

**Towards the Recognition and Establishment of
the Position Informatics Nurse Specialist in
Ireland**

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partial fulfillment of the requirements for the degree of
Masters of Science in Health Informatics
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Declaration

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

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Summary

This dissertation seeks to determine the case for the recognition and establishment of the position Informatics Nurse Specialist in Ireland. In the USA formalised professional structures have been put in place in recognition of the speciality Nursing Informatics. The author explores the feasibility of similar structures in Ireland.

To this end a critical analysis of definitions of Nursing Informatics is conducted and a new revised definition of Nursing Informatics and the informatics nurse is developed. The author examines the framework for Irish nursing specialities and addresses the question: where does Informatics Nursing fit? A nine point action plan for the development of the specialism in Ireland is presented. The question: who are informatics nurses? is addressed through the analysis of two American studies and the subsequent survey of Irish informatics nurses.

This survey is conducted using a questionnaire distributed electronically to 24 nurses with a 75% response rate. The areas of interest are the clinical background, informatics education, informatics career and job responsibilities of the subjects. The findings of this Irish survey are significantly similar to those of the American studies. It reveals Irish informatics nurses to be highly qualified nurses with considerable clinical experience working in numerically data-rich clinical areas. Most Irish informatics nursing posts have been created in the last five years and are paid at the clinical nurse manager/clinical nurse specialist level. Respondents rated implementation, liaison/communication and systems development as their top three job responsibilities.

In conclusion the evidence at hand is examined and the author determines that the case for the recognition and establishment of the speciality is a strong one. However, the framework of Irish nursing specialisms and the limited number of informatics nurses practicing undermine the feasibility of such a development within the next five years.

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Glossary

ABNS	American Board of Nursing Specialties
ANA	American Nurses Association
ANIA	American Nursing Informatics Association
ANP	Advanced Nurse Practitioner
CNS	Clinical Nurse Specialist
HIMSS	Healthcare Information Management Systems Society
HISI	Health Informatics Society of Ireland
HISI-N	Health Informatics Society of Ireland – Nursing
ICDA	Irish Cancer Data Association
ICN	International Council of Nurses
IT	Information Technology
NCRI	National Cancer Registry of Ireland
NCPDNM	National Council for the Promotion and Development of Nursing and Midwifery

Chapter 1:

Introduction

The delivery of healthcare generates vast quantities of data and information. Nurses comprise the largest healthcare profession in the Irish Health Service and provide twenty-four hour care. Consequently, nurses both generate and utilise the greatest amount of health data and information. It is inevitable that certain nurses will develop particular interests in various aspects of this data and information. This field of interest has been termed *Nursing Informatics*.

In recent years positions have been created which require the skills and knowledge of these informatics nurses. Some of these nurses have formed a group within the Healthcare Informatics Society of Ireland (HISI) called HISI-Nursing.

In the USA, the American Nurses Association (ANA) have published their Scope and Standards of Nursing Informatics Practice. Furthermore, the position Informatics Nurse Specialist has been established. This dissertation seeks to examine the case for the establishment of a similar framework for informatics nurses practising in Ireland today and in the future.

To date, no research has been conducted regarding the role, responsibilities or background of these nurses. There are no educational programs available to nurses which are primarily focused on the preparation of individuals to practice

as informatics nurses. Without valid evidence regarding the position Informatics Nurse, there can be no plans for the provision of such educational programs. This dissertation seeks to contribute to the discussion of the educational needs of informatics nurses in Ireland.

1.2 Aims of the Study

To determine the case for:

1. The recognition of Nursing Informatics as a specialism within the Irish Nursing Profession by the statutory bodies and employers.
2. The establishment of the position Informatics Nurse Specialist in Ireland.

To discover:

- a) the professional and educational backgrounds,
- b) current employment conditions and
- c) the job responsibilities of informatics nurses currently practicing in Ireland.

1.3 Objectives of the Study

The objectives of the study are:

- To open a discussion amongst all stakeholders regarding the future development of Nursing Informatics in Ireland.
- To provide a succinct comprehensive definition of Nursing Informatics.
- To conduct a quantitative survey of informatics nurses.
- To promote Nursing Informatics.

1.4 Structure of the Report

Chapter 1 provides an introduction to the subject, and outlines the aims and objectives of the study. Chapter 2 opens the review of the literature with a critical analysis of attempts to define Nursing Informatics. A new revised definition is provided in order to meet the needs of the researcher and to promote discussion. In Chapter 3, the framework for nursing specialities in Ireland will be described and the author will address the problem: where does Nursing Informatics fit? A strategic plan will be suggested to advance the establishment and recognition of the position Informatics Nurse Specialist in Ireland. Chapter 4 will address the question: who are informatics nurses? International evidence will be examined. Chapter 5 details the methodology of the survey. Chapter 6 will present the findings. Chapter 7 discusses the study and suggests future work. Chapter 8 concludes the dissertation and provides a summary of dissertation contributions.

Chapter 2:

Defining Nursing Informatics

2.1 Introduction

For the purpose of this project it is imperative to define Nursing Informatics. The definition needs to fulfill certain criteria:

1. It must reflect expert thinking in the field.
2. It must be succinct.
3. It must be comprehensive.
4. It must provide the author with selection criteria for research subjects (informatics nurses).

This section will offer a critical analysis of the evolution of the definition of Nursing Informatics. The author will not find a definition which will satisfy his requirements. As a result a revised definition of Nursing Informatics will be presented. This will fulfill the above criteria.

The term Nursing Informatics has emerged from the terms Medical Informatics and Health Informatics.

2.2 Informatics

In their historical account, Sackett and Erdley (2001) reveal that a Russian Scientist A.I. Mikhailov, in 1966 coined the term *informatika* (translated to informatics). He defined the term in his 1968 book *Oznovy Informatiki* as "...that scientific discipline that studies the structure and general properties of scientific information and the laws of all processes of scientific communication." (Pharmacy Informatics, 2005; Collen, 1995 cited in Sackett & Erdley, 2001).

2.3 Medical Informatics

Francois Gremy, in the 1970's, is widely credited with coining the term *informatique medical*, translated to Medical Informatics (Hannah, Ball and Edwards, 1999). Early on, the term Medical Informatics was used to describe "those collected informational technologies which concern themselves with the patient care, medical decision making process." (Greenburg, 1975 cited in Hannah, Ball and Edwards, 1999 p.4) Another early definition, in the first issue of the *Journal of Medical Informatics*, proposed that Medical Informatics was the "complex processing of data by a computer to produce new kinds of information" (Anderson, 1976). As our understanding of this discipline developed, Greenes and Shortcliffe (1990) redefined Medical Informatics as:

the field that concerns itself with the cognitive, information processing and communication tasks of medical practice, education, and research, including the information science and the technology to support these tasksAn intrinsically inter-disciplinary field....[With] an applied focus...[addressing] a number of fundamental research problems as well as planning and policy issues. (pp1114-1120)

2.4 Health Informatics

Increasingly, it was recognized that other disciplines have a body of knowledge separate from medicine, but part of health care. As a result, in the early 1990s, other health professions began to explore the use of informatics in their disciplines. Mandil (1989) coined the phrase “health informatics” which he defined as the use of information technology (including both hardware and software) in combination with information management concepts and methods to support the delivery of health care. Thus, Health Informatics has become the umbrella term that describes the study of the retrieval, storage, presentation, sharing, and use of biomedical information, data, and knowledge for providing care, solving problems, and making decisions (Shortcliffe & Blois, 2001).

Health Informatics is a broad term and is not concerned with a specific healthcare profession or discipline. The purpose is to improve the use of healthcare data, information and knowledge for supporting patient care, research, and education (Delaney, 2001). The focus is on the subject (information), rather than on the tool (the computer). The distinction is not always obvious due to the need to master computer skills to enable one to manage this information. The computer is used in acquiring, organizing, manipulating, and presenting the information. Without, however, human direction in how the data will be treated, interpreted, and manipulated the computer is useless. Health Informatics provides that human direction.

2.5 Nursing Informatics

Nursing was just one of the professions that began to explore the use of informatics in their discipline. As research was conducted and medical informatics evolved, nurses realized there was a discrete body of knowledge related to nursing and the use of informatics. Nursing Informatics emerged as a speciality of nursing and as early as 1980 efforts were made to define this new discipline.

2.6 The Need for a Definition of Nursing Informatics

Staggers and Thompson (2002) defend the need for the definition of Nursing Informatics. They argue that a definition is “a fundamental element for shaping a specialty” (p.256). It renders a speciality recognisable to those outside the specialty and reinforces its distinction from general practice. The definition of Nursing Informatics guides role delineation and supports directions for practice, education, training and research. It may be useful to other disciplines as they define informatics practice within their own specialties. Finally, Staggers and Thompson assert that “a definition of nursing informatics is needed to help others, within and outside nursing, understand the legitimacy of the practice and the general competencies of a nurse who specializes in informatics.” (ibid.)

A definition should however be succinct. Stagers and Thompson refer to this need with the assertion that Informatics Nurse Specialists need to be able to succinctly define their practice. However, review of numerous definitions of the specialty reveals increasingly verbose results including Stagers and Thompson's own 66 word definition. (ibid. p260) Outside of academia a definition is useful only if it can be used to comprehensively and concisely answer a question regarding the nature of a concept. A definition of Nursing Informatics should be able to answer the question "What is Nursing Informatics?" within a sentence or two.

For the purposes of this project, the author needs to be able to define the practice of Nursing Informatics in order to recognise its practitioners. The following review and composition of a revised definition have resulted from attempts to find a satisfactory definition.

2.7 Defining Nursing Informatics

There follows a chronological analysis of attempts to define Nursing Informatics. It will be evident that whilst there are many consistencies, there are also some differences in the definitions. The changes in the definitions reflect a growth in the perspective of the writers and the evolution of the speciality. Stagers and Thompson (2002) (revised from those suggested by Turley 1996) identified three themes which emerge from the analysis of definitions of Nursing Informatics:

1. Information technology-oriented definitions.
2. Conceptually-oriented definitions.
3. Role-oriented definitions.

However, further analysis of the definitions produces additional themes and questions which are relevant to the author's attempts to identify practitioners of Nursing Informatics. These issues will be discussed at the end of the analysis.

