of ICPs as noted by the nursing staff was that they could save time with the documentation because they had to write less. The ICP served as a reminder for care interventions and it was also very useful for the new staff joining the unit as a guideline for the care of patients and helped them to integrate into the unit.

2.9.5 Patient and Healthcare workers’ attitude to ICPs

Evidence from 3-year first in-depth study undertaken in Scotland which led to the successful development and implementation of over 100 ICPs found that they made a difference for both patients and staff alike (Kent & Chalmers, 2006).

2.9.5.1 Patient perceptions and involvement in ICPs

The ICP mirrors the patient’s care pathway whilst in hospital. According to several studies, the fact that the patient is involved and informed of his treatment decreases anxiety, increases motivation and helps plan for discharge (Edwards, 2003; Nicklin, 2002; Smith & Ross, 2007). The structured ICP with specific goals to be reached along a time-frame can be shared with the patient. Consequently, the care pathway is clear, the patient can be encouraged to participate in the care and fear of the unknown is reduced. Patients have a more positive attitude and know exactly what their activity level should be by the day of discharge (Mosher et al., 1992). Williams et al. (1993) also confirm that patient involvement in planning of care results in improved quality of care, better patient education and improved discharge procedures.

Bragato and Jacobs (2003) state that strengthening patient focus reduces the separation between a patient and their records, thus empowering patients and reducing their uncertainty about treatment by giving them a more active part in their
The involvement of the patient prior to admission and the use of a common and comprehensive medical record means that patients are able to understand the language used and the treatment they receive (Kinsman, 2004). This is further confirmed by Barker and Frosdick (1999) where the provision and inclusion of the patients and their relatives in the planning of their care provides a sound basis for the patients being able to give true informed consent to treatment. Also, the greater the level of patient and family involvement in patient care, the more positive the patient perception of their readiness for discharge (Nixon et al., 1998).

2.9.5.2 Physician and nurses' reaction to ICPs

Mosher et al. (1992) were responsible for developing and implementing several orthopaedic patient pathways. Initially, the physicians were apprehensive and feared that patients would be unduly worried if events did not mirror the patient pathway. However after implementation, they developed a positive attitude when a good response from the patients eliminated that concern. Björvell (2002) in a 2-year study on an intervention programme on nursing documentation describes a varied response from the medical profession with negative remarks coming only from the primary physicians and not from visiting physicians who instead praised the new nursing documentation.

On the other hand, in the same study the nurses were 'hooked' from the start of the ICPs implementation. The nurses identified benefits such as time saving, quality improvement and enhanced patient teaching due to more time availability. The ICPs gave nurses an invigorating sense of empowerment, also due to their involvement during the development of the pathways (Mosher et al., 1992). Nurses felt that the use of ICPs for dying patients led to enhanced quality care, continuity, guidance for junior nurses and also an increased sense of confidence in their delivery of care as well as a general reduction in paperwork (Jack, Gambles, Murphy & Ellershaw, 2003). The quality of nursing can be challenged and improved, when nurses themselves are a part of that challenge and improvement (Wright, 2007). In another study the researchers observed a significant improvement in communications.
allowing greater nursing autonomy resulting in a reduction in calls to junior medical staff. Apart from reducing the duplication of information, areas of overlap in the care process are identified, thus also reducing the amount of duplication of tasks (Sweeney, Flora, Chaloner, Bucklend, Morrice & Barker, 2002; Campbell et al., 1998).

A study by de Luc (2000) indicated that the pathway development process offers the opportunity to energize clinical staff to take the initiative and tackle pre-existing problems. Thus, it can help staff to focus on the clinical care they provide and identify how this can be improved. Also, Collins and Leahy (2008) emphasize the benefits of ICPs as they give the surgeon a central role and responsibility in fashioning their design and practice. ICPs assist in providing the type of care that they wish, according to international best practice, creating and controlling care centred on the patient.

In a one-year project by Baker (1996) the author tried to improve discharge planning by introducing multidisciplinary patient records. This resulted in dramatic overall changes in record keeping and positive benefits were noted in team communication and discharge planning.

Crawford and Shanahan (2003) also mention that ICPs may cause constraints on clinical freedom and their use may stifle innovation and progress. Although as previously mentioned, Panella et al. (2003) found that the six implemented ICPs added permanent value to the organisations as a whole, the specific ICP for stroke patients was stopped after only 3 months as the doctors considered the pathway to be like a 'cookbook' process. These doctors had not been consulted in the design of the ICP and this compromised the implementation of the pathway. Thus, this reflects the importance of involvement and commitment from all team members who will be using the ICP to ensure success (Ignatavicius & Hausman, 1995; Heymann, 1994).

Some caregivers especially medical professionals may also experience a sense of loss of autonomy and exercise of clinical judgment in using care pathways and may resist their use (Bryson & Browning, 1999). One solution for this is to build some degree of
variability into the protocol to accommodate such individuals and to address their concerns at regular meetings of the design and evaluation team.

However, Bragato and Jacobs (2003) as well as Bryson and Browning (1999) sustain that even with the high level of involvement and commitment from all the staff, there may be resistance from medical staff, who may view the process as a reduction in their autonomy and power.

### 2.10 Teaching purposes

The structured and systematic documentation designed by a multidisciplinary team provides an important source of knowledge to nursing and medical students and acts as a potential motivating force for their development (Price, 2006). It also enhances more effective communication between wards and departments, makes patient care easier for students to understand and improves the quality of clinical learning (Pollard & Hibbert, 2004). ICP training needs to be formally included together with quality initiatives and multidisciplinary collaboration in the healthcare professional pre and post basic training (Reeve, 1997). The structured pathway allows for the teaching of surgical trainees and medical students with variances prompting literature assessment as well as analysis of current best practice. For nurses and support staff, ICPs improve education and also provide an outlet for nurses to directly impact on patient care planning. ICPs may be used as a reference for new staff during orientation lectures, when teaching acceptable standards of practice, or as part of Reflective Practice (Pollard & Hibbert, 2004; Collins & Leahy, 2008, College of Nurses of Ontario, 2002). In a 3 year project by Bryson and Browning (1999) staff confirmed that ICPs had proven to be useful educational tools and that they formed a basis for directing education.

Locally teaching on ICPs is not part of the undergraduate curriculum, however the Nursing process is one of the most important subjects that is emphasized throughout the Nursing course (J. Depares, personal communication, March 20, 2009).
2.11 Ideal Clinical settings and conditions for the use of ICPs

ICPs are usually developed for tracer conditions, that is where the condition is easily diagnosed and management of the condition is relatively well defined. These conditions are of high prevalence, high clinical risk and high cost for example stroke patients and hip or knee arthroplasty (Collins & Leahy, 2008). The care interventions for these conditions normally require the co-operation of several professionals (Bragato & Jacobs, 2003; Munoz et al., 2006; Dowsey et al., 1999). Darer, Pronovost and Bass (2002) demonstrated that in the UK the specialities most likely to develop and implement pathways were orthopaedics, followed by general surgery and then medicine, including care of the elderly. In two hospitals in Scotland over 100 ICPs have been developed across a range of specialities, namely Surgical, Medical, Orthopaedic, Oncology, Paediatric and Maternity specialities. They encompass both elective and emergency care, day cases, inpatients and outpatients. However, to introduce such a significant change in practice it is essential to develop a structured approach towards both the change process itself and the development of the ICP (Bryson & Browning, 1999).

Conversely there is still insufficient evidence to justify routine implementation for certain conditions like hip fracture patients because, variations are high due to various co-morbidities such as other medical problems. Implementing ICPs for such cases may be a waste of time and of scarce resources (Parker, 2004).

2.12 Change in working practices

According to the ‘theory of reasoned action’, a person’s intention to behave in a certain way is determined by their attitude towards the behaviour and their perception of social pressure to behave in a certain way (Ajzen & Fishbein, 1980). Groenman, Slevin and Buckenham (1992), state that people may have positive or negative feelings which will then influence their behaviour. Norms and values also play an important role in the concept of attitude. Bearing these concepts in mind, changing the behaviour towards clinical documentation will also need to involve a change in the attitude toward
documentation. Bridges (1996) describes resistance to change as being related with the fear of leaving what is known, predictable and safe.

Change brings its own issues and many of the problems and debates can be related to the change process. Unwillingness to become integrated with other disciplines and to consider themselves part of a team remains a cultural barrier and so does the potential hidden agendas displayed by some individuals. This could be overcome by strong, sustained and enthusiastic support from influential members of senior management, particularly senior clinicians (Bryson & Browning 1999).

As stated by Bragato and Jacobs (2003), the implementation of new pathways represent a major change for hospital staff and despite attempts to provide full training and to involve all staff in the development process, there was a degree of resistance to the change particularly from the doctors. Both Bragato and Jacobs (2003) and also Brett and Schofield (2002) in their studies emphasize the importance of investing in staff training and education when implementing new documentation systems. Foster and Harrison (2000) favoured formal group training of all the main users of the ICP in the implementation process as this empowers staff and decreases resistance and reluctance to accept new concepts and ideas. To this end, the project carried out by the researcher included an Action research approach and a training programme.

2.13 Developing an ICP

Several authors point out to the importance of a structured approach when developing ICPs. Ignatavicius and Hausman (1995) state that there are two key factors necessary for successful implementation of clinical pathways. First, the Hospital Senior Management must support the concept of clinical pathways and provide the resources required to develop, implement and evaluate the project. Second, the project will move forward more rapidly to completion if a person is appointed to champion the project through each stage of the development process.
Bryson and Browning (1999) mention that development of ICPs should begin in a surgical speciality and should focus on high volume and short-stay procedures. They also refer to the importance of bottom-up approach, clinically led participation and a team based approach to promote ownership. The researchers also suggest project teams to stimulate interest and engage staff to support ICP development, through a series of educational meetings.

In Figure 1 below, Middleton and Roberts (1998) also emphasize the importance of continuous analysis and review as key processes in the evaluation of the effectiveness of an ICP. These processes also contribute to the cycle of continuous improvement and ensure that care and treatment is based on up-to-date evidence of effective practice.

**Figure 1: AN ICP CYCLE OF CONTINUOUS IMPROVEMENT**
2.14 Conclusion

This review reflects both the positive and negative elements related to ICPs that have been identified in the literature. Studies related to ICPs seem to indicate that this type of documentation enhances multidisciplinary teamwork, reduces fragmentation of care and enhances discharge planning as well as decreasing costs. They also improve student training and education, support Clinical Governance and ensure that clinical care is evidence based. Moreover, Clinical Paths can be powerful mechanisms to prevent malpractice litigation, becoming a welcoming tool for preventing legal liability and enhance legal advantages.

There seems to be some controversy over the issue of whether ICPs have an influence on the length of stay of patients with some studies finding that ICPs help reduce length of stay while others finding either no difference or even an increase in length of stay. The evidence for better patient outcomes is also unclear and some queries are raised over whether ICPs may hinder the autonomy of the different disciplines. Cost of implementation and the time needed to train staff may be a barrier in the introduction of ICPs. However, ICPs offer the opportunity to energize clinical staff to take initiative and to make staff focus on the clinical care they provide.

The present literature seems to indicate that with a structured approach towards the implementation of ICPs, the benefits of ICPs seem to outweigh the disadvantages.

In this study, the researcher based the introduction of the ICP on the process followed by Panella et al. (2003) who present several steps that were used in the implementation of their ICP. These include:

1. Selecting the area of practice
2. Building the multidisciplinary work-team
3. Defining the diagnosis and selection criteria of patients
4. Review of practice and literature

5. Develop the clinical path

6. Pilot and implementation

7. Ongoing evaluation

8. Implementation with regular monitoring and updating

These steps ensured that the process of implementation was structured and avoided certain problems that introducing a new method of documentation to the multidisciplinary team may encounter.

In next chapter the methodology will be described in line with the process outlined above.
Chapter 3

Methodology
3.1 Introduction

In this Section the Methodology used in this study will be elaborated upon. The Aims and Objectives, Research Question and Research Design will be explained. Details of the Piloting phase, Data collection process, Data analysis and Ethical considerations will also be discussed.

3.2 The Aim and Objectives of the Study

The main aim of this study was to assess the present documentation system in the orthopaedic clinical area with the scope of, developing, piloting and implementing an Integrated Care Plan (ICP) for Total Knee Replacement (TKR) patients in one orthopaedic ward. Training and education of all health care professionals making use of the care plan was also simultaneously instituted.

To achieve the aim the following objectives were established:

1. To assess the needs for an Integrated Care Plan (ICP) with the professionals working in the researched area by evaluating the present nursing and medical documentation.

2. To train and educate the various professionals that will be using the care plan.

3. To develop an ICP based on the local needs of the TKR patients and on the competencies of the staff documenting the patient care delivered.

4. To pilot the ICP for the Total Knee Replacement Patient (TKR) in one orthopaedic ward for a period of five months.

5. To evaluate the piloted care plan documentation system, after concluding the piloting phase.
3.3 Research Question

Will the new documentation system being proposed in this research improve the quality of the patient documentation and facilitate in streamlining and standardising care processes?

3.4 The Research Design

3.4.1 Theoretical framework

This study adopted a Management Change Framework through an Action Research design which has the potential to close the gap that exists between research, practice and theory. The “Mutual Collaboration” approach was used in this research, where the researcher and practitioner work together on problems and, through dialogue, arrive at a shared understanding about the possible causes, interventions and plans for initiating a process of change (Hart & Bond, 2000). This bottom-up, collaborative approach enables the active involvement, participation and consensus of key players in order to identify problems and implement reforms that would empower staff to bring about change (Bowling, 2002). A defining feature of action research is the central role of the reflective practitioner in the research process who is engaged in researching and evaluating aspects of his own practice as he actively participates in that practice (Edwards & Talbot, 1999). Active research encourages openness, self-criticism and reflexivity among all participants and it empowers participants to take control over their own work situations.

Social psychologist Kurt Lewin (1890-1947) described action research as proceeding in a series of steps (Hart & Bond, 2000) mainly Planning, Acting, Reflecting and Observing. Likewise, Edwards and Talbot, (1999) constructed the ‘Action Research Cycle’ with its sequence of Planning, Acting, Monitoring and Review (Figure 2).
These steps were followed by the researcher accordingly:

**Planning:** the researcher commenced by diagnosing the problem through the use of the ‘Dudley Group of Hospitals NHS Trust Multidisciplinary Audit of Documentation’ to assess the traditional medical and nursing documentation in the ward. A Nominal Group Technique (NGT) was also carried out to identify the participants’ perceptions about the traditional documentation system. This NGT assisted in the process of developing and introducing the ICP.

The participants were also assessed in relation to their knowledge on ICPs through a self-administered questionnaire as part of a training package (The Clinical Pathways Education Package).

**Acting:** The Clinical Pathways training package (education programme) was introduced after the documentation audit was completed. This education package was introduced as the training tool and targeted all the health care professionals who would be using the ICP in the clinical area. Following the training and feedback, the ICP was structured, based upon established ICPs and ideas generated from the
participants. The ICP was piloted for a period of five months in one of the orthopaedic wards.

**Monitoring:** The researcher participated actively during the five months of the ICP piloting by monitoring the outcomes, reactions and actions of the multi-disciplinary team when using the ICP. During this phase, the feedback given was noted and there was a constant monitoring and auditing of each ICP (n=30) as it was being used.

**Review:** The Dudley Group of Hospitals NHS Trust, Multidisciplinary Audit of Documentation was also used again as mentioned above, as a formative assessment to evaluate each ICP during the process of the piloting phase. This was then compared with the scores of the traditional documentation assessed in the initial phase. On conclusion of the piloting phase another NGT was carried out to evaluate the participants' perceptions related to the actual use of the ICP and to obtain any suggestions for improvement.

### 3.4.2 The rationale for using this design

Due to the elaborate framework needed to introduce this change which included ongoing monitoring, staff training and review of introduced changes, an Action Research design was considered as optimal to achieve the specified objectives (Bowling, 2002; Stinger, 1996; Hart & Bond, 2000). It was also necessary to promote continuous participation, collaboration and review from all healthcare professionals, including the researcher, based upon the phases of 'Plan', 'Act', 'Monitor' and 'Review' according to the Action Research Cycle (Edwards & Talbot, 1999).

### 3.5 Site Description

The study was carried out in a local acute general hospital and data collection took place in one orthopaedic ward. Pilot work was done in the other two orthopaedic wards.
3.6 Sample Population

The target population was all Health Care Professionals allocated to one of the three Orthopaedic wards except the two Nursing aides on the ward. The Nursing aides were excluded from the study since they were not involved in the collation of any form of documentation. The study population consisted of twelve (12) nurses, four (4) physiotherapists, one (1) social worker, two (2) occupational therapists and nine (9) medical personnel including Consultants, Senior Assistants, Senior House Officers and Housemen, totalling twenty eight (28) staff.

3.7 Sampling Technique.

A Purposive sampling approach was used throughout the research, which included the deliberative selection of health care professionals working in the research area (Burns & Grove, 1993). Purposive sampling is criticized as generalization to the population is not statistically justifiable. However in this particular study, the use of purposive sampling, also known as judgement sampling, was important as it adds strength to the study by ensuring that participants are not only representative of the population but also have insight into the area of the study that is valuable to the research process (Bowling, 2002).

3.8 The Phases of the Research Project

To further clarify the process of this research project, the different phases of the project will now be elucidated below (Table 1).
Table 1. The Phases of the Study

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<td>A.</td>
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### 3.8.1 Phase 1

**Phase 1A: Audit of Traditional Documentation**

The first activity of this research project was to conduct an audit of the traditional documentation. The audit was carried out using the ‘Dudley Group of Hospitals NHS Trust, Multidisciplinary Audit Forms of Documentation’ (Appendix 2). This audit was conducted prior to the introduction of the training package to carry out formative
evaluation of the traditional medical and nursing documentation in the ward. The policy on data collection recommended by the Dudley Group of Hospitals NHS Trust which also adheres to The National Health Service Litigation Authority (NHSLA) was followed by the researcher (Appendix 2). NHSLA states that the number of sets of notes audited should reflect the numbers of patients seen within each speciality and recommends at least 30 notes should be audited.

i Sampling Technique

Thirty patient notes were retrieved from patients who had previously been operated for total knee replacement. These notes were of the previous consecutive 30 patients operated upon prior to the introduction of the ICP. The Practice Development Nurse (PDN) was asked to audit the nursing staff notes by filling in the ‘Nursing Staff Documentation Section’ (Appendix 3). The Medical staff notes and the consent form section were audited by a senior house officer (Appendix 4) who filled in the ‘Medical Staff Documentation’ audit forms. He was appointed by the researcher and works in one of the other orthopaedic wards. The results were discussed during the first NGT that took place after the education package was completed and feedback gathered as part of the developing process of the ICP.

ii Data Collection

The research tool and data collection process

The Dudley Group of Hospitals NHS Trust, Multidisciplinary Audit Forms of Documentation were used as the audit tool of documentation. Permission to use this tool was requested and granted by Dudley Hospital Governance Facilitator Ms. Gail Parsons who is a Nurse Consultant in Trauma & Orthopaedics at Dudley (Appendix 5). Permission to audit the patient's notes locally was obtained from Dr. H. Agius Muscat, Director IM&T (Appendix 6).
The tool consists of two main sections, namely a Medical and Nursing documentation audit with a number of statements for each of the two sections. The statements cover different areas of documentation.

The Nursing section of the Documentation Audit tool consisted of twenty eight statements with a marking of a Yes/No for each. The correct answer was given a positive weight of one mark for each statement. The Nursing section was divided into three categories which consisted of: General statements (n=15), Assessment/Treatment plan statements (n=10) and the Case notes (n=3). Consequently, the total highest score for each individual nursing documentation audit was of twenty eight marks, that is, one mark for each correct outcome.

The Medical section of the Documentation Audit tool consisted of forty statements with a marking of a Yes/No for each. The correct answer was given a positive weight of one mark for each statement. The Medical section was divided into six categories which consisted of: General statements (n=14), statements related to Assessment, Diagnosis and Treatment Plan (n=7), Operation/Anaesthesia (n=4), Prescription Sheet (n=5), Discharge Planning (n=5) and Informed Consent (n=5). Each statement had a marking of a Yes/No and the correct answer was given a positive weight of one mark.

During the first step, the traditional level of documentation was assessed using the Dudley Group of Hospitals Audit form. Each of the thirty traditional notes were individually measured against the established criteria of the Audit form. The scores for each of the audits were recorded and the final total score for all the thirty traditional notes was calculated.

**Phase 1B: Pre-training Assessment of participants’ knowledge related to ICPs.**

In this phase the participants’ level of knowledge on ICPs was assessed through the distribution of a questionnaire prior to initiating the process of the education training package as part of a pre-and post assessment. The pre and post test questionnaire is part of the self-directed education package. The same questionnaire was used again
after the completion of the learning package during the second phase of the study to measure the effectiveness of the training programme.

i Sampling Technique

The questionnaire was distributed to all the twenty eight (n=28) healthcare professionals working on the ward. The number of participants who completed this programme was of twenty seven (n=27).

ii Data Collection

The research tool and data collection process

The questionnaire (Appendix 7) which is part of the Education Training Package consisted of ten (10) questions which included statements on ICPs in general and included the following:

- Definition and function of a Clinical Pathway.
- The components of a Clinical Pathway.
- The professional staff groups that may document on a Clinical Pathway.

The questionnaires were coded with a number and distributed individually to all the twenty eight participants over three days. They were then collected after five days with a return rate of twenty seven.

3.8.2 Phase 2

Phase 2A: Training programme to enhance knowledge on ICPs.

A training programme was carried out during this phase as part of the main research objective of training and educating staff in the use of ICPs. The Clinical Pathways Education Package (Appendix 7) is a self-directed learning package which provides the learner with a pre and post test activity (questionnaire) prior to commencing and
on completion of the learning package. It is suggested by the creators of the Educational Package that the self-directed learning package can be worked through from start to finish in approximately 3 hours. It collects quantitative data about the participant’s knowledge and learning experience pre and post completion of the package. The package also includes a Workbook section with focused questions to consolidate the learning attained. It is suggested as material to be used in wards or hospitals where clinical pathways are about to be introduced. Permission to use the package for review, research or private study was granted as permitted under the Copyright Act, 1968 (Appendix 7).

**i Sampling Technique**

The same twenty eight participants as in Phase 1 were included in the sampling of this phase.

**ii Data Collection**

Twenty eight educational packages were distributed over two days to all the participants and were collected after fifteen days. Twenty seven ICP training packages out of the twenty eight distributed were retrieved and compliance in filling in the educational packages was very positive.

**Phase 2B: Post-training Evaluation of participants’ knowledge related to ICPs.**

In this phase a post-test questionnaire was distributed to assess the effectiveness of the training programme. This was a duplicate of the pre-test questionnaire distributed during the first phase (Appendix 7).

**i Sampling Technique**

The questionnaire was distributed to all the twenty eight (n=28) healthcare professionals working on the ward. The number of participants who completed this programme was of twenty seven (n=27).
ii Data Collection

The research tool and data collection process

The questionnaire consisted of the same ten (10) questions as in the pre-training programme questionnaire. The questionnaires were again coded with the same number corresponding to the first questionnaire and distributed individually to all the twenty eight participants over three days. They were then collected after five days with a return rate of twenty seven.

Phase 2C: Nominal Group Technique to identify MDT views on hindering factors of effective documentation and suggestions for improvement of MDT documentation.

An NGT design (Appendix 8) was chosen for this study due to its several advantages over other group methods such as brainstorming, the Delphi method and focus groups. This was considered to be the most appropriate approach as it combines quantitative and qualitative data collection in a group setting. An NGT assists in exploring and understanding people's experiences, beliefs and feelings (Holloway & Wheeler, 2002) so as to gain insight and generate ideas in order to pursue the identified subject in greater depth. This has the advantage of making use of group dynamics to stimulate discussion (Bowling, 2002) whilst avoiding the normal pitfalls associated with group dynamics as in other mentioned methods (Longford, 1994). It also has the advantage of producing results that can be quickly summarized quantitatively, providing a useful starting point for more detailed qualitative analysis (Gallagher, Hares, Spencer, Bradshaw & Webb, 1993). The main limitation with NGT lies in its difficulty to administer (Gallagher et al., 1993). To overcome this, the Practice Development Nurse (PDN) who is also qualified in Adult Learning Education and has previous experience in conducting such groups was asked for his expert help in conducting this NGT and also the second NGT in Phase 4 (Appendix 9).
**i Sampling Technique**

The same twenty eight participants as in Phase 1 were included in the sampling of this phase. The rate of participation was of nineteen (68%) however all professions forming part of the multi-disciplinary team were represented in the sample.

**ii Research Tool**

The first NGT was carried out after the education programme in a seminar room outside the participants' place of work and lasted approximately 2hrs 30mins to collect the participant's views and suggestions and review the audit results to determine the need for change in the clinical area.

