E-HEALTH IN NORTHERN IRELAND

The Voice of Nursing

European Centre for Connected Health

HSC Public Health Agency

Royal College of Nursing Northern Ireland

Preface

Given the rate and extent of new development in technological applications to healthcare, raising awareness among the nursing population in Northern Ireland is not only timely but essential for success

This report details an engagement with nurses in Northern Ireland regarding their interest, knowledge and use of technology in healthcare, made possible by the collaboration of the European Centre for Connected Health and the Royal College of Nursing, and the subsequent appointment of a Professional Development Officer for a 6 month period.

The aim is to express the voice of nursing as the healthcare environment moves into an Information Age. This is a first step in the engagement of Nurses in the eHealth debate and the report has been pitched in that context. The design of the consultation was exploratory and opportunistic and yet the findings deliver a wealth of thought provoking material, which can inform strategy, policy, research, curriculum design and practice development.

The contribution made by the nurses in this project has been invaluable in gaining an insight into their knowledge of eHealth which will assist in the future planning of nurse education and training. However it has been their thought provoking creativity in the application of technology to nursing practice and systems of care which will present the future challenge for nurse leadership in eHealth.

The support of the Chief Nursing Officer, Martin Bradley, and his team has been generously given and warmly received.

Royal College of Nursing
Northern Ireland

Foreword

Information and technology is now part of most people's lives, from the very young to the older population. In the future, a more informed and expert patient will have most of their care given at or near their home and therefore the role and context of nursing practice will change. Given this demographic and strategic direction, it is important that nurses optimise new and developing information and technology systems to prepare themselves, the care environment, and ultimately improve the patient experience.

This report documents valuable preparatory work which we hope will lead to a purposeful journey in developing eHealth solutions for patient care and nursing informatics in clinical practice, through future strategic and operational planning.
The informative material contained in the report may be of interest to nurses working in clinical practice, education, management and policy development and demonstrates how technology cuts across all aspects of nursing and patient care.

At this juncture, nurse leadership in eHealth will have a vital role in promoting opportunities and guiding nursing practice to maximise information technology for the benefit of patients.

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Executive Summary

Nursing practice is rooted in individualised care for the patient, based on establishing a nurse- patient relationship. Nursing literature, the popular press and patient advocacy groups support and value this element of nursing and therefore the challenge for nursing is the ability to balance the fundamental practice of ‘hands on, face to face’ care with new methods of technology assisted nursing practice such as telephonic and nursing ‘remotely’ via modern technology.

In February 2009 the European Centre for Connected Health (ECCH) and the Royal College of Nursing (RCN) collaborated to appoint a Professional Nursing Officer for a 6 month period, to contribute to the design and delivery of eHealth development opportunities, for nursing in particular and generally for the health and social care community in Northern Ireland. A key objective was to engage with the Nursing workforce in Northern Ireland to raise awareness about eHealth and gain insight into their knowledge and interest in Nursing Informatics in particular.

A Communication Plan was launched in February 2009, outlining a design of two phases. The first phase was based on the need to give information to nurses and at the same time gather information. With this dual purpose and taking cognizance of the many demands on staff time, it was decided to use a ‘one-stop’ approach through half day workshops. Two workshops were held in April & May 2009 and 87 nurses attended. A programme including local examples of technology used in practice was presented, the nurses completed a survey using a questionnaire, and also took part in focus groups.

In the second phase, following analysis of the data from the Nurse Workshops, two discussion groups with Nurse Managers and Nurse Educators were held to explore the issues raised. Further a seminar with strategic leaders was held in June to discuss the findings and add to the discussion. There was generally a positive attitude towards using technology in patient care, with 91.5 % of the nurses believing that the use of technology will improve patient safety. Both the findings of the survey and the focus group indicate that nurses are ready and willing to become involved in technology based nursing, and 95.8% of the respondents felt that nurses had a role in developing technology in healthcare. The richness of the data gathered from the focus groups on ‘blue sky’ thinking was an indication of the level of creativity, with many workable solutions presented on ‘wish lists’.

As for applying data and information to make practice decisions, the operational managers and strategic leaders felt this was not being fully optimised, although it was thought to be important in performance management. It may be that preparing nurses to make use of the data which information systems produce requires further attention, but firstly the data has to be labelled in a standardised format. However, there was consensus among strategic nurse leaders that more work was required in terms of capability, such as developing a leadership role in eHealth, along with a nursing informatics curriculum to meet the needs of the nursing workforce in an eHealth culture.

To summarise, this first step in engaging with nurses on the eHealth debate has not only raised awareness among the nursing workforce but also provided a voice for nurses from practice, education and management to articulate their views. Ultimately, it is hoped that this report will initiate further work and development in the area of Nurse Informatics and the contribution nursing can make in developing an eHealth culture in Health and
Social Care.

1.0 Introduction

1.1 Industrial Age Medicine is being replaced by Information Age Healthcare (Smith as cited by Yellowless, 2006) , where new technologies will become commonplace in assisting people to manage their own health and will be an essential enabler in independence, choice, accessibility and autonomy. Already most people of all ages use some form of technology in their daily lives and therefore it is likely they will be able to use and accept technology assisted healthcare.

1.2 Nursing practice is rooted in individualised care for the patient, based on establishing a nurse- patient relationship. Nursing literature, the popular press and patient advocacy groups support and value this element of nursing and therefore the challenge for nursing is the ability to balance the fundamental practice of 'hands on, face to face' care with new methods of technology assisted nursing practice such as telephonic and remote nursing.