The term "Nursing Informatics," was probably first used and defined by Scholes and Barber in 1980 in their address to the MEDINFO conference that year in Tokyo."...the application of computer technology to all fields of nursing--nursing services, nurse education, and nursing research." (p73)

Similarly, Hannah (1985) defined Nursing Informatics as:

The use of information technology in relation to any of the functions which are within the purview of nursing and which are carried out by nurses. Hence, any use of information technology by nurses in relation to the care of patients, or the educational preparation of individuals to practice in the discipline is considered nursing informatics. (p181)

The above definitions define Nursing Informatics by the tool (information technology) used in its practice. With hindsight these definitions appear limited in their value but at the time they reflected the common perception of Nursing Informatics.

Then in 1989, Graves and Corcoran first steered the focus away from the use of technology to information concepts in their definition:

A combination of computer science, information science, and nursing science designed to assist in the management and processing of nursing data, information, and knowledge to support the practice of nursing and the delivery of nursing care.

(p227)

This new definition put nursing practice at the centre of Nursing Informatics and was widely accepted. It implied that Nursing Informatics could be considered a speciality of nursing. Furthermore it introduced two metastructures of Nursing Informatics. They presented an information model that identifies data, information and knowledge as key components of Nursing Informatics practice. Graves and Corcoran (1989) draw from Blum (1986) to define the three concepts as follows:

- *Data* are discrete entities that are described objectively without interpretation,
- *Information* is data that are interpreted, organised, or structured, and
- *Knowledge* is information that is synthesized so that the relationships are identified and formalised.

Furthermore Graves and Corcoran (1989) stated that Nursing Informatics is a combination of nursing science, information science and computer science. Their central notion is that the application of these three core sciences is what makes Nursing Informatics unique and differentiates it from other informatics specialties.

McGonigle and Eggers (1991) however, did not believe it necessary for the focus of Nursing Informatics to be exclusively to support the practice of nursing and the delivery of nursing care, in their definition:

The synthesis of nursing science, information management science, and computer science to enhance the input, retrieval, manipulation and/or distribution of nursing data. (p194)

In 1992 the American Nurses Association (ANA) Council on Computer Applications in Nursing (cited in Staggers and Thompson, 2002, and Saba and McCormick, 1995) defined Nursing Informatics in terms of a speciality of nursing and its functions and purposes:

...a specialty that integrates nursing science, computer science, and information science in identifying, collecting, processing, and managing data and information to support nursing practice, administration, education, and research; and to expand nursing knowledge. The purpose of nursing informatics is to: analyze information requirements; design, implement and evaluate information systems and data structures that support nursing; and identify and apply computer technologies for nursing. (Staggers and Thompson, p258, Saba and McCormick, p226)

However, this definition was not widely cited possibly due to the limitations of its reference to the “systems life-cycle” in the second sentence. (Staggers and Thompson 2002)

Hannah, Ball and Edwards (1994), however returned to the discarded theme of the... use of information technologies in relation to those functions within the purview of nursing, and that are carried out by nurses when performing their duties..... (p5)

In 1994, in their Scope of Practice for Nursing Informatics, the ANA defined Nursing Informatics as:

the specialty that integrates nursing science, computer science, and information science in identifying, collecting, processing, and managing data and information to support nursing practice, administration, education, research and the expansion of nursing knowledge. (p3)

This definition is a rearrangement of Graves and Corcoran's (1989) definition with the continued formal recognition of Nursing Informatics as a speciality of the profession of nursing. It also marks progress from their previous definition. The systems life-cycle is replaced with reference to the role of the Informatics Nurse Specialist.

The following is a result of a Delphi study conducted by Goosen (1996) with 44 International experts, from the US, UK, Netherlands and the rest of Europe. The consensus on it was very high.

Nursing informatics is the multi-disciplinary scientific endeavor of analyzing, formalizing and modeling how nurses collect and manage data, process data into information and knowledge, make knowledge-based decisions and inferences for patient care, and use this empirical and experiential knowledge in order to broaden the scope and enhance the quality of their professional practice. The scientific methods central to nursing informatics are focused on:

1. Using a discourse about motives for computerized systems,
2. Analyzing, formalizing and modeling nursing information processing and nursing knowledge for all components of nursing practice: clinical practice, management, education and research
3. Investigating determinants, conditions, elements, models and processes in order to design, and implement as well as test the effectiveness and efficiency of computerized information, (tele)communication and network systems for nursing practice, and
4. Studying the effects of these systems on nursing practice.

If we are to adopt this verbose definition, we must also accept that an informatics nurse who uses their Nursing Informatics expertise in the development of a non-nursing knowledge based application is not conducting Nursing Informatics. Goosen's definition focuses primarily on the type of knowledge that the informatician is concerned with. It is limiting and does not consider the concept of patient-centered care.

Remarkably, in 2000, Goosen succinctly defined Nursing Informatics as "...the discipline that is concerned with the development, use, and evaluation of nursing information systems." (p.25). This again is a limited and limiting definition.

The International Medical Informatics Association - Nursing Informatics (IMIA-NI) (1998) further confined Nursing Informatics to the sphere of nursing knowledge in their definition:

Nursing Informatics is the integration of nursing, its information, and information management with information processing and communication technology, to support the health of people world-wide.

In 2001, the ANA updated their definition:

Nursing informatics is a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice. Nursing informatics facilitates the integration of data, information, and knowledge to support patients, nurses, and other providers in their decision-making in all roles and settings. This support is accomplished through the use of information structures, information processes, and information technology. (p17)

It is evident that the definition of the ANA has evolved from the management of nursing information in order to provide for nurses, to the management of nursing

information in order to provide for patients and the entire multi-disciplinary team, thus reflecting the new concept of shared care and patient management of health.

Staggers and Thompson (2002) presented their revised definition as follows:

Nursing informatics is a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice. Nursing informatics facilitates the integration of data, information, and knowledge to support patients, nurses, and other providers in their decision making in all roles and settings. This support is accomplished through the use of information structures, information processes, and information technology. (p.260)

This revised definition for Nursing Informatics acknowledges the expanded role of patients in their own health care, the role of the Informatics Nurse Specialist, the broad concepts of nursing and Nursing Informatics, and the inter-relationship of critical elements within Nursing Informatics. However, it is not succinct. Furthermore it does not acknowledge the value of Nursing Informatics to administrators and managers who may not necessarily be described as healthcare providers, but who may be considered to be stakeholders within the healthcare system.

2.8 Discussion

The definitions described reveal a number of issues which have challenged academics during the evolution of nursing informatics. Most have been previously analyzed by Stagers and Thompson (2002) who identified three themes. However, further questions have emerged. These include:

2.8.1 Is Nursing Informatics a speciality or merely nurses using technology?

At the evolution of Nursing Informatics it appears that the use of technology by nurses was considered to be Nursing Informatics (Scholes and Barber, 1980; Hannah, 1985; Hannah, Ball and Edwards, 1994). However, with the rapid increase in the use of technology in nursing and the involvement of nurses in the design and implementation of information systems, it was apparent that Nursing Informatics was more than the use of technology. Furthermore, some nurses received educations in computer and information science which when combined with nursing produced a unique body of knowledge. This is reflected in later definitions (Graves and Corcoran, 1989; McGonigle and Eggers, 1991; American Nurses Association 1994). The American Nurses Association recognise the Informatics Nurse Specialist.

2.8.2 Does Nursing Informatics deal only with nursing data, information and knowledge?

This issue was relevant early in the evolution of the discipline, with many definitions confining Nursing Informatics to nursing data, information and

knowledge (Hannah, 1985.; McGonigle and Eggers, 1991). However, with the advent of shared care and multi-disciplinary teamwork in healthcare, data, information and knowledge have become less discipline specific. It is noticeably discarded in 1992 in the first definition by the ANA.

2.8.3 Should Nursing Informatics support nursing only?

Again, there appears to be a trend in the definitions. In the early years Nursing Informatics provided for nursing only, (Scholes and Barber, 1980; Graves & Corcoran, 1989; American Nurses Association, 1995; Goosen, 1996) but as time has passed this restriction has been loosened to the point where Nursing Informatics now supports all stakeholders in the health system with specific reference to patients and nurses (American Nurses Association, 2001).

2.8.4 Can only nurses practice Nursing Informatics?

This issue requires resolution. There does not appear to be consensus in the definitions. Hannah (1985) and Hannah, Ball & Edwards (1994) assert that Nursing Informatics is done by nurses. It may be concluded that the American Nurses Association (1994, 1995 and 2001) are in agreement by their maintenance of Nursing Informatics as a specialty of nursing. However, these are the only definitions which imply that Nursing Informatics is a discipline carried out by nurses.

There is consensus that in order to do Nursing Informatics, a practitioner must have knowledge of nursing. In the definitions, knowledge of nursing is described as knowledge of nursing science (Graves and Corcoran, 1989; McGonigle and Eggers, 1991; American Nurses Association, 1995 and Staggers and Thompson 2002).

However, the description of nursing as a science is not valid. This argument has significance for the definition of Nursing Informatics.

The claim that nursing is a science is encouraged by journal titles such as *Advances in Nursing Science*, and *Nursing Science Quarterly* and Schools of Nursing are often located within faculties of Health Science in third level institutions. Edwards (2001) argues that there seems to be two clear reasons why nursing might seek an alignment with science. The first relates to the prestigious nature of science. O'Hear writes 'There is no institution in the modern world more prestigious than science.' (1989 cited in Edwards 2001) The second reason stems from more than simply the desire for prestige. The reported prestige of science stems from its success in generating knowledge of the empirical world. Thus, given acceptance of the view that it is preferable to base nursing practice upon that which is known as opposed to merely believed, then it seems rational to align nursing with science.

However, nursing does not fulfill many of the necessary criteria in order to be aligned with science. In contrast to the essentially descriptive nature of science, nursing is essentially normative (see, for example, Bishop and Scudder, 1997). This normativity can be illustrated in two senses. First nurses aim to bring about certain kinds of states rather than others, for example the relief of suffering. This is in contrast to science where what are aimed at are true descriptions of the world. As long as a description is accurate, the scientist has done her job. In contrast, the nurse has to bring about states of a specific kind. (Edwards, 2001) A second prima-facie obstacle to the identification of nursing and science is this one. Description of the world within science is itself of *intrinsic* significance. Within the nursing domain, descriptions of patient's conditions, or of the mechanisms by which drugs are effective, are of essentially *instrumental* significance only. Such descriptions are means towards fulfillment of the ends of nursing. This is not so in science.