A semi-structured interview guide was constructed to provide focus for the discussion. This included two questions related to the main inhibiting factors that may hinder effective multi-disciplinary documentation for Total Knee Replacement patients and actions that can be taken to reduce such inhibiting factors so as to ensure a standard multi-disciplinary approach. A table to list the top ten inhibiting factors was also included.

**iii Piloting the tool**

The tool was piloted at the other Orthopaedic wards not participating in the study. The questions of this interview guide were given to two nurses in each ward, a doctor, a physiotherapist and an Occupational therapist. Following this piloting a minor change was done to one of the questions.

**iv Data Collection process**

The nineteen participants were provided with NGT tool and the hindering factors were identified during the session. They were then asked to list in a table format the top ten hindering factors. The participants were also asked to identify actions needed to reduce inhibiting factors. Again they were asked to list the top ten actions needed to be taken and to give them a score from one to one hundred, according to
importance. The summary of the key points from the NGT were identified at the end of the meeting by the moderator and presented back to the participants to allow clarification of the main points and allow additional comments to be made by the participants.

3.8.3 Phase 3

Phase 3A: Compiling and structuring of the Integrated Care Plan

After the first NGT and the completion of the training package, the process of compiling an ICP that reflected the needs of the local clinical setting was initiated. The ICP was developed on the lines of various ICPs that were obtained from abroad as well as literature searches related to the subject. The structure of the ICP was mostly based on the South Manchester University Hospitals ICP for Total Knee Replacement after permission (Appendix 10) was obtained. However the ICP was radically adapted according to the feedback and suggestions of the Multi-disciplinary team so as to ensure its contextual relevance to the local situation (Appendix 11).

Certain areas which had no relevance for the local clinical setting were eliminated. These included the Consent form for use of patient’s own drugs and the assessment for self-medication. The Nutritional Status Assessment Sheet was also eliminated at this stage since it was considered that it would create too many changes during one process. However, it is planned that this sheet will be included in the future. New Assessment tools introduced in the clinical setting through this ICP included the Waterlow scale and the Moving and Handling Risk Assessment. Each daily report included a graph for the vital observation charting of that specific day. A physiotherapy discharge summary, which should be given to every patient on discharge, was also incorporated in the ICP.

A few sheets used in the traditional documentation were also incorporated within the ICP so as to provide a sense of continuity and familiarity. These included the Pre-
Admission Assessment Sheet, the Theatre sheet and the Anaesthetic sheet. The structure of the ICP was constructed in a way that required the least amount of writing by introducing a large number of check-list boxes with structured statements for daily nursing routines. However space for hand written notes was also allocated for each profession of the multi-disciplinary team.

Following this, content validation of the ICP was carried out by means of an Expert Panel that included an Orthopaedic Consultant not taking part in the study, a Departmental Nursing Manager who is a University Lecturer and who had done previous research on documentation, and the Practice Development Nurse.

Phase 3B & C: Piloting of the Integrated Care Plan, Monitoring and Feedback.

The ICP was piloted in the Orthopaedic ward where the study was conducted as part of the action research. The period of the piloting lasted for five months during which each ICP was monitored by the researcher. Any queries arising during this phase were addressed by the researcher who was present and supportive. The researcher was the constant point of reference for all the different professionals working on the ward. At the initial stage of the piloting of the ICP certain professionals, mostly nurses, were finding difficulty to adapt to the changes especially to the new Assessment sheets that were introduced in the ICP. Also there was the general feeling, that it was taking longer to fill and thus to adapt to the change. Consequently the researcher had to regularly encourage and advice staff on the use of the ICP and this demonstrated the importance of using an action research approach. This support was effective as evidenced by the positive results and compliance that were eventually achieved after a few weeks when the participants became more familiar with the ICP.
3.8.4 Phase 4

**Phase 4 A: The Individual audit of Integrated Care Plans**

In the first phase an audit of thirty traditional notes had been carried out prior to the training programme and the introduction of the ICP. In this phase of the research project an audit of the thirty (30) ICPs was conducted after the five (5) month piloting stage. The audit was carried out using the same Audit forms, used in the first audit of the traditional notes, that is, the 'Dudley Group of Hospitals NHS Trust, Multidisciplinary Audit Forms of Documentation' (Appendix 2). The policy on data collection recommended by the Dudley Group of Hospitals NHS Trust was adhered to as in the audit carried out during Phase 1A.

**i Sampling Technique**

Thirty (30) ICPs for total knee replacement were retrieved during the five month piloting phase. Following the introduction of the ICP, the first 30 consecutive patients were chosen for the auditing of the ICP documentation. The same procedure used in Phase 1 was followed, where the same persons who carried out the first audit, completed also the second audit.

The results were discussed during the second NGT that took place after the audit was completed. Feedback was gathered as part of the continuous developing process of the ICP since it is not a static document and amendments and changes may be required according to feedback.

**ii Data Collection**

*The research tool and data collection process*

The same audit tool used in phase 1, that, is, 'The Dudley Group of Hospitals NHS Trust, Multidisciplinary Audit Forms of Documentation' was used as the audit tool of documentation (Appendix 2).
The tool consists of two main sections, namely a Medical and Nursing documentation audit with a number of statements for each of the two sections. The statements cover different areas of documentation as already described in Phase 1. Each of the thirty ICPs were individually measured against the established criteria of the Audit form. The scores for each of the audits were recorded and the final total score for all the thirty ICPs was calculated.

**Phase 4 B: Comparison with traditional documentation audit.**

At this stage following the completion of the second audit, the results of both audits were compared. The audit results of the 30 traditional patient notes were compared with the results of the thirty ICPs. The results of the audit on the thirty traditional notes carried out during the pre-intervention phase and the thirty ICPs audited after the piloting phase were analysed using the unpaired student t-test. Since comparison of the audits was not carried out using the same patients for both appraisals, a paired student t-test could not be used.

**Phase 4C: Second Nominal Group Technique to explore the perceptions of the various professions in relation to their experience when using the ICP for five (5) months.**

An NGT design was chosen, as the last intervention of this study. This method was again chosen for the same reasons as outlined before in phase 2C. Again, to overcome the NGTs’ difficulty to administer, the Practice Development Nurse (PDN) was asked for his expert help in conducting this second NGT (Appendix 9).

**i Sampling Technique**

The same twenty eight participants as in Phase 1 were included in the sampling of this phase. The rate of participation was of seventeen (61%) however, similar to the first NGT, all professions forming part of the MDT were represented in this sample.
**ii Research Tool**

The second NGT was carried out after the multi-disciplinary team had been using the ICP as the method of documentation for all TKR patients. The NGT was carried out in a seminar room outside the participants' place of work and lasted approximately two hours.

A semi-structured interview guide was constructed to provide focus for the discussion. This included four (4) questions related to the benefits and disadvantages when using the ICP as compared to the use of the traditional documentation. Suggestions for improvement were also incorporated in the questions as well as a question relating to whether the ICP should be continued as the formal method of documentation (Appendix 12).

**iii Piloting the tool**

The tool was piloted at the other Orthopaedic wards not participating in the study. The questions of this interview guide were given to two nurses in each ward, a doctor, a physiotherapist and an Occupational therapist. Following this piloting, a minor change was done to one of the questions.

**iv Data Collection process**

The four questions were presented by the researcher and the participants were encouraged to discuss their views. During the NGT the participants took it in turns to answer verbally these questions and the main themes mentioned were written on a white board to validate the content with the respective participants. For each repeated mention of a specific theme or benefits a score of one was given on the whiteboard so that the themes were finally listed according to importance.

The audit results comparing the traditional notes to the ICPs were finally presented to those participating at the end of the NGT.
3.9 Validity and Reliability

The Dudley Group of Hospitals NHS Trust, *Multidisciplinary Audit Forms of Documentation*:

Ms. Gail Parsons Nurse Consultant in Trauma & Orthopaedics Dudley stated that no formal scientific data is available on reliability and validity of this standardized tool but it is used extensively by many hospital trusts in the NHS, and is approved by the NHSLA, National Health Service Litigation Authority.

**The Clinical Pathways Education Package:** It is an ICP training package used by the researcher to collect quantitative data about the participants' knowledge and learning experience pre and post completion of the package. It is suggested as material to be used in wards or hospitals where clinical pathways are about to be introduced and is used extensively in NHS hospitals for such training and education.

**The NGT:** credibility of NGT was enhanced by allowing the participants to freely generate their ideas, without interference from the researcher. The NGT encourages minority options to be voiced and finally to further assess credibility the outcomes of the discussion were directed back to the participants to validate them as being their experience.

3.10 Ethical considerations and authorization for the study

Ethical issues were given their due concern as respondents should not be harmed or caused distress as a result of participating in the study (Cormack, 2000; Bowling, 2002). Also the participants should be given adequate information and be able to withdraw from the study whenever they decide to do so (Polit & Hungler, 1999; Gordon & Stokes, 1989). Informed consent was obtained from the participants of the study who were informed in writing about the aims of the study, confidentiality and the freedom to withdraw from the study at any time (Appendix 13). All data collected was confidential.
and no names were requested to protect anonymity throughout the study. Only relevant data to the purpose of the study was collected, which will be erased personally by the researcher after completion of study. According to Treece and Treece (1986) the subject’s consent for voluntary participation in a study should be obtained without being coerced.

Permission to conduct this study was sought and granted by the Board of Studies of the Health Services Management and by the University of Malta Ethics Board (Appendix 14). A letter was written to the hospital authorities, explaining the aim and objectives of the study and asking permission to undertake the study (Appendix 15). Permission from the Director Institute of Health Care, MDH to conduct the study was asked and granted (Appendix 16).

The main ethical issues involved during the NGT were those of anonymity and confidentiality. Anonymity was not possible due to participants being in a group. The participants were however informed that their identity would not be revealed in any part of the report and that they would be asked to keep all information shared within the group only.
Chapter 4

Findings
4.1 Introduction

This chapter will present the analysis of the data that was obtained from this study. Data collection and analysis was conducted concurrently, since this action research study could progress to the subsequent phase based on the findings and results of the previous phase. This data would then be used to clarify the necessary changes as the study progressed.

The findings of this study will be presented in relation to the following objectives:

1. The needs for an Integrated Care Plan (ICP) as presented by the professionals working in the researched area during Nominal Group sessions and after evaluating the present nursing and medical documentation.

2. Training and educating the various professionals who will use the ICP.

3. Developing the ICP based on the local needs of the TKR patients and on the competencies of the staff documenting the patient care delivered.

4. Piloting the ICP for the Total Knee Patient (TKR) in one orthopaedic ward for a period of five months.

5. Evaluating the piloted care plan documentation system, after concluding the piloting phase.

4.2 Demographic Data:

The Health Care professionals participating in this study were 13 males (46%) and 15 females (54%). The age of the respondents ranged from 20 years to 59 years (Figure3).
The years of experience of the participants was varied with the majority (89%) falling within the category of 0-9 years of experience (Figure 4).

The largest proportion of participants in this study were nurses and doctors. Social workers formed the smallest group (Figure 5).
4.3 Comparing traditional nursing and medical documentation with the Integrated Care Pathway documentation.

The ‘Dudley Group of Hospitals NHS Trust Multidisciplinary Audit of Documentation’ was used to assess the traditional medical and nursing documentation in the pre-intervention phase, that is, before introducing the training programme and piloting of the ICP. The same audit tool was then used in the post-intervention phase so as to compare the level of documentation between the traditional method and the ICP.

The results of the audit on the thirty traditional notes carried out during the pre-intervention phase and the thirty ICP audited during the post-intervention phase were analysed using the unpaired student t-test. To compare the scores of each individual statement the Fishers Exact Test was used, since no raw data was used.
4.3.1 Nursing Documentation Audit

The Nursing section of the Documentation Audit tool consisted of twenty eight statements with a marking of a Yes/No for each. The correct answer was given a positive weight of one mark for each statement. The Nursing section was divided into three categories which consisted of:

1. The General statements (n=15)
2. The Assessment/Treatment plan statements (n=10)
3. The Case notes (n=3)

Consequently, the total highest score for each individual nursing documentation audit was of twenty eight marks, that is, one mark for each correct outcome.

The results of the documentation audit prior to the introduction of the ICP revealed a mean score of 16 marks out of the potential 28 marks (57.4%). This was the mean score registered from thirty traditional patient documentation files. On the other hand, the audit carried out after the introduction of the ICP registered a mean score of 22.4 marks (79.9%) out of twenty eight marks, indicating an increase of 22.5% in the quality of documentation (CI 13-18, 19-26). This difference was found to be highly statistically significant with a p value of \(p<0.0001\) indicating a significant improvement in the nursing documentation following the introduction of the ICP.

Table 2 provides a comparison between the score of each individual statement for the 30 traditional documentation notes audited and the score of each statement for the audit of the implemented ICP. Consequently the mean score is the difference between the scores of the pre and post ICP audit. The scores show the degree of improvement after the introduction of the ICP or vice versa. The statistically significant p values are presented in Table 2 below, in bold.
TABLE 2 - Dudley Tool Nursing Documentation Audit

<table>
<thead>
<tr>
<th>General</th>
<th>Traditional notes score</th>
<th>ICP notes score</th>
<th>Mean score difference</th>
<th>Mean Difference %</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Blue or black ink used</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>0.0</td>
<td>P=1.00</td>
</tr>
<tr>
<td>A2 I.D. No. on each individual document</td>
<td>30</td>
<td>0</td>
<td>-30</td>
<td>-100.0</td>
<td>p=0.00</td>
</tr>
<tr>
<td>A3 Patient name on each individual document</td>
<td>30</td>
<td>28</td>
<td>-2</td>
<td>-6.7</td>
<td>p=0.5</td>
</tr>
<tr>
<td>A4 Date on each entry</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>0.0</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A5 Time on each entry</td>
<td>29</td>
<td>29</td>
<td>0</td>
<td>0.0</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A6 Notes Legible</td>
<td>27</td>
<td>30</td>
<td>3</td>
<td>10.0</td>
<td>p=0.24</td>
</tr>
<tr>
<td>A7 Names of signatories written in capital for identification</td>
<td>0</td>
<td>23</td>
<td>23</td>
<td>76.7</td>
<td>p=0.00</td>
</tr>
<tr>
<td>A8 All alterations cancelled with a single score and signature/date</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>10.0</td>
<td>p=0.53</td>
</tr>
<tr>
<td>A9 Has Tipp-ex been used for corrections</td>
<td>25</td>
<td>28</td>
<td>3</td>
<td>10.0</td>
<td>p=0.42</td>
</tr>
<tr>
<td>A10 Are there any unacceptable abbreviations</td>
<td>10</td>
<td>4</td>
<td>-6</td>
<td>-20.0</td>
<td>p=0.12</td>
</tr>
<tr>
<td>A11 Are the next of kin and emergency contacts identified</td>
<td>29</td>
<td>29</td>
<td>0</td>
<td>0.0</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A12 Care plans of other MDT members are easily accessible</td>
<td>3</td>
<td>29</td>
<td>26</td>
<td>86.7</td>
<td>p=0.00</td>
</tr>
<tr>
<td>A13 There is no duplication of documentation</td>
<td>1</td>
<td>25</td>
<td>24</td>
<td>80.0</td>
<td>p=0.00</td>
</tr>
<tr>
<td>A14 Documentation is sequential and structured</td>
<td>25</td>
<td>30</td>
<td>5</td>
<td>16.7</td>
<td>p=0.52</td>
</tr>
<tr>
<td>A15 All relevant information related to patient care is included</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>p=1.00</td>
</tr>
</tbody>
</table>

**Assessment /Treatment Plan**

<p>| A16 Date and time of admission recorded | 28 | 29 | 1 | 3.3 | p=1.00 |
| A17 Drug allergies or ‘none’ recorded | 20 | 29 | 9 | 30.0 | p=0.00 |
| A18 Activities of daily living recorded | 29 | 30 | 1 | 3.3 | p=1.00 |
| A19 Assessment of pain status and needs | 17 | 29 | 12 | 40.0 | p=0.00 |
| A20 Pressure sore risk assessment (Waterlow) | 2 | 30 | 28 | 93.3 | p=0.00 |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A21</td>
<td>Phlebitis scale commenced (Jackson)</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>A22</td>
<td>Assessments on admission signed by a registered practitioner</td>
<td>29</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>A23</td>
<td>Discharge planning commenced</td>
<td>5</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>A24</td>
<td>Evidence of patients involvement in the planning of their care</td>
<td>1</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>A25</td>
<td>Fluid balance chart completed (including totals)</td>
<td>3</td>
<td>24</td>
<td>21</td>
</tr>
</tbody>
</table>

**Case Notes**

<table>
<thead>
<tr>
<th></th>
<th>Traditional notes score</th>
<th>ICP notes score</th>
<th>Mean score difference</th>
<th>Mean Difference %</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A26</td>
<td>Are the case notes in a good state of repair</td>
<td>11</td>
<td>10</td>
<td>-1</td>
<td>-3.3</td>
</tr>
<tr>
<td>A27</td>
<td>Is the filing in the correct order</td>
<td>22</td>
<td>30</td>
<td>8</td>
<td>26.3</td>
</tr>
<tr>
<td>A28</td>
<td>Are there any loose sheets in the case notes</td>
<td>12</td>
<td>27</td>
<td>15</td>
<td>50.0</td>
</tr>
</tbody>
</table>

The findings indicate that there were about four statements which got worse mean scores after the introduction of the ICP while there were a number of statements which showed an improved outcome. The most statistically significant negative mean score was that related to the writing of the ID card number of the patient (A2: p=0.000).

The highest statistically positive mean scores were related to reduction in duplication of documentation (A13: p=0.000), discharge planning (A23: p=0.000), evidence of patient involvement (A25: p=0.000) and care plans of other MDT members easily accessible (A12: p=0.000).

As already stated, the overall result was an improvement of 22.5% after the introduction of the ICP. The implications of these findings will be elaborated upon in the Discussion Section.
4.3.2 Medical Documentation Audit

The Medical section of the Documentation Audit tool consisted of forty statements with a marking of a Yes/No for each. The correct answer was given a positive weight of one mark for each statement. The Medical section was divided into six categories which consisted of:

(1) The General statements (n=14)
(2) The Assessment/Diagnosis/Treatment plan statements (n=7)
(3) Operation/Anaesthesia (n=4)
(4) Prescription sheet (n=5)
(5) Discharge (n=5)
(6) Consent form and Pre-op checklist (n=5)

Consequently, the total highest score for each individual medical documentation audit was of 40 (forty) marks, that is, one mark for each correct outcome.

The audit of the Medical Documentation Section resulted in a mean score of 25.0 (62.6%) prior the ICP introduction (CI: 20-29), to a mean score of 33.7 (84.3%) following the ICP introduction (CI:31-38). Thus, the result indicated a positive mean difference of 11.7 (21.75%) in the quality of documentation after the introduction of the ICP. This resulted in a statistically significant improvement of documentation with a p value of less than 0.0001 (p<0.0001), when comparing the scores of the traditional documentation against the ICP documentation scores.

Table 3 below gives a breakdown of the individual statements for the Medical audit and provides details of the mean difference and p value for each statement.

**TABLE 3- The Dudley Tool Medical Documentation Audit**

<table>
<thead>
<tr>
<th>General</th>
<th>Traditional notes score</th>
<th>ICP notes score</th>
<th>Mean score difference</th>
<th>Mean Difference %</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Blue or black ink used</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>0.0</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A2 I.D. No. on each individual document</td>
<td>13</td>
<td>11</td>
<td>-2</td>
<td>-6.7</td>
<td>p=0.79</td>
</tr>
<tr>
<td>A3 Patient name on each individual document</td>
<td>9</td>
<td>30</td>
<td>21</td>
<td>70.0</td>
<td>p=0.00</td>
</tr>
<tr>
<td>A4</td>
<td>Date on each entry</td>
<td>10</td>
<td>30</td>
<td>20</td>
<td>66.7</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>------</td>
</tr>
<tr>
<td>A5</td>
<td>Time on each entry</td>
<td>1</td>
<td>23</td>
<td>22</td>
<td>73.3</td>
</tr>
<tr>
<td>A6</td>
<td>Notes Legible</td>
<td>11</td>
<td>29</td>
<td>18</td>
<td>60.0</td>
</tr>
<tr>
<td>A7</td>
<td>Names of signatories written in capital letters for identification</td>
<td>7</td>
<td>20</td>
<td>13</td>
<td>43.3</td>
</tr>
<tr>
<td>A8</td>
<td>All alterations cancelled with a single score and signature/date</td>
<td>7</td>
<td>8</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>A9</td>
<td>Has Tipp-ex been used for corrections</td>
<td>25</td>
<td>25</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>A10</td>
<td>Are there any unacceptable abbreviations</td>
<td>10</td>
<td>11</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td>A11</td>
<td>Care plans of other MDT members are easily accessible</td>
<td>4</td>
<td>30</td>
<td>26</td>
<td>86.7</td>
</tr>
<tr>
<td>A12</td>
<td>There is no duplication of documentation</td>
<td>9</td>
<td>29</td>
<td>20</td>
<td>66.7</td>
</tr>
<tr>
<td>A13</td>
<td>Documentation is sequential and structured</td>
<td>19</td>
<td>30</td>
<td>11</td>
<td>36.7</td>
</tr>
<tr>
<td>A14</td>
<td>All relevant information related to patient care is included</td>
<td>16</td>
<td>30</td>
<td>14</td>
<td>46.7</td>
</tr>
</tbody>
</table>

**Assessment/Diagnosis/Treatment Plan**

<table>
<thead>
<tr>
<th>A15</th>
<th>Presenting History clearly documented</th>
<th>28</th>
<th>30</th>
<th>2</th>
<th>6.7</th>
<th>p=0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A16</td>
<td>Past medical history clearly documented</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A17</td>
<td>Initial examination clearly documented</td>
<td>28</td>
<td>30</td>
<td>2</td>
<td>6.7</td>
<td>p=0.5</td>
</tr>
<tr>
<td>A18</td>
<td>Admitting diagnosis recorded</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A19</td>
<td>Treatment plan clearly documented</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A20</td>
<td>Investigations requested recorded in the case notes</td>
<td>26</td>
<td>29</td>
<td>3</td>
<td>10.0</td>
<td>p=0.35</td>
</tr>
<tr>
<td>A21</td>
<td>Investigation results initialed and filed appropriately</td>
<td>25</td>
<td>28</td>
<td>3</td>
<td>10.0</td>
<td>p=0.42</td>
</tr>
</tbody>
</table>

**Operation/Anaesthesia**

<table>
<thead>
<tr>
<th>Operation/Anaesthesia</th>
<th>Traditional notes score</th>
<th>ICP notes score</th>
<th>Mean Score Difference</th>
<th>Mean Difference %</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A22 Operation checklist completed</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A23 Intra-operative record completed</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td>0.0</td>
<td>p=1.00</td>
</tr>
<tr>
<td>A24 Type of anaesthetic recorded on operation note</td>
<td>25</td>
<td>30</td>
<td>5</td>
<td>16.7</td>
<td>p=0.52</td>
</tr>
<tr>
<td>A25 Anaesthetist name on operation note</td>
<td>29</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>p=1.00</td>
</tr>
</tbody>
</table>

**Prescription sheet**
As can be seen from the results of Table 3, there were no statistically significant negative mean scores resulting from the medical audit when the two audits are compared.

Conversely, and corresponding to the Nursing audit, statistically positive mean scores were present in relation to the reduction in duplication of documentation (A12: p=0.00) and an improvement of accessibility to care plans of other MDT members (A11: p=0.00). Other statistically significant scores were registered as can be seen in the above Table 3 with the highlighted p values.
As in the case of the Nursing documentation Audit, the majority of statements showed an improved outcome. As already stated, the overall result was a positive score of 21.75% after the introduction of the ICP. The implications of these findings will be elaborated upon in the Discussion section of this thesis.

4.4 Comparing the knowledge of participants related to ICPs.

The effectiveness of the ICP Educational training package provided to the participants was evaluated using a pre-post test questionnaire. The number of participants who carried out this programme was of twenty seven (n=27) out of the total sample of twenty eight (n=28), indicating a high response rate. A questionnaire was distributed before the start of the programme as part of the learning package to identify the participants’ knowledge related to ICPs. The same questionnaire was then repeated after the programme so as to compare each individual participant’s level of knowledge before and after the programme.

The data was analysed using the paired student t-test and the Fishers Exact Test to analyse the scores of the individual statements of the audit tool. The results indicated an improvement in the knowledge of the participants following the educational programme. The result of the paired student t-test showed a statistically significant p value of p <0.0002, thus indicating that the programme had a positive effect in enhancing the knowledge of the participants in relation to ICPs. Although the results of the pre education questionnaire revealed a fairly low knowledge of ICPs with mean difference of 59.6 %, (CI: 2-5) the post education score indicated a significant increase to 84.4% (CI: 10-12) with eight participants obtaining a 100% score. Thus, the result indicated an increase of 25% in the knowledge of the participants related to ICPs after the training programme.