1.3 Global healthcare is moving at a pace assisted, and sometimes driven by, developing information and communication technologies. Across all four countries in the United Kingdom, healthcare organisations are encouraged to focus on patient centric services with an emphasis on integrated community based care, in an environment of limited resources and a growing older population (The Royal Society, 2006). Therefore, the use of electronic, mobile and integrated communication and information systems will be an essential requisite in the development of modern healthcare services. To advance this eHealth culture, the four countries in the United Kingdom have individual Connecting for Health programmes focused on using innovative technology in health and social care.

1.4 The vision for healthcare in Northern Ireland has been prepared through the publication of key strategic documents (DHSS&PS 2002,2004,2005). Along with the other three countries, the Department of Health, Social Services and Public Safety in Northern Ireland (DHSS&PS) has also outlined the need to optimise the use of technology in healthcare. The intention is to develop a culture of eHealth through three main strategic programmes, the Information, Communication and Technology Project (DHSS&PS, 2009), the European Centre for Connected Health (DHSSP&PS,2008) and the ICT Strategy 2003-2010 (DHSS&PS, 2005). These programmes have already enabled a range of new services for patients, such as Remote Telemonitoring and Picture Archiving for X-Rays, and there are plans to implement an Electronic Patient Record, along with many other initiatives.

1.5 As the eHealth agenda gathers momentum, it is important to engage with nurses to understand their perceptions of eHealth and the impact for their practice and existing roles. In February 2009 the European Centre for Connected Health (ECCH) and the Royal College of Nursing (RCN) collaborated to appoint a Professional Nursing Officer for a 6 month period, to contribute to the design and delivery of eHealth development opportunities, for nursing in particular and generally for the health and social care community in Northern Ireland.

1.6 A key objective was to engage with the nursing workforce in Northern Ireland to raise awareness about eHealth and gain insight into their knowledge and interest in Nursing Informatics in particular. This report is an account of the first step towards an active and focused engagement with Nurses in Northern Ireland regarding their interest, knowledge and use of technology in healthcare.

2.0 Making Sense of the Terminology

2.1 As technology is now part of everyday clinical practice, there is increasing research and discussion on new technologies and their application to nursing practice in the nursing and popular press. However, for many nurses there is some uncertainty around the terminology used in eHealth, so for ease of understanding commonly used terms are defined in Appendix A.

2.2 The term **Nursing Informatics** is used to define information and technology when applied to nursing practice, and is increasingly being used as a role descriptor for nursing expertise. The Royal College of Nursing describes Nursing Informatics as:

> 'an exciting field of specialist nursing practice, integrating information and computer science with nursing to enable nurses to collect and manage data, process data into information and knowledge, and make knowledge-based decisions about patient care' (Royal College of Nursing, 2006).

2.3 There are many definitions and descriptors used for **eHealth**, summarised as a culture of applying communication and information technology to health and care.

> 'the term characterizes not only a technical development, but also a state of mind, a way of thinking, an attitude and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology' (Eysenbach, G. J., 2001).

2.4 The terms **Connected Health** or **Connecting for Health** are used interchangeably to describe a model for healthcare delivery using technology, encompassing remote care such as home telemonitoring and including connected Information systems to increase accessibility, such as hospital booking systems and remote access to laboratory results.

2.5 Providing nursing care or monitoring health and/or care remotely means transmitting messages and to describe this type of care the **'tele'** terminology is used. **Telenursing** is not new; Nurses have provided health information and nursing advice over the telephone for many years. However, it's application in assessment, diagnosis and care advice is growing, for example the NHS Direct Service. Interactive video systems where patients can contact nurses at any time and arrange for a video consultation is another telecommunication method, not widely used yet, but does have potential, especially with so much care moving into the community; for example, helping patients to change a simple dressing, or deal with a leaking catheter by giving demonstrations.

2.6 T**elemonitoring services** records clinical observations, such as blood pressure, blood glucose, respiratory peak flow, and weight measurement and then transmits the readings down a telephone line to a centre where they can be monitored against the patient's clinical parameters as part of their clinical pathway. Telemonitoring helps patients and families to become active participants in their care, particularly in the self-management of chronic illness. It also enables nurses to provide accurate and timely information and support.

2.7 Telemedicine is similar to telenursing in that it provides medical care remotely, for example patient consultations for diagnosis or treatment advice access via a video or telephone link.

2.8 Telecare is the provision of remote monitoring using systems that allow monitoring of the home environment, such as motion sensors or gas detectors which can enable older or vulnerable people to remain living independently.

3.0 The Patient Experience

Strategic direction has become more patient centric with public demand for accessible, safe, equitable and value for money health services. The development of an ehealth culture will increase the opportunities for patients to become more involved in their own care.

3.1 Safe and equitable nursing care in an eHealth environment
The use of technology in nursing care should be underpinned by the rights of the individual (Human Rights Act 2000) and the standards necessary to improve the patient experience as set out in Improving the Patient and Client Experience (DHSS&PS, 2008) taking into account:

- The patient's choice and autonomy to make their own decisions
- The patient's right to privacy, dignity and respect
- The patient's right to information relating to their care
- The patient's and carer's learning needs to enable them to fully engage in the eHealth environment
- The patient's care environment and carer support

3.2 Protecting Patient Confidentiality
The patient has a right to have their information held securely and in confidence, only shared with relevant professionals when necessary. The ICT Strategy for Northern Ireland (DHSS&PS,2005) refers to the Caldicott Committee's Review (1997) and the changes in professional codes of practice (GMC and NMC) as a recognition of the need to share information, with appropriate safeguards and precautions.