In recent years the idea that nursing is a practice has been presented as a possibility. Notable proponents of this idea are Bishop and Scudder (1991, 1997, and 1999) among others (Cash, 1998 and Sellman, 2000). In a trivial sense, nursing is something which is practiced. One cannot be a nurse unless one knows how to practice and nursing knowledge can be obtained only by engaging in practice. A more interesting, richer, sense of practice is one which MacIntyre (1985) describes as follows. He writes:

By a 'practice' I am going to mean any coherent and complex form of socially established co-operative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of social activity, with the result that human powers to achieve excellence, and human conceptions of ends and goods involved are systematically extended. (p187)

In order to be considered to know nursing, knowledge of nursing science is not considered to be sufficient to be recognized by the profession of nursing to be a nurse i.e. registration as a nurse. The *goods internal* to nursing are gained only through practice within the nursing profession. Thus, in order to register as a nurse, a student nurse is required to complete practical experience, as well as to know nursing science.

Therefore the description of nursing as nursing science in the definitions of Nursing Informatics is an incomplete one. Nursing is most likely a practice. If we are to accept this classification of nursing then it is necessary to omit the term 'science' when referring to nursing in the definition of Nursing Informatics.

It is agreed that a practitioner of Nursing Informatics must have knowledge of nursing to practice Nursing Informatics. But knowledge of nursing can only be gained from practicing nursing. Therefore to practice Nursing Informatics one must be a nurse.

2.9 Revised Definition of Nursing Informatics

Having reviewed the contentious issues in earlier definitions of Nursing Informatics, a number of facts present themselves.

1. Nursing Informatics is a speciality of nursing.
2. Nursing Informatics does not focus exclusively on nursing data.
3. Nursing Informatics supports all stakeholders in the healthcare system.
4. Nursing Informatics can be practiced by nurses only.
5. Nursing Informatics is best described using the *data, information, knowledge* information model.
6. Nursing Informatics is the unique combination of nursing, information science and computer science.

This exploration of the definitions, resolution of contentious issues and adoption of unchallenged concepts allows the author to propose a revised definition of Nursing Informatics.

Nursing informatics is:

A nursing speciality which involves the integration of nursing, computer science and information science to manage and communicate health data, knowledge and information in order to support stakeholders within the healthcare system.

It follows that an informatics nurse is:

A nurse specialist whose primary role involves the integration of nursing, computer science and information science to manage and communicate health data, information and knowledge in order to support stakeholders within the health system.

This definition satisfies the author's criteria for a definition of Nursing Informatics:

1. It reflects expert thinking in the field.
2. It is succinct.
3. It is comprehensive.
4. It provides the author with selection criteria for research subjects (nursing informatics practitioners).

Based upon previous definitions and reflective of expert thinking, it identifies the skills and knowledge, the material and purpose of Nursing Informatics, whilst limiting Nursing Informatics to a speciality of the nursing profession. Furthermore it is a succinct one sentence definition which can be easily understood and quoted. It incorporates all stakeholders within the health system rather than just nurses or the multidisciplinary team. This definition is not as open to trends or the latest developments in thinking as appears to have occurred in previous definitions (see American Nurses Association, 1992). It will enable the author and others to identify informatics nurses.

2.10 Conclusion

Selection criteria are necessary for the author to select subjects for research. The author must be able to accurately identify practitioners of Nursing Informatics in Ireland. To this end the author has chronologically reviewed definitions and presented a critical analysis of these definitions with reference to the work of Staggers and Thompson (2002).

Analysis did not reveal a satisfactory definition based upon the authors criteria. As a result the author presented a revised definition of Nursing Informatics and the Nursing Informatics practitioner. This definition will fulfill the needs of the author and may be of value to others working within the field of Nursing Informatics.

Chapter 3:

Informatics: an Irish Nursing Specialism?

3.1 Introduction

In the previous section Nursing Informatics and the practitioner of Nursing Informatics have been defined.

This section will explore the concept of a nursing speciality. It will determine the requirements for the recognition and establishment of the position Informatics Nurse Specialist as a nursing specialty both internationally and within Ireland. The framework for nursing specialities in Ireland will be described and the author will address the problem: where does Nursing Informatics fit? Nine actions will be suggested to advance the establishment and recognition of the position Informatics Nurse Specialist in Ireland.

3.2 What is a Nursing Speciality or Nurse Specialist?

In Ireland the term *nurse specialist* is not equivalent to the term *medical specialist*.

In accordance with section 30 of the Medical Practitioners Act, 1978 the Irish Medical Council:

...may, with the consent of the Minister, prepare and establish a register to be known as the Register of Medical Specialists containing therein a division in respect of each specialty from time to time recognised by the Council pursuant to section 38 of this Act. (Government of Ireland, 1978)

The Register of Medical Specialists was established, pursuant to section 30, in 1997. A specialist is a doctor who has completed his/her training and requires no further training or supervision to practice independently in the discipline of his/her choice. Specialist registration is the best assurance to the public of the ability of a doctor to practice without supervision. (Irish Medical Council, 2006)

In the case of nurse specialists, the circumstances are quite different. An Bord Altranais is the statutory body which regulates Nursing in Ireland. Its terms of reference are defined by The Nurses Act 1985 (Government of Ireland, 1985). Under the terms of this Act, An Bord Altranais must maintain a register of nurses. This register has five points of entry; general nursing, psychiatric nursing, intellectual disability nursing, sick children's nursing and midwifery. However no provision was made in The Nurses Act 1985 for the establishment or maintenance of a register of nurse specialists.

It may be concluded that in Ireland a nurse specialist is not equivalent to a medical specialist. Despite the variety of different specialised roles carried out by Irish nurses, there is no register of nurse specialists maintained in Ireland.

The International Council of Nurses (ICN) defines a nursing specialist as follows:

The nursing specialist is a nurse prepared beyond the level of a nurse generalist and authorised to practise as a specialist with advanced expertise in a branch of the nursing field. Speciality practice includes clinical, teaching, administration, research and consultant roles. (ICN Guidelines on Specialisation in Nursing, ICN Geneva 1992: cited in Scott, 1998)

The American Nurses Association (ANA) offers a more pragmatic definition of specialty nursing that does not include the concept of advanced expertise. Rather they introduce the concept of intersection with another body of knowledge. ANA suggests that speciality nursing is:

Nursing practice that intersects with another body of knowledge, has a direct impact on nursing practice, and is supportive of the direct care rendered to patients by other nurses. (2003)

Whilst these definitions have considerable value further discussion of the criteria necessary for the recognition of a nursing speciality is required.

3.3 How is a Nursing Speciality Recognised?

Panniers and Gassert (1986), who applied Styles' (1989) earlier work on specialisation to informatics, identified the following five attributes or characteristics that must be present to designate a speciality in nursing:

1. A differentiated practice
2. A defined research program
3. Organisational representation
4. Educational programs
5. A credentialing mechanism

It is necessary to consider the evidence for the designation of Nursing Informatics as a specialism in Ireland.

3.3.1 A differentiated practice

International studies, policies and literature (Staggers and Thompson, 2002; ANA, 1994; ANA, 2001) strongly identify Nursing Informatics as a differentiated practice both within nursing and from other discipline-specific specialities within health informatics. It is argued that Nursing Informatics shares interest in the four phenomena of interest of nursing: the patient, health, environment and nurse. However, Nursing Informatics differentiates itself by focusing on the structure and algorithms of data, information and knowledge used by nurses in their practice (Lange, 1997).

In Ireland, a review of the literature reveals that no research has been conducted into the activities or job responsibilities of informatics nurses. The publication of a number of job advertisements, the existence of the Nursing Section of the Health Informatics Society of Ireland and a number of modules in undergraduate nurse training would support the claim that Nursing Informatics exists as a differentiated practice within Irish nursing and health informatics. However, until research is conducted into the area and further evidence is made apparent, it would be presumptuous to be conclusive in this area.

3.3.2 A defined research program

Research within Nursing Informatics is exceptionally varied. In the USA the work of Brennan et al., (1998) and the National Center for Nursing Research (1993) have identified a set of priorities for Nursing Informatics research. The greatest

emphasis is on nursing language and the development of clinical information databases. However, in Ireland no research program has been presented. Whilst research is being carried out, (e.g. the Irish Nursing Minimum Dataset project conducted by Dublin City University and University College Dublin) it is not part of a greater Nursing Informatics dedicated research program (Dublin City University, 2006).

3.3.3 Organizational representation

Nursing Informatics in Ireland is represented by the Health Informatics Society of Ireland - Nursing (HISI-N). This group are affiliated to the Association for Common European Nursing Diagnosis, Interventions and Outcomes. Irish Nursing Informatics is represented by HISI-N at international level on the European Federation for Medical Informatics and the International Medical Informatics Association-Nursing Informatics special interest groups.

3.3.4 Educational programs

In Ireland there is at present no post-graduate educational program offered in Nursing Informatics. A diploma course in Nursing Informatics was offered in University College Dublin from 1997 to 2001. This course was equivalent to an access to nursing degree course. It was not equivalent to a post-graduate diploma qualification.

Correspondence with HISI-N members, reveals that it is probable that Informatics Nurses in Ireland have completed an MSc in Health Informatics in Trinity College Dublin, hold a degree in a computer or information science related subject or have received enough 'on the job' training or expertise to enable them to practice in this specialised field.

Further research is necessary to determine the educational background of informatics nurses in Ireland.

3.3.5 Credentialing

A fifth element necessary for acknowledging a professional specialty is the development of a certification mechanism. At present in Ireland, once an individual has reached the requirements for registration as a nurse, and they continue to renew their nurse registration with An Bord Altranais, there is no further testing or competency assessment of nurses. In the case of Nursing Informatics, there is no credentialing or monitoring of practice by a statutory body.

In the USA, the American Board of Nursing Specialties (ABNS) provides an accreditation process for specialty nursing certification, including Informatics Nurse Specialists.