Table 4 gives a breakdown of the individual scores for each of the ten questions and the comparative percentage score for the pre and post intervention results.
### TABLE 4- The Clinical Pathways Education Package Questionnaire

<table>
<thead>
<tr>
<th>Questions on ICP Knowledge</th>
<th>PRE</th>
<th>POST</th>
<th>Mean Score Difference</th>
<th>Mean Difference %</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Definition of a Clinical Pathway</td>
<td>17</td>
<td>25</td>
<td>8</td>
<td>29.6</td>
<td>p=0.02</td>
</tr>
<tr>
<td>2. The function of a Clinical Pathway</td>
<td>16</td>
<td>23</td>
<td>7</td>
<td>25.9</td>
<td>p=0.07</td>
</tr>
<tr>
<td>3. Which professional staff groups may document on a Clinical Pathway</td>
<td>20</td>
<td>26</td>
<td>6</td>
<td>22.2</td>
<td>p=0.05</td>
</tr>
<tr>
<td>4. The components of a Clinical Pathway</td>
<td>4</td>
<td>16</td>
<td>12</td>
<td>44.4</td>
<td>p=0.00</td>
</tr>
<tr>
<td>5. Definition of a variance</td>
<td>20</td>
<td>25</td>
<td>5</td>
<td>18.5</td>
<td>p=0.14</td>
</tr>
<tr>
<td>6. Whether the only source of a variance is when a patient does not comply with the Clinical Pathway</td>
<td>18</td>
<td>20</td>
<td>2</td>
<td>7.4</td>
<td>p=0.77</td>
</tr>
<tr>
<td>7. Who should review a complex variance</td>
<td>21</td>
<td>25</td>
<td>4</td>
<td>14.8</td>
<td>p=0.25</td>
</tr>
<tr>
<td>8. Whether Individualisation of Clinical Pathways is referred to as a variance</td>
<td>9</td>
<td>17</td>
<td>8</td>
<td>29.6</td>
<td>p=0.06</td>
</tr>
<tr>
<td>9. The utility of Variance analysis and monitoring</td>
<td>20</td>
<td>26</td>
<td>6</td>
<td>22.2</td>
<td>p=0.05</td>
</tr>
<tr>
<td>10. The meaning of DRG</td>
<td>15</td>
<td>25</td>
<td>10</td>
<td>37.0</td>
<td>p=0.00</td>
</tr>
</tbody>
</table>

The main areas of knowledge enhancements with statistically significant improvement were registered in three areas as highlighted in Table 4 above (i.e. p<0.05). These were: the definition and components of the Clinical pathway and the meaning of the Diagnosis Related Group.

#### 4.5 The Pre-Intervention Nominal Group Technique

**4.5.1 Response rate**

The number of participants who attended for the session was of nineteen out of the twenty eight potential participants. There were seven doctors including two consultants, seven nurses, two physiotherapists, two occupational therapists and one social worker. The results emerging from the first NGT will now be discussed based on the questions put forward to the participants.
4.5.2 Generation of Ideas - Question 1

'What are the main inhibiting factors that may hinder effective multi-disciplinary documentation for TKR patients?'

The top ten inhibiting factors for multi-disciplinary documentation were identified by the different professionals. They ranked the items according to importance by giving them numerical weighting from one (1) to one hundred (100) represented as scores in following figures. Figures 6, 7 and 8 below provide the details of the ten identified inhibitory factors for each professional category with the total added score for the ranked statements.

Figure 6. Top 10 inhibiting factors for multi-disciplinary documentation - doctors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegible handwriting</td>
<td>600</td>
</tr>
<tr>
<td>Fragmentation-loss of time</td>
<td>660</td>
</tr>
<tr>
<td>No time for handover/feedback</td>
<td>650</td>
</tr>
<tr>
<td>Variable protocol of care</td>
<td>640</td>
</tr>
<tr>
<td>Lack of communication</td>
<td>630</td>
</tr>
<tr>
<td>No standardisation</td>
<td>620</td>
</tr>
<tr>
<td>Repetition</td>
<td>610</td>
</tr>
<tr>
<td>No involvement of MDT in ward round</td>
<td>600</td>
</tr>
<tr>
<td>Power struggle</td>
<td>600</td>
</tr>
<tr>
<td>Missing details</td>
<td>600</td>
</tr>
</tbody>
</table>

Figure 7. Top 10 inhibiting factors for multi-disciplinary documentation - nurses

<table>
<thead>
<tr>
<th>Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegible handwriting</td>
<td>600</td>
</tr>
<tr>
<td>Different use of words</td>
<td>650</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>640</td>
</tr>
<tr>
<td>Long reports are time-consuming</td>
<td>630</td>
</tr>
<tr>
<td>Lack of communication</td>
<td>620</td>
</tr>
<tr>
<td>Missing details</td>
<td>610</td>
</tr>
<tr>
<td>Repetition</td>
<td>600</td>
</tr>
<tr>
<td>No standardisation</td>
<td>600</td>
</tr>
<tr>
<td>Power struggle</td>
<td>600</td>
</tr>
<tr>
<td>No patient involvement</td>
<td>600</td>
</tr>
</tbody>
</table>
The Figure 9 below gives an overview of the Top 10 inhibiting factors for all the participants in this study. The top three main inhibiting factors that emerged from the feedback of all the participants was the lack of Multi-disciplinary communication when using the traditional documentation, illegible handwriting and fragmentation – loss of time.
4.5.3 Generation of Ideas- Question 2

'What actions can be taken to reduce such inhibiting factors so as to ensure a standard multi-disciplinary approach?'

After the professionals identified and ranked the top ten barriers that may hinder integrated and multidisciplinary documentation, Question 2 dealt with the potential actions and changes that could be taken at ward level to enhance integrated, sequential and structured documentation. Each participant was asked to list the top ten most important actions that could be taken. Figures 10, 11 and 12 present the different professionals' responses to Question 2.

Figure 10. Top 10 actions needed to reduce inhibiting factors to ensure standard multi-disciplinary approach - doctors

- Audit and discipline
- Standardisation of notes
- No fragmentation
- Printed notes to improve legibility
- ICP
- No repetition
- Coverage of all details to reduce mistakes
- Documentation should involve all disciplines
- Leading to effective and timely decisions
- Flexible documentation

Score
The Figure 13 below gives an overview of the Top 10 actions needed to reduce inhibiting factors towards cohesive MDT documentation that were identified by all the participants.
of this study. The top three main actions were the introduction of an ICP, regular audit and discipline in the use of documentation, and the inclusion of all details required by the MDT.

Figure 13. Top 10 actions to reduce inhibiting factors to ensure standard multidisciplinary approach - all professionals

Score

<table>
<thead>
<tr>
<th>Action</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICP</td>
<td></td>
</tr>
<tr>
<td>Audit and Discipline</td>
<td></td>
</tr>
<tr>
<td>Coverage of all details</td>
<td></td>
</tr>
<tr>
<td>Leading to effective and timely</td>
<td></td>
</tr>
<tr>
<td>Standardisation of notes</td>
<td></td>
</tr>
<tr>
<td>Printed notes to improve</td>
<td></td>
</tr>
<tr>
<td>No repetition</td>
<td></td>
</tr>
<tr>
<td>No fragmentation</td>
<td></td>
</tr>
<tr>
<td>Tailor made for all care protocols</td>
<td></td>
</tr>
<tr>
<td>Flexible documentation</td>
<td></td>
</tr>
</tbody>
</table>

4.6 The Post-Intervention Nominal Group Technique

The second NGT was conducted five months after the introduction and piloting of the ICP. The aim of this NGT was to explore the perceptions of the various professions in relation to their experience when using the ICP as the mode of documentation instead of the traditional method. Four structured questions were put forward for discussion so as to identify the benefits, disadvantages and any suggested changes to the format of the ICP. Since this was a session focused on receiving feedback on the use of the tool, no numerical weighting was given, however ranking of importance was given to the suggestions and feedback provided. The suggestions and feedback that emerged during the discussion was documented so as to assist the researcher in emending the format of the ICP accordingly.
4.6.1 Response rate

The number of participants who attended for the session was of seventeen out of the twenty-eight potential participants. There were five doctors including two consultants, nine nurses, one physiotherapist, one occupational therapist and one social worker. The results emerging from the second NGT will now be presented based on the questions put forward to the participants.

4.6.2 Generation of Ideas- Question 1

'After using the ICP for 5 months, can you discuss any benefits that you perceive in using the ICP as compared to the use of the traditional documentation method?'

The feedback from this question generated a number of benefits that were identified by the professionals present at the NGT.

Twelve participants stated that the ICP incorporates all activities of daily living and thus would ensure that all aspects of patient care are documented. Ten participants stated that due to the tick lists, the ICP was less time consuming to fill in when compared to traditional documentation. Eight participants stated that the ICP made it easier for the individual professions to access all the documentation related to the patient. Seven participants stated that it was easy to record the data due to the structured format while another seven stated that the ICP encouraged notes to be written by all the members of the MDT. Four participants stated that the ICP was also useful as a tool for clinical audit while three participants stated that it assisted in better discharge planning. Table 5 gives a ranking of these perceived benefits.
TABLE 5: Perceived benefits of the ICP according to multidisciplinary team members

<table>
<thead>
<tr>
<th>In decreasing order of importance according to professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Incorporates all activities of daily living</td>
</tr>
<tr>
<td>2. Time-sparing</td>
</tr>
<tr>
<td>3. Easy to access all documentation</td>
</tr>
<tr>
<td>4. Easy to record data</td>
</tr>
<tr>
<td>5. Encourages notes by all members of the MDT</td>
</tr>
<tr>
<td>6. Helpful as a tool for clinical audit</td>
</tr>
<tr>
<td>7. Better discharge planning</td>
</tr>
</tbody>
</table>

4.6.3 Generation of Ideas- Question 2

‘Can you discuss any disadvantages that you identified whilst using the ICP?’

The disadvantages referred to by the multi-disciplinary team participants are presented in Table 6. Twelve of the participants stated that there were no disadvantages in using the ICP. However six of the participants referred to the difficulty of changing staff behaviours to ensure compliance in filling in the ICP. Two participants stated that sometimes they found that the ICP did not have the flexibility to include variations in the space available. Another participant stated that filling the ICP could be time consuming.

TABLE 6: Perceived Disadvantages of the ICP found during implementation

<table>
<thead>
<tr>
<th>In decreasing order of importance according to professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No disadvantages</td>
</tr>
<tr>
<td>2. Hard to implement behavioural changes</td>
</tr>
<tr>
<td>3. Little space for variation</td>
</tr>
<tr>
<td>4. Time consuming</td>
</tr>
</tbody>
</table>
4.6.4 Generation of Ideas- Question 3

‘In your opinion should the ICP be continued as the formal method of documentation for TKR patients? If no, please give your reasons.

In response to this question, there was unanimous positive response that the ICP should be continued as the formal method of documentation. It was stated by one of the participants, that since the ICP had been used for five months it was now clearly understood and most of the staff had become acquainted in its use. They were recognizing the benefits of the ICP when compared to the traditional method of documentation.

4.6.5 Generation of Ideas- Question 4

‘Are there any improvements to the ICP that you would suggest?’

Several improvements to the ICP were suggested by the participants and these are listed in Table 7. Fifteen participants suggested that the parameter chart inserted in the daily report should be removed and instead a flow chart with parameters should be included. Ten participants referred to the need of having the Patient ID number on each individual sheet of the ICP. This was due to the fact that since the initial version of the ICP was not in a booklet form, sheets could become dislodged and misplaced. Thus, having the I.D. number could facilitate retrieval of any misplaced sheets. Eight participants suggested that there should be separate sections for each MDT member so that the notes written by different participants could be easily found within the specified area of the ICP. Seven participants suggested that there should be more space within the ICP where the Nursing report can be written in more detail. Six participants suggested that there should be a list of standardized abbreviations used by the MDT, on the front page of the ICP and another six participants suggested that there should be an MDT signature sheet on the first page of the ICP. One of the Consultants suggested that there should be space (box) to write the post-op CBC in the Vital Observation chart.
TABLE 7: Implementations suggested by multidisciplinary team members

<table>
<thead>
<tr>
<th>In decreasing order of importance according to professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove temperature/ parameter chart from daily report</td>
</tr>
<tr>
<td>2. Patient ID on each sheet</td>
</tr>
<tr>
<td>3. Separate section for each MDT member</td>
</tr>
<tr>
<td>4. More space for reports</td>
</tr>
<tr>
<td>5. Include more abbreviations</td>
</tr>
<tr>
<td>6. MDT signature sheet on first page of ICP</td>
</tr>
</tbody>
</table>

4.7 Conclusion

Data collection included an evaluation of the traditional documentation which was then compared with the evaluation of the ICP after its introduction. These pre and post intervention evaluations were carried out using the Dudley Group of Hospitals Documentation audit tool and the results showed a statistically significant positive enhancement in the documentation after the introduction of the ICP. The effectiveness of the Clinical Pathways Package educational programme was measured using a pre- and post educational questionnaire. These revealed a statistically significant increase in the knowledge of the participants in relation to ICPs.

Two NGTs were carried out throughout the research project so as to shed light on the need for enhancement in the way the MDT documents patient care and to identify the perceptions of the participants in relation to the introduction of the ICP. The potential benefits, disadvantages and suggestions for improvement were also explored.

In the next chapter these findings will be discussed and elaborated upon. The implications of the findings will be explored to identify the effectiveness of this action research and recommendations will be made accordingly.
Chapter 5

Discussion
5.1 Introduction

This chapter discusses the main findings that emerged from this study and goes on to suggest recommendations for management practice, education and further research.

As previously outlined, this action research project consisted of a number of consecutive phases. These different phases followed sequentially as the project progressed. A major aspect of ICP development is the time needed to develop them to their full potential as they are not static documents and need to evolve continually (Herring, 1999; Ellis & Johnson, 1999). Thus, action research was considered by the researcher as the ideal method for use in this project. The findings will be discussed in line with the following objectives of this study:

1. The needs for an Integrated Care Plan (ICP) as presented by the professionals working in the researched area during Nominal Group sessions and after evaluating the present nursing and medical documentation.

2. Training and educating the various professionals who will use the ICP.

3. Developing the ICP based on the local needs of the TKR patients and on the competencies of the staff documenting the patient care delivered.

4. Piloting the ICP for the Total Knee Patient (TKR) in one orthopaedic ward for a period of five months.

5. Evaluating the piloted care plan documentation system, after concluding the piloting phase.
Table 8. The Phases of the Study

PHASE 1:
A. Audit of traditional documentation.
B. Pre-training Assessment of participants' knowledge related to ICPs.

PHASE 2:
A. Training programme to enhance knowledge on ICPs.
B. Post-training Evaluation of participants' knowledge related to ICPs.
C. Nominal Group Technique (NGT) to identify MDT views on hindering factors of effective documentation and suggestions for improvement of MDT documentation.

PHASE 3:
A. Compiling and structuring of the ICP using various resources, MDT input and adaptation according to needs.
B. ICP introduced and piloted for 5 months.
C. Continuous feedback sought from staff during this phase.

PHASE 4:
A. Individual audit of Integrated Care Plans.
B. Comparison of the ICPs' audit with traditional documentation audit.
C. Nominal Group Technique carried out to identify the perceptions of the participants after using the ICP and to obtain suggestions.

The results and data emerging from the different phases will now be discussed in detail.

5.2 Comparing the traditional Nursing and Medical documentation audit score with the ICP documentation audit score.

The results of the traditional Nursing and Medical documentation audit prior to the introduction of the ICP revealed a mean score of 16.07 (57.38%). This modest score was due to a number of areas within the traditional documentation that scored low on
the Dudley Documentation Audit tool. The areas with the lowest scores in the nursing and medical audit of notes that indicated the need for improvement included:

- The lack of accessibility of care plans to all the MDT members.
- The amount of duplication that was found in the files.
- The lack of pressure sore risk assessment and pain score documentation.
- The lack of documentation related to a structured discharge plan.
- The lack of evidence of patient involvement.
- The chronology in the filing of clinical notes.

Thus, the first audit indicated that the traditional documentation was deficient in a number of important areas. This result pointed towards the need to invest in an integrated system of documentation which would combine the MDT notes, thus minimising the deficiencies highlighted by this study. Similar deficiencies in traditional documentation, including lack of accessibility to information and duplication of information were also evidenced by Helleso and Ruland (2001). In a study that followed a similar process to the author’s research, Baker (1996) also identified similar findings regarding traditional documentation which lacked continuity and also had frequent instances of duplication. Such findings need to be addressed since poorly designed documentation instruments can lead to careless recording that may magnify exposure to liability even if no negligence has occurred (Forkner, 1996).

As previously referred to in the literature review, various studies have indicated that ICPs can be a solution to these deficiencies since they amalgamate all the anticipated elements of care and treatment for a particular condition or disease (College of Nurses of Ontario, 2002; Panella et al., 2003; Björvell et al., 2003). They also serve to involve the patient in their care, improve flow of information amongst providers, decrease fragmentation and provide a method of audit so as to plan and allocate resources efficiently (Forkner, 1996; Tapp, 1990).

A second documentation audit was carried out by the researcher in a similar fashion to Baker (1996). This audit was conducted five months after piloting the ICP, in order to evaluate its effects. For clarity of comparisons, the findings of the pre and post ICP
documentation audit will now be discussed in more detail and will be separated into Nursing and Medical audit results.

### 5.2.1 Nursing Documentation Audit

The result obtained for the Pre and Post-ICP documentation audit revealed a mean score of 16.1 (57.4%) and 22.4 (79.9%) respectively. On comparison there was a clear positive difference and improvement of 22.5% after the use of the ICP. The audit of the Nursing Documentation Section also resulted in a highly statistically significant p value, \( p<0.0001 \), again, indicating a significant improvement in the nursing documentation following the introduction of the ICP.

This marked improvement concurs with the findings in the literature where, in most studies, improvement in nursing documentation towards a more cohesive system of documentation was evident after the introduction of an ICP. As evidenced in the literature, ICPs are now considered as an important tool in the improvement of the standards of documentation system of the multi-disciplinary team (Ellershaw, 2001; Kent & Chalmers, 2006).

When looking in detail at the individual statements of the audit tool the observations outlined below can be made. These observations will now be discussed and both the negative and positive outcomes will be highlighted.

Table 9 below shows the negative outcomes identified from the audit, after the introduction of the ICP.

<table>
<thead>
<tr>
<th>General</th>
<th>Traditional notes score</th>
<th>ICP notes score</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.D. No. on each individual document</td>
<td>30</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Patient name on each individual document</td>
<td>30</td>
<td>28</td>
<td>0.5</td>
</tr>
<tr>
<td>Are there any unacceptable abbreviations?</td>
<td>10</td>
<td>4</td>
<td>0.12</td>
</tr>
</tbody>
</table>
The statistically significant negative score for the I.D. number documentation \((p=0.00)\) on the individual sheets of the ICP was due to the fact that during the initial stages of creating the ICP, no specific section to write the patient's I.D number had been included. However, during the second Nominal Group Technique (NGT), which will be elaborated upon in the following section, the participants did specifically express the need to include the patient’s I.D. card number on each sheet of paper.

Conversely, it was also noted that even though an area was included where the patient’s name could be registered this was mostly not complied with. Another issue that might have further precluded staff from filling in this section of the patient’s name was the fact that the area was crammed and could easily be overlooked.

There was also a negative score on unacceptable abbreviations since no structured list of abbreviations was included in the first version of the ICP. Although this was not statistically significant \((p=0.12)\), the percentage was of -20\% indicating an increase in unacceptable abbreviations in the ICP. According to the literature the presence of abbreviations should be avoided and patient’s records should provide clear evidence of care planning and care delivery (Short, 1997; College of Nurses of Ontario, 2002). Also according to JCAHO, Sentinel Events Advisory Group, data collected on frequently occurring errors in healthcare show that certain commonly used abbreviations were frequent contributors to such errors. Consequently as part of the 2004 National patient safety Goals issued by JCAHO, institutions seeking accreditation by the organisation must now standardise such abbreviations in line with the JCAHO guidelines (Karch, 2004).

This issue regarding abbreviations was also mentioned during the second NGT during which the participants suggested that a list of standard abbreviations should be included within the structure of the Integrated Care Plan. Other versions of ICPs, example, The ‘South Manchester University Hospitals’ NHS Trust, ICP for TKR that the researcher reviewed before developing the piloted ICP had such abbreviations listed as part of that ICP. Thus, the researcher amended the ICP and
placed an abbreviations list in the ICP after the results of the audit and the feedback from the professionals.

On the positive side, as can be identified from the results, after the introduction of the ICP documentation, the main statements of marked improvements were the respective core areas identified during the initial evaluation that needed to be improved. These included a significant reduction in duplication, easy access to MDT members’ notes, discharge planning, patient involvement and the inclusion of the pressure sore risk assessment tool (Waterlow Score).

This reduction in duplication is consistent with the results of other studies in the literature. Bryson and Browning (1999) in their three (3) year project, with over 100 ICPs implemented in two (2) hospitals, stated that duplication of information existed in nearly all of the old case notes but this was reduced by 80-85% in the ICPs. The integrated care plans improve standards of the documentation system and efficiency by reducing duplication, repetition and wastage of resources and thus help in the delivery of seamless care which reduces fragmentation (Clegg & Meston, 1999; Ellershaw, 2001; Kent & Chalmers, 2006).

Clear, standardised and comprehensive ICP documentation system reduces the possibility of litigation and becomes a powerful tool to prevent malpractice litigation (B. Gafa, personal communication, May 18, 2009). On the other hand poorly designed documentation magnifies exposure to liability. Consequently, ICPs have been advocated as excellent risk management tools and superior to traditional documentation when it comes to recording evidence of best practice (Bryson & Browning, 1999).

There was also a positive improvement in nursing documentation regarding the use of the Waterlow pressure sore assessment tool. The utilization of reliable and valid assessment tools is important in clinical practice, to aid the clinical judgement of the professional and therefore identify patients at risk for pressure ulcers and malnutrition (Baath, Hall-Lord, Idvall, Wiberg-Hedman & Larsson, 2008).
Evidence from literature shows that such good practice is important when nursing all patients, even more so in orthopaedic patients, as their risk of developing sores is higher (Clark & Watts, 2008). This was also stated by Peich and Calderon-Margalit (2004) who used a standardized monitoring tool for pressure sore risk assessment in patients with hip fractures. This resulted in the reduction of the prevalence rate of pressure sores on the ward from 21% to 8%. Thus although orthopaedic patients were at a higher risk of developing pressure sores, prevention was feasible by early assessment. The presence of such pressure sores places significant pressures on an already burdened health care system. Every year, without fail, health care spending continues to rise at a rapid rate, creating problems of sustainability and affordability. Experts agree that these costs are increased by inefficiencies, poor management, and inappropriate care (Ginsburg, 2004). The overall costs of preventing and treating such pressure sores are considered to be substantial, and according to Bennett et al. (2004) around 4% of total NHS expenditure (1 billion pounds), is spent on treating such ulcers, significantly increasing hospitals costs and patients’ length of stay.

With regards to the issues of discharge planning and patient involvement in the planning of their care, there was a significant improvement when using ICP in the researcher’s ward. Bragato and Jacobs (2003) confirms the benefits of patient involvement throughout the care process, where they comment that strengthening patient focus reduces the separation between a patient and their records, thus empowering patients and reducing their uncertainty about treatment. Mosher et al., (1992), point out that patients have a right to be kept informed and involved throughout their process of care, and they should know their expected activity level by the day of discharge. Williams et al. (1993) and also Leino-Kilpi, Iire, Suominen, Vuorenheimo and Valimaki (1993), confirm that patient involvement in planning of care, results in improved quality of care, better patient education and improved discharge procedures. Increased communication with patients should also reduce the potential for litigation and complaint, and numerous authors describe increased levels of patient satisfaction with care pathways, partly related to increased information and communication (Wilson, 1997).
Consequently, consonant with other studies in the literature, these statistically significant findings indicate that the introduction of the ICP had a positive influence on the Nursing documentation.

5.2.2 Medical Documentation Audit

The mean Score for the audit carried out prior to the introduction of the ICP and post the introduction of the ICP also indicated an improvement in medical documentation going from a mean of 25.0 (62.6%) prior the ICP introduction, to a mean of 33.7 (84.3%) post the ICP introduction. Thus, the result indicated a clear mean difference with an increase of 21.75% in the quality of documentation after the introduction of the ICP. This audit also resulted in a statistically significant p value, \( p<0.0001 \) indicating an improvement in the medical documentation following the introduction of the ICP.

When looking in detail at the individual statements of the audit tool the observations outlined below can be made. Negative outcomes identified after the introduction of the ICP were obtained for the following statements outlined in Table 10 below.