3.2.1 As communication systems become bedded into everyday practice, of particular relevance to connected health is the sharing of information across statutory, voluntary and private sector agencies. To safeguard personal information the principles of The Data Protection Act (1998) should be applied. Further Guidance is available from DHSS&PS Code of Practice on Protecting the Confidentiality of Service User Information (2009) www.dhsspsni.gov.uk/confidentiality

3.3 Access
All four countries now have their own web based Patient Portal which gives direct access to information on services and health advice:

- England : http://www.connectingforhealth.nhs.uk/
- Wales : http://www.wales.nhs.uk/
- Scotland : http://www.show.scot.nhs.uk/
- Northern Ireland : http://www.hscni.net/

Some of these portals offer direct access to services such as Patient Choice, a booking service for hospital appointments; NHS Direct, nurse-led telephone health advice and access to Map of Medicine, a user friendly diagnostic map using questions on signs and symptoms. All the portals offer patients the opportunity to take control of their own health by giving a wide range of advice on healthy living and disease prevention.

3.4 Patient's Perspective
Many studies have shown positive benefits for patients when using an eHealth medium for information and advice, although they still are reluctant to lose face to face contact with health professionals (Donnelly, L.S et al., 2008). Yet, services such as remote monitoring have the potential to improve clinical outcomes in community dwelling patients (Clark, R., 2007) and was seen as a welcome addition to their overall care.

3.5 Services at or nearer to home
3.5.1 The European Centre for Connected Health (www.eu-cch.org) was launched by the Minister for Health in Northern Ireland, Michael McGimpsey in January 2008 to promote improvements in patient care through the use of technology in health and social care. Currently, the main aim is to establish a regional managed service for remote monitoring of patients with chronic disease (Remote Telemonitoring Northern Ireland [RTNI]), with a target of 5000 patients having access to remote telemonitoring by 2011.

3.5.2 It is hoped that patients with a RTNI service will be encouraged to take more control in the management of their condition and nursing will have a vital role in patient education and reinforcing positive health behaviours. Nursing is central to the success of RTNI, through the ability to create the rapport necessary to communicate effectively with patients at every level of the care pathway, remotely or face to face.

4.0 Review of the Nursing Literature

Beyond the nursing literature there is a wealth of research and evidence on eHealth, however for the purposes of this report the search was confined to Nursing Research databases, with the intention of sourcing UK nursing literature, where possible.

4.1 Method
A literature search was undertaken using PubMed database, British Nursing Index, and PROQuest. Practice Guidelines, Evaluations, Comparative Studies, Reviews and Articles were selected from nursing and other clinical journals.

Database	Results
PubMed Search terms: telenursing OR nurse triage AND remote telemonitoring	Returned n=59 Filtered to exclude the term emergency & nurse practitioner Returned n=6
British Nursing Index Search Terms : eHealth OR Telenursing OR Nurse Triage AND Remote Monitoring OR NHS Direct	Returned n=69 Filtered using Skills OR Knowledge OR Satisfaction OR Role OR Community Nurses Returned n=9
ProQuest Information Service (RCN) telenursing OR nurse triage AND remote telemonitoring	Returned n=4
Manual Search	Returned n=3

Further review of the abstracts excluded 4 articles as not being relevant to the aim of the literature search. The main body of nursing research and evidence in eHealth has been carried out in America, however as telenursing has developed in the UK, nursing literature is beginning to emerge.

4.2 Telenursing

4.2.1 The impact on nursing practice of the NHS Direct Service demonstrates how the absence of visibility is managed through the development of assessment skills based on professional knowledge and experience. Three broad areas in which nurses 'picture build', to anticipate and manage a situation where they are not actually with a patient, were identified:

- Gathering information
- Delivering information, advice and reassurance
- Building trust and rapport

Pettinari C.J. & Jessop L. (2001).

4.2.2 Although Nurses have adapted, extended and enhanced their skills and knowledge to meet the demands of technology supported nursing, some have expressed concerns about the impact a lack of 'face to face' practice has had on their clinical skills.

4.2.3 To overcome this a 'split-role' model, working as a remote nurse advisor as well as giving care in a 'face to face' context, is recommended (Snooks, H.A; Williams, A.M. et al., 2008). The plans to implement a Remote Telemonitoring Service for Northern Ireland (RTNI), may facilitate this split-role approach, as it is anticipated there will be more telephone contact by specialist and community nurses, rather than home visits, to provide follow up care.

4.3 Remote Nurse Triage

4.3.1 Nurse triage has been defined as the process by which a patient is assessed on arrival at A&E or at a GP Practice. More recently the term has been expanded to include a nursing response to enquires made by via the telephone (Edwards, B.,1998).

4.3.2 The benefits of nurse triage as an activity in terms of patient satisfaction, improved access to care and longer consultations is documented in a number of studies, including randomised controlled trials and prospective observational studies (Horrocks, S., Anderson, E., & Salisbury, C., 2002; Dale,J., Crouch, R., & Lloyd, D., 1998; Bunn, F., Byrne., G. Kendall, S.).