The ABNS have set out 18 standards which must be satisfied before a specialty organisation is accredited and its practitioners can receive certification:

Standard 1 Definition and Scope of Nursing Specialty

Standard 2 Research Based Body of Knowledge

Standard 3 Organizational Autonomy

Standard 4 Public Representation

Standard 5 Eligibility Criteria for Test Candidates

Standard 6 Test Development

Standard 7 Validity

Standard 8 Reliability

Standard 9 Elimination of Bias/Sensitive Items

Standard 10 Test Administration

Standard 11 Test Security

Standard 12 Passing Scores

Standard 13 Continued Competency

Standard 14 Communications

Standard 15 Confidentiality

Standard 16 Appeals

Standard 17 Misrepresentation and Non-Compliance

Standard 18 Quality Improvement

Standard 13 asserts that the certifying organisation must have a recertification program in place that requires certificants to maintain current knowledge and to periodically document the knowledge necessary to maintain competence in the speciality (ABNS, 2006).

It is evident that Nursing Informatics in Ireland does not meet all of the above criteria necessary for its classification as a nursing speciality. Of the five attributes or characteristics that must be present to designate a speciality in nursing (Panniers & Gassert, 1986) Nursing Informatics in Ireland fulfils the third criterion (organizational representation) only.

However, if we examine one of the recognised nursing specialities in Ireland, for example Intensive Care Nursing, we find that these specialties in turn do not meet all of the above criteria. It does not have a defined research program and credentialing is inadequate. With this in mind we must consider that an alternative system of classification or credentialing of nursing specialities is used in Ireland. The next section will explore this framework for nursing specialisms.

3.4 Framework for Nursing Specialisms in Ireland

The framework for nursing specialism in Ireland can most easily be described as having two strands:

1. Traditional specialism, and
2. Clinical career pathway specialism.

3.4.1. Traditional specialism

Examples of nurse specialists in Ireland include intensive care nurses, accident and emergency nurses, oncology nurses, forensic psychiatric nurses and theatre nurses. Employers require nurses practicing in these specialised fields to hold specific qualifications in their area which usually include clinical experiential components. These courses, which are usually post-graduate diplomas or certificates, are accredited by An Bord Altranais (LEVEL II), thus accrediting the nurses who hold the qualification.

Specialist courses are post-basic courses designed, developed and conducted with reference to a specific body of knowledge and experience in an area of nursing. Such courses must satisfy the criteria of An Bord Altranais in relation to specialist education courses. (An Bord Altranais, 2006)

The following criteria apply to specialist courses:

- these must be open nationally to all registered nurses
- where there is more than one course of the same type, these should be harmonised with regard to duration, content, theory and practice
- these courses should be under the direction of a registered nurse tutor
- a course plan must be submitted to An Bord Altranais
- a certificate is issued by the hospital/health board and the words "approved by An Bord Altranais" should be used. (ibid)

National pay deals have entitled specialist nurses to a qualification allowance in their salary provided they are practicing in the area in which they are qualified (Irish Nurses Organisation, 2006). Many have established their own societies and associations to promote and support their specialisms.

The publication of the Commission on Nursing in 1998 was a watershed in Irish nursing. It addressed the area of nursing specialisms and established the clinical career pathway in Irish nursing.

3.4.2. Clinical career pathway specialism

The Commission on Nursing in considering nursing specialities, responded to issues arising (1998). These included:

Deficiencies in the ability of the profession to respond in an effective and proactive manner to the ever increasing pace of change and developments in the health services. (p.99, 6.3)

They received submissions from “approximately sixty groups and individual nurses who consider themselves to be “specialists” in particular areas of nursing and midwifery practice” (1998). They continued:

Many of these nursing or midwifery specialities operate alongside medical specialities and seem to have developed in response to demands from medical professionals for more specialised nurses or midwives to support the medical field. A further group of areas which might also be regarded as nursing or midwifery specialities appears to have developed in response to the demands for changes in nursing and midwifery practice. (p.99, 6.4)

Many requests were made to the Commission for support in developing expanded/extended new roles for nurses and midwives. The Commission observed that “heretofore, specialist and new expanded roles have largely developed in an informal, unstructured manner ...” (p.99, 6.5)

In response, the Commission on Nursing recommended the establishment of an independent statutory agency with responsibility for post-registration professional development of nursing and midwifery (p.100). As a result, in 1999, the National Council for the Professional Development of Nursing and Midwifery (NCPDNM) was established (Government of Ireland, 1999)

The NCPDNM is intended to have five functions, the first three of which are:

- (a) to monitor the on-going development of nursing and midwifery specialities, taking into account, changes in practice and service need;
- (b) to formulate guidelines for the assistance of health boards and other relevant bodies in the creation of specialist nursing and midwifery posts;
- (c) to support additional developments in continuing nurse education by health boards and voluntary organizations; (Government of Ireland, 1999)

Initial reading of the above may lead one to presume that the NCPDNM is responsible for the monitoring of all nursing specialties. However this is not the case. The NCPDNM support only the nursing specialist roles which are considered to be within the field of a specific clinical career pathway. This pathway consists of registered nurse/midwife leading to clinical nurse or midwife specialist (CNS) and then leading to advanced nurse or midwife practitioner (ANP).

The Commission on Nursing (1998) stated unequivocally that there is a difference between the traditional specialist nurse and the new clinical career pathway nurse:

It does not necessarily follow that nurses or midwives, with specialist post-registration qualifications working in specialist areas such as accident and emergency departments or neonatal intensive care, are clinical nurse or midwife specialists. (p104-105, 6.28)

CNS and ANP posts are monitored and supported by the NCPDNM using strict criteria. The posts must “have a major clinical focus, incorporating assessment, planning, delivery and evaluation of care given to patients/clients and their families in hospital, community and outpatient settings.” The post holders must be a consultant in education and clinical practice, both to nursing/midwifery colleagues and the wider multidisciplinary team (2004).

3.5 Where does Nursing Informatics fit?

When we consider the clinical career pathway it is immediately evident that Nursing Informatics cannot fit within the stated criteria as set out by the NCPDNM. International evidence (ANA, 2001) does not suggest that the post (Informatics Nurse Specialist) has a “...major clinical focus, incorporating assessment, planning, delivery and evaluation of care given to patients/clients” (NCPDNM, 2004). The informatics nurse does not practice in the clinical setting and does not directly deliver nursing care. Furthermore the NCPDNM has no record of

receiving any correspondence or application for recognition/accreditation from an informatics nurse in Ireland (Personal Correspondence, 2006).

The alternative to the clinical career pathway is the traditional nursing specialism. These specialisms are not necessarily closely monitored or controlled by a statutory body. However, by accrediting Category II post-graduate courses, which qualify nurses for a salary allowance, An Bord Altranais accredits these specialisms. At present there is no An Bord Altranais accredited or otherwise post-graduate course offered in Nursing Informatics in Ireland.

It appears that the most likely path for the position Informatics Nurse Specialist to be established and recognised in Ireland is the offering of a post-graduate qualification in Nursing Informatics. This course must be accredited to Category II by An Bord Altranais which will then qualify its graduates working in the Nursing Informatics field for a qualification allowance.

It is evident that Nursing Informatics in Ireland is a number of steps away from recognition or accreditation as an established nursing speciality in Ireland. In order to fulfill the criteria as set out by Panniers and Gassert (1996) and the requirements of An Bord Altranais the following actions are required:

1. There needs to be evidence that Nursing Informatics exists as a differentiated practice within Irish Nursing and Health Informatics. This will

- involve identifying the unique competencies of Irish Informatics Nurse Specialists.
2. The clinical background, education, informatics career and job responsibilities of Irish informatics nurses must be explored.
 3. A defined research program should be compiled setting out the priorities for Nursing Informatics research in Ireland.
 4. Research is necessary to determine the educational background of informatics nurses in Ireland.
 5. A post-graduate diploma course or its equivalent will be offered, which will achieve Category II approval by An Bord Altranais.
 6. There must be evidence that there are sufficient numbers of informatics nurses practicing in Ireland.
 7. Evidence should be produced that there is a need for Informatics Nurse Specialists within the Irish Health Service and that this need will persist.
 8. Representation must be made by HISI-N to the relevant statutory bodies to promote the establishment and recognition of the speciality.
 9. Nursing Informatics must be represented when a review of credentialing of Irish Nursing and its specialities is conducted in the future.

The above measures constitute a major undertaking with considerable costs.

Chapter 4:

Who are Informatics Nurses?

4.1 Introduction

Practicing Informatics Nurses in Ireland are a group of people who have not been surveyed to date. A number of them have come together as a group to form the HISI-N. This group consists of a committee and over thirty members. However it is unknown whether all members practice in the Nursing Informatics field or their membership is a result of an interest in Nursing Informatics.

Internationally, informatics nurses have formed special interest groups such as the British Computer Society Nursing Specialist Group, the Canadian Nursing Informatics Association, the Health Informatics Society of Australia - Nursing Informatics, Capital Area Roundtable on Informatics in Nursing (USA), Healthcare Information Management Systems Society (HIMSS) - Nursing Informatics Committee (USA), International Medical Informatics Association – Nursing Informatics Special Interest Group, Health Informatics New Zealand – Nursing Informatics Working Group and the European Federation for Medical Informatics – Working Group 5 . However, a comprehensive literature search has revealed just two substantial surveys of informatics nurses.

4.2 ANIA Role Survey

A descriptive study, using a survey approach, was conducted among 48 American Nursing Informatics Association (ANIA) member respondents by Rosen and Routon in November 1996. (Rosen & Routon, 1998) Members were asked to complete a survey regarding their current position, educational and work experience, continuing education and work challenges. The response rate was 40% to the postal questionnaire.

4.2.1 Nursing and Informatics Experience

Respondents were asked to identify the number of years in practice as a registered nurse. The mean response was 20.69 years and the mean response for months employed in NI was 62.57.

4.2.2 Organisational Structure

Within their workplace, organisational structure was explicated. Several respondents noted a dual line of report. The reporting structure was divided almost equally between nursing administration and information systems. Administration was a distant third. The vast majority of participants (77%) practiced in the hospital setting.

Sixteen different job titles were identified by participants. The two most common job titles were System Analyst and Nursing Information System Coordinator. Each had seven responses (14%). The next most frequent included: clinical

analyst, manager, director, and product specialist with four responses each. The mean salary was \$57,000 (€44,941) per year.

4.2.3 Formal Education

It was evident that respondents were committed to lifelong learning. There were 16 members with Baccalaureate of Science in Nursing (BSN) degrees (33%); 7 members with Masters of Science in Nursing degrees (15%) and four members with non-nursing bachelor degrees (8%). In addition, seven members noted they were currently pursuing a MSN degree, four were enrolled in non-nursing masters programs, and three members were seeking PhD degrees.