<table>
<thead>
<tr>
<th>General</th>
<th>Traditional notes score</th>
<th>ICP notes score</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Medication written in capitals</td>
<td>4</td>
<td>0</td>
<td>0.11</td>
</tr>
<tr>
<td>Is there written evidence that the benefits of the procedure were explained</td>
<td>1</td>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>Is there written evidence that risks of the procedure were explained</td>
<td>3</td>
<td>0</td>
<td>0.24</td>
</tr>
</tbody>
</table>

The results indicate that there was no improvement in the scores of the above statements. Considering that illegible handwriting in Medication prescription can lead to potential iatrogenic mistakes, lack of Upper Case lettering documentation
for all medication could be detrimental to the patient. Such iatrogenic mistakes are increasing as evidenced across most healthcare systems (Scally & Donaldson, 1998; Halligan & Donaldson, 2001).

A historic report prepared and presented by the Institute of Medicine in 2000 concluded that 44,000 to 98,000 people die each year as a result of errors during hospitalization (The American Iatrogenic Association, 2002). The incidence of failures to deliver recommended care should decrease as the requirement to document the delivery of this care becomes more explicit, as it does when using ICPs (Bryson & Browning, 1999).

As already mentioned in the previous nursing documentation section, the issue of patient information, patient involvement and of informed consent is very relevant because research indicates that this improves quality of care and discharge procedures and helps patients to take a more active role in their care (Luhrs & Penrod, 2007; Poskiparta, Liimatainen, Kettunen, & Karhila, 2001). Unfortunately from the audit results of the Medical documentation section, there was no documented indication that the medics had explained the benefits of the procedure or that the risks of the operation had been explained to the patient. As Bryson and Browning (1999), point out, it can be assumed that care which isn’t documented isn’t done, and this can have legal implications.

The checklist nature of the ICP encourages staff to be comprehensive in their documentation and likewise to identify omissions and unplanned events as variations. Thus, the structure of the ICP helps to reduce errors and prevent possible litigation. Evidence also points out that the care interventions that have actually taken place are much more apparent in ICPs (Bryson & Browning, 1999).

Consequently, these issues were addressed in the post intervention phase after the final evaluation and review of the structure of the ICP was done in an attempt to highlight these deficiencies. Subsequently the ICP audit showed a statistically significant improvement in the crucial areas that had previously inhibited integration and communication between the multi-disciplinary team.
The areas which showed most improvement were the following:

**i. Cohesive, accessible documentation & reduction in duplication of notes & tasks:**
The notes of all MDT were more accessible, with decreased amount of duplication after the implementation of the ICP as they were all compiled in one package. Literature shows that ICPs incorporate the MDT documentation, thus enhancing comprehensive documentation accuracy, whilst being sufficiently contemporaneous to keep colleagues well informed when sharing the care of patients (Bryson & Browning, 1999; Bragato & Jacobs, 2003).

From the literature it is felt that ICPs, apart from reducing the duplication of information, reduce the amount of duplication of tasks. Areas of overlap are identified during the process of pathway design. Decisions can thus be reached as to whom is the most appropriate professional to perform that task, therefore facilitating the most appropriate use of time and resources (Campbell et al., 1998).

**ii. Improved legibility of the documentation:**
There was also a substantial improvement in the legibility of the notes due to the structure of the ICP which includes ticking boxes as part of the documentation. This was a significant improvement since lack of legibility was one of the most important hindering factors mentioned by the participants in the first NGT session during the pre-intervention phase. The checklist nature of the record, and the specified accountability for each activity, encourages staff to be comprehensive in their documentation and in their tasks.

Thus, the main findings for the medical audit were positive and reflected the outcomes of similar studies in the literature. In comparison a 3 month study by Crawford and Shanahan (2003) noted that the quality of medical notation in an ICP when compared to the traditional record keeping, resulted in poorer quality of documentation than with traditional medical records. However, in the majority of studies, ICPs were found to enhance clinical governance and multi-disciplinary
team work, facilitate discharge planning, minimise duplication in documentation, standardise and streamline clinical processes and produce measurable outcomes to improvements in patient care (Bragato & Jacobs, 2003; Forkner, 1996; Brett & Schofield, 2002).

5.3 Comparing the Pre- and Post ICP Educational (Training) Programme Knowledge assessment.

A training programme on ICPs was carried out for all professionals before the piloting of the ICP, to enhance its success. The importance of training is emphasized for the successful development and implementation of ICPs (Brett & Schofield, 2002; Bryson & Browning, 1999).

During Phase 1, at the beginning of the study a questionnaire was distributed to the participants prior to the introduction of the ICP Training programme. This questionnaire was aimed at identifying the knowledge of participants on the use of ICPs. The results showed that the majority of the participants had a limited knowledge about ICPs and the overall mean score achieved was of 59.6 % correct responses.

The pre-Educational programme’s highest scores were recorded by two doctors and one nurse who obtained a 90% score. However, five of the medical professionals obtained the lowest score and it was clear that they had no previous knowledge of ICPs. Since no ICPs had ever been introduced in the researcher’s hospital, this result was not surprising. As Crawford and Shanahan (2003) point out, accurate documentation should be promoted during undergraduate training to develop good habits in clinical documentation. Pearson et al. (1995) also state that it is important to incorporate ICPs into their Medical teaching programmes, by using ICPs as teaching instruments in lectures and thus integrating pathways into their teaching hospitals.

However locally, the present undergraduate training does not include ICPs training as part of the medical or nursing course and this may also have led to the low score prior to the education programme on ICPs (J. Depares, personal communication, March 20, 2009).
Following the initial questionnaire, the Educational Training programme was introduced to educate staff on the use of ICPs. Both Bragato and Jacobs (2003) and also Brett and Schofield (2002) emphasize the importance of investing in staff training and education when implementing new documentation systems. Foster and Harrison’s (2000) favoured formal group training of all the main users of the ICP in the implementation process as this empowers staff and decreases resistance and reluctance to accept new concepts and ideas. As stated by Bragato and Jacobs (2003), the implementation of new pathways represent a major change for hospital staff and even despite attempts to provide full training and to involve all staff in the development process, there may still be a degree of resistance to the change. As pointed out by Panella et al. (2003), lack of multi-disciplinary involvement in the development and implementation of the ICP will not lead to successful outcomes, as in the case of the stroke patient, the ICP which had to be stopped after just 3 months as the doctors considered the ICP as a ‘cookbook’ process.

To this end, the project carried out by the researcher included a training programme to enhance the knowledge of staff in using ICPs and to empower staff and decreases resistance. Following this programme the same questionnaire used in the initial phase of the project was redistributed again after the completion of the ICP Educational programme. The scores were then compared individually to those obtained before the start of the Educational package. The result of the paired Student T-test showed a statistically significant p value of p <0.0002, thus indicating that the programme had a significant positive effect in enhancing the knowledge of the participants in relation to ICPs. This pre-post test indicates that the ICP Educational programme was effective in enhancing the knowledge of the multi-disciplinary professionals participating in this research project. However, it was important to continue with re-education as the pathway evolved (Syed & Bogoch, 2000) since ICPs are not static documents and need to evolve continually (Herring, 1999; Ellis & Johnson, 1999).

5.4 The Pre-Intervention Nominal Group Technique (NGT)

Following the implementation of the ICP Training programme and the second questionnaire, the first NGT was carried out. The aim of this NGT was to identify the
participants' perceptions related to the inhibitors of effective multi-disciplinary
documentation and to explore suggestions for potential improvement in the
documentation system. Of the potential twenty eight participants, nineteen attended
the session which gave an adequate sample to ensure the generation of ideas required.

Such NGTs and workshops have been incorporated in the methodology of other
studies where for instance Wright et al. (1999) used workshops to define the key
(2003) emphasized the importance of staff involvement and ownership through MDT
steering groups for the success of developing and implementing ICPs in two
orthopaedic units in Scotland.

During the NGT, the main determining inhibitors of effective multi-disciplinary
documentation were found to be similar by the different health professions in certain
areas. The common issues that the professionals felt inhibited effective multi-
disciplinary documentation were: illegible handwriting, lack of terminology
standardization, variances in care protocols, waste of time looking for other
professionals' entries in the patients notes, fragmentation, having to write and repeat
doctors orders and lack of communication and lack of meetings between the different
professionals.

It was evident from the various participants' first feedback before the development of
the ICP, that they all viewed the traditional documentation as inadequate in providing
a seamless, cohesive patient record which is safe and standardized. They all
commented about the lack of communication between each profession and the
repetition and time wasted due to fragmented notes.

Good practice may be adhered to when using the traditional system of documentation,
however, with the use of ICPs best practice is recorded and individually signed
Consequently, ICPs can be considered as a vastly superior risk management tool
when compared with traditional documentation (Bryson & Browning, 1999).

In relation to the issue of better utilization of time, literature shows that some
professionals found that both the traditional documentation with its long laborious
reports, as well as the initial struggling with the piloting phase of a new ICP led to the
perception of increased documentation (Bragato & Jacobs, 2003). But in several studies the professionals, especially the nursing staff felt that ICPs reduced duplication since the plan and record of care are combined. The time saved can be more productively used to manage exceptions to the routine and those patients who may differ from the norm (Bryson & Browning, 1999).

Centralization of records and collaborative care planning have been identified as important requirements in the study by Baker (1996). Literature by Roberts et al. (2004) also affirms that ICPs are a driving force for communication and faster clinical consensus, improving the processes of care in complex clinical cases. An ICP approach is multi-disciplinary and it promotes teamwork, improves verbal and non-verbal communication and enhances care planning as compared to the traditional separate documentation (Barker & Frosdick, 1999; Campbell et al., 1998; Atwal & Caldwell, 2002).

5.5 The Development of the ICP

During this phase the ICP was developed by the researcher using various resources available from other ICPs. The main resource used was the ‘South Manchester University Hospital NHS Trust’ Integrated Care Pathway for Total Knee Replacement. ICPs incorporate national best practice guidelines as part of a wider quality assurance programme, however they are usually locally developed based on the guidelines and the diverse needs of the MDT team (Cheah, 2000; Baker, 1996). This is because pre-designed ICPs may not be suitable for the particular hospital for various reasons (Bragato & Jacobs, 2003).

To this end, a number of changes and adaptations were introduced based on the literature available, the feedback from the first NGT and the results of the first documentation audit carried out. The literature review by Syed and Bogoch (2000) indicated that several studies refer to ICPs as a dynamic entity that evolves as it is put into practice. This was also concluded by the author carrying out this action research since a number of changes were introduced during the process of this project.
As in the case of Baker (1996) the redesigning of the local ICP included changes related to physiotherapy and occupational therapy documentation since normally these professionals did not contribute to any ward based multidisciplinary documentation. The Orthopaedic Consultants and Surgeons involved in the local researchers' study had a pivotal role in the process and acted as ‘champions’ for this change. This is stated as being an essential element by Collins and Leahy (2008) who point out that the surgeons have a duty and responsibility to be instrumental in the design and practice of ICPs.

Bragato and Jacobs (2003) also sustain that even with the high level of involvement and commitment from all the staff, there was resistance from medical staff. During the author's study, the highest rate of non-compliance was evidenced not from Consultants or Senior House Officers but from the Junior House Officers who had to be repeatedly reminded to make entries in the ICP. Some of the Housemen stated that they were finding difficulty to comply with this change. They viewed the ICP as an extra burden since they still documented in the original traditional notes instead of using only the ICP. This may have been due to the ICP still being a new way of documentation locally and the housemen had not encountered this type of documentation before. The issue of extra documentation was also mentioned in the literature review by Syed and Bogoch, (2000) where it was argued that ICPs require additional documentation that places extra demands on heavily burdened caregivers.

As mentioned above, the redesigning of the local ICP included changes to physiotherapists and occupational therapists documentation. Although physiotherapists were involved in the design, they also exhibited some reluctance to switch from their usual notes to ICPs. Many times they had to be reminded by the nursing staff and at times by the respective consultant to enter notes in ICP. The physiotherapy discharge form which was added to improve continuity of care for the patient also took some time to get used to. The highest compliance for the ICP was from the Nurses, Consultants and Resident Senior House Officers.

The ethical and managerial issues were also kept in mind during the ICP development process. Williams, Roberts and Rigby (2003) mention the need to address the language of the dynamics of care, how to achieve a common
understanding of responsibilities, language and common methods of recording a complete health and illness history. These issues were prioritised during the process of developing the ICP through discussion with the various professionals of the MDT and the Orthopaedic Consultants.

As part of the action research process, the ICP was introduced as a pilot project and during this time, constant feedback was received from the multi-disciplinary professionals in relation to the effectiveness of the ICP. This is very important since involvement and commitment from all team members who will be using the ICP is imperative for its success (Ignatavicius & Hausman, 1995; Heymann, 1994). This process was also made possible since the researcher is an integral part of the clinical team and was thus constantly involved in the piloting process.

Some relevant changes introduced through the ICP when compared to the traditional documentation were the following:

- The Pre-Admission Assessment documentation
- A structured medical assessment on admission
- A structured nursing report based on the activities of daily living with a special focus on TKR care.
- Discharge planning documentation
- The Waterlow pressure sore score tool
- A Moving and Handling Risk Assessment review
- Physiotherapy Discharge Summary

5.6 The Second Nominal Group Technique

A second NGT was carried out five months after the introduction of the ICP. The aim of this NGT session was to identify the benefits and disadvantages of using the ICP and also to explore possible suggestions on enhancing the ICP. The feedback from this session will again be categorised according to the four NGT session questions.
Question 1

"After using the ICP for 5 months, can you discuss any benefits that you perceive in using the ICP as compared to the use of the traditional documentation method?"

In relation to the first question of the NGT the majority of the participants (n=12) stated that the ICP incorporates all activities of daily living and thus would ensure that all aspects of patient care is documented. It was also pointed out that due to the checklist boxes, the ICP was less time consuming to fill in when compared to traditional documentation and individual professions had access to all the documentation related to the patient. This concurs with the finding of Bryson and Browning (1999) where nurses remarked that another advantage of the ICP was that much of the care was documented in real time. Consequently, there was less need to spend lengthy periods of time documenting care at the end of a shift. During the NGT this was further confirmed and it was stated that recording of data was easier due to the structured format and that the ICP encouraged notes to be written by all the members of the MDT. The ICP was also identified as a useful tool for clinical audit as well as an aid for better discharge planning. The majority of the participants especially nurses were positively inclined towards the use of the ICP and perceived it as more beneficial when compared to traditional documentation.

These positive remarks from the participants reflect some of the research findings on ICPs which highlight the invigorating sense of empowerment felt by nurses with their use, also possibly due to their involvement during the development of the pathways (Mosher et al., 1992). A 2-year study by Björvell et al. (2002) found that the nurses became ‘hooked’ from the start of the ICPs implementation and identified benefits such as time-saving and enhanced patient teaching due to more time availability.

Question 2

"Can you discuss any disadvantages that you identified whilst using the ICP?"

The majority of the multi-disciplinary participants (n=12) believed that there was no disadvantages in using the ICP. The greater part of the participants were nurses, and
they showed enthusiasm and commitment towards the success of the TKR ICP from the beginning of the project.

However, three of the nurses commented that not all members of the MDT were remembering to fill in the ICP regularly and occasionally the housemen or physiotherapist used the traditional patient notes to write their entries on. Sometimes the doctor had to be reminded by the nurses to revert back to the ICP. Six of the participants mentioned the expected difficulty met when trying to change staff behaviour to ensure compliance in filling in the ICP. Professional culture is cited as the most common barrier to ICP implementation (Middleton & Roberts, 1998) and as already mentioned it is crucial that medical staff are involved in development of the ICPs and totally buy into the project if it is to succeed. Bryson and Browning (1999) point out there are also other barriers to the implementation of ICPs, including, time needed, training and costs.

The difficulty to bring about behavioural change is also reflected in the literature. Groenman et al. (1992) state that people may have positive or negative feelings which will then influence their behaviour. Norms and values also play an important role in the concept of attitude. Consequently, changing the behaviour towards clinical documentation will also need to involve a change in the attitude toward documentation. Bridges (1996) describes resistance to change as being related with the fear of leaving what is known, predictable and safe.

Two participants stated that sometimes they found that the ICP did not have the flexibility to include variations in the space available. This was amended by the researcher after the piloting phase of the ICP as input of such variations should be encouraged, recorded, and analysed. They permit modification and as a result inappropriate care or waste is eliminated (Middleton & Roberts, 1998). Many authors describe the effect of variance analysis, as part of pathway use, in reducing costs while simultaneously increasing quality (Bryson & Browning, 1999). Lack of space to allow for variations recording may lead to the participants feeling that ICPs constraint their clinical decision freedom and becoming ‘cookbook’ process (Panella, et al., 2003). This was confirmed by Crawford and Shanahan (2003) who identified that
ICPs without space for variations and change may cause constraints on clinical freedom and their use may stifle innovation and progress.

Although Syed and Bogoch, (2000) argue that ICPs may be more time consuming since they require additional documentation, this issue was referred to by only one participant during this study.

**Question 3**

*In your opinion should the ICP be continued as the formal method of documentation for TKR patients? If no, please give your reasons.*

In response to this question, the participants unanimously agreed that the ICP should be continued as the formal method of documentation for TKR patients. One of the participants added that the experience of using the ICP for five months had made the staff acquainted with and confident of using the tool. They were also appreciating the benefits when compared to the traditional method of documentation.

The nurses appreciated the fact that they did not need to spend time writing long reports, as the ICP had the care and process outlined, and it was also easier when giving over at the end of the shift. This agrees with the comments made by nurses in the study by Bryson and Browning (1999) during their 3 year project of ICPs implementation.

This feedback from the multi-disciplinary team seems to indicate that the ICP was embraced by most of the participants over the five month piloting phase. Even though some of the participants, such as the doctors and physiotherapists did not strictly comply with the filling of the ICP, they still acknowledged the benefits of it and the need to continue using it. The findings indicate that until the process of changing attitudes and behaviour of documentation becomes ingrained within the system, nurses will need to continue reminding other care professionals to fill in the ICP.
Question 4

'Are there any improvements to the ICP that you would suggest?'

The suggestions provided by the participants were related to the removal of the parameter chart inserted in the daily report and the introduction of more space on each individual day's report to provide the opportunity for any variances or detailed writing. The issue of variances was already mentioned by two of the participants in answer to Question 2, and literature further agrees to these participants' opinions. Campbell et al. (2005) mention this issue and they suggest that variances should be considered when updating the ICP. Every et al. (2000) also state that the identification of factors that contribute to variance and interventions to improve those factors are the key features in the process of ICP improvement. Apart from the benefits of auditing and improvement, Ignatavicius and Hausman (1995) specify that variance analysis is important as it may indicate the need for the staff to be given additional education.

It was also suggested that the ICPs should be broadened to include total hip replacements, arthroscopies and trauma cases such as hip fracture patients. Although this comment showed an interest in the participants to expand this project further, the issue of ICP development for trauma cases is arguable. Bragato and Jacobs (2003) state that such trauma ICPs may not be as successful as in elective cases and it is harder to develop pathways for trauma cases due to their unpredictability and comorbidity.

An interesting suggestion was that there should be separate sections for each MDT member so that the notes written by different professionals could be easily found within the specified area of the ICP. However, in the researchers' opinion this would contradict the main aim of having the ICP, as the researchers' objective at the start of this study was to amalgamate the multidisciplinary notes and reap its benefits. As several authors pointed out throughout the literature, an ICP approach is multidisciplinary, incorporates the MDT documentation, thus enhancing comprehensive, and accurate documentation and improves flow of information amongst providers (Forkner, 1996; Tapp, 1990; Panella et al., 2003; Björvell et al., 2003 Bragato & Jacobs, 2003).
5.7 Conclusion

The results emerging from the various interventions reviewed during this chapter provide a generally positive outcome in relation to the piloting of the ICP. The results indicate that there was a positive enhancement in the scores of the documentation level after the introduction of the ICP even though the participants were not informed when the audits would be carried out. The Educational package also led to an improved knowledge about the ICPs when measuring the pre and post scores of the ICP questionnaire. The first NGT clarified the perceptions of staff in relation to the inhibitors of good documentation and the potential interventions that could be introduced to address these inhibitors. Feedback and data was also regularly received from the participants during the five months of the ICP piloting. The NGT group served as a medium to explore the participant’s experience on using the ICP. The feedback was positive and a number of suggestions to improve the tool were also provided.

In the next chapter, the conclusions and recommendations emerging from this research project will be discussed.
Chapter 6

Conclusion

&

Recommendations
6.1 Introduction

The literature review has outlined the development of Integrated Care Pathways (ICPs) over the past decades with an emphasis on the main outcomes from various studies. A number of studies have found that ICPs may not always lead to positive outcomes mainly due to lack of involvement of staff, the cost of developing and implementing pathways and due to constraints on clinical freedom which may stifle innovation and progress (Crawford & Shanahan, 2003; Currie & Harvey, 1998; Syed & Bogoch, 2000). However, the majority of the studies have demonstrated positive outcomes by producing measurable improvements in patient care, reducing duplication in documentation and enhancing accessibility to documentation. They also aid in standardising and streamlining clinical processes, enhancing the discharge process and involving the patient in the care (Bragato & Jacobs, 2003; Forkner, 1996; Baker, 1996; Wilson, 1998; Olsson et al., 2006; Middleton, Barnett & Reeves, 2003; Kitchiner & Bundred, 1999; Nanly et al., 2004; Panella et al., 2003).

The main aim of this study was to assess the present documentation system in the orthopaedic clinical area with the scope of, developing, piloting and implementing an ICP for total knee replacement (TKR) patients. The objectives were attained and the ICP was implemented in one orthopaedic ward supported by a structured training programme for all health care professionals making use of the ICP. The methodology applied was Action Research using the “Mutual Collaboration” approach. The researcher and practitioner worked together through different phases and through dialogue, arrived at a shared understanding about the possible causes, interventions and plans for initiating a process of change (Hart & Bond, 2000). The success of this project was also due to the support provided by the Senior Nursing Management, the Clinical Chair of Orthopaedics together with the two orthopaedic consultants in the researchers’ ward.

The research project indicated that the introduction of the ICP was effective in enhancing multi-disciplinary documentation. When compared to traditional documentation, statistically significant positive results were obtained with the use of
ICPs. The areas with the most prominent positive outcomes were related to easy access to notes, reduction in duplication, improvement in the legibility of the notes, enhanced discharge planning and patient involvement.

Thus, the main findings of this research study were positive and reflected the outcomes of similar studies in the literature. The Nominal Group Technique sessions were effective not only as a means of identifying the hindering factors of effective documentation but also to further enhance the process of the ICP development after its introduction.

6.2 Critique of the study

The area of the study was purposely chosen, therefore the study can only be partially generalized to other Health Care Workers in other areas of the hospital. It explores the knowledge and perceptions of participants in relation to ICPs, the outcomes of a training programme and piloting an ICP and the suggestions for improvement in only one orthopaedic ward.

The sample size is small and reflects ideas of one area. However, it included all Health Care professionals in the ward, from Consultants, Medical personnel, Nurses, Physiotherapists, Occupational Therapists and Social workers, therefore providing a good reflection of ideas from different grades. This high rate of participation may be due to the researcher being the ward manager but also due to the personal interest each individual had on the issue of enhanced documentation. Due to the researcher being the manager of the ward where the study is taking place, there is a possible ‘Hawthorne Effect’, which may have affected the rate of participation and also the feedback collected. The researcher tried to limit the Hawthorne effect by being aware of this and maintaining an objective judgment.
The fact that theatre staff were not included in this study could be considered as a limitation since the ICP could not be fully developed to include the full patient journey care process. A Consultant Anaesthetist was contacted to explore the possibility of including the documents of theatre staff within the ICP but due to time constraints this part of the project could not be followed up.

Since the project had a multi-modal and evolutionary approach, it ensured a comprehensive overview of the progress throughout the process. It also provided convergence of results through independent verification, thus reinforcing the findings achieved from the study. Moreover the results obtained from such a project can be a stepping stone for further projects in other areas.

Being an action research study, the researcher took an active role in identifying the barriers to effective documentation and communication and in promoting change. Above all this study was a learning experience for the researcher.

It is felt that in spite of the limitations the following recommendations are justified.

### 6.3 Recommendations for management practice

As evidenced from the literature and as well from the findings of the project, the introduction and implementation of ICPs represent a major change for hospital staff. The involvement and training of all staff as a team and of the senior management is imperative for its success.

- The introduction of ICPs for different elective orthopaedic surgical interventions should be considered, especially when the pathway of the patient’s journey is based on a standard process.
• ICPs for different elective surgical interventions, other than orthopaedic, can also be considered for development.

• The introduction of ICPs should be thoroughly planned with provision of training and involvement of all the Multi-disciplinary team members from the earliest phase of the project.

• Getting the senior management members of the different professions on board will facilitate the process of introducing ICPs and the availability of resources.

• Continuous evaluation of the process is imperative to ensure that any potential problems are identified and managed at an early stage.

• Audits can be introduced as an ongoing process to measure costs and patient outcomes so as to ensure effective documentation and efficient allocation of resources. ICPs can thus serve as a fundamental tool to plan and monitor the type and amount of care clients need so as to ensure efficient and effective patient care.