4.3.3 The process by which Telenurses practising triage arrive at their decisions has been explored (Pettinari, C., & Jessop,L., 2001; Edwards, B.,1998). The main findings centre on the nurse's ability to visualise or 'picture build' from the information given by the patient, including their clinical condition, their symptoms, as well as taking into account the situational context. This method of assessment practice assists the nurse in making clinical decisions. Ultimately, the decision made by the Telenurse will impact on the outcome for the patient, the remote monitoring service and a range of other community services.

4.3.4 The literature presents descriptions of decision support tools used in telephone triage, such as protocols, guidelines and decision trees, however they should not substitute for the independent assessment and judgement of registered nurses (Brennan, M.,1992; Marsden,J.,1998; Mead, P., 2000). Therefore, Telenurse individuality in making decisions may impact on triage.

4.4 Telenursing

4.4.1 Telenurses do seem to be able to compensate for the lack of visibility by developing their communication skills in listening and questioning, such as modelling body locations, contrasting observations, listening for physical signs, and selective listening. Also Telenurses are able to build trust and rapport over the phone by personalising calls, pacing the flow of conversation, and displaying sensitivity to the patient's environment.

4.4.2 Telenurses have developed methods of modulating voice quality and pace when giving information, advice and reassurance (Pettinari,C., & Jessop,L., 2001). Therefore, it seems that Telenurses can transpose a 'face to face' nursing experience into a telephone nursing experience with similar benefits for patient care.

4.5 Role Preparation

4.5.1 Telenurses are now employed in a wide range of services, including 24/7 help-lines, wellness counselling, smoking cessation, palliative care support, and monitoring chronic conditions. It is well documented that patient satisfaction is a factor in patient compliance and care outcomes. A study carried out with a sample of 1,939 patients using multi-variate predictors of patient expectations, found listening, clarity, and collaboration from a Telenurse, predicted patient satisfaction. The expectation of a competent nurse was the strongest predictor of patient satisfaction (Moscato et al., 2007).

4.5.2 Whether actual or perceived, competence is a vital requisite for a Telenurse. Preparation for such a role has been investigated (O'Cathain et al 2001 & 2004) and the findings were inconclusive in terms of recruitment from particular clinical backgrounds. Although the Telenurses themselves felt that a mixed background of hospital and community experience was more beneficial, there was no evidence to support this perception. Therefore, the authors concluded that there was no likely benefit in narrowing nurse recruitment to particular clinical backgrounds.

4.5.3 Yet it seems that expertise in specific clinical conditions may have an influence as Telenurses were more likely to override the software if they had clinical experience and knowledge of the health problem they were dealing with (O'Caithain et al 2001). This indicates that experience in managing chronic conditions may be of value when recruiting Telenurses to a Remote Monitoring Service for chronic conditions.

4.5.4 Yet, clinical experience alone cannot prepare a Telenurse for triage work. Studies have shown that a high level of safety was demonstrated when nurses were trained and experienced in telephone triage (Marklund et al. 1991, Dale,J., Crouch, R., & Lloyd, D., 1998; Lattimer et al. 1998). Training included working with protocols/guidelines, decision-making tools, IT skills, communication skills (including listening, questioning, reasoning, colloquialisms, jargon avoidance), referral procedures, legal and accountability matters. The value of training and experience cannot be under estimated. Many authors (Summersgill 1997, Alongi & Kirvan-Jones 1998, Dale et al. 1998) refer to training as vital for safety, consistency and appropriateness of outcomes.

4.6 Potential to support Patient Care

4.6.1 Viewed in the context of a patient journey, the Telenurse is a member of an integrated team of health professionals. Within the team, the Telenurse can carry out routine assessment and care in terms of giving advice and information to patients (Greenberg, E., 2000), thereby increasing the likelihood of more appropriate referrals to the community teams and leaving more time for care that can only be provided face to face.

4.6.2 Decision making by Telenurses was investigated by O'Cathain et al (2004) who found that overall variability in decision making was reduced using decision support software, although some variation remained dependent on different types of software. A nurse-level analysis adjusted for case-mix showed that the type of software explained 9% of the variation between nurses (p=0.001), along with length of experience (p=0.016) and type of experience (p=0.064). Nurses with more than 20 years experience were more likely to triage callers to self care than those with less than 10 years experience. They also suggested triage decisions may depend upon the individual nurse's approach to risk whether patients will be under–triaged and risk missing something important, or over-triaged resulting in more referrals with the potential to overload a busy service.

4.6.3 The literature indicates that the activity of nurse triage is effective in terms of quality and in reducing the number of home visits (Horrocks, S., Anderson, E., & Salisbury, C., 2002), There is evidence to suggest that home visits and GP visits can be reduced by up 50% using nurse triage, (Bunn, F., Byrne, G. Kendall, 2004). Therefore, it could be deduced that access to nurse triage would ultimately decrease workload in the community and could release resources for the benefit of patients in the healthcare system (Marklund et al., 2007).

4.6.4 The literature seems to indicate that by providing better information, triage by telephone supports clinicians through reducing inappropriate referrals, and hence will reduce workload. However, it could be argued the new Remote Telemonitoring Service (RTNI) for chronic conditions may detect previously undetected clinical need, and therefore will increase the clinical workload. Yet, a reduction in overall morbidity may in turn reduce the clinical workload and therefore has the potential to support clinicians.