4.2.4 Job Responsibilities

Members were asked to indicate their five major job responsibilities in percentage of time for each, with no ranges. The percentages were to equal 100%. The respondents indicated that the largest percentage of their time was spent in support. Training, development, and project management followed with almost equal percentages.

This survey was the first of its kind conducted. Membership of the ANIA was restricted to Southern California so it was not representative of the entire USA. It was evident that the average Informatics Nurse had considerable clinical experience before moving to Nursing Informatics full time. Usually within the last

six years. The Informatics nurses displayed a commitment to life-long learning; however, there was an absence of formal Nursing Informatics qualifications.

The respondent's salaries were in the range of a clinical nurse manager; however, the respondents reported that there was great variety in job titles and reporting structures. Respondents were most involved in support, training, development, and project management. Their biggest challenges were working with others and prioritisation.

This was a small survey (n=48) in relation to the research population in the USA. However comparative analysis should be helpful in assessing the state of development of the speciality in Ireland. However, an even more valuable study to the researcher is the HIMSS survey.

4.3 HIMSS Survey 2004

This survey was conducted in 2003 and published in 2004 by the HIMSS, sponsored by Omnicell Inc. The HIMSS survey enables us to make comparisons with the conditions and responsibilities of informatics nurses working in the USA. In the USA the specialism of Nursing Informatics is most advanced in comparison to other jurisdictions. Comparison between the conditions and responsibilities of American informatics nurses and Irish, should illustrate the level of advancement of the speciality in Ireland.

The HIMSS survey of informatics nurses is the largest comprehensive survey of informatics nurses completed in recent years. This was a web survey which received 537 usable responses. It looked at the following areas:

4.3.1 Who are informatics nurses?

The survey explored the paths that informatics nurses have traveled to reach their present position, the responsibilities that compose their jobs, and how they maintain their credentials.

4.3.2 How did they get here?

The survey explored the clinical backgrounds and the qualifications held by respondents. According to the survey, only 10% of respondents have a formal Nursing Informatics degree, and less than 2% are currently pursuing one. Instead, respondents come from a wide variety of educational and clinical speciality backgrounds. For instance, one third of survey respondents hold a Master's degree in nursing, while 14% of informatics nurses also hold advanced degrees outside of nursing, such as an MBA.

In a speciality that had been recognised by the American Nurses Association for only 12 years, it is not surprising that the nurses in the survey had an extensive clinical background before moving into the role of informatics nurse. More than half of the respondents (50%) had at least 16 years of clinical experience prior to entering the speciality, while another 21% had 11 to 15 years of experience. The

nursing backgrounds that most frequently provided the stepping stone to Nursing Informatics were critical care (24%) and medical-surgical nursing (22%). Nearly 40% of respondents had fewer than 5 years of experience as an informatics nurse, and only one quarter had 10 or more years of experience.

4.3.3 Where do they work?

With nearly 40% of respondents having fewer than 5 years of experience as an informatics nurse, it was not surprising that no single job title was held by more than a handful of respondents. Respondents in the survey reported holding titles that included application analyst, clinical applications specialist, director of nursing informatics, consultant, project manager, and informatics nurse specialist among others.

While their clinical background related primarily to critical care or medical-surgical nursing, less than 25% of respondents spent any time in hands-on clinical activities. Indeed, only half of the respondents worked in a hospital setting, and another 13% worked at the corporate level of a healthcare system. Nearly one quarter of respondents worked for a vendor, supplier, or consulting firm. The remaining 15% of respondents worked for other facilities, including academic settings, government/military facilities, payer/managed care, or primary care locations.

Additionally, there was no clear reporting structure identified by the nurses in this survey report. Approximately one third (37%) indicated that they reported to the information systems department, while another quarter (26%) indicated that they reported directly to the nursing department. Respondents also indicated that they reported to administration, sales/marketing, implementation, or quality improvement.

4.3.4 What do they earn?

The average salary earned by respondents was \$69,500, salaries varied widely, and factors such as geographic location, work setting, and educational level impacted the salary of respondents. The average salary of a nurse manager (the equivalent of an Irish Clinical Nurse Manager 2) in the USA in 2004 was \$71,140.

4.3.5 What are they doing?

Two thirds of respondents (67%) identified systems implementation, which includes training, supporting, and preparing users, as a top job responsibility. Systems development, the customizing/updating of a vendor system or the creating/updating of an in-house system, was identified by over half of the respondents. Acting as a liaison or communicator, which includes working with administration and the coordination of activities, was also a key role played by informatics nurses. It was identified by one third of respondents.

Informatics nurses spent much less time on tasks such as performing quality initiatives, system evaluation and problem solving, quality improvement and patient safety, and informatics education (training, planning, and continuing education). Each of these items was identified by approximately one quarter of respondents.

4.4 Discussion

It is evident from the two surveys described, that in the USA, informatics nurses are highly qualified specialists with extensive experience in clinical care. Their job titles and reporting structures within their organisations vary greatly. Their salaries are equivalent to that of a clinical nurse manager. However, actual earnings were not surveyed. There may in fact be a wide gap between actual earnings when shift and location allowance as well as bonuses are considered. There appears to have been insignificant development of the role between the two surveys. Respondents in both were involved in systems development, support and education.

As stated earlier, comparative analysis between the above two American surveys and an Irish survey should be beneficial in assessing the level of advancement of the specialism in Ireland. Nursing Informatics in the USA is considered to have a head start on their European counterparts. The structures developed by the

American Nurses Association for Nursing Informatics are significant in comparison to the complete absence of structure in Irish Nursing.

However, comparison is not possible at present. There is no survey information available to Irish informatics nurses. Due to this absence, the author has conducted a survey of Irish informatics nurses. The next chapter (Chapter 5) describes the methodology employed in this survey.

Chapter 5:

Methodology

5.1 Design

This survey titled Irish Informatics Nurses Survey is a descriptive survey. The aim of descriptive research is to discover new facts about a situation, people, activities or events, or the frequency with which certain events occur. The focus of descriptive studies is on the situation as it is, the research making no attempt to manipulate variables. The data which are obtained can then be used to assess and justify current conditions and practice, or to make plans for improving them. (Carter D, 2002).

In common with all types of research, the descriptive researcher is trying to achieve a clear picture of the situation, and protection against bias is an important consideration. Measures taken to achieve this protection include the use of valid and reliable instruments and methods of data collection.

5.2 Sample

The research population was all informatics nurses employed in Ireland today. Identification of subjects was difficult due to the absence of a register of informatics nurses and variations in job titles. Subjects were identified through membership of HISI-Nursing Group (HISI-N) and the National Cancer Data Association (NCDA). Nurses who are members of the NCDA are mostly employees of the National Cancer Registry of Ireland (NCRI). Also contact was

made with subjects through networking at Informatics Conferences. Members of the committee of the HISI-N were helpful by identifying potential subjects within their own membership, workplace and through their network of contacts. A nurse employed by the NCRI made a list of all nurse employees of the organisation available to the researcher.

As the research progressed it became evident that the population was limited in size. Consequently sampling was not necessary. The researcher targeted all potential subjects known to him.

5.3 Inclusion/Exclusion

The researcher used the definition of an informatics nurse presented in Chapter 2 as the operational definition of an informatics nurse:

A nurse specialist whose primary role involves the integration of nursing, computer science and information science to manage and communicate health data, information and knowledge in order to support stakeholders within the health system.

Prior to the distribution of questionnaires, potential respondents were e-mailed a letter outlining the objectives of the study and presenting the above definition (see Appendix A). They were invited to participate in the study if they considered themselves inclusive in the above defined role. Potential subjects were asked to identify their preferred method of data collection:

- a) Web-based questionnaire
- b) Paper based questionnaire or
- c) Interview.

5.4 Questionnaire Design & Piloting

Questionnaires need to be designed for their purpose, which is to collect specific information that will provide answers to the overall research question of the study. The data collected, and hence the findings, can only be as good as the questions asked. The most important stage of a project using a questionnaire is the preparation and design of the questionnaire itself. (Murphy-Black, 2002)

The questionnaire distributed was titled Informatics Nursing Questionnaire. (see Appendix C).

The following requirements were identified by the researcher:

1. The questionnaire must provide data comparative with the ANIA and HIMSS surveys.
2. It must be concise.
3. Respondents should be able to complete it within ten minutes.
4. Questions must be unambiguous and as direct as possible.

The researcher examined the findings of the two American studies and based upon their findings he designed the questionnaire to provide equivalent data.

The questionnaire was formatted using *Windows Word Form*. Questions were divided into four areas of enquiry:

1. Clinical Background
2. Informatics Education
3. Informatics Career

4. Job Responsibilities.

Piloting of the questionnaire was carried out in April 2006. Five questionnaires were distributed to informatics nurses for completion. Analysis of the findings and feedback from the five subjects revealed a number of problems with the phraseology and formatting of the questionnaire. Alterations were made and the instrument was retested. The five subjects expressed satisfaction with the questionnaire on retest.

5.5 Data Collection

The majority (85%) of subjects expressed a preference for a web-based questionnaire. The researcher presumed that respondents were familiar and competent with the use of both *Windows Word* and e-mail. This was because they worked in the informatics area and they had already replied to the researchers' initial e-mail.

In early June, 2006 the researcher e-mailed the subjects presenting the attached questionnaire and inviting their participation (see Appendix B). In total 39 were distributed. The researcher set a deadline for responses at the end of June, which gave subjects three weeks to complete and return questionnaires.

5.6 Analysis

The data generated from the questionnaire was both quantitative and categorical including binary, nominal and ordinal variables.

The researcher received completed questionnaires as attachments to e-mails. These were stored and backed up having removed any label from the files which would identify the respondent. Each respondent and their corresponding returned questionnaire was numerically coded to provide anonymity. Data was numerically coded and entered into a Microsoft Excel datasheet.

Once the deadline for return of responses had passed, the researcher commenced descriptive analysis of the data. The purpose of descriptive analysis is to summarise the data, extracting the salient points from the results, rather than presenting every data item on every subject.

It was not necessary to conduct inferential statistical analysis of the data due to the absence of different groups in the study.

5.7 Ethical Considerations

The researcher could not identify any potential risks to subjects in this study. However, in order to provide a failsafe, the researcher preserved the anonymity of respondents and has not presented any data which may be attributed to the response of any individual respondent.