• Regular analysis of variation in an audit setting can be used to monitor, review, update and improve clinical and organizational practices by empowering any new changes within the overall pathway template.

• Further longitudinal study to carry out cost-benefit analysis, between ward using traditional documentation system and patient care without the use of ICP and ward using the ICP method of documentation.

6.4 Recommendations for further education

ICPs are considered as superior risk management and cost effective tools when compared to traditional documentation, as well as excellent audit and planning tools.
• Training or education on ICPs should be included in the curriculum of Nurses, Doctors, Occupational Therapists and Social workers so that integrated documentation systems such as ICPs will not be difficult to implement and adhere to in the clinical setting.

• Updating sessions for the MDT should be done every year so as to provide feedback on the outcomes of Audits, discuss any new developments and receive feedback on the use of ICPs.

• Written formalized ICP standards can be used as a benchmark both to measure practice and to assist students and newly qualified staff in following the correct procedure when filling in the ICPs. If required, the Training programme used in this study can be used for the newly qualified staff.

6.5 Recommendations for further research

Research based on periodic audits is part of an ongoing process of quality improvement in healthcare. This is only possible with the availability of timely data providing possible comparisons and evaluation of clinical practice over time. Unfortunately regular audits are limited locally due to various reasons, including a non standardized approach to documentation.

• Similar studies can be done in other surgical or orthopaedic areas to enhance the generalizability of the results.

• A longitudinal study can be carried out over a longer period of time to identify the compliance of staff in using the ICPs and the effectiveness of ICPs in enhancing Multi-disciplinary documentation and collaboration.
Other studies can look into the important aspects of ICPs in connection with reducing length of patient stays, cost effectiveness and risk management. This is relevant due to the ever-increasing costs of health services which require cost effective measures whilst improving quality of care.

To conclude, as mentioned in the literature, more systematic research is needed to state with any certainty what effect ICPs have on patient outcomes and nursing care. Due to the positive outcomes of the study, the researcher has replaced the traditional documentation and the revised version of the ICP is being used on a regular basis on the ward. It is also planned to extend the use of ICPs to other Orthopaedic elective surgery conditions such as Total Hip Replacement patients. Meetings with the Director Nursing, Orthopaedic Departmental Nursing Manager, two other Nursing Officers of the particular orthopaedic wards, the Chairman of Orthopaedics and the respective Orthopaedic Consultants have been held and there is an agreement to disseminate the use of the ICP for TKRs to the other two Orthopaedic wards in line with the process of this project. The Chairman of Orthopaedics also suggested the introduction of an ICP for Hip fracture and for Total Hip Replacement patients and it is intended to develop and pilot these ICPs in the researcher’s ward.

This study has indicated the effectiveness of using an Action research method to implement a change and this process will be used for any new initiatives. It has also demonstrated the importance of planning the project thoroughly and involving all stakeholders in the process. The eagerness shown by the Orthopaedic Consultants has been a fundamental element in the success of introducing this ICP and for further development of similar ICPs for other Orthopaedic Conditions.

Undoubtedly, documentation remains a pillar stone in the provision of patient care and ICPs may be a way forward to enhance the process.
References
References


Surgical Operations Register, Clinical Performance Unit, SLH-MDH.


Bibliography


Appendices
Appendix 1

Analysis of Studies
<table>
<thead>
<tr>
<th>Date &amp; Author</th>
<th>Aim</th>
<th>Design</th>
<th>Sample</th>
<th>Results</th>
<th>Strengths and Limitations</th>
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<tbody>
<tr>
<td>Nixon, Whitter &amp; Stitt, 1998</td>
<td>To audit discharge practices at the interface between primary and secondary care. To evaluate how the results and lessons of the pilot study will help develop a full audit and quality cycle in the future</td>
<td>Pilot study involving community nurses, nurses from medical ward &amp; day surgery unit, practice nurse, specialist nurse, research nurse, discharge coordinator occupational therapist, liaison pharmacist, social worker, dietician, carers &amp; G.P as a link person.</td>
<td>30 questionnaires (response rate 40%) for hospital nurses. 15 questionnaires (response rate of 73%) for community nursing staff. Data collected from G.P by means of a questionnaire. Semi-structured interviews used to collect data from patients &amp; carers.</td>
<td>There is an identifiable gap in discharge process at the interface between primary and secondary care. Staff in each speciality has increased awareness of their roles &amp; responsibility to enhance &amp; ensure that the discharge planning audit process is truly interdisciplinary in nature.</td>
<td>Different professions and the patients included. Provided impetus for development of a steering committee consisting of different disciplines involved in the discharge process which provided a resource of information gathering and sharing. Small sample and low response rate from hospital staff. Only one G.P. Observer bias. Interviewer bias. Recall bias. Questions ambiguous and required amendment. Difficulty inputting the data on some occasions. Delay to start project as basic and technical equipment had to be bought and clerical staff needed to input data of audit proved problematic. In effect the project managers had to cover their own clerical work.</td>
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<tr>
<td>Sulch et al., 2000</td>
<td>To evaluate the effectiveness of ICP-based management in reducing the LOS without affecting functional outcome in stroke patients undergoing specialist rehabilitation.</td>
<td>Prospective, open randomized controlled trial with 2 parallel groups followed for 6 months.</td>
<td>152 consecutive, acute stroke patients in stroke rehabilitation unit, randomized to ICP care coordinated by nurse or conventional multidisciplinary care. The ICP preceded by training sessions and 3 month pilot.</td>
<td>ICP management had little advantage over the already established multidisciplinary care in the setting of the study. ICP method of stroke care did not reduce the length of in-patient stroke rehabilitation.</td>
<td>Sample size based on objective data from previous studies. Primary outcome measure reflects objective. Crossover of interventions minimized by using 2 different teams in 2 different wards. Pilotling of ICP and staff education reduced errors and bias. Use of ICP required additional staff members. ICPs effectiveness is based on the premise that patients will have predictable recovery, whereas stroke patients show considerable variability in the timing, nature and order of recovery.</td>
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<td>March et al., 2000</td>
<td>To evaluate whether ICPs for acute management of hip fracture have an effect on patient care, short term mortality or residential status.</td>
<td>Observational cohort study comparing management and outcome before and after clinical pathway implementation. Outcomes compared to those at 2 pathway hospitals audited for one year prior to the application of the care pathways.</td>
<td>Medical review and outcomes determined by telephone follow-up 4 months post fracture before (n=455) and after (n=481) clinical pathway implementation within pathway hospitals as well as between patients admitted to hospitals with (n=2) and without (n=4) pathways.</td>
<td>ICPs associated with increased use of evidence based and best practice guidelines. Reduction in acute hospital LOS of 1 day (5 vs. 6 days) in pathway hospitals but increase in LOS at rehabilitation hospital (21 vs. 26 days). Pathway hospitals before &amp; after implementation of ICP showed decrease LOS of 2 &amp; 2.5 days respectively. No significant effect on 4 month mortality or residential status.</td>
<td>Application of evidence based guidelines by staff. ICPs for hip fracture yield fewer benefits than in elective settings where there is greater homogeneity, predictability and less comorbidity. Development and maintenance of ICPs are resource intensive. Functional outcome measures and objective indices of patient satisfaction were not used. The reduction in LOS of one day was at the expense of an increase in LOS at rehabilitation centers, thus transferring costs from one budget to another and not creating any net cost savings.</td>
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<td>Björvell et al., 2003</td>
<td>To describe the Registered Nurses’ (R.N) perceptions of and attitudes towards the effects of 2 year comprehensive intervention using the VIPS model for nursing documentation and to generate hypothesis for further research.</td>
<td>Focus groups discussions were used to collect data, with a qualitative content analysis method for the processing of the data.</td>
<td>20 RNs selected to take part in focus group discussion from a group of 34 RNs in 3 hospital wards (1 surgical, 1 neurological, 1 rehabilitation ward) at Stockholm University Hospital who had participated in 2 year intervention programme on nursing documentation.</td>
<td>Participants stated that structured documentation made them think more and think in a different way about their work with their patients. Role changing reported from medical technical focus to nursing expertise focus and from hands on clinician to administrator and secretary. Importance of multidisciplinary and organizational work when implementing innovations highlighted.</td>
<td>Focus groups encourage unprejudiced discussion and obtain perceptions on topics in non-threatening environment. Anonymity of participants guaranteed with the advantage that they could speak freely. Participants have high level of knowledge on the topic. Earlier findings validated and new knowledge generated. Recall bias. Follow up study needed. The results of the focus groups may be outdated. Not possible in the analysis to identify whether one statement was made by a number of different people or repeatedly by the same person.</td>
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<td>Reference</td>
<td>Methods</td>
<td>Findings</td>
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<td>de Luc, K., 2000</td>
<td>To evaluate the effectiveness of 2 ICPs, a midwifery-led maternity pathway and a breast disease pathway within the NHS.</td>
<td>Separate survey of NHS organizations developing ICP undertaken to ensure that ICPs evaluated were similar to national pathways. Outcomes were: comparison of care delivered, patient satisfaction levels and views of staff involved in the development and operation of ICPs. ICPs took 10 months to develop. Data collected over 3 months in breast ICP, 7 months in maternity ICP via documentation audit, patient survey and staff interviews. Breast disease ICP: 198 patients chosen; 98 prior, 100 with ICP. Maternity ICP: 173 patients chosen; 100 prior, 73 post ICP. Success of ICPs varies. Development process of ICPs promotes the easiest route for change including multidisciplinary team working, design of clinical documentation and reviewing and updating clinical practice. This requires an ongoing commitment of time and effort in the operation of ICPs once implemented.</td>
<td>Involvement of the multidisciplinary team including patients. Decreased observer bias, recall and Hawthorne biases. No difference in confounding factors between the two groups. Sample size constrained by the length of time needed for the throughput of patients. Results can are tentative until tested with larger sample. Measure of clinical severity of conditions and matching of pairs of patients not undertaken Issue of generalizability.</td>
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<td>Jack et al., 2003</td>
<td>To explore the perceptions of the nurses in a large university teaching hospital regarding the impact of the Liverpool Care Pathway (LCP) for the dying patient in the acute hospital setting.</td>
<td>Qualitative research with 2 focus group interviews. Method of data collection was to enable group discussion and interaction allowing for exploration and understanding of people's experiences, feelings and beliefs. Purposive sampling of the nurses. 15 network nurses from across the hospital setting who volunteered to take part in the study were chosen. The LCP was perceived as having a positive impact on the care of patients, relatives, medical and nursing staff. Impact on nurses found to be extremely positive with increased confidence and knowledge to care for dying patients. Nurses perceived reduced and improved documentation with fewer complaints, more time to take care of the patient, useful aid to memory, and helped in possible legal implications.</td>
<td>Data analysis undertaken by additional researcher not involved with data collection phase to reduce observer bias. Nurses participating in the study were volunteers. Potential volunteer bias. Only nurses took part. The small sample size and the purposive selection of the sample lead to questionable generalizability. Furthermore the study was undertaken in one acute hospital setting and organizational support may differ in other hospitals. Maintaining group confidentiality was difficult for obvious reasons. Difficulty in interpretation of data from focus groups is recognized because of the difficulties in transcribing the data and due to no specific approaches to focus group analysis being available.</td>
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<td>Author</td>
<td>Objective</td>
<td>Methodology</td>
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<td>Crawford &amp; Shanahan, 2003</td>
<td>To assess the overall standard of our medical record keeping and to compare the quality of records in ICPs with traditional medical notation.</td>
<td>Study conducted between May and July 1999. Patient records scrutinized using standardized scoring system, based on RCS Eng guidelines on medical record keeping. Each set of records scored for: admission clerking, subsequent entries, consent form, operation note &amp; discharge letters. During the 3-month period of the study 53 total hip replacements (ICP notation) and 30 total knee replacements (traditional notation) were performed. Each set of records n=83 was scored for identified outcomes. In both groups the frequency of omissions was high. The overall score for traditional records was significantly higher than for the ICP records and it took 35% longer to retrieve information from the ICP group. In this study the quality of record keeping was higher when using the traditional notation than an established ICP. A standardized scoring system, based on The Royal College of Surgeons of England guidelines was used. Notation was scrutinized by a single author for both groups, causing possible observer bias. Documentation deficient in both groups. Authors compared documentation of patients undergoing different operations (53 THR vs. 30 TKR). This study has addressed only documentation within ICPs and has not considered patient management, outcome or clinical effectiveness. Only the medical documentation was assessed.</td>
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<td>Bragato &amp; Jacobs, 2003</td>
<td>To describe the development and implementation of ICPs in two orthopaedic units in Scotland.</td>
<td>Development of ICP from July 1995, led by multidisciplinary steering group. First ICP piloted in August 1996. Training phase initiated, followed by general training programme to explain the concept of ICPs to staff. All carers involved in its development. ICPs implemented on trauma, elective orthopaedic units consisting of 20 patients each. Project led by a multidisciplinary steering group led by orthopaedic surgeon, 4 nurses from different wards, the head occupational therapist, a senior pharmacist, a senior physiotherapist and an ICP facilitator. ICP replaced traditional notes. ICPs act as management device making it possible to reduce the average LOS. ICPs assist in identification and reduction of bottlenecks. Empowerment of patients by involving them actively in planning process of their care. ICPs save time with documentation. Acts as reminder. Easier induction to the new staff as the ICP acts as a guideline for the care of the patients. Different professions involved. Time, money were invested in the staff training programmes - even sent to US. Champion identified and was available on the wards to spur on this project. Resistance in the implementation phase mainly from the medical profession who understood the process as a reduction in autonomy and power. Absence of involvement of anesthetists almost compromised project as they refused to comply with the care pathway system. Harder to develop ICPs in the trauma unit. One acute hospital setting and the results may not be generalised to other areas. Costs over a long period of time. Costs escalate with the intensive staff training and the presence of a champion in the involved wards to motivate staff and answer to any queries.</td>
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Panella et al., 2003

To test ICPs in a variety of Italian health care organizations in 2000-2002. To measure performance in decreasing outcomes and outcome variations.

Experimental period of 1 year for each setting-6 months before and 6 months after the implementation of the ICP. Pre and post-analysis model to evaluate the effect of applying ICPs to process and outcome indicators and to the costs sustained to assist patients using the activity-based costing (ABC) methodology.

The samples include all the patients treated by staff during the experimental period. Creation of indicators, specific for each ICP, to measure variations in the care processes and outcomes. The ICPs were tested in 6 sites, each with a different ICP.

The overall purpose of ICPs to improve outcome by providing a mechanism to coordinate care and to reduce fragmentation and ultimately cost was demonstrated possible to achieve.

Observed improvement may represent a natural drift toward high performance. Lack of attention while collecting data before ICP implementation may have distorted the comparison of the indicators before and after the adoption of the ICPs.

A longer implementation period and the adoption of a randomized controlled trial might have improved the strength of this study’s findings.

Patient satisfaction was not measured, which is a serious study limitation. Combining the clinical indicators with a satisfaction survey could have given a more accurate measure of the real level of quality achieved through ICPs.

The cost of the development and implementation was not evaluated.

Further research is needed to conclude that implementation of ICPs is a cost-effective process.

This study implemented hospital-based ICPs whilst current trends suggest that ICPs should be extended into primary and community settings. The next step in this research would be the development of more highly integrated pathways that span the continuum of care for the patients.

Regular audit and adjustments after variances assessment allows for development of standardized clinical processes, as an effective way to improve quality and reduce litigations and health costs. Costs are reduced by the use of ICP in certain groups of patients, with different diagnosis as in orthopaedic patients.

The overall purpose of ICPs to improve outcome by providing a mechanism to coordinate care and to reduce fragmentation and ultimately cost was demonstrated possible to achieve.

Observed improvement may represent a natural drift toward high performance. Lack of attention while collecting data before ICP implementation may have distorted the comparison of the indicators before and after the adoption of the ICPs.

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<table>
<thead>
<tr>
<th>Roberts et al., 2014</th>
<th>To investigate whether a care pathway for older hip fracture patients can reduce length of stay while maintaining the quality of clinical care.</th>
<th>Prospective study of patients admitted 12 months before and after ICP for management of femoral neck fracture. Sample included patients aged ≥ 65 years with new first time femoral neck fracture admitted to orthopaedic unit during study periods, of which 395 (99%) and 369 (97%) clinical case records were available for full analysis.</th>
<th>ICP was associated with longer hospital stays, and increased use of occupational therapy but some improved clinical outcomes, including improved mobility after discharge, fewer pressure sores and infections and fewer admissions to institutional care.</th>
<th>Time and resources required to implement the ICP was considerable and ongoing. A major benefit of the ICP was that it served as a driving force to reach clinical consensus on protocols for deep vein thrombosis and antibiotic prophylaxis.</th>
<th>A before and after study design leads to possible Contamination Bias. Several local nursing and residential homes closed during the study and social services experienced a shortage of home carers which may have contributed to the longer hospital stays evidenced in the study. The ICP was designed to start from admission to the A&amp;E dept, but this proved impossible.</th>
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<tr>
<td>Olsson et al., 2006</td>
<td>To evaluate the effectiveness of an ICP in patients with an acute fracture of the hip.</td>
<td>A nonrandomized prospective study was conducted comparing an intervention group, guided by an ICP, with a comparison group, representing standard care.</td>
<td>The intervention group had a significantly shorter LOS (12.2 vs. 26.3 Days), a shorter time to first ambulation, fewer pressure wounds and medical complications than the comparison group. No readmissions occurred within 30 days post-intervention in either group.</td>
<td>Significantly reduced LOS and improved quality of care, without allowing a running-in period.</td>
<td>Further investigation needed to illuminate what components of the ICP are responsible for this reduction in care days and to determine whether there is an effect on one-year survival. Observer bias since it is non randomized study</td>
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<td>56 patients admitted to hospital compared with intervention group by pre-fracture data for demographics, physical function, medical and mental status. ICP developed and implemented. Staff received training and instructions. Data was then collected from 56 consecutive patients in intervention group.</td>
<td></td>
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<td>This study design as in previous one can lead to difficulties in differentiating between the effect of the intervention and that of other influences resulting in Contamination Bias. However most studies of ICPS in patients with hip fractures have been conducted using this method. Randomized controlled trial design is considered the gold standard for evaluating interventions however in studies as this one it is somewhat problematic because such a design involves interactions between the patients and nurses.</td>
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Appendix 2

Dudley Group of Hospitals
Audit Tool
THE DUDLEY GROUP OF HOSPITALS NHS TRUST
POLICY ON THE RECORDING AND AUDIT OF PATIENT
INFORMATION IN HEALTH RECORDS (2D)

1. INTRODUCTION
The importance of keeping accurate, detailed and legible information on treatment and
care cannot be overemphasised as records of this kind are:
- important communication tools from practitioner to practitioner
- a means of ensuring continuing care
- essential for evaluating care
- a safe guard in cases of legal or disciplinary action
- open to patient access, under the remit of the Data Protection Act (1998). The latter
requires the Trust to keep accurate records, failure of which may result in the imposition
of a fine.

2. TYPES OF RECORDS
There are a wide variety of records kept on patients in the Trust, ranging from uni­
professional records not shared by other professional groups to multi disciplinary
records which are shared and used by all the team of professionals caring for that
individual patient. No one format is correct for every situation but with the development
of clinical governance and its underlying philosophy of team work, the move to joint
records such as integrated care pathways are to be encouraged.

3. PROFESSIONAL BODY RECOMMENDATIONS
Many professional bodies produce recommendations on the importance of record
keeping. The Trust encourages all its staff to adhere to these recommendations.
References to some of these publications can be found at the end of this document.

4. ROLES AND RESPONSIBILITIES
It is the responsibility of every member of staff who writes in the patients records to
adhere to the standards which are outlined in the next paragraph.

5. STANDARDS OF RECORD KEEPING
The following standards should be adhered to by all staff:

- Be factual, consistent and accurate
- Be written as soon after the event as possible
- Be written clearly and in such a manner that text cannot be erased
- Be accurately dated, timed and signed, with the signature printed alongside the first
entry
- Be written in such a manner that any alterations or additions are dated, timed and
signed in such a way that the original entry can still be read clearly. The reason for the
amendments should be noted and if these are after the original date of entry the reason
for the delay should be noted also
- Correction fluid should never be used
• Should only include abbreviations outlined in the Trust abbreviation policy.
• Should not include jargon, meaningless phrases, or offensive statements
• Should be written in blue or black ink at all times to facilitate photocopying
• All documents should be completed in full. Each separate sheet MUST include the
  patients name and identity number.
• Full resuscitation instruction should only be recorded in the main health record.
  Summarised notes on resuscitation activities can be made in uni-professional notes,
  e.g. nursing notes, to aid communication within groups.

6. ADDITIONAL STANDARDS
Individual departments, directorates or professional groups may wish to develop further
standards to the ones outlined above for auditing purposes. These should be formalised
and communicated to all staff.

7. INFORMATION TECHNOLOGY AND COMPUTER HELD RECORDS
The same basic principals that apply to manual records must be applied to computer
held records. Hard copies of computer held records do not need to be kept, and they do
not replace the need to maintain dialogue throughout the inter professional health care
team. Safeguards for computer held records must be in compliance with the Computer
Misuse Act 1990.

8. AUDITING OF RECORDS
Each inpatient speciality/department will arrange for the clinical audit of record keeping
standards to be undertaken on, at a minimum, every 2 years. Guidelines for this can be
found at Appendix 1. An audit report template can be found at Appendix 2.
Allied Health Professionals and other departments such as anaesthetics will audit similar
relevant standards

10. PROCESS FOR MONITORING THE EFFECTIVENESS OF THIS POLICY
Each year an analysis will be undertaken of the results of the audit so that common
issues and areas of good practice can be identified, lessons learned and disseminated
throughout the organisation

References
Chartered Society of Physiotherapists (2000) General Principles of Record Keeping and Access to
Health Records. (Ref: PA47).
National Health Service Litigation Authority (2006) Risk Management Standards for Trusts, Pilot
version

Originator: Derek Eaves, Clinical Governance Co-ordinator
Approver: Ann Close, Nursing Director
Date of Approval: June 2006
Date for Review June 2009
This policy supersedes that dated September 1999 and 2003 and incorporates The
Nursing and Midwifery Policy NM 13
GUIDELINE FOR THE ANNUAL AUDIT OF DOCUMENTATION OF CLINICAL CARE

1. INTRODUCTION
The rationale behind the audit of documentation is that for reasons of good practice and to reduce litigation, it is imperative that patient events are accurately and legibly recorded. The Trust also has to adhere to The National Health Service Litigation Authority (NHSLA) standards on record keeping. Until now with the exception of Maternity and Children's Service most audits have been undertaken by the audit department staff. As part of a continuing education philosophy it has been decided that it would be more beneficial if the audit was done by medical and nursing staff.

2. THE PROCESS
Each specialty will be notified by the Assistant Clinical Governance Co-ordinator of the necessity to audit. The process will be organised by the matrons who will nominate a nurse from each specialty and the audit leads for each specialty who will nominate a junior doctor to carry out the audit. A list of the specialties, audit leads, matrons and audit officers is attached as Addendum 1.

The National Health Service Litigation Authority states that the number of sets of notes audited should reflect the numbers of patients seen within each specialty. It is recommended that a minimum of 30 sets of notes should be audited for each specialty. The same sets of notes should be audited by the nurses and the doctors. Within the surgical specialties it is important that the notes of patients who have undergone operations are audited.

3. DATA COLLECTION
This will be on forms designed by the audit department on SNAP a data capture programme (Appendix 2). There are 3 sections:-

- Sections 1 and 2 to be completed by the medical staff
- Section 3 to be completed by the nursing staff

The forms will also be made available for completion on line. Alternatively, forms can be provided by the audit department. Under no circumstances should forms be photocopied. If the data has been collected by nursing and medical staff on hard copies, they should be sent to the relevant audit officer for analysis. After analysis the auditors will formulate a report and put forward some recommendations for improvement if required together with an action plan. This can be done in liaison with the Matrons and Audit Leads. The report should then be forwarded to the Clinical Governance Department for discussion at the Trust Patient Safety Group.

4. PRESENTATION
As a learning exercise the results of the audit should be presented at the appropriate local Clinical Governance/Audit Meeting.
Results of Multidisciplinary Audit of Record Keeping
Specialty ____________________________ Date ____________________________
To be presented at __________________________ on __________________________

Objectives of the Audit
The rationale behind the audit of documentation is that for reasons of good practice and to reduce litigation, it is imperative that patient events are accurately and legibly recorded. The Trust also has to adhere to the National Health Service Litigation Authority (NHSLA) standard on record keeping.

Methodology
__ Sets of notes were audited from the speciality. An SHO/SpR audited the first and second sections, the medical notes and consent form (where relevant). A nurse audited the second section, the nursing notes.