4.6.5 Given the advances Telenurses have made in assessing patients, promoting self-care and, when required making appropriate referrals, it is likely that there will be benefits for both patients and clinicians by providing clinical services remotely. However, attention should be given to training for Telenurses in enhanced communication techniques to ensure the quality of service matches patient expectations and contributes to the effectiveness of the wider clinical team.

5.0 Scoping: Nursing Practice in eHealth

5.1 Virtually all nurses use technology and communication in their daily practice, whether it is diagnostic or treatment equipment, data information systems or mobile assisted care systems. Most nurses will come across new advances in the application of technology and some will lead on innovative application to nursing care.

5.2 Nursing practice initiatives are testing new and advanced applications, whilst others are maximising the use of established IT applications to modernise nursing services. Some regional and local exemplars of nurses using integrated information systems, delivering remote nursing care, data capture, and management information systems are given in Appendix B, simply to demonstrate the range of applications to nursing practice in place.

5.3 Although Northern Ireland does not have the full range of web enabled patient services in place yet, significant progress has been made in the implementation of the ICT Strategy (DHSSPS, 2005) and Nurses in Northern Ireland have shown their ability to maximise the opportunities presented to improve patient care.

5.4 Some local nurses have initiated technology solutions and led them through the initial design and testing process. Other technology based solutions have been tested and adapted for local use in Northern Ireland and nurses are heavily involved, if not leading, on some of these projects, for example:

- eCAT: Electronic Caseload Analysis
- Tissue Viability Service – Digital Pen
- Tele-Dermatology
- Virtual Ward
- Electronic Rostering
- Pandemic H1N1 Influenza Update: Template using web links
- Remote telemonitoring for patients with Chronic Conditions

*more detail is described in Appendix B

6.0 Engaging with Nurses on eHealth

A Communication Plan was launched in February 2009 to outline the method anticipated to engage with Nurses on eHealth.

6.1 Design
The Communication Plan design had two phases and was based on the need to give information to Nurses and at the same time gather information. With this dual purpose and taking cognizance of the many demands on staff time, it was decided to use a 'one-stop' approach through half day workshops. Although six workshops were planned for the Spring 2009, the demands of an impending pandemic of the H1NI flu virus necessitated a rationalisation and it was decided to have two workshops, one in Belfast and one in Antrim.

6.2 Aim
To communicate and market new developments in nursing practice emerging from a technology driven healthcare system to nurses in Northern Ireland.

6.3 Objectives
1. To outline eHealth Strategy set in a global, regional and local context
2. To describe the Remote Telemonitoring Service for Northern Ireland
3. To present information on nursing initiatives in eHealth, including local exemplars
4. Inform the development of an eHealth Nursing Strategic Response Document
5. Provide updates in current trends in eHealth and emerging nursing Practice
6. To seek innovators and ideas for further opportunities to develop ehealth
7. Consult with nurses regarding roles, boundaries and process
8. Consult with nurses to ascertain their understanding in terms of:
   a) perceptions
   b) expectations
   c) benefits
   d) challenges
   e) educational and training need.

6.4 Phase 1 : Nurse Workshops

6.4.1 In May 2009 two 3 hour workshops were held. Flyers advertising the workshops were circulated widely to Trusts, the private and voluntary sectors, GP practices, academic institutions and the RCN. The majority uptake was from Nurses working in the community, possibly because of the imminent implementation of the Remote Telemonitoring Service.

6.4.2 A total of 87 nurses attended the workshops across the spectrum of clinical practice and the majority were in a senior practitioner position. The workshop programme was planned to impart information on eHealth but also to gather information from the attendees.
Using opportunistic sampling, data was gathered through:

- a survey using a questionnaire (Appendix C)
- five focus groups (30 minute duration) using structured questions to guide the discussion (Appendix D)

6.4.3 The anticipated outcomes were to:
Give Nurses a better understanding of e Health in Nursing in terms of:

a) Demographic and policy context
b) Changing healthcare environment
c) Remote Telemonitoring Service and target expectations
d) Current trends in eHealth nursing practice

Launch an eHealth newsletter
Initiate interest in joining an eHealth Nursing Forum
Gather information to meet the planned objectives
Provide an opportunity for discussion

6.5 Phase 2 : Post Nurse Workshops

6.5.1 Following a preliminary analysis of the data from the nurse workshops, two discussion groups and a seminar were held to explore the findings.

6.5.2 Education Group (1 hour duration)
A group discussion was held with academic nursing staff to discuss the training and educational themes identified from the preliminary results of the survey and focus groups. The main education providers were represented.

6.5.3 Management Group (1 hour duration)
A group discussion was held with appropriate senior managers responsible for the operational delivery of nursing services to discuss the themes around roles, boundaries and process identified from the preliminary results of the survey and focus groups. Four Trusts were represented.

6.5.4 Consensus Seminar (2 hour duration)
There was a half day consensus seminar to discuss preliminary findings and agree final recommendations on the way forward to conclude the project. The seminar was held on 1st July 2009 in the RCN. Attendees included strategic leaders in nursing across all sectors, including the Northern Ireland Patient and Client Council.

7.0 The Nursing Voice : the findings

The need to rationalise the scope of the communication plan meant that the breadth of consultation across nursing was limited. The uptake was mainly from community based nurses, probably due to the forthcoming implementation of the Remote Telemonitoring Service. However, the findings indicate a quality and richness in the data which amply describes the nursing perspective on eHealth. The results presented in this chapter are descriptive and will be discussed further in Chapter 8.