Subjects who have completed questionnaires have done so with the understanding that their response will add to our knowledge of informatics nurses in Ireland. This understanding and relationship must be respected by the researcher. It is the researcher's intention to disseminate the findings of this study both through publication and presentation at informatics conferences.

Chapter 6:

Findings

6.1 Response

39 questionnaires were distributed in early June 2006. Subjects can be categorised into three groups

1. HISI-N members.
2. NCRI employees and ICDA members.
3. Networking contacts.

In total 14 questionnaires were distributed to ICDA members. Three nurses returned questionnaires one of which was incomplete. Two nurses contacted the researcher expressing the view that they did not consider themselves to be informatics nurses based upon the operational definition. Further correspondence revealed that all of the nurses working for the NCRI carry out similar duties. Therefore consideration of the two completed questionnaires in the study findings could be contentious. As a result, the researcher decided to omit the two completed returns from NCRI nurses. Their inclusion would have challenged the validity of the study.

One questionnaire did not reach a subject due to their absence from work. In total 38 questionnaires were received and once the 14 NCRI nurses are omitted from the study this leaves 24 potential respondents. The researcher received 18 returns, which is a response rate of 75%.

6.2 Clinical Background

All but one of the respondents were registered with An Bord Altranais (94.44%).

The mean number of years since first registration as a nurse was 18.39 (range 9-31) SD 6.98.

Subjects were asked to indicate the nursing area in which they have most experience. They were offered a list of twelve nursing areas to pick from. The results are presented in Table 1:

Nursing Area	Frequency	Frequency %
ICU	4	22.2
Medical /Surgical	4	22.2
Psychiatry	0	0
Nursing Education	2	11.1
Accident & Emergency	3	16.7
Midwifery	0	0
Intellectual Disability	0	0
Theatre	2	11.1
Clinical Management	2	11.1
Administration	0	0
Sick Children	1	5.6
Other	0	0

Table 1: Nursing area of most experience

None of the 18 respondents directly care for patients in their current role. However, they had considerable clinical experience with a mean number of years of 13.72 (range 5-28) SD. 6.75. Respondents were asked what nursing position they held immediately prior to securing their informatics position. The results are presented in Chart 1:

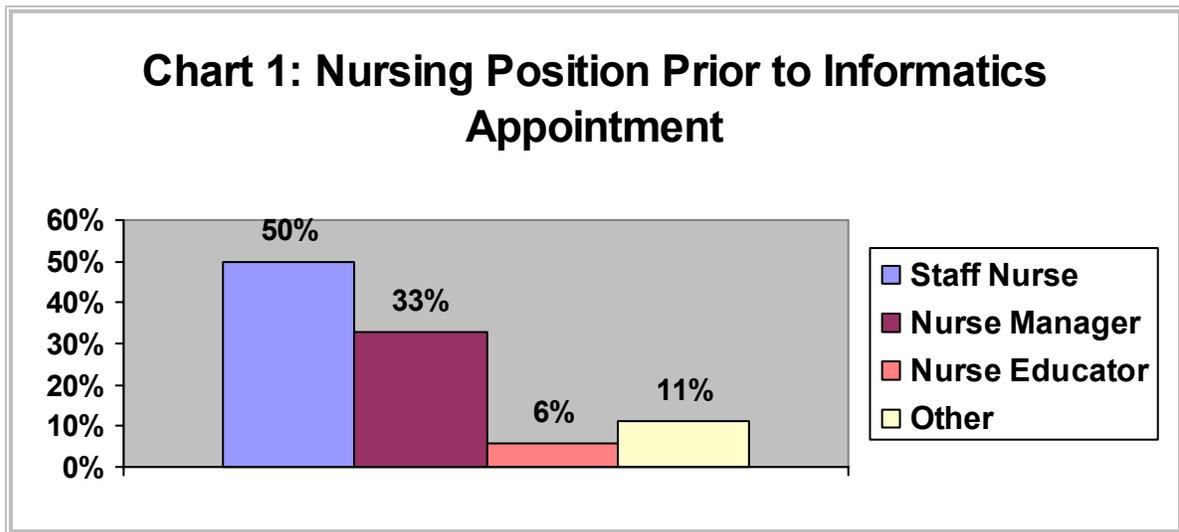


Chart 1: Nursing Position Held Immediately Prior to Informatics Appointment

The two respondents who selected “other” held the positions Cancer Program Administrator and Technician in Intel.

77.78% respondents have worked abroad in nursing positions.

6.3 Informatics Education

12 (66.67%) of the 18 respondents held formal informatics qualifications. The informatics qualifications were spread as illustrated in Table 3:

Qualification	Frequency%
MSc in Health Informatics	58%
PG Diploma in Health Informatics	25%
Diploma in Nursing Informatics	17%

Table 2: Informatics Qualifications

One respondent held both a Diploma in Nursing Informatics and a Masters Degree in Health Informatics.

Four (22.22%) respondents were Information Technology graduates, all of whom did not hold a Health or Nursing Informatics specific qualification. In total of the eighteen respondents only one (5.55%) was not an informatics or IT graduate. Respondents held further qualifications. One held a second Masters degree in Education, three held degrees in Nursing studies and Management, one was a Board Certified Tumor Registrar.

6.4 Informatics Career

As expected there was great diversity in the job titles of respondents. They are listed in Table 3 overleaf:

Job Title	Frequency
Informatics Nurse	2
Lecturer	1
Rostering Project Manager	1
Clinical Coordinator-IT	1
Application Specialist/Clinical & IT Support	1
Clinical Analyst Software Development	1
Clinical Systems Support Coordinator	1
Lecturer/Researcher	1
IT Nurse Manager	2
Assistant Nurse Coordinator of Computer, Information, Management Services	1
Renal IT Nurse	1
Colorectal Cancer Data Manager	1
Nurse Coordinator IT	1
Theatre Project Nurse	1
Nursing IT Officer	1
Theatre IT Nurse	1

Table 3: Respondents Job Titles

The questionnaire then asked subjects to whom do they report. Table 4 reports the response:

Reports to:	Frequency	Frequency %
Director of Nursing Services	3	16.7
Head of Information Technology	2	11.1
Director of Nursing Services & Head of Information Technology	5	27.8
Head of School of Nursing	2	11.1
Assistant Director of Nursing Services	1	5.6
Hospital General Manager	1	5.6
Development Manager	1	5.6
Nurse Coordinator of Computer, Information, Management Services - Assistant Director of Nursing Services	1	5.6
Division Nurse Manager	1	5.6
Lead Clinician, Head of IT, Business Manager, Clinical Director	1	5.6

Table 4: Reporting Structures

Nurses were asked “Which department of your organisation do you work in?” Again responses revealed variety. One respondent did not answer this question.

Table 5 shows the responses received:

Department	Frequency	Frequency %
Information Technology	6	35.3
Information Management	3	17.7
Theatre	2	11.8
Development	1	5.9
Nursing Education	2	11.8
Information & Communication Technology	1	5.9
Renal	1	5.9
Practice Development	1	5.9

Table 5: Departments of Employment

Respondents were asked for how many years had informatics been their primary occupation. The mean response was 5.81 (range 1-15) years with a SD of 3.16. The informatics nurses were employed at different levels within their organisations pay structures. However, all but one could be described as working in the middle-management level. See Table 6 overleaf:

Pay-Scale	Frequency	Frequency %	€
Lecturer	2	11.1	68,197- 89,888
Clinical Nurse Manager 3 (CNM3)	2	11.1	52,483- 59,492
Clinical Nurse Manager 2 (CNM2)	11	61.1	45,386- 53,969
Clerical Grade 7	1	5.6	44,208- 57,970
Clerical Grade 5	1	5.6	37,704- 45,623
Staff Nurse	1	5.6	28,878- 40,861

Table 6: Informatics Nurses Pay-Scales

The type of organisation employing the respondents is illustrated in Chart 2:

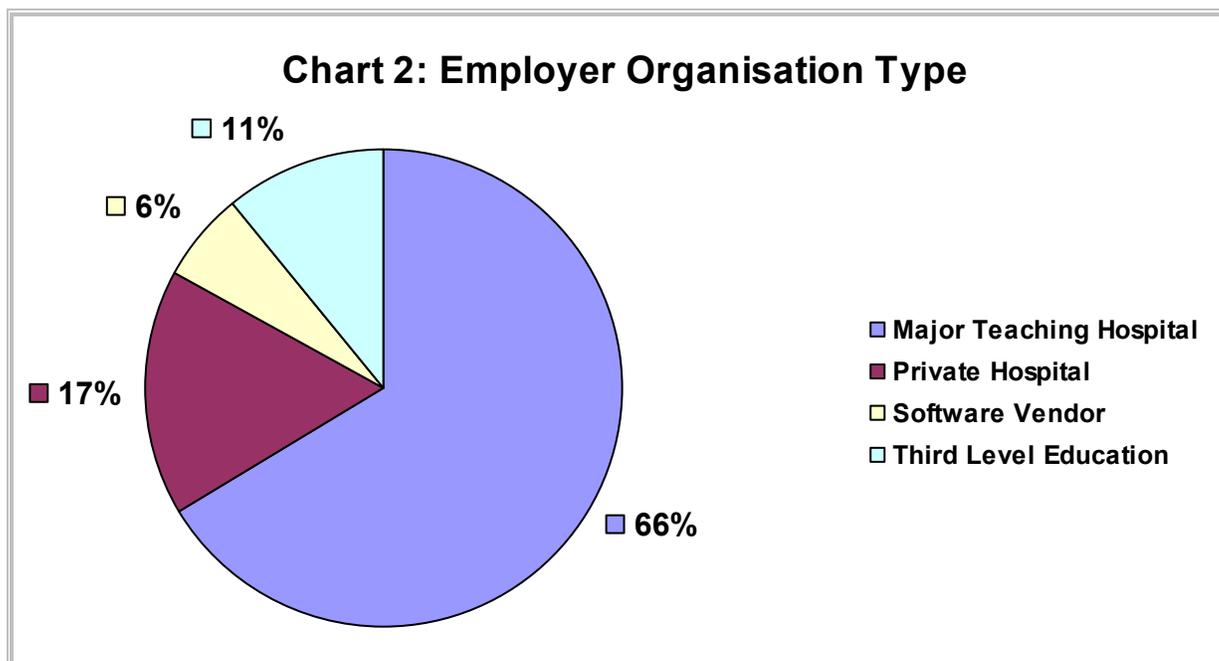


Chart 2: Employer Organisation Type

6.5 Job Responsibilities

In order to explore the job responsibilities of Irish Informatics Nurses, subjects were asked how many staff report to them. Two respondents had three staff reporting to them and two more had one staff reporting to them and the remainder had none.