Results
The results of the audit recommendation and action plan can be found tabled on the following pages
THE DUDLEY GROUP OF HOSPITALS NHS TRUST
Multidisciplinary Audit of Documentation
Speciality ................................ Section 1 Nursing Staff Documentation

### Nursing Audit of Documentation

<table>
<thead>
<tr>
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<th>No</th>
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<tr>
<td>Patient name on each individual document</td>
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<tr>
<td>Date on each entry</td>
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<tr>
<td>Notes Legible</td>
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<tr>
<td>Names of signatories written in capital for identification</td>
<td></td>
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<tr>
<td>All alterations cancelled with a single score and signature/date</td>
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<tr>
<td>Has Tipp-ex been used for corrections</td>
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<tr>
<td>Are there any unacceptable abbreviations</td>
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<tr>
<td>Are the next of kin and emergency contacts identified</td>
<td></td>
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</tr>
<tr>
<td>Care plans of other MDT members are easily accessible</td>
<td></td>
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</tr>
<tr>
<td>There is no duplication of documentation</td>
<td></td>
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</tr>
<tr>
<td>Documentation is sequential and structured</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All relevant information related to patient care is included</td>
<td></td>
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</tbody>
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<table>
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<tr>
<th>Assessment /Treatment Plan</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
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<tr>
<td>Date and time of admission recorded</td>
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<td>Drug allergies or 'none' recorded</td>
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<tr>
<td>Activities of daily living recorded</td>
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<tr>
<td>Assessment of pain status and needs</td>
<td></td>
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<tr>
<td>Pressure sore risk assessment (Waterlow)</td>
<td></td>
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<tr>
<td>Phlebitis scale commenced (Jackson)</td>
<td></td>
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<tr>
<td>Assessments on admission signed by a registered practitioner</td>
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<tr>
<td>Discharge planning commenced</td>
<td></td>
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<tr>
<td>Evidence of patients involvement in the planning of their care</td>
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<tr>
<td>Fluid balance chart completed (including totals)</td>
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<td>Case Notes</td>
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<td>Are the case notes in a good state of repair</td>
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<td>Is the filing in the correct order</td>
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<td>Are there any loose sheets in the case notes</td>
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**Medical Audit of Documentation**

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<td>Is there written evidence that the benefits of the procedure were explained</td>
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<td>Is there written evidence that risks of the procedure were explained</td>
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<td>Was operation site marked</td>
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<tr>
<td>Was the Pre-op checklist fully completed</td>
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</tbody>
</table>
Appendix 3

Letter to PDN- Audit
20\textsuperscript{th} January, 2009

Dear Reggie,

As you are I am currently reading for a Masters Degree in Health Services Management at the Institute of Health Care, University of Malta. As part of my studies I need to conduct an Action Research study in Orthopaedic Ward 2, MDH. This research aims to address the present lack of Multidisciplinary approach in documentation in the Orthopaedic clinical area, whilst determining the necessary changes needed to introduce integrated care plans, improving the quality of service delivery and standard of care. The audit will cover the Nursing documentation whilst using traditional documentation and also during a later phase in the study, the ICP documentation.

The Dudley Group of Hospitals NHS, Trust, Multidisciplinary Audit Forms of Documentation will be used to carry out the audit and evaluate the Nursing documentation. Thirty patient notes will be retrieved from patients who had previously been operated for total knee replacement prior to the introduction of an Integrated Care Pathway (ICP). Following the introduction of the ICP, the first 30 consecutive patients will be chosen for the auditing of the ICP documentation. All ethical issues will be adhered to and no inconvenience whatsoever will be created to both patients and staff.

Whist your co-operation is much appreciated and needed for the success of this research, in the event that you do not wish to participate this will not affect you in any way.

Thanking you in advance

Lillian Zahra

\[\text{Agreed}\]
Appendix 4

Letter to Senior House Officer
20\textsuperscript{th} January, 2009

To: Mr. Mark Portelli M.D. MRCS (Edin)

Dear Mark,

I am currently reading for a Masters Degree in Health Services Management at the Institute of Health Care, University of Malta. As part of my studies I need to conduct an Action Research study in Orthopaedic Ward 2, MDH. This research aims to address the present lack of Multidisciplinary approach in documentation in the Orthopaedic clinical area, whilst determining the necessary changes needed to introduce integrated care plans, improving the quality of service delivery and standard of care. The audit will cover the medical documentation whilst using traditional documentation and also during the later phase of the study, the ICP documentation.

The Dudley Group of Hospitals NHS, Trust, Multidisciplinary Audit Forms of Documentation will be used to carry out the audit and evaluate the medical documentation. Thirty patient notes will be retrieved from patients who had previously been operated for total knee replacement prior to the introduction of an Integrated Care Pathway (ICP). Following the introduction of the ICP, the first 30 consecutive patients will be chosen for the auditing of the ICP documentation. All ethical issues will be adhered to and no inconvenience whatsoever will be created to both patients and staff.

Whist your co-operation is much appreciated and needed for the success of this research, in the event that you do not wish to participate this will not affect you in any way.

Thanking you in advance

Lillian Zahra
Appendix 5

Permission for The Dudley Group of Hospitals Audit Tool
Dear Lillian,

Yes ... you are fine to go ahead and use the tool ... I have had authorisation from our Hospital Clinical Governance facilitator... I'm afraid we have no data on reliability/validity - though many Trusts have something similar and the items are based on the NHSLA requirements.

Good luck with your work,

Best wishes,

Gail

Gail Parsons
Nurse Consultant in Trauma & Orthopaedics

-----Original Message-----
From: Zahra Lilian at MDH [mailto:lilian.zahra@gov.mt]
Sent: 18 November 2007 10:42
To: Parsons, Gail
Subject: Emailing: DUDLEY policy on recording and audit of med records

<<DUDLEY policy on recording and audit of med records.pdf>> Dear Gail,

Thank you for your prompt reply. We are currently Mater Dei Hospital, so you can imagine the amount of work and responsibility that this entails. I'm finding it difficult to study but hope that soon we will settle and I can concentrate on my studies. Attached please find the information I collated and the audit form I wish to use for my thesis after you kindly grant me permission. May you also inform me about their validation and reliability please.

Regards
Lillian
Appendix 6

Permission from Director Information

Management & Technology
20th January, 2008

To: Dr Hugo Agius Muscat Director IM&T

Re: Permission to conduct audit of nursing and medical documentation at OW2

I am currently reading for a Master’s Degree in Health Services Management at the Institute of Health Care, University of Malta, Gwardamangia. As part of my studies I need to conduct an action research study in Orthopaedic Ward 2, Mater Dei Hospital which includes the audit of nursing and medical documentation. In this regard, I would like to ask your permission to carry out this audit at Ow2.

An internal audit tool will be used to evaluate the medical and nursing documentation in the participating ward. The same tool will be used prior and post an education programme which will be conducted to educate the Health Care Professional about Integrated Care Pathways. The Dudley Group of Hospitals NHS Trust, Multidisciplinary Audit Forms of Documentation will be used to carry out the audit. All ethical issues will be considered and no inconvenience whatsoever will be created to both patients and staff. Data protection act will be adhered to and only relevant data to the purpose of the study will be collected.

This research aims to address the present lack of multidisciplinary approach in documentation in the orthopaedic clinical area, whilst determining the necessary managerial changes needed to introduce integrated care plans, improving the quality of service delivery and standard of care.

Whilst thanking you in advance, your co-operation will be much appreciated.

Yours sincerely,

Lillian Zahra

Nursing Officer
OW2

[Signature]

[Approved]

DR HUGO AGIUS MUSCAT
DIRECTOR INFORMATION MANAGEMENT & TECHNOLOGY
Appendix 7

The Clinical Pathways Education Package
Clinical Pathways
Education Package

Produced in conjunction with Asthma Clinical Pathway Project as an initiative of Inter-hospital and Agency Clinical Pathway Group. May 2002
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AIM

To increase knowledge and effective use of Clinical Pathways.

OBJECTIVES

On completion of this Clinical Pathway self-directed learning package staff will be able to:-

• define clinical pathway
• identify the functions of a clinical pathway
• list the components of a clinical pathway
• define variance
• identify sources of variance
• discuss what is required when a complex variance occurs
• discuss the documentation of a special need
• complete the documentation of a clinical pathway

PRE-REQUISITES

The self-directed learning package should be used by nursing & allied health staff in wards/departments where Clinical Pathways are already in use or may be about to be introduced.

DIRECTIONS FOR USE

The self-directed learning package can be worked through from start to finish in approximately 3 hours. The pre-test should be completed before commencing the package to provide the learner with a basis upon which to measure their knowledge acquisition on completion of the package.
Throughout the package you are prompted by the following symbols:

TIME OUT

'Time outs' allow you to reflect on your learning to date, and prompt the completion of activities aimed at consolidating the information provided in this learning package.

READING

Throughout this learning package you may be prompted to complete additional reading. Whilst not compulsory it is recommended that you make use of these opportunities to consolidate your knowledge. Readings may include journal articles or hospital specific policy documents.

Getting Started

It is advisable to complete the following pre and post test activity prior to commencing, and then again following completion of this learning package (This is included as Appendix 2 to allow for additional copies to be made available to staff). This will allow you to identify your areas of strength, and those areas which you would like to develop further.

We also request that you take a few moments to complete the accompanying learning package evaluation form. We would like to provide you with the most relevant and useful package, and find this is easier to achieve if we receive feedback from "those using it". You are requested to forward your completed evaluations to your team/unit manager.
Pre-test and post-test
Answer all questions indicating your response in the ‘pre’ column on commencement of the package. Upon completion of the package re-assess your initial responses by placing your answer in the ‘post’ column. Some questions have more than one correct answer. This checklist is for use as a self analysis tool. It is not a document that is “marked” however you are encouraged to search for answers and clarify uncertainties through the learning package. This form of self reflection has proven effective in optimising learning opportunities.

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<th>PRE</th>
<th>POST</th>
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<tbody>
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<td></td>
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<tr>
<td>a) interdisciplinary standardised documentation of a patients planned care</td>
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<tr>
<td>b) a standardised care plan</td>
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<tr>
<td>c) a ‘tick box’ document of planned care</td>
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<tr>
<td>2. The function of a Clinical Pathway is to:-</td>
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<tr>
<td>a) reduce the amount of staff involved in patient care</td>
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<td>b) replace a Doctors order</td>
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<tr>
<td>c) provide a written document of patient goals/outcomes and staff intervention at agreed intervals</td>
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<tr>
<td>d) act as a quality audit tool</td>
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<tr>
<td>3. Which professional staff groups may document on a Clinical Pathway:-</td>
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<tr>
<td>a) Nurses only</td>
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<td></td>
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<tr>
<td>b) Medical staff only</td>
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<td></td>
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<tr>
<td>c) Allied health professionals only</td>
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<tr>
<td>d) All of the above</td>
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<td>4. The components of a Clinical Pathway are:-</td>
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<tr>
<td>a) assessment, planning, implementation, evaluation</td>
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<tr>
<td>b) clinical indicators, clinical incidents, time-line, special needs.</td>
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</tr>
<tr>
<td>c) evaluation, analysis, synthesis</td>
<td></td>
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<tr>
<td>5. Variance can be defined as:-</td>
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<tr>
<td>a) when a patient requires complex nursing care</td>
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<td></td>
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<tr>
<td>b) lack of consensus</td>
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<td></td>
</tr>
<tr>
<td>c) difference between what was expected and what actually happened</td>
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<tr>
<td>6. The only source of variance is when a patient does not comply with the Clinical Pathway?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) true</td>
<td></td>
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<tr>
<td>b) false</td>
<td></td>
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</tbody>
</table>
7. A complex variance should be reviewed by:–
   a) medical staff on each shift
   b) the CNM
   c) the Executive
   d) all health care team members on each shift

8. Individualisation of Clinical Pathways:–
   a) is not possible
   b) is not necessary
   c) is documented as special needs
   d) indicates a variance has occurred

9. Variance analysis and monitoring is:–
   a) a continuous evaluation & quality improvement tool
   b) a medical records responsibility
   c) a method of statistical analysis

10. DRG is an abbreviation of:–
   a) Doctor Regulated Group
   b) Donor Recipient Graft
   c) Diagnosis Related Group
   d) Diagnosis Referral Group

**So what is a clinical pathway?**

Clinical pathways are evidence based clinical management plans promoting the optimal path toward a successful outcome for a patient’s stay in hospital. They involve the client in the care provided by the multidisciplinary team, minimise duplication in documentation and direct quality of care.

In excess of thirty other names have been used to describe Clinical Pathways. Other names by which you might know clinical pathways include:

- critical pathways
- clinical guidelines
- clinical outcome plans
- care plans
- CareMaps® (Zander 1990)
- clinical protocols
- clinical practice protocols
- clinical algorithms
- practice standards
- critical pathways
- collaborative paths
- anticipated paths
- integrated care pathways
TIME OUT

Check your clinical area for information pertaining to clinical pathways. Find out whether you have any clinical pathways in use throughout your hospital. If you do ...

- What pathways are in use?
- How long have they been in use?
- Do you have a resource file of information on clinical pathways within your unit or hospital?

Where did they come from?

The use of Pathways dates back to World War II, where they were developed as a planning tool for the United States Navy. In the 1950's a similar planning tool was instrumental in coordinating 3,000 agencies working on a submarine weapon system. In later years the field of engineering found that identifying the optimal pathway in the production of items was beneficial both in terms of cost and productivity.

The methodology of clinical pathways and case management was first introduced to the health care system in the USA in the late 1980's. This appeared to be as a response to changes in the health care system ie. escalating health care costs and increasing consumer demands for plans of care and evidence of best practice outcomes (Birdsall, Phillips & Sperry 1997). Case management plans were originally initiated by a nursing department in Boston, USA in 1985, highlighting yet again the significant impact the nursing profession can have on patient care and changes in care strategies.

The term Casemix is used to describe a system of categorising patients according to predetermined characteristics which enable comparisons of like groups. The Diagnosis-Related Group (DRG) system was the first successful casemix classification.

In Australia, agreement about hospital funding between the Commonwealth and the States was reached in 1988. Clinical Pathways for patients of certain
DRG's then evolved from shorthand versions of extensive documentation called Case Management Plans. Since then the Clinical Pathway methodology has been used internationally. Numerous changes in the Australian health care system over recent years suggest that the adoption of Clinical Pathways, as a measure of quality care, may be a timely and appropriate move for Australian health care organisations.

What is the link between Clinical Pathways and Individualized Care Plans?

Variances identify any deviation from an activity outlined on a pathway. Recorded on pathway and detailed in integrated progress notes, they allow analysis and monitoring of care provided in terms of positive or negative effect, primary or secondary source, and effectiveness of interventions.

Guidelines are based on available evidence and serve to support and direct clinical practice/interventions in terms of accepted best practice. They will be derived from a variety of sources and will be supported with differing levels of evidence, ranging from experience based evidence to randomised control trial evidence. Clinical guidelines are used in daily practice through translation onto the clinical pathway document.

Support the pathway by providing the patient with clear, succinct and simple description and explanation of expected progress through admission. This aids staff in patient education and compliance with care interventions.

Will be established for patients who 'do not fit', or who "come off" pathway temporarily as a result of individualised care needs eg. complex wound management plans; those who have co-morbidities that will temporarily preclude use of pathway.

As can be seen, individualised plans of care are simply another piece to the puzzle. They complement the clinical pathway and may well, in certain circumstances, temporarily replace the clinical pathway as the primary reference document.
Objective of Clinical Pathways

The primary objective of a Clinical pathway is to provide multidisciplinary care to specific patient populations, through tracking a patient along the expected path from pre-admission to discharge. In the process however many more objectives are being realised.

The principles of patient focus, evidence based best practice, collaboration between all parties concerned and aligned with the principles of continuous improvement, mean that pathways are living documents producing measurable outcomes to improvements in patient care.

Advantages

There are many documented advantages for the creation and use of Clinical Pathways. These include:

- Reduction in variation in the treatment received and the outcome for patients, by standardising and streamlining processes. This results in reduced duplication and repetition thereby optimising cost efficiency.

- Patient and family are aware of expected outcomes and, through daily feedback on progress, are able to participate in their own care and outcome achievement, thereby reducing anxiety.

- Promotes continuum of care across the inpatient stay and facilitates discharge coordination between patient, family and care providers to ensure a smooth transition from hospital to home.

- Communication of protocol and interventions are clearly documented and available at the bedside for reference through one document for all disciplines, thus increasing confidence, empowerment and teamwork.

- Increased customer satisfaction: patient, families, doctors, nurses, allied health workers and health funds.

- Doctor satisfaction is increased as care requirements are clearly communicated, facilitating consistency in care delivery.

- Provides a legal record of duty of care which acts as a guide for all staff in the provision of evidence based care.

- Allows clinical analysis of care practices and results through monitoring of progress according to pre-established outcomes, thereby optimising professional accountability.
Potential for the improvement in the quality of care through examination of actual care given and associated outcomes

Potential reduction in length of stay for the patient without reduction in effectiveness of care

Permit the establishment of a benchmark for the multidisciplinary team

Documentation is by variance therefore time is reduced, facilitating increased patient contact

Pathways can be translated into non-medical language to provide patient information and education

TIME OUT

From the list of advantages to implementing Clinical Pathways, write down some measurable outcomes that could be used to audit changes in practice when using a Clinical Pathway within your department.

How are Clinical Pathways developed?

A pathway is developed by a team of representatives from each discipline involved in the care of patients with the specific diagnosis eg. for a Total Knee Replacement pathway, nursing, medical, physiotherapy and occupational therapy staff will form the team. They will develop the pathway based on the
latest evidence to support their practices. A Clinical Pathway Coordinator facilitates the process. Clinical Pathways are ideally developed for high cost, high risk and high variation in treatment conditions. In choosing the patient groups for which a Clinical Pathway would be suitable the following should be considered:

- high volume procedures or DRG
- high cost procedures or diagnoses
- high variation in treatment conditions
- high variation in length of stay or costs compared to State or other health services
- opportunity to make an impact on outcomes
- clinician interest/commitment
- high risk diagnoses
- procedures or conditions where there are suspected inefficiencies
- procedures or conditions where possible to standardize care

In developing a Clinical Pathway it should be broad in its application and range from admission through to discharge and out patient follow up.

**Identify current processes**

Using data including demographics, co-morbidities, movement through the hospital, LOS, clinical interventions, services involved in care delivery including community based care and services, the target populations are identified and existing baseline outcomes, including time frames are measured.

**Identify the optimum outcomes**

Research the best practice guidelines for the procedure or disease (eg. in literature, Internet, protocols, research studies, evidence based practice guidelines, Cochrane reviews). The pathway team define experiences and practice preferences, which may be doctor specific or generic, along with identifying the optimum time frames for outcome achievement. If care requirements are unpredictable, pathways can be individualised.
Research and Agree on Clinical Guidelines

- Are systematically developed statements to assist practitioner decisions about appropriate health care for specific clinical circumstances.
- Outcome focused
- Guidelines should be strongest possible (ie. high level evidence)
- Strong methods for evaluating research evidence to support practice
- Level of evidence linked to practice
- Multi-disciplinary development with consumer consultation
- Flexible enough to adapt to local conditions
- Reflect all best practice – resources, environmental etc
- Evaluated and updated regularly

Draft clinical pathway

Draft pathway is created and authorised. Time frame, variance analysis and evaluation tools for trial are established, ensuring compliance with Australian Standards and Hospital protocols, and suitable educational support materials are available.

Implementing clinical pathway

- Set specific measurable goals to be achieved by the introduction of clinical pathway aligned with individual organisation culture, systems and goals.
- Introduce pathway for target population with educational support
- Analyse variation, and feedback result
to team members
• Review clinical pathway and modify to improve / maintain outcomes
• Reintroduce refined clinical pathway
• Continue this cyclical process ad infinitum, evaluating pathway throughout.

What can I expect to see on a Pathway?

Pathways are created in many formats. Regardless of format, pathways are known to have standard inclusions. Some of these are listed below. This list is a guide only and in no way is all inclusive.

1. Clinical prompts
   - consults
   - tests/procedures/treatments
   - vital signs
   - hygiene
   - mobility
   - nutrition/elimination
   - medication
   - health perception/education

2. Clinical incidents/interventions
   - reflects the multi-disciplinary team's contribution to the patient's episode of care

3. Timeline
   - a graphical picture of the patients actual episode of care, against the ideal timeline. This is often identified against CPD (care path day)

4. Special needs
   - refers to any specific requirements needed by the patient which are not stated on the Clinical Pathway eg. incontinence, altered mental state, enteral feeding, isolation nursing ,stoma care

5. Variations to planned care/progress
   - Provides for notation of variations to expected progress on pathway

TIME OUT

According to the DRG classification in your speciality, identify groups who fit into the above diagnosis and care categories. Do you have a patient group who would be suitable for the development of a Clinical Pathway? If your answer is yes, discuss your findings with your Manager or colleague.
TIME OUT

a) make notes of members of the multi-disciplinary team you would bring together to form a group of experts in developing a Clinical Pathway for an identified group of patients.

b) network with colleagues in other institutions to find out if they have developed Clinical Pathways for the same group of clients.

How are pathways used in the daily care of patients?

As previously discussed, clinical pathways provide the format for translating evidence based clinical guidelines into day to day practice. Therefore, what you 'see and use' as the pathway document is simply the end product of a comprehensive compilation and analysis of available evidence to support best practice for a specific clinical circumstance.
**When does a patient start on a pathway?**

The Clinical Pathway is commenced with the first significant contact that a patient has with the hospital. This could be in the emergency department, pre-admission clinic or when the patient is admitted to the ward.

The following will need to be done:

- label pathway and complete signature register. Be sure that when variations are recorded this is prior to signing the relevant column
- discuss pathway briefly with patient, using where available patient pathway documents (clear, succinct simple information sheets that optimise patient teaching and compliance with interventions)
- file in patient notes in pre admission/ED or with end of bed documents if patient is an in-patient

**What happens on admission to a ward?**

In most cases the Clinical Pathway document will be located within the patient notes provided that they have a pathway diagnosis. This will always be the case if the patient has been seen pre-admission or has been admitted post operatively through a Day Of Surgery Admissions (DOSA) arrangement (Some hospitals have established DOSA units where the patients surgery and admission have been expected). Pathway documents are usually located at bedside once the patient has been admitted.

Some patients will be admitted under a "non pathway" diagnosis, although during admission require care for "pathway" diagnosis. In these cases, in collaboration with the multidisciplinary team, the patient will commence a pathway during an admission episode.

Care will be “picked up” from the appropriate Care Pathway Day (CPD) on the relevant Pathway.

**How is my daily routine affected when I am caring for Pathway Patients?**

Pathways provide you with a valuable time management tool. The following hints are provided as a guideline to inclusions / alterations to your daily routine when caring for a patient on a Pathway.

- At the beginning of the day read through the nominated pathway items for that day, taking particular notice of those concerning your discipline
- Discuss the events outlined for the day with the patient
Ensure that the date appears at the top of the column for that day and that your initial is identified in the signature identification section of the pathway.

Check through the interventions listed for the day and decide if this is appropriate for this patient at this time.

If changes are required it may be appropriate to discuss this with the other team members.

Carry out care as required.

**Variance reporting and analysis**

*What is a Variance and what does it mean?*

Variance represents the difference between what is expected to occur during the patient’s episode of care and what actually occurs.

A degree of variance from the norm will always occur because every patient is different and responds in unpredictable ways.

It is most important that variances are recorded as it is this information which will be used in the evaluation of the designated care on the pathway and its effect on patient outcomes.

Variances are a record of any deviation from an activity listed on the clinical pathway. A variance can be positive, e.g., patient moves on faster than indicated by the pathway for that particular intervention; negative, e.g., patient is unable to progress as indicated on the pathway. These variances are recorded by the discipline involved in that category of care e.g. total hip replacement is upgraded to walking with frame one day early – recorded by physio.

Variance can be categorised in a number of ways, all providing information about the actual variation from care path, the contributing factors and the outcome for the patient.

Therefore variances are most often coded and identified as:

1. **TYPE of variance** *i.e. Positive or negative*
   - **POSITIVE** – Where the patient progresses towards the anticipated outcome faster than anticipated
     *Example: early discharge, early ambulation*
   - **NEGATIVE** - Contribute to prolonging the length of stay or contributing to interruptions in reaching the anticipated outcome
     *Example: IV not removed due to administration of antibiotics for wound infection, missed a test due to inappropriate preparation*
   - **NO EFFECT** - Some facilities choose to document ‘no effect variance’, where the variance needs to be recorded for the other care givers
information but the event is neither positive or negative to the patient’s progress on the pathway – Check hospital protocols)

2. SOURCE of variance  ie. Primary (cause) or secondary (effect)
   - PRIMARY (Cause) - This is the underlying cause of the deviation from the plan
     Example: wound infection
   - SECONDARY (Effect) - The subsequent effect of the variance on the patient outcome
     Example: IV remains insitu for antibiotic therapy

Regular analysis of outcomes ie. causes and effects will enable clinicians to reflect on process efficiency and will become the catalyst for change in practice.