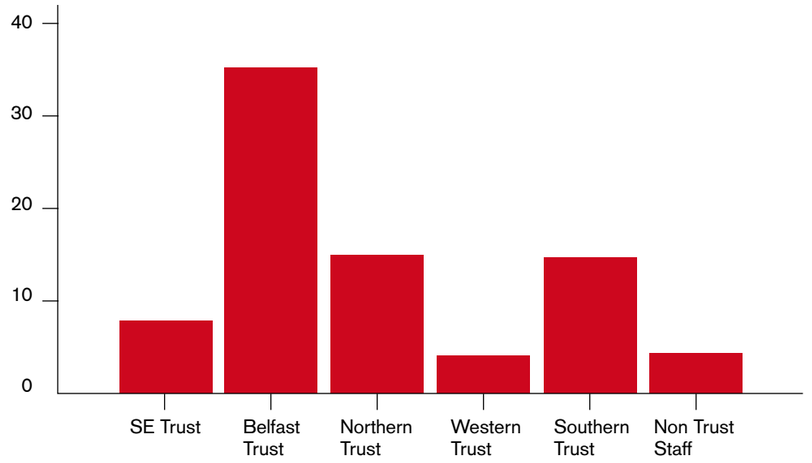
Phase 1

7.1 The survey

The data from the questionnaire was analysed using the Statistical Package for Social Sciences (SPSS).

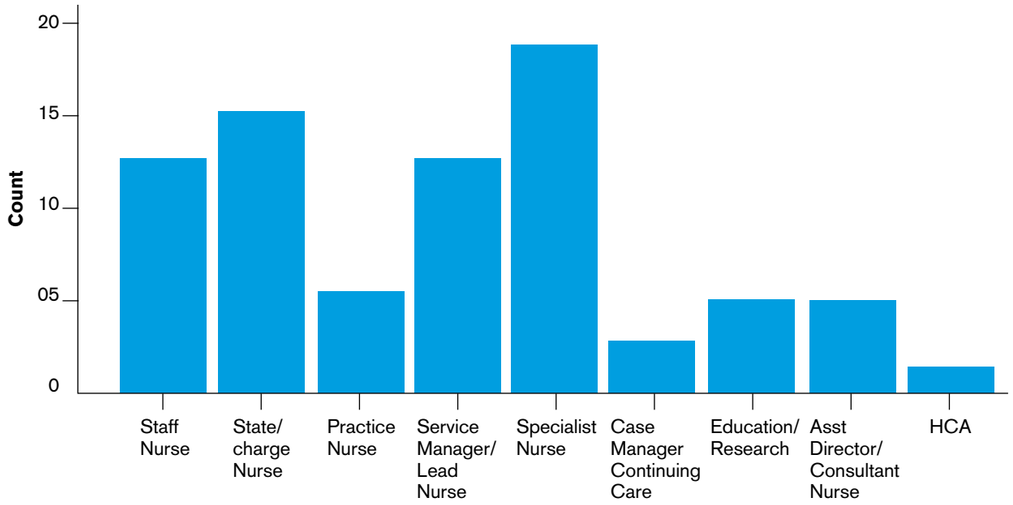
7.1.1 Demographic Profile
Of the 73 respondents, 89% (n=65) were employed by the HSC Trusts
(Graph I), 8.2% (n=6) were employed by GP Practices and one person came from education.
The majority of respondents mostly worked with adults (84.7%) in community nursing (71.2%), primary care (12.3%), and some were hospital based nurses (8.2%).

Graph I Employing Organisations



The nurses came from a range of roles (Graph II), were educated to degree level (86.3%), and some also held a Masters degree (17.8%). The majority of Nurses had been working as a registered nurse for more than 15 years (81.4%), with 24.3% having more than 30 years experience.