Respondents were asked to pick their top three job responsibilities from a list. They were asked to prioritise their choices with number one being their top responsibility. Chart 3 illustrates the collated findings:

Chart 3: Job Responsibilities

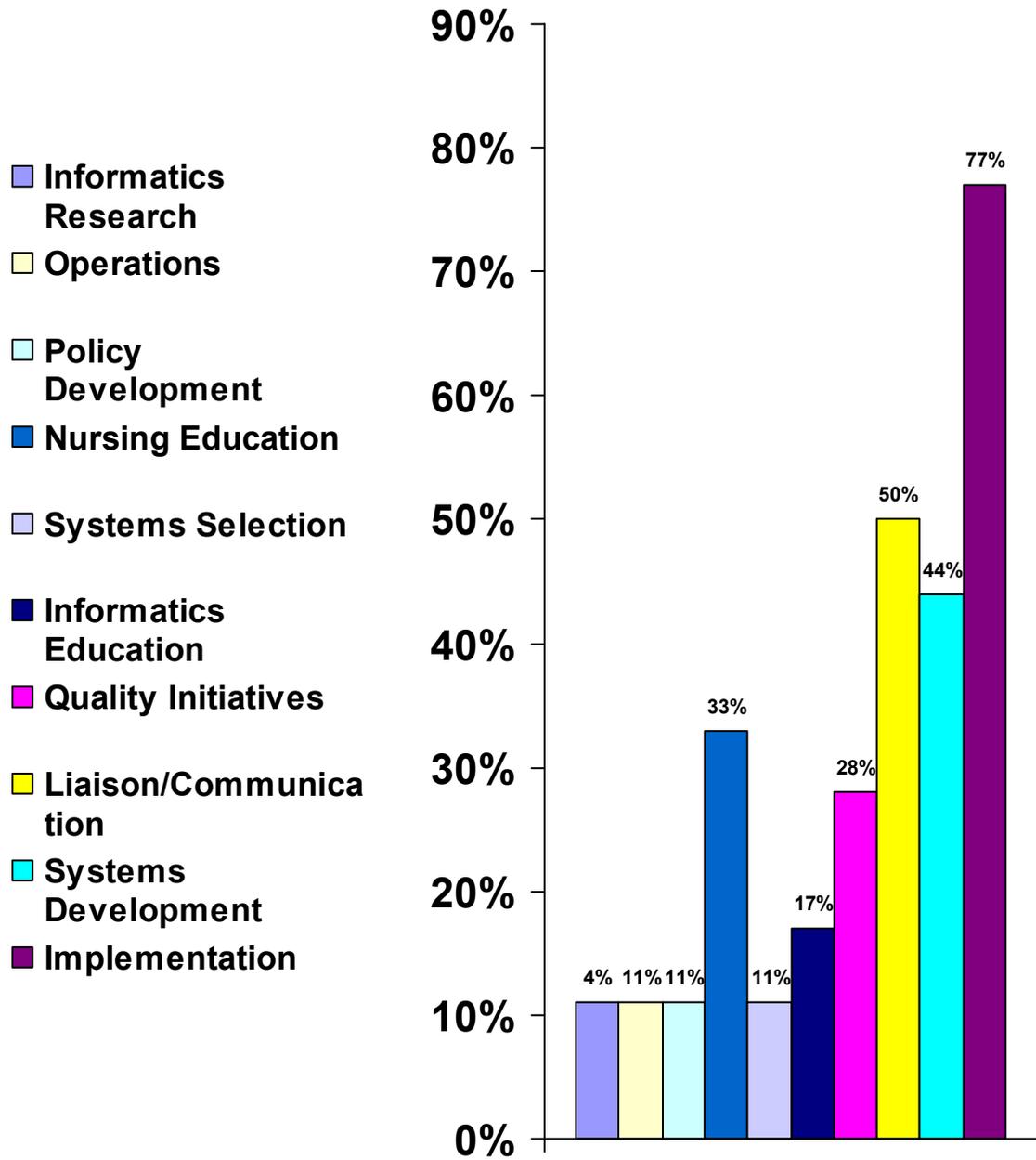


Chart 3: Job Responsibilities

The frequency of first choices is illustrated in Table 7:

Job Responsibility	Frequency % of 1st Choice
Sales/Marketing	0
Operations	11
Policy Development	0
Vendor Communication	0
Strategic Planning	0
Nursing Education	6
Systems Selection	0
Informatics Education	6
Quality Initiatives	11
Liaison/Communication	22
Systems Development	28
Implementation	11
Informatics Research	6

Table 7: Job Responsibilities – Frequency of First Choice

This chapter has presented the findings of the researchers' survey. In Chapter 7 the author will discuss these findings.

Chapter 7:

Discussion

7.1 Sample and Response

As this study progressed it became evident to the researcher that the informatics nurse population in Ireland is smaller than anticipated. Discussions with active members of the Nursing Informatics community and attendance at conferences and workshops revealed that whilst there is considerable interest in the subject, as evidenced by the large attendance at these events, the number of nurses employed in the field is not so large. The author estimates that there can be no more than 35-40 informatics nurses working in the country.

The researcher was unable to obtain a comprehensive listing of this population. Through the assistance of HISI-N steering group members and the goodwill of former Health Informatics students, 24 of the 35-40 informatics nurses received questionnaires. Of these the response rate was 75%. This means that this questionnaire was responded to by 50% (18) of the research population. It is reasonable to assert that the findings of this study are representative of the overall population.

The exclusion of respondents from the NCRI was necessary due to the lack of clarity regarding their position. Some employees considered themselves to be informatics nurses whilst others did not. Nurse employees of the NCRI are employed as Cancer Data Managers. Discussion with some of these nurses

revealed that their nursing background is pivotal to the fulfillment of their role as Cancer Data Managers. When absent from work they are replaced by non-nursing clerical workers. However these clerical workers are incapable of completely fulfilling the role. Further exploration of the role of the Cancer Data Manager is necessary, however, it is not within the scope of this project.

7.2 Clinical Background

94% of respondents were still registered with An Bord Altranais despite the fact that none of the respondents were engaged in clinical care. This is indicative of a continued orientation towards nursing. Indeed some respondents were no longer employed as nurses and are paid on a clerical pay-scale.

As expected, the respondents had most clinical experience working in the quantitative data rich areas of Intensive Care, Medical/Surgical and Accident & Emergency. There was an absence of those experienced in Psychiatry and Intellectual Disabilities. These areas are traditionally rich in qualitative data but produce less quantitative data which is more easily coded. The reasons for this absence of Nursing Informatics in Psychiatric and Intellectual Disabilities Nursing are most likely to be complex. The author speculates that they are due to an absence of funding and vision/knowledge amongst nurse leaders in the area. The implementation of the recommendations of the report A Vision for Change (Government of Ireland, 2006) may contribute to the rectification of this imbalance.

Some 50% of respondents had been staff nurses immediately prior to their informatics appointment. However, only one respondent continues to be paid at this level. Nursing Informatics posts can be considered to be promotional posts.

The significant majority (78%) of respondents had worked abroad in nursing. It could be speculated that these nurses experienced Nursing Informatics practice abroad and returned to Ireland with the knowledge and vision to develop Nursing informatics here.

The clinical background of Irish informatics nurses is remarkably similar to their American counterparts. Both groups have considerable clinical experience (mean 13-15 years) working in numeric data-rich areas of nursing before securing an informatics position.

7.3 Informatics Education

Irish informatics nurses are clearly well qualified for their positions. There is evidence of a commitment to lifelong learning through their completion of part-time postgraduate educational programs. Unlike the respondents to the American surveys, the Irish nurses hold informatics specific qualifications.

7.4 Informatics Career

Similar to the American surveys there is great diversity in the job titles of Irish informatics nurses. Whilst the length of time Irish nurses have been working in

informatics is almost identical to their American counterparts. Again similar to the USA, Irish informatics nurses are employed at the middle management layer of their organisations, with corresponding remuneration.

There were unclear reporting structures. Some of the Irish nurses reported to both the Nursing and IT Head of Department, whilst one respondent reports to four different individuals. This is comparable to the findings of the HIMSS survey.

Irish informatics nurses work in diverse departments within the hospital setting. However, as evidenced in the HIMSS (2004) survey, half of American informatics nurses do not work in a hospital. 25% worked for a vendor, supplier, or consulting firm compared to just 6% in this survey.

7.5 Job Responsibilities

Chart 3 and Table 7 illustrated the job responsibilities of respondents. Respondents selected implementation, liaison/communication, systems development, nursing education and operations as their top job responsibilities. Their involvement in sales/marketing, policy development, strategic planning and systems selection does not appear to be central to their positions. This is mirrored in the HIMSS survey findings. Informatics nurses appear to be employed at a lower level within informatics practice. With both the HIMSS survey and this survey revealing a lack of involvement of informatics nurses in strategic and policy development and vendor communication.

7.6 Summary

The findings of this study when compared to the findings of the HIMSS and the ANIA study reveal remarkable similarity. The only significant difference between the two groups is that unlike the Irish nurses, quarter of American Informatics nurses are employed by vendor, supplier, or consulting firms. Considering the similarity between the two groups, this move to private enterprises may develop within Irish Nursing Informatics.

The results of this study are significant to the development of the specialty in Ireland. If we recall the nine actions necessary for the development of the speciality in Ireland in section 3.5:

1. There needs to be evidence that Nursing Informatics exists as a differentiated practice within Irish Nursing and Health Informatics. This will involve identifying the unique competencies of Irish Informatics Nurse Specialists.
2. The clinical background, education, informatics career and job responsibilities of Irish informatics nurses must be explored.
3. A defined research program should be compiled setting out the priorities for Nursing Informatics research in Ireland.
4. Research is necessary to determine the educational background of informatics nurses in Ireland.