The source of the variance may also be coded as follows :

(A) Patient/family
patient condition/age
patient/family decision or preference
patient/family influence

(B) Clinician/caregiver
physician order/preference
caregiver decision
caregiver response time

(C) Hospital
bed availability / appointment time
information availability
supplies/equipment availability

(D) Community
placement / home care availability
ambulance / transport delay

Variances can be the result of system issues such as bottlenecks for certain tests, staffing shortages, clinician decisions based on judgment or opinion, and patient/client/family situations that arise unexpectedly.

- Every effort should be made to keep patient on the pathway

Definition of codes for these categories are often included on pathway documents. Staff, on identification of a variance, should specify the code and outline the variance on the ‘variance record’ section of the document. Check hospital protocols.

⇒ Variance reporting must include an action and the outcome of that action
Variance documentation must be recorded at the time of occurrence.
Variations must be recorded by all members of the multidisciplinary team on the variance record section of the pathway form.

**Remember ...**
A critical pathway without variance analysis and management, is a process without evaluation.

**TIME OUT**

*With your knowledge and understanding of your patient groups, identify 5 possible variances for the pathways currently in use in your unit, and state the type and source of each variance. If you do not currently have pathways in use, consider an appropriate patient group that could be cared for using a pathway and identify variances that could be foreseen in the care of the client.*

---

**Monitoring variance**

Analyzing variances and outcomes contributes to continuous quality improvement; it provides care providers and system administrators with regular feedback and it encourages changes in practice that incorporate this information. You will want to incorporate these changes in your care pathway so that the next round of variance and outcome analysis captures the impact of the new practices.
What Documentation is required?

Care is documented on both the pathway document and in the patient’s health record. At all times, as with any legal records, staff are required to comply with statutory, legal and professional practice requirements.

- **Pathway Document**

The Clinical Pathway is designed to reduce the amount of routine documentation required – for example nursing care plan, problem orientated report writing in the integrated progress notes. Information which is relevant to the patient’s well being or progress should be documented as usual eg. a family conference to discuss on going care or discharge.

The pathway does **not** represent standing orders therefore physicians orders are still required.

When you have attended to the care of the patient eg. at the end of treatment for physio or end of shift for nurse, you need to “sign off” that this care has been attended. The identity of specific care-providers is indicated by an initial in the signature identification section of the pathway.

Many pathways utilise a ‘tick box’ method to indicate when care has been carried out. Some may use an ‘initial’ system. Refer to hospital specific protocols.
• Variance Document

Pathway documents will include some area for documenting variances in care. Whilst they may be physically separate from the pathway, they are still a component of the pathway. Other documents have a section allocated to recording of variances. These usually allow for brief description of the variance of care from the expected path. Detailed descriptions of actions taken, or client responses to interventions are likely to be recorded in the integrated progress notes.

• Integrated Progress Notes

Integrated Progress Notes are still used for ‘pathway’ patients. Documentation is by exception, which means that routine care is not repeated in the notes provided it has been carried out without variation. If required, variances can be documented in greater detail in the integrated progress notes thereby making it possible to see the unexpected events at a glance. Staff identify their discipline by either writing, eg “nursing” in the left-hand column of the note entry, or alternatively using a pre-printed sticker if available eg. “physio” sticker.

What if there is no change in care from pathway?

Initial or ‘tick’ on the relevant day/shift with any additional comments in progress notes only if required. If there is no change to care given, you are still required to make an entry in the integrated progress notes once in 24 hours. For example “all care given as per clinical pathway”. This may be all that is seen in the patients progress notes for the entire admission (hopefully!). Although if there are variances, these can then be seen at a glance quickly.

What if there is some variation in care from pathway?

Initial for care given, indicate that a variance has occurred, and record change/s on variance record. Further documentation can be made in integrated progress notes if required.

What if there is major variation in care from pathway?

Initial for care given. Note in variance record and in integrated progress notes.

What happens on discharge?

Discharge planning interventions are included in every pathway especially towards the end of stay. In most cases this is the only discharge
documentation that is required. Check hospital protocols for local specific discharge requirements.

Check that the discharge outcomes have been met and if not please document a variance. The pathway is filed in the patient health record.

**Documentation of special needs**

At times patients may require special needs. This may not result in a variance from pathway, but may be required in addition to expected care requirements outlined on the pathway. In these cases, notation should be made on the appropriate day of the pathway. More detailed description, assessment, evaluation or planning can be documented in integrated progress notes. Refer to hospital protocols for local requirements – some may have "complex care plans" / "complex problems" documents that are completed and filed alongside the pathway in patient health record.

If the special need does not require any interventions because the patient is capable of attending to this need themselves, a notation in the Clinical Pathway may be all that is required.

When special needs are resolved an entry is made in the appropriate day on the Clinical Pathway and in the integrated progress notes.

**TIME OUT**

*If Clinical Pathways are in use in your department, complete a Clinical Pathway for a patient. Discuss the documentation requirements with a colleague, ensuring all pathway documentation guidelines have been fulfilled.*

*If you work in an area where Clinical Pathways are not yet in use, complete the documentation for an imaginary patient using the accompanying template (Appendix 1). Complete only the sections which would be completed by your professional group eg physiotherapy, nursing. Discuss the documentation with a colleague, ensuring all pathway documentation guidelines have been fulfilled.*
Frequently Asked Questions?

When things are not so simple ............... 

Most pathway patients progress along the pathway with only an occasional variance. However from time to time there are patients who have complications and 'fall off the pathway' or who unexpectedly 'become' pathway patients. The following questions represent the most frequent questions that arise in these situations.

**Which patients do not commence a pathway?**
Not all patients admitted for a specific procedure, or under a specific DRG will commence on the designated pathway. This would include those who:
• have severe co-morbidities eg. medical conditions, disabilities etc that will affect pathway progress
• are admitted to an area which does not have experience with pathway patients

**How do I prepare the documentation?**
As the pathway patient's documentation varies from other patients, the admission documentation may need some alteration. Check hospital protocols for admission documentation required for 'pathway' patients.
All pathway patients will, however, have integrated progress notes and the relevant pathway included in their files.

**What does the patient need to know?**
Let the patient know that they are on a Pathway. A way of doing this is to say that a group of senior clinicians have developed a plan of all the essential things that need to happen while they are in hospital to ensure their rapid recovery. Say that all people are different and that we use it only as a guide and will adapt it to suit them. Most patients appreciate the opportunity to look through the pathway and to ask questions. Where there is supporting 'patient pathways' these should be used to enhance patient education, whilst assisting in optimising patient compliance with care interventions. Likewise, family and support network may be included in this process of education and discussion.

**Can I start a pathway post-operatively?**
There is no reason why you can not start a patient on a pathway after they have had surgery. For example where it was thought they were going to have an appendicectomy but returned having had a bowel resection instead. If the relevant pathway exists, this should be done as soon as possible.
My patient has complications, should I cease the pathway?
Ceasing a pathway should be a team decision. Most patients are able to continue on a pathway despite significant variation. Indications to cease the pathway may include, but are not limited to:

- Major complication affecting all categories of care eg. extensive CVA
- Complication that will result in another major procedure
- Change in condition requiring transfer to ICU
- Transfer to an area not familiar with clinical pathways

Consult with the pathway coordinator (where one is available) if necessary.

How do I record major variations from the pathway?
Major departures from designated pathway care can be recorded as follows:

- Indicate on the pathway document, using designated method, that variance has occurred. This may be a 'tick' method, or 'symbol' method
- Document and categorise the variance on the variance section of pathway document
- Expand the detail of the major variance that has occurred in the Integrated Progress Notes

Do I revert to using separate notes if the patient's pathway is ceased?
When a pathway is ceased, a variance is documented on the variance page and a individualised plan of care is commenced. Integrated notes are maintained as usual to avoid confusion and ensure continuity of notes.

The patient is remaining on the same pathway day, how do I record care?
- Write the date on top of the relevant pathway column
- Record the reason, the care given (eg. care as per day 5) and your initials on the variance page

What do we do when the patient stays longer than pathway length of stay?
When a patient has an extended length of stay, they will "run out of days" on the pathway. Therefore there will be no space to record the following

- Care given
- Name of caregiver

If this occurs, it is not necessary to change to the standard method of documentation (ie. Individualised plan of care and Integrated progress notes). The variance record can be used to record the above information as well as variances.
For example if the patient is on their 8th day in hospital and the care given is the same as day 7 then this is recorded on the variance record as: “Care as per Day 7” plus your signature and designation.
If care is not exactly as any day on the pathway then select the day that is closest to care given and record as: “Care as per Day 10 except for TDS wound care”

**NB: Please remember that the care given and the caregiver should be recorded for all shifts**

*If a patient has not progressed in all categories for 2-3 days then the case should be discussed with the other team members eg nurse, physio, doctor and a decision made as to whether the pathway should be ceased.*

**Why record variance information?**
The variance information collated from many patients can be used in the following ways:

- To make changes in the pathway eg. when it is clear that the majority of patients are mobilising more quickly than what is designated on the pathway
- To assess if interventions have had any effect. For example an examination of wound infection rates both before and after a change in wound care.

**Summary**

Integrated care pathways reflect the ideal treatment and plan of care for a typical patient admitted for a given diagnosis or treatment. Not all patients will follow the pathway. Some will require a more customized approach to meet their unique needs due to co-morbidities, complications, etc. For the vast majority of patients in a given population, however, an integrated care pathway will ensure they get the care they need when they need it, and that critical aspects of care are not forgotten or omitted.

Integrated care pathways are becoming a popular tool for

- Improving the quality of patient care;
- Ensuring that care and treatment is based on the best current evidence available;
- Decreasing the fragmentation of care delivery across the continuum of care; and,
- Ensuring the most efficient and effective use of health care resources.

A successful program of integrated care pathways can help health professionals, managers, meet one of their biggest challenges...making optimal use of limited resources while delivering top-calibre, timely care.
To be effective, pathways need:
- Support from senior administration and physicians;
- Interdisciplinary involvement throughout the process;
- Clear goals, objectives, roles, and responsibilities;
- Effective communication systems;
- Systems for collecting and analyzing clinical and cost data;
- A culture of evidence-based decision making;
- Research support; and,
- A collaborative approach.

Integrated care pathways can facilitate effective patient/client-centred care cross the continuum both within and between districts. Using a coordinated, collaborative approach to develop and implement your pathway will reduce duplication of efforts and ensure that patients/clients move smoothly along a given path of care, regardless of the service setting or district.

Have you completed your Post-Test?

Now is time to reflect on what you have achieved by working through this learning package. We hope you feel more enlightened about providing care through use of clinical pathways and look forward to working with you in improving quality of client care. We ask that you return to your ‘pre-test’ sheet and complete the post-test section.

Looking over your completed sheet, do you feel you have reduced the ‘gap’ between what you knew before, and what you know now.

Congratulations, you are now well on the way to effective use of clinical guidelines and clinical pathways.

Evaluation

Please complete the accompanying evaluation form and return to the Team Manager. We trust you have enjoyed working through this education package.
Acknowledgements
We especially wish to thank the hospitals and health services associated with WA Interhospital and Agency Clinical Pathway Group. The following resource documents supplied were invaluable in the creation of this learning package.

Fremantle Hospital  Clinical Pathway Resource File
Hollywood Private Hospital  Clinical Pathway Self Directed Learning Package
Swan Health Service  Clinical Pathways Learning Package and Education session
Kalamunda Health Service  Clinical Pathways
Australian Council on Healthcare Standards  Clinical Pathways Help Package
Bentley Health Service  Clinical Pathways User Instructions

References
The following references and resource materials have been used in the creation of this learning package.


Nelson MS, 1993,'Critical pathways in the emergency department' Journal of Emergency Nursing, April, 19(2) 110-114

Schriefer J, 1994,'The synergy of pathways & algorithms: two work better than one' Journal of Quality Improvement 20(9)485-499
Windle PE, Houston S, 1995, 'COMIT: Improving patient outcomes' Nursing Management, September, 26 (9) 64-69


Additional References for Further Information


Brunelle D, Suarez S. Interdisciplinary teams ensure guideline compliance. Hospital Case Management 1997;5(8), suppl 1-4.


McMillan, S. "10 C's of Successful Care Pathways." Presentation at Integrated Care Pathways Workshop, Saskatoon, November 2000.


Helpful Internet Sites

The following is a suggested list of interesting internet sites. This list is by no means exhaustive and you are encouraged to read widely on the subject of clinical pathways. Words used to describe Clinical Practice Guidelines in alternate organisations: Clinical Pathway, Mapping Care, Care maps, Care Paths, Critical Paths, Critical Pathways, Algorithms of care, Clinical Protocols.

Agency for Healthcare Policy & Research
http://www.ahcpr.gov/clinic/index.html#online

American Society of Anesthesiologists - Newsletters
http://www.asahq.org

Canadian Council on Health Services Accreditation
www.cchsa.ca

Canadian Institute of Health Information
www.cihi.ca/eindex.htm

Canadian Medical Association Infobase
http://www.cma.ca/cpgs/index.asp

Cochrane Collaboration

Health Communications Network - Clinical pathways resource

Health Services Utilization and Research Commission
http://www.hsurc.sk.ca

Legal aspects

MedNet Clinical Paths/Guidelines Connections
http://www.sermed.com/clinicalpaths.htm

National Health and Medical Research Council – Australia

National Pathways Association
http://www.the-npa.org.uk/

New Zealand Guideline Group
http://www.nzgg.org.nz/tools.cfm

Norris Medical Library – Evidenced-based Medical Resources
http://cwis.usc.edu/hsc/nml/e-resources/ebm.html

Scottish Intercollegiate Guidelines Network

St George’s Hospital Medical School - Appraisal instrument for clinical guidelines
http://www.sghms.ac.uk/depts/phs/hceu/form.htm

St Vincents Hospital Sample pathways
http://wwwsvh.stvincents.com.au

Utilization Management for Simon Fraser Health Region, Canada

Variance Analysis – Australasian Association for Quality in Health Care
## APPENDIX 1  CARE PATHWAY TEMPLATE

### PATHWAY TITLE ________________________

<table>
<thead>
<tr>
<th>Date</th>
<th>INITIAL HOURS</th>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
<th>WEEK 1</th>
<th>1 MONTH</th>
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<td>Assessments</td>
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<td>Activity</td>
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<td>Nutrition</td>
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<td>Elimination</td>
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<tr>
<td>Patient/Family Education &amp; Psychosocial Support</td>
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<td>Discharge Planning</td>
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</tr>
<tr>
<td>Patient/client outcomes</td>
<td>Pain free</td>
<td>Vital</td>
<td>Knows how to use</td>
<td>Understands discharge instructions</td>
<td>Attending special program</td>
<td>Normal activities resumed</td>
</tr>
<tr>
<td>Variance Tracking</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Signatures</td>
<td>am pm nocte</td>
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</tbody>
</table>

APP 7 Pathway Education package_dd27.doc
APPENDIX 2  PRE AND POST TEST

Answer all questions indicating your response in the 'pre' column on commencement of the package. Upon completion of the package re-assess your initial responses by placing your answer in the 'post' column. Some questions have more than one correct answer. This checklist is for use as a self analysis tool. It is not a document that is "marked" however you are encouraged to search for answers and clarify uncertainties through the learning package.

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A Clinical Pathway can be defined as:-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) interdisciplinary standardised documentation of a patients planned care</td>
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</tr>
<tr>
<td></td>
<td>b) a standardised care plan</td>
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<tr>
<td></td>
<td>c) a 'tick box' document of planned care</td>
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<tr>
<td>2. The function of a Clinical Pathway is to:-</td>
<td></td>
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<tr>
<td></td>
<td>a) reduce the amount of staff involved in patient care</td>
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<td>b) replace a Doctors order</td>
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<td></td>
<td>c) provide a written document of patient goals/outcomes and staff intervention at agreed intervals</td>
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<tr>
<td></td>
<td>d) act as a quality audit tool</td>
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<tr>
<td>3. Which professional staff groups may document on a Clinical Pathway:-</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) Nurses only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Medical staff only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Allied health professionals only</td>
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</tr>
<tr>
<td></td>
<td>d) All of the above</td>
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<tr>
<td>4. The components of a Clinical Pathway include:-</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) assessment, planning, implementation, evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) clinical indicators, clinical incidents, time-line, special needs.</td>
<td></td>
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<tr>
<td></td>
<td>c) evaluation, analysis, synthesis</td>
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</tr>
<tr>
<td></td>
<td>d) clinical guidelines, patient pathway, variance record</td>
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<td>5. Variance can be defined as:-</td>
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<tr>
<td></td>
<td>a) when a patient requires complex nursing care</td>
<td></td>
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<td></td>
<td>b) lack of consensus</td>
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<td></td>
<td>c) difference between what was expected and what actually happened</td>
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<tr>
<td>6. The only source of variance is when a patient does not comply with the Clinical Pathway?</td>
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<tr>
<td></td>
<td>a) true</td>
<td></td>
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<tr>
<td></td>
<td>b) false</td>
<td></td>
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</tbody>
</table>
7. A complex variance should be reviewed by :-
   a) medical staff on each shift
   b) the CNM
   c) the Executive
   d) all health care team members on each shift

8. Individualisation of Clinical Pathways:-
   a) is not possible
   b) is not necessary
   c) is documented as special needs
   d) indicates a variance has occurred

9. Variance analysis and monitoring is :-
   e) a continuous evaluation & quality improvement tool
   f) a medical records responsibility
   g) a method of statistical analysis

10. DRG is an abbreviation of:-
    a) Doctor Regulated Group
    b) Donor Recipient Graft
    c) Diagnosis Related Group
    d) Diagnosis Referral Group

**We thank you for your cooperation in maximising the potential of this learning package through completion of this pre/post test.**
1. Were the contents of the learning package relevant to the set objectives? YES / NO (Please circle one)

2. Did the package contents and format: (Feel free to circle more than one)
   a) provide useful information for your practice
   b) provide you with new information
   c) help to improve your skills
   d) confirm your existing knowledge

3. Did you find this package: (Feel free to circle more than one)
   a) stressful
   b) satisfying
   c) a waste of time

4. Was the information provided in this package easy to read and comprehend? YES/NO (Please circle one)

5. Please make suggestions as to how the program / package could be improved (Feel free to use reverse side of this sheet)

6. Will your practices in the provision of patient care change? If YES, how?

Thankyou for your feedback
Interhospital and Agency Clinical Pathway Group
Appendix 8

Nominal Group Technique-
first session
Nominal Group Technique Information Sheet

Dear participant,
Welcome and thank you for accepting to participate in this study. Your participation is important to determine the changes needed in our clinical area so as to enhance the quality of our documentation. The following is an overview of today's programme.

09:00-09:15 - Silent Generation of ideas.
You have 15 minutes to consider the questions below on the form given to you and write your ideas in point form within the space provided.
*Please do not discuss your ideas at this time.*

09:20-09:40 - Listing of ideas
Present only one idea for each turn.
No debates during sharing of ideas.
You are free to miss a turn.
You are free to borrow or share someone else's ideas.

09:45-10:10 - Discussion of ideas on Flip chart
Discussion time allocated is 25 minutes.
You may suggest new items for discussion.
It is important to listen what others have to say.

10:15-10:30 - Ranking to select the top ten ideas
Choose ten items that you consider most important, in answer to question 1 and question 2.

10:30-10:45 - Break
Please refrain from discussing any topics of the session during the break. Break duration is 15 mins.

10:50-11:15 - Discussion on vote
Everybody is encouraged to give his opinion on the content of the top ten items.

11:15-11:30 - Revised rating of top ten items
Rate the top ten items.
Give 100 points for the most important item.
Give a value between 1-100.

Thank You
Please spend 15 minutes considering the questions below and write your ideas in point form within the space provided. Please do not discuss your ideas during these 15 minutes.

1. What are the main inhibiting factors that may hinder effective multi-disciplinary documentation for Total Knee Replacement patients?

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2. What actions can be taken to reduce such inhibiting factors so as to ensure a standard multi-disciplinary approach?

______________________________________________________________________________
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List the Top 10 ideas according to your priority for Question 1

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List the Top 10 ideas according to your priority for Question 2

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Revised rating of top 10 – Give a score from 100 to 1 for each idea with 100 being the best score.

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<tr>
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<td>10</td>
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</table>
Appendix 9

Letter to PDN-
NGT Sessions
5th, January, 2008

Dear Reggie,

As you are aware I will be conducting two (2) Nominal Group Technique (NGT) sessions as part of my reading for a Masters Degree in Health Services Management. These consist of two sessions during which there will be a free exchange of ideas about specific themes put forward by the facilitator. These sessions will be of approximately two and a half hours with a fifteen minute break. The participants invited to come will be all the health care workers of the involved ward.

Since you have previous experience in conducting such an NGT session I would like to ask you if you would kindly assist me by facilitating these sessions with me. Arrangements for the venue have been organized and we would be using the Seminar Room of the Yellow foyer on the third floor, next to Orthopaedic Ward 2.

Your assistance in this regard will help in promoting standardization of care and enhance integrated and clear documentation. In the event that you do not wish to participate this will not affect you in any way. I will be giving you more information about the structure of the NGT sessions in the near future should you agree to facilitate them.

Regards

Lillian Zahra

[Agreed]

[Signature]
Appendix 10

Permission for South

Manchester University Hospitals ICP
Re: Total Knee Replacement Care Plan

Zahra Lilian at MDH

From: Martin Lovell [mlovell@UHSM.NHS.UK]
Sent: Tuesday, October 16, 2007 10:43 AM
To: Zahra Lilian at MDH
Subject: Re: Total Knee Replacement Care Plan

Feel free to use any of our information

I have forwarded your email to our matron who may respond about your other queries

Martyn Lovell

>>> Zahra Lilian at MDH 16/10/2007 09:23 >>>
Dear Mr. Lovell,

I am the nursing officer of an orthopaedic ward (OW2) in the only acute general hospital in the small island of Malta, St. Lukes hospital. I am currently doing my Masters degree in Health Services Management and I am carrying out research on integrated care plans which presently are not used anywhere in any hospital in Malta.

My aim is to develop an integrated care pathway for total knee replacement in my orthopaedic unit. Both orthopaedic consultants Mr. Ray Gatt and Mr. Anthony Bernard are very interested in implementing this care plan. Can you kindly give me permission to use your current care plan for TKR, Version 1 April 02, reviewed on April 03. I wish to pilot it in our ward after carrying out an education programme and focus groups as part of my research during the following 2 years. The care plan will not be implemented during my study but I will gladly keep you informed about the possibility of implementing the care plan after the completion of the study and its findings.

Can you please also give me information on how the care plan was tested for its reliability and validity. Your expert advice and help will be greatly appreciated, as I feel overwhelmed as from where to start at the moment. I’m doing my Msc in Health services as part time student whilst also working 46hr week and we are also in the process of migrating to a new hospital next month called Mater Dei.

I am eagerly looking forward for your feedback.