Graph II Job Role

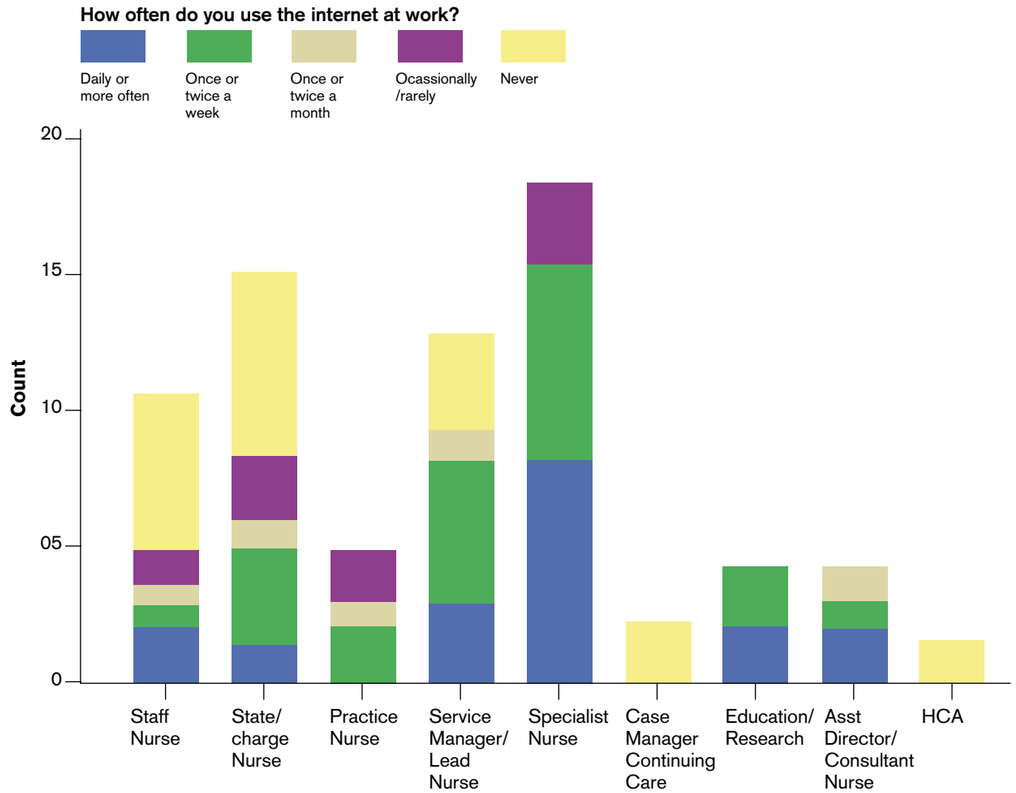


7.1.2 Access to a computer, email, intranet and internet

Given the senior level of the respondents, it is not surprising that 98.6% of them had access to a computer and 95.6% (n=70) used the computer on a daily basis. However, fewer participants were using email on a daily basis (77.8%) and even fewer accessed their organisation's intranet (52.8%) and fewer again used the internet (25% daily, 55% once/twice a week).

Yet most of the surveyed staff have access to a computer, with 60.6% either having sole use of a computer or sharing it with one other person, and 65.8% of respondents having immediate access and 20.5% only waiting sometimes to use it. Given the level of expertise and positions held among the cohort of Nurses, it was unexpected to see that some rarely or never used the internet Graph III.

Graph III Use of the Internet by Job Role



Of the group who have full access to a computer, 31% use the internet monthly or less often and the of the group who wait sometimes to access the computer, 73% use the internet monthly or less often (Table 1)

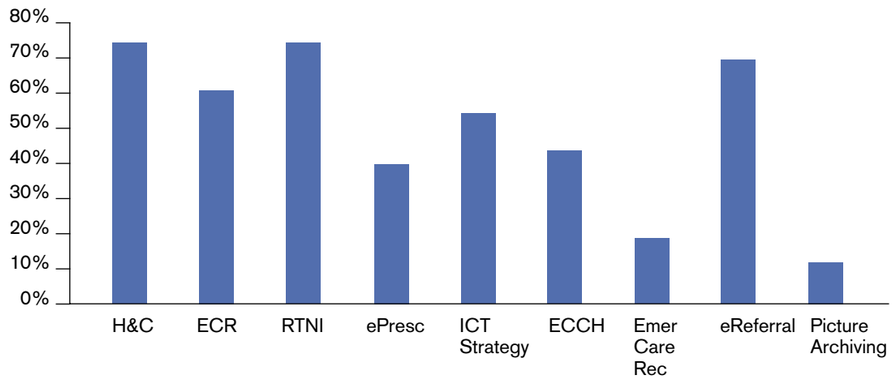
Table 1 Use of the Internet and Access to a computer at work

Count		Can you access a computer			Total
		Any time I need to	Sometimes I have to wait	Often I have to wait	
How often do you use the internet at work	Daily or more often	16	1	1	18
	Once or twice a week	17	3	2	22
	Once or twice a month	4	1	0	5
	Occasionally/rarely	6	0	2	8
	Never	5	10	4	19
Total		48	15	9	72

7.1.3 Knowledge of Connected Health

Over 75% (n=56) had heard of eHealth and in some detail (Graph IV). They gained their knowledge from a range of sources, with the majority (45%) gaining their knowledge through work.

Graph IV : Previous Knowledge



7.1.4 Attitudes & Perceptions

To ascertain and test attitudes to eHealth the respondents were asked to rate a number of statements and the results are generally positive and consistent. In terms of the impact technology will have on the relationship with patients, most respondents felt it would be beneficial (Table 2) although there was some reticence when asked about confidentiality (Table 3).

Table 2: Using technology in nursing will affect the nursing relationship with patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Be somewhat detrimental	7	9.6	9.6	9.6
	Have little or no effect	6	8.2	8.2	17.8
	Be somewhat beneficial	37	50.7	50.7	68.5
	Be beneficial	23	31.5	31.5	100.0
	Total	73	100.0	100.0	

Table 3: Using technology in nursing will affect the confidentiality of patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Be somewhat detrimental	11	15.1	15.3	15.3
	Have little or no effect	31	42.5	43.1	58.3
	Be somewhat beneficial	15	20.5	20.8	79.2
	Be beneficial	15	20.5	20.8	100.0
	Total	72	98.6	100.0	
Missing	0	1	1.4		
Total		73	100.0		

Generally the nurses felt that technology could improve patient safety (Table 4), and patient care (Table 5).