5. A post-graduate diploma course or its equivalent will be offered, which will achieve Category II approval by An Bord Altranais.
6. There must be evidence that there are sufficient numbers of informatics nurses practicing in Ireland.
7. Evidence should be produced that there is a need for Informatics Nurse Specialists within the Irish Health Service and that this need will persist.
8. Representation must be made by HISI-N to the relevant statutory bodies to promote the establishment and recognition of the speciality.
9. Nursing Informatics must be represented when a review of credentialing of Irish Nursing and its specialities is conducted in the future.

This study has addressed both Action 2 and 6, as well as part of Action 4. Action 6 calls for evidence regarding the number of specialists practicing. The author has estimated that there are 35 to 40 informatics nurses practicing in Ireland today. As evidenced in the survey, most of these positions have only been created in the past five years. The speciality is in its infancy in Ireland compared to the more established specialities of Intensive Care Nursing or Oncology Nursing. It is likely that the number of Nursing Informatics positions in Ireland will increase in the coming years.

Returning to the stated purpose of this dissertation: to determine the case for the recognition and establishment of the position Informatics Nurse Specialist in Ireland. The author presents the evidence generated:

1. There are between thirty five and forty informatics nurses practicing in Ireland today.
2. The current framework of Irish nursing specialities only allows Nursing Informatics to be recognised as a nursing speciality similar to critical care nursing. A speciality which is recognised only through an allowance payable to those qualified and practicing in their speciality.
3. The survey has revealed that Irish informatics nurses have similar qualifications, job responsibilities, clinical backgrounds and informatics careers to their American counterparts.

The practicability of the establishment and recognition of the speciality in Ireland is undermined by the small number of nurses practicing in Informatics. The economic feasibility of the composition and publishing of a publication similar to the ANA's Scope & Standards of Nursing Informatics Practice (2001) would not be favourable at present.

Until alterations are made to the framework of nursing specialities, the advantage to informatics nurses of inclusion would be minimal.

However, it is of utmost importance that Irish informatics nurses monitor the progression of their speciality in the coming years. The number of new Nursing Informatics positions created in the last five years is evidence that the number of

informatics nurses is increasing. The feasibility of the establishment and recognition of the speciality may be more favourable in five years time.

7.7 Future Recommendations

Monitoring of the speciality could be carried out by repeating the authors' survey on a triennial basis. This would not be a costly exercise and could be conducted at Nursing Informatics conferences.

The educational needs of future Irish informatics nurses should also be monitored. The Post Graduate Diploma and Masters of Science degree in Health Informatics in Trinity College Dublin has served to educate and prepare many informatics nurses for practice. Correspondence should be maintained between informatics nurse employers and the academic institutions with a focus on the educational institutions meeting the future needs of informatics nurse employers.

There needs to be evidence that Nursing Informatics exists as a differentiated practice within Irish Nursing and Health Informatics. This will involve identifying the unique competencies of Irish informatics nurses. This study could be carried out by a student at Masters Degree level. At present the absence of a concise listing of Nursing Informatics competencies, results in difficulties in surveying the informatics nurse population.

Chapter 8:

Conclusion

This project has explored an area of the Irish Nursing Profession which has not been investigated in the past. The development of Nursing Informatics as a speciality within Irish Nursing has been a rapid one, which has kept pace with the belated modernization of the Irish Health Service. However, just as the Health Service has been “playing catch-up” so too has Nursing Informatics in Ireland. The advanced state of organisation and regulation of the speciality in the USA is at odds with the absence of credentialing and recognition by the statutory bodies in Ireland.

However, this study has found that the job responsibilities, informatics education, clinical experience and informatics careers of Irish informatics nurses are equivalent to their American counterparts. The only significant difference between the two groups is that more informatics nurses are employed in the private Information and Communication Technology sector in the USA.

Despite similarities with American informatics nurses, Irish informatics nurses are without a scope and standards of practice, register of practitioners, formalised pay-structures or representation at national strategic level within nursing.

The Commission on Nursing (1998) produced their report eight years ago. It was presented as a blueprint for the future of Irish Nursing. In the introduction to their report, the Commission wrote:

..... the health services are in a state of constant and rapid development in response to technological, social and economic changes both domestically and internationally.

The Commission is recommending a new framework which will give a secure basis for the further professional development of nursing and midwifery in the context of anticipated changes in the health services, their organisation and delivery.

However, in the case of Nursing Informatics it must be concluded that the Commission failed to “give a secure basis for the further professional development of nursing and midwifery..... in response to technological, social and economic changes.” Nursing Informatics was not mentioned or considered in the report of the Commission. In the intervening years, the Report of the Commission has become not only a blueprint for Irish Nursing but also a millstone around the neck of Nursing Informatics in Ireland.

For the last eight years, all developments within the profession of Nursing in Ireland can be referenced back to the report of the Commission. By not considering Nursing Informatics, the Commission contributed to its marginalization. The statutory bodies An Bord Altranais and the National Council for the Promotion and Development of Nursing and Midwifery have not been a positive factor in the development of the specialism Nursing Informatics in Ireland. Their terms of reference are so restrictive that it is difficult for them to promote or develop the specialism. So, if Nursing Informatics is on the periphery of its own

profession, what hope is there for informatics nurses to be consulted within the wider Health Informatics community?

This study has presented a new revised definition of Nursing Informatics and the informatics nurse. This definition recognises the development of shared care and patient participation in the health service. It is succinct and capable of absorbing changes more easily than previous definitions. Furthermore it has presented arguments relating to a number of contentious issues in the definition of Nursing Informatics.

The author has examined the case for the establishment and recognition of the position Informatics Nurse Specialist in Ireland. Following investigation, the author concludes that whilst the argument for such a development is valid, the feasibility and practicability of this action renders it unreasonable at present. However, close monitoring of developments within the speciality are necessary in the future with a view to the establishment and recognition of the position in Ireland.

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Appendices

Appendix A

Letter Inviting Participation in Study

Dear Insert Name,

In part-completion of my MSc in Health Informatics in Trinity College, I have commenced work on a research project titled: *Towards the establishment and recognition of the position Informatics Nurse Specialist in Ireland*. Part of this project will be a survey of informatics nurses practising in Ireland today. This survey will address the question: *What are the conditions and unique competencies of Nurse Informaticians practicing in Ireland?*

I have defined the informatics nursing practitioner as follows:

A nurse specialist whose primary role involves the integration of nursing, computer science and information science to manage and communicate health data, information and knowledge in order to support all stakeholders within the health system.

If you feel that your current position (irrespective of job title) falls within the above definition, or you educate others to practice, then I am anxious to secure your participation in this survey.

Participation will involve answering a written questionnaire, web questionnaire or a structured interview. The data-collection method will be decided based upon the number and preference of participants in order to maximize response.

If you are interested in participating, can you contact me at the above e-mail address leaving a contact phone number and a note about your place of work and position. Please express your preference for data collection method.

This project will be the first survey of informatics nurses conducted in Ireland. It has the potential to influence the future development of the role and education of the Irish informatics nurse. I wish to assure you that your anonymity and the highest standards of ethical practice will be maintained throughout this project.

Yours sincerely,

Pat Codd RPN, BNS, PGDip Health Informatics

Appendix B

Cover Letter

Dear Nurse,

Informatics Nursing is an emerging specialism within the Irish Nursing Profession. However, at present, an absence of information regarding the number, conditions and responsibilities of these nurses in Ireland exists. If this knowledge is acquired, Informatics Nurses will have the evidence necessary to accelerate the advancement of the specialism in Ireland.

In part completion of my MSc in Health Informatics in TCD, I am undertaking a study titled: Towards the Recognition and Establishment of the Position Informatics Nurse Specialist in Ireland.

If you are a nurse specialist whose primary role involves the integration of nursing, computer science and information science to manage and communicate health data, information and knowledge, in order to support stakeholders within the health system, the attached Windows Word form is relevant to you.

Enclosed is a short questionnaire (part A of my study). I would be grateful if you could complete this questionnaire and return e-mail it to me by Friday June 30th. All data enclosed will be treated as strictly confidential.

If you have a colleague who is interested in this study, please feel free to forward this communication to them.

Yours sincerely,
Pat Codd

Appendix C

Informatics Nursing Questionnaire

1. Clinical Background

1.1 Are you currently registered with An Bord Altranais? Yes
No

1.2 In what year were you first registered?

1.3 In which nursing area do you have most experience?

- ICU/CCU
- Medical/Surgical
- Psychiatry
- Nursing Education
- Accident & Emergency
- Midwifery
- Intellectual Disability
- Theatre
- Clinical management
- Administration
- Sick Children
- Other (Please Specify)

1.4 Do you directly care for patients in your current role? Yes
No

1.5 If no: For how many years did you work in clinical care?

1.6 What nursing position did you hold immediately prior to securing your Informatics position?

- Staff Nurse
- Nurse Manager
- Nurse Educator
- Other (Please Specify)

1.7 Have you worked as a nurse abroad? Yes
No

2. Informatics Education

2.1 Do you hold a formal Informatics qualification? Yes
No

2.2 If yes please describe your qualification

2.3 Do you hold a formal IT qualification? Yes
No

2.4 If yes please describe your IT qualification

2.5 Please describe other qualifications you hold which are relevant to your informatics position

3. Informatics Career

3.1 Please state your current job title.

3.2 Who do you report to (e.g. Head of IT, Director of Nursing Services)?

3.3 Which department of your organisation do you work in?

3.4 For how many years has informatics been your primary occupation?

3.5 Which pay-scale are you on (e.g. Staff Nurse, Nurse Tutor, Lecturer, Clerical Grade V, CNM 2, other)?

3.6 Describe the business of your employer:

Major Teaching Hospital	<input type="checkbox"/>
Non-teaching Hospital	<input type="checkbox"/>
Third Level Education	<input type="checkbox"/>
Software Vendor	<input type="checkbox"/>
Private Hospital	<input type="checkbox"/>
Disease Registry	<input type="checkbox"/>
Other (Please Specify)	

4. Job Responsibilities

4.1 How many (if any) staff report to you?

4.2 From the list below number your top three job responsibilities. (Number 1 being your top job responsibility)

Informatics Research

Sales/Marketing

Operations

Policy Development

Vendor Communication

Strategic Planning

Nursing Education

Systems Selection

Informatics Education

Quality Initiatives

Liaison/Communicator

Systems Development

Implementation

Thank you for your participation.

Please return completed questionnaire to coddp@cs.tcd.ie