Thank you

Regards

Lillian Zahra

10/17/2007
Appendix 11

The ICP

Orthopaedic Ward- MDH
Integrated Care Pathway (ICP)
TOTAL KNEE REPLACEMENT
To be filled in by all members of the team.
**PRE-ADMISSION CLINIC: MEDICAL ASSESSMENT**

**Social History**
- Single ☐ Married ☐ Other ☐
- Occupation:
- Driving:

**Family History**

**Smoker:** Y ☐ N ☐

**Alcohol:** Y ☐ N ☐

**Present Drug History** (clarify compliance)

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dose</th>
<th>Frequency</th>
<th>Comments</th>
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</table>

**ALLERGIES:** Anaesthesia ☐ Iodine ☐ Adhesive tape ☐ Drugs ☐

**CLINICAL EXAMINATION**

<table>
<thead>
<tr>
<th>J ☐</th>
<th>CVS Normal ☐ Abnormal ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ☐</td>
<td>JVP Normal ☐ Abnormal ☐</td>
</tr>
<tr>
<td>C ☐</td>
<td>HS Normal ☐ Abnormal ☐</td>
</tr>
<tr>
<td>C ☐</td>
<td>Chest:</td>
</tr>
<tr>
<td>O ☐</td>
<td>Abdo:</td>
</tr>
</tbody>
</table>

**Peripheral pulses:**

- Femoral ☐ Popliteal ☐
- DP/PT ☐

**Observations:**

- B/P: Pulse:
- Other:
Date: ___________  Patient Name: ___________________________  ID Card No: ___________________________

**Anaesthetic/Medical Review:**


Operation Risks & Benefits explained to patient □  CONSENT FORM SIGNED BY PATIENT □

**PRE-ADMISSION CLINIC: PHYSIOTHERAPY ASSESSMENT – Mobility**

**Past physiotherapy treatment:**


**Bed mobility:**


**Transfers:**


**Gait assessment:**


**Stairs:**


**Walking Aids – in use / to procure:** Y □  N □

**Pain scale:**


Relieved by:

**Leg length:**  L □  R □

**Special Tests**


**Other Joints**

**History of falls:** Y □  N □
<table>
<thead>
<tr>
<th><strong>Date:</strong></th>
<th><strong>Patient Name:</strong></th>
<th><strong>ID Card No.:</strong></th>
</tr>
</thead>
</table>

**PRE-ADMISSION CLINIC: NURSING ASSESSMENT**

<table>
<thead>
<tr>
<th><strong>Nutritional Status</strong></th>
<th><strong>Weight:</strong> kgs</th>
<th><strong>Height:</strong> mt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal diet ☐</td>
<td>Diabetic ☐</td>
<td>BGM: ______ mmols</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eats independently ☐</td>
<td>Semi-dependent ☐</td>
<td></td>
</tr>
<tr>
<td>Totally dependent ☐</td>
<td>Uses dentures ☐</td>
<td></td>
</tr>
<tr>
<td>Has dental caries ☐</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Skin Condition</strong></th>
<th><strong>Waterlow score:</strong></th>
<th><strong>Comments:</strong></th>
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<tbody>
<tr>
<td>Intact ☐</td>
<td>Dry ☐</td>
<td>Tissue ☐</td>
</tr>
<tr>
<td>Ulcers ☐</td>
<td>Infected wound ☐</td>
<td>Dry ☐</td>
</tr>
<tr>
<td>Skin allergies ☐</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Elimination</strong></th>
<th><strong>Frequency:</strong></th>
<th><strong>Urgency:</strong></th>
<th><strong>Incontinent:</strong></th>
<th><strong>Haematuria:</strong></th>
<th><strong>Burning:</strong></th>
<th><strong>Catheterised:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal ☐</td>
<td>Frequency ☐</td>
<td>Urgency ☐</td>
<td>Incontinent ☐</td>
<td>Haematuria ☐</td>
<td>Burning ☐</td>
<td>Catheterised ☐</td>
</tr>
</tbody>
</table>

| **Bowels** | **Incontinent:** | **Constipated:** | **Loose:** | **Malaena:** | **No sounds:** | **Has Colostomy/ Ileostomy:** | **Uses laxatives:** |
|-------------|-----------------|-----------------|-----------|------------|----------------|-------------------------------|
| Normal ☐ | Incontinent ☐ | Constipated ☐ | Loose ☐ | Malaena ☐ | No sounds ☐ | Has Colostomy/ Ileostomy ☐ | Uses laxatives ☐ |

<table>
<thead>
<tr>
<th><strong>Communication</strong></th>
<th><strong>Vision:</strong></th>
<th><strong>Hearing:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Openly communicates ☐</td>
<td>Normal ☐</td>
<td>Impaired ☐</td>
</tr>
<tr>
<td>Withdrawn ☐</td>
<td>Uses glasses ☐</td>
<td>Normal ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sleep Pattern</strong></th>
<th><strong>Mental/ Emotional status</strong></th>
<th><strong>Values &amp; Beliefs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Undisturbed ☐</td>
<td>Oriented ☐</td>
<td>Spiritual needs raised ☐</td>
</tr>
<tr>
<td>Restless ☐</td>
<td>Delirious ☐</td>
<td>Accepts Transfusion if required Y ☐ N ☐</td>
</tr>
<tr>
<td>Requests sedation ☐</td>
<td>Demented ☐</td>
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</tr>
<tr>
<td></td>
<td>Drowsy ☐</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unconscious ☐</td>
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<tr>
<td></td>
<td>Anxious ☐</td>
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<tr>
<td></td>
<td>Depressed ☐</td>
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<td></td>
<td>Self harm ☐</td>
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<table>
<thead>
<tr>
<th><strong>Present worries:</strong></th>
<th><strong>Expected home support on discharge:</strong></th>
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<table>
<thead>
<tr>
<th><strong>Patient Education</strong></th>
<th><strong>Social Situation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op information given verbally. Y ☐ N ☐</td>
<td>Own Home ☐ Has stairs ☐ Nursing Home ☐</td>
</tr>
<tr>
<td>Patient information booklet given Y ☐ N ☐</td>
<td>Lives alone ☐ Lives with:</td>
</tr>
<tr>
<td>Patient Information booklet provided Y ☐ N ☐</td>
<td></td>
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</table>

| | Requires Social Worker referral? Y ☐ N ☐ |

---

**Mater Dei Hospital - Total Knee Replacement ICP**

*Version 2: 2009*
**MATER DEI**

**NURSING OBSERVATIONS CHART**

<table>
<thead>
<tr>
<th>Rate of obs</th>
<th>B.P.</th>
<th>Pulse:</th>
<th>Temp.</th>
<th>CBC</th>
<th>Post op</th>
<th>Ward:</th>
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<tbody>
<tr>
<td><strong>DATE</strong></td>
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*Mater Dei Hospital - Total Knee Replacement ICP*
**NURSING ASSESSMENT ON ADMISSION**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>ASSESSMENT</th>
<th>N= No problems, I=Independent, A=Assisted, D=Dependent</th>
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</thead>
<tbody>
<tr>
<td>Breathing</td>
<td></td>
<td>N□ SOB□ Shallow□ Wheezing□ Gasing□</td>
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<tr>
<td></td>
<td></td>
<td>Cyanosis□ Secretions□</td>
</tr>
<tr>
<td>Bathing</td>
<td>I□ A□ D□</td>
<td></td>
</tr>
<tr>
<td>Dressing</td>
<td>I□ A□ D□</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>I□ A□ Chair bound□ Bed bound□ Toileting I□ A□ D□</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Uses walking aid: Brought? Y□ N□</td>
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<tr>
<td></td>
<td></td>
<td>History of falls□</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk of DVT - High□ Moderate □ Low □</td>
</tr>
<tr>
<td>Skin</td>
<td>Intact□ Dry□ Tissue□ Broken□ Ulcers□</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infected wound□</td>
</tr>
<tr>
<td>Nutrition</td>
<td>I□ A□ D□</td>
<td>I.V.I.□ NB□</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NG tube□ Malnourished□</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dental caries□ Swallowing difficulty□</td>
</tr>
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<td></td>
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<td>Has dentures: Up□ Low□ Brought? Y□ N□</td>
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<tr>
<td>Elimination</td>
<td>Urine Bowels</td>
<td>NO Frequency□ Urgency□ Incontinent□ Haematuria□ Burning□</td>
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<td></td>
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<td>Catheterised□</td>
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<td>NO Incontinent□ Constipated□ Loose□ Malena□ No sounds□</td>
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<td></td>
<td>Has Colostomy/ Ileostomy □ Uses laxatives□ Last BC:</td>
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<tr>
<td></td>
<td>Speech</td>
<td>NO Incoherent□ Speech Difficulties□ Withdrawn□ Mute□</td>
</tr>
<tr>
<td></td>
<td>Vision</td>
<td>Visually impaired□ -has Glasses□ Brought? Y□ N□ Blind□</td>
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<tr>
<td></td>
<td>Hearing</td>
<td>Hearing Impairment: Rt□ Lt□ -has Hearing aid □ Brought? Y□ N□</td>
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<tr>
<td>Cognitive</td>
<td>Oriented□ Delirious□ Demented□ Drowsy□ Unconscious□</td>
<td></td>
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<tr>
<td>Values &amp; Beliefs</td>
<td></td>
<td>Anxious□ Depressed□ Self harm□</td>
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<tr>
<td></td>
<td></td>
<td>Spiritual needs raised□ Accepts Transfusion if required Y□ N□</td>
</tr>
<tr>
<td>Any specific worries/ anxiety</td>
<td></td>
<td></td>
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<tr>
<td>Sleep/Rest</td>
<td>Sleeps well□ Sleeps with difficulty□ Uses/needs sedation□</td>
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<tr>
<td>Substance misuse</td>
<td>Smokes□</td>
<td>Alcohol intake□</td>
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<td></td>
<td>Recreational drugs□</td>
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<tr>
<td>Home situation</td>
<td>Lives in own Home □</td>
<td>Nursing Home □</td>
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<tr>
<td>Discharge Plan</td>
<td>Expected Home support on discharge &amp; Discharge Plan:</td>
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<tr>
<td></td>
<td>Contact OT: Y□ N□</td>
<td>Contact Social Worker: Y□ N□</td>
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<tr>
<td>Educational Needs</td>
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**DOCTOR CHECKLIST ON ADMISSION**

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
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<tbody>
<tr>
<td>Patient assessment completed</td>
<td></td>
</tr>
<tr>
<td>Blood results still in date. If not, retaken</td>
<td></td>
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<tr>
<td>Consent form checked</td>
<td></td>
</tr>
<tr>
<td>Limb to be operated on marked</td>
<td></td>
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<tr>
<td>Cross match 2 units of blood available</td>
<td></td>
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<tr>
<td>ECG present in notes</td>
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<tr>
<td>CXR and knee medical images available on PACS</td>
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</tbody>
</table>

Dr’s name..................................Signature .................. Date……/……/…… Pager:.........

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Other Nursing &amp; Multi Disciplinary Notes – Admission Day</th>
<th>Sign</th>
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</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Date/Time</th>
<th>VARIANCES – Give reason and action taken</th>
<th>Sign</th>
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<tbody>
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</table>
DAY OF OPERATION - POST OP CARE ON WARD

<table>
<thead>
<tr>
<th>NURSE</th>
<th>✓, X or n/a</th>
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<tbody>
<tr>
<td>DATE:</td>
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</tbody>
</table>

| Observations (BP, Temp, CSM, PCA) recorded as prescribed |
| Pain score at rest below 5 (0=No pain, 5= moderate, 10 = very severe) |
| PCA / Epidural patent and patient understands its use |
| Alternative analgesia provided if required |
| Oxygen as prescribed ..............l/per hr.......for........ hrs |
| TED stockings applied |
| Pressure areas checked 2 hourly- intact |
| Wound checked hourly - Nil / minimal oozing. |
| Intravenous infusion patent and to regime |
| Fluid balance recorded and maintained |
| Urine post op passed (if catheterized more than 30 mls per hour passed) |
| Oral fluids commenced and diet as tolerated |
| Check CBC taken - Blood transfusion .......... units given |

Drains observed. Drainage at MN: Drain 1 ________ Drain 2 ________

Nursing Notes - enter time and sign
<table>
<thead>
<tr>
<th>DATE:</th>
<th>Day</th>
<th>Night</th>
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</thead>
<tbody>
<tr>
<td>POST OP - DAY 1</td>
<td>NURSE: Name(Day)</td>
<td>Night:</td>
</tr>
<tr>
<td>Give assistance with hygiene/ changing clothes</td>
<td></td>
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<tr>
<td>TED stockings checked</td>
<td></td>
<td></td>
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<tr>
<td>Pressure areas checked – intact. Encourage use of monkey pole</td>
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<tr>
<td>Wound checked - Nil / minimal oozing.</td>
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<tr>
<td>Patient ambulated on armchair</td>
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<tr>
<td>PCA / Epidural patent</td>
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<tr>
<td>Alternative analgesia provided if required. Pain score at rest or movement below 5</td>
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</tr>
<tr>
<td>CPM machine started. Flexion range: 0° - ____°</td>
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<tr>
<td>Observations (BP, Temp, CSM, PCA) recorded as prescribed</td>
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<td></td>
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<tr>
<td>Treatment administered as prescribed including anti-coagulant</td>
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<td></td>
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<tr>
<td>Intravenous infusion site patent and to regime</td>
<td></td>
<td></td>
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<tr>
<td>Fluid balance recorded and maintained</td>
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<td></td>
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<tr>
<td>Bowels opened</td>
<td></td>
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<tr>
<td>Diet and fluids given</td>
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<tr>
<td>Check CBC taken - Blood transfusion ........units given</td>
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<tr>
<td>Drains observed. Drainage at MN: Drain 1 ________ Drain 2 ________</td>
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**Nursing Notes** *enter time and sign*
Date: ____________  Patient Name: ____________  ID Card No: ____________

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<thead>
<tr>
<th>POST OP- DAY 2</th>
<th>NURSE: Name(Day)</th>
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<th>✓, X or n/a</th>
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<tbody>
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<td>DATE:</td>
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<td>Day</td>
<td>Night</td>
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<tr>
<td>Give assistance with hygiene/ changing clothes</td>
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<tr>
<td>TED stockings checked</td>
<td></td>
<td></td>
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<tr>
<td>Pressure areas checked – intact. Patient using monkey pole to relieve own pressure areas</td>
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<tr>
<td>Wound checked - Nil / minimal oozing. Redressed aseptically</td>
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<tr>
<td>Patient mobilized using Zimmer frame</td>
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<tr>
<td>PCA discontinued</td>
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<tr>
<td>Alternative analgesia provided if required. Pain score at rest or movement below 5</td>
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<td></td>
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<tr>
<td>CPM machine started. Flexion range: 0° - ___°</td>
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<tr>
<td>Observations (BP, Temp, CSM, PCA) recorded as prescribed</td>
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<tr>
<td>Treatment administered as prescribed including anti-coagulant</td>
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<tr>
<td>Intravenous infusion discontinued.</td>
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<tr>
<td>Fluid balance recorded and maintained</td>
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<tr>
<td>Bowels opened</td>
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<td></td>
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<tr>
<td>Diet and fluids given</td>
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<tr>
<td>Discuss Discharge plan</td>
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<tr>
<td>Drains observed. Drainage at MN: Drain 1 _______ Drain 2 _______</td>
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</table>

**Nursing Notes - enter time and sign**

---

Mater Dei Hospital - Total Knee Replacement ICP

Version 2 - 2009

19
INDEPENDENCE with hygiene encouraged – Assisted with shower/bed bath

TED stockings checked

Pressure areas checked – intact. Patient using monkey pole to relieve own pressure areas

Wound checked - Nil / minimal oozing. Redressed aseptically

Patient mobilized using Zimmer frame

Oral analgesia provided as required. Pain score at rest or movement below 5

CPM machine continued. Flexion range: 0° - ______°

Observations (BP, Temp, CSM) recorded as prescribed

Treatment administered as prescribed including anti-coagulant

Bowels opened (aperient for bowels administered if necessary)

Normal Diet and fluids given

Discuss Discharge plan

Patient has informed relatives of expected discharge date and arranged transport

Exercises carried out by patient as advised by physiotherapist

Nursing Notes - enter time and sign
<table>
<thead>
<tr>
<th>DATE:</th>
<th>POST OP- DAY 4</th>
<th>NURSE: Name (Day) Night:</th>
<th>✓, X or n/a</th>
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</thead>
<tbody>
<tr>
<td>Independence with hygiene encouraged – Assisted with shower/bed bath</td>
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<tr>
<td>TED stockings checked</td>
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</tr>
<tr>
<td>Pressure areas checked – intact. Patient using monkey pole to relieve own pressure areas</td>
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</tr>
<tr>
<td>Wound checked - Nil / minimal ooze. Leave it dry.</td>
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<tr>
<td>Patient mobilized using Zimmer frame / crutches</td>
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<tr>
<td>Oral analgesia provided as required. Pain score at rest or movement below 5</td>
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<tr>
<td>CPM machine continued. Flexion range: 0° - ____°</td>
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<tr>
<td>Observations (BP, Temp, CSM) recorded as prescribed</td>
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<tr>
<td>Treatment administered as prescribed including anti-coagulant</td>
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<tr>
<td>Bowels opened (aperient for bowels administered if necessary)</td>
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<tr>
<td>Normal Diet and fluids given</td>
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<td></td>
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</tr>
<tr>
<td>Discuss Discharge plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient has informed relatives of expected discharge date and arranged transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge medication ready on ward</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercises carried out by patient as advised by physiotherapist</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Nursing Notes** - *enter time and sign*

---

Mater Dei Hospital - Total Knee Replacement ICP

Version 2 - 2009
**POST OP - DAY 5**

**NURSE:** Name( Day)  
**Night:**

<table>
<thead>
<tr>
<th></th>
<th>Day</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence with hygiene encouraged – Assisted with shower/bed bath</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>TED stockings checked</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pressure areas checked – intact. Patient using monkey pole to relieve own pressure areas</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Wound checked - Nil / minimal oozing. Leave it dry.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Patient mobilized using Zimmer frame / crutches</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Oral analgesia provided as required. Pain score at rest or movement below 5</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>CPM machine continued. Flexion range: 0° - ___°</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Observations (BP, Temp, CSM) recorded as prescribed</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Treatment administered as prescribed including anti-coagulant</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Bowels opened (laxative for bowels administered if necessary)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Normal Diet and fluids given</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Discuss Discharge plan</td>
<td>✓</td>
<td></td>
</tr>
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<td>Patient has informed relatives of expected discharge date and arranged transport</td>
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</tr>
<tr>
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<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**Nursing Notes:** enter time and sign

---

*Mater Dei Hospital - Total Knee Replacement ICP*  
Version 2 - 2009
Independence with hygiene encouraged – Assisted with shower/bed bath

TED stockings checked

Pressure areas checked – intact. Patient using monkey pole to relieve own pressure areas

Wound checked - Nil / minimal oozing. Leave it dry.

Patient mobilized using Zimmer frame / crutches

Oral analgesia provided as required. Pain score at rest or movement below 5

CPM machine continued. Flexion range: 0° - ______°

Observations (BP, Temp, CSM) recorded as prescribed

Treatment administered as prescribed including anti-coagulant

Bowels opened (aperient for bowels administered if necessary)

Normal Diet and fluids given

Discuss Discharge plan

Patient has informed relatives of expected discharge date and arranged transport

Discharge medication ready on ward

Exercises carried out by patient as advised by physiotherapist

**Nursing Notes** - *enter time and sign*
Date: ____________________  Patient Name: ____________________  ID Card No: ____________________

**PHYSIOTHERAPY DISCHARGE SUMMARY**

Name: ____________________  Ward: ____________________  
Address: ____________________  Consultant: ____________________  
Physiotherapist: ____________________  Tel no: ____________________  
DoB: ____________________  Diagnosis: ____________________  

Operation: Total Knee Replacement  Date: ____________________  

Details: ____________________  

**DISCHARGE SUMMARY**

OP Clinic appointment: Y  N  Date: ____________________  Physio: ____________________  

Physio appointment: Y  N  Date: ____________________  

SLR achieved: Y  N  Quads lag:  
Rt: ____________________  Lt: ____________________  
AROM on D/C:  
Rt Fl: ____________________  Lt Fl: ____________________  
Ext: ____________________  Ext: ____________________  

Mobility: ____________________  
Walking aids: ____________________  
Stairs: ____________________  
Transfers: ____________________  
Short term objectives: ____________________  
Any other information: ____________________  

Mater Dei Hospital - Total Knee Replacement ICP  Version 2 - 2009  29
Appendix 12

Nominal Group Technique-

*second session*
Second Nominal Group Technique Information Sheet

Dear participant,

I would like to thank you again for your constant support to this project.

09:00- 09:15 - **Silent Generation of ideas.**
You have 20 minutes to consider the questions below on the form given to you and write your ideas in point form within the space provided.
*Please do not discuss your ideas at this time.*

09:20 - 09:40 - **Listing of ideas**
- Present only one idea for each turn.
- No debates during sharing of ideas.
- You are free to miss a turn.
- You are free to borrow or share someone else’s ideas.

09:45 - 10:10 - **Discussion of ideas on Flip chart**
Discussion time allocated is 30 minutes.
- You may suggest new items for discussion.
- It is important to listen to what others have to say.

10:15 - 10:30 - **Choosing the top ten ideas**
Choose ten items that you consider most important, in answer to question 1 and question 2.

10:30 - 10:45 - **Break**
Please refrain from discussing any topics of the session during the break. Break duration is 15mins.

10:50-11:15 - **Ranking to select the top ten ideas**
Each participant names the ten items chosen and these are written on the whiteboard as the final list. The ten most mentioned items are ranked according to importance. Everybody is encouraged to give his opinion on the content of the top ten items.

Thank You
1. After using the ICP for 5 months can you discuss any benefits that you perceive in using the ICP as compared to the use of the traditional documentation method?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Can you discuss any disadvantages that you identified whilst using the ICP?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. In your opinion should the ICP be continued as the formal method of documentation for TKR patients? If no, please give your reasons.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. If yes, are there any improvements to the ICP that you would suggest?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Appendix 13

Consent Form for Participants
Appendix 13: Information letter and Consent form for participation in the study

5th January, 2008

Dear Colleague,

As part of my studies for Masters Degree in Health Services Management I am conducting a research project to assess the present documentation system used in our ward and according to the data results, I will pilot and adapt the South Manchester Integrated Care Plan (ICP) for our Total Knee Replacement patients. This study will also involve carrying out training and education of all health care professionals making use of the care plan. This involves working through a self-directed learning package which can be done from start to finish in approximately 3 hours. A self analysis tool consisting of ten questions indicating your pre-post knowledge of ICPs is also included in the package.

I would be grateful if you participate in my study which would be of benefit to our patients and to us as health care workers. However I would like to make it clear that although your participation is essential for the outcome of this study it is totally voluntary and in the event that you do decide to withdraw or not to participate this will not affect you in any way. Feedback on the outcomes of the documentation audit will be given to you during the Nominal Group session that will follow.

Your completed form will be treated with the strictest confidence and you will note that there is no request for name or address. All data will be destroyed after successful completion of the study.

May I take this opportunity to thank you for your co-operation and should you have any queries do not hesitate to contact me.

Lillian Zahra

Consent Form for Research purposes

The aim of the study, together with what will be required of me as a participant has been fully explained to me. I have also had the opportunity to ask any questions.

I am also aware that this information will be processed according to the Data Protection Act.

I agree to participate in this study according to the above conditions given to me by the researcher.

Name of participant ______________________________ Signature of participant ______________________________

Name of researcher ___________________________ Signature of researcher ___________________________

Today's date ________________
Appendix 14

Permission from Ethics Committee
<table>
<thead>
<tr>
<th>To be completed by Faculty Research Ethics Committee</th>
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</thead>
<tbody>
<tr>
<td>We have examined the above proposal and advise</td>
</tr>
<tr>
<td>Acceptance</td>
</tr>
<tr>
<td>Refusal</td>
</tr>
<tr>
<td>Conditional acceptance</td>
</tr>
<tr>
<td>For the following reason/s:</td>
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<td></td>
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<tr>
<td>Signature:  Date 06/09/2008</td>
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</table>

<table>
<thead>
<tr>
<th>To be completed by University Research Ethics Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have examined the above proposal and grant</td>
</tr>
<tr>
<td>Acceptance</td>
</tr>
<tr>
<td>Refusal</td>
</tr>
<tr>
<td>Conditional acceptance</td>
</tr>
<tr>
<td>For the following reason/s:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Signature: Paul   Date 8/6/08</td>
</tr>
</tbody>
</table>
Appendix 15

Permission from Hospital Authorities
20th January, 2008

To: Dr F. Bartolo, Medical Administrator, St Luke’s Hospital

Mr: Mr F. Zammit Maempel Chairman of Orthopaedic Department
Mr. A. Bernard Consultant Orthopaedic Surgeon
Mr. R. Gatt Consultant Orthopaedic Surgeon
Mr. Emanuel Bezzina Director Nursing Services
Ms. Pauline Gatt Departmental Nursing Manager

From: Ms Lillian Zahra Nursing Officer.

Re: Permission to conduct a research

I am currently reading for a Master’s Degree in Health Services Management at the Institute of Health Care, University of Malta, Gwardamangia. As part of my studies I need to conduct an action research study in Orthopaedic Ward 2, Mater Dei Hospital. In this regard, I would like to ask your permission to conduct this research.

An internal audit tool will be used to evaluate the medical and nursing documentation in the participating ward. The same tool will be used prior and post an education programme which will be conducted to educate the Health Care Professional about Integrated Care Pathways. A focus group will be carried out after the education programme to collect the participant’s views and suggestions for the clinical area. All ethical issues will be considered and no inconvenience whatsoever will be created to both patients and staff.

This research aims to address the present lack of multidisciplinary approach in documentation in the orthopaedic clinical area, whilst determining the necessary managerial changes needed to introduce integrated care plans, improving the quality of service delivery and standard of care.

Whilst thanking you in advance, your co-operation will be much appreciated.

Yours sincerely,

Lillian Zahra Nursing Officer OW2
Appendix 16

Permission from Director Institute of Health Care
28th February, 2008

Dear Dr. Buttigieg,

I am currently reading for a Master's degree in Health Services Management at the University of Malta. I am about to start my dissertation in which I would like to carry out research on the present nursing and medical patient documentation in the orthopaedic unit at Mater Dei Hospital. The title of the dissertation being the following: ‘Developing an Integrated Care Pathway for Total Knee Replacement Patients in an Acute Orthopaedic Setting’.

The aim of this study is to assess the present documentation system in the orthopaedic clinical area and pilot the integrated care plan for total knee replacement in one orthopaedic ward whilst instituting training and education of all health care professionals making use of the care plan.

I would like to request your authorisation to carry out this study.

Regards

Mrs. Lillian Zahra

N.O. OW2
I.D. 58567(M)

Dr. Sandra Buttigieg
MD MSc MBA PhD (Aston)
Institute of Health Care
University of Malta