Table 4 Using technology in nursing will improve patient safety

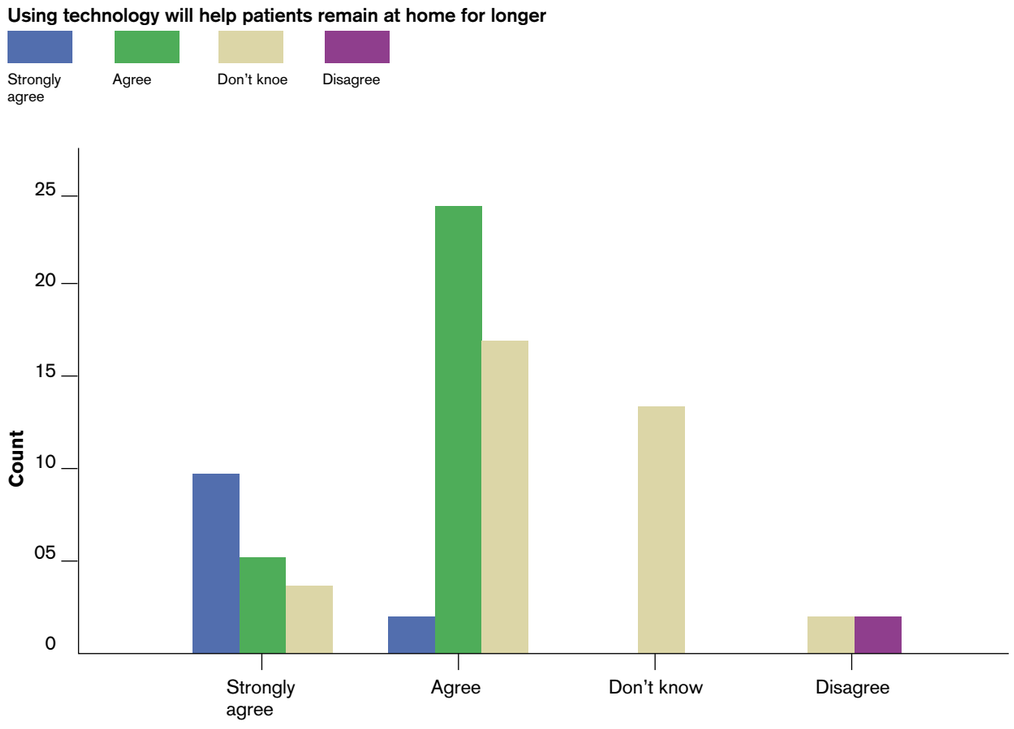
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	25	34.2	34.2	34.2
	Partly	41	56.2	56.2	90.4
	No	7	9.6	9.6	100.0
	Total	73	100.0	100.0	

Table 5 Using technology improves patient care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	13	17.8	17.8	17.8
	Agree	36	49.3	49.3	67.1
	Don't know	22	30.1	30.1	97.3
	Disagree	22.7	2.7	100.0	
	Total	73	100.0		

Nurses were quite positive about patients using technology to manage their own health, but were unsure whether the use of technology would help patients to stay at home for longer. As can be seen in Graph V, 58 respondents (79%) either agreed or strongly agreed that using technology will help patients manage their own health, and 39 (53%) also agreed or strongly agreed that using technology will help them to remain at home for longer. However 13 respondents (18%) were unsure on both statements.

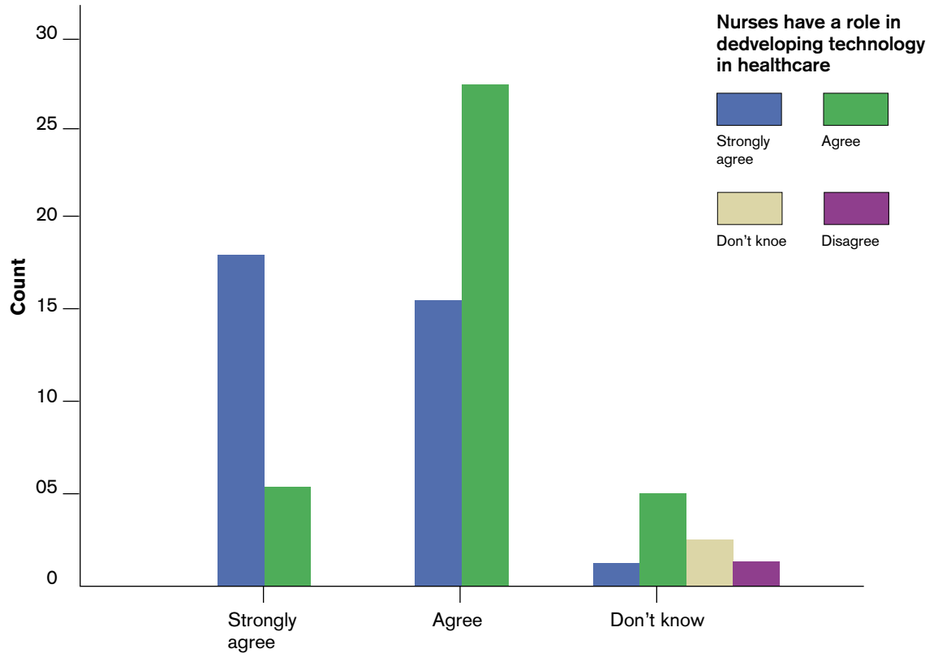
Graph V: Nurses' perceptions of the use of technology to improve patient outcomes.



7.1.5 Nurses' Role in eHealth

There appears to be a strong consensus that nurses have a role to play in the developing healthcare technology, especially among the participants who have an interest in new developments (Graph VI), however 91.7% felt they needed to prepare for such a role (Table 7).

Graph VI Nursing role in healthcare informatics



New developments in eHealth intrest me

Table 6 Nurses need more preparation in terms of knowledge and skills for the technological age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	28	38.4	38.9	38.9
	Agree	38	52.1	52.8	91.7
	Don't know	2	2.7	2.8	94.4
	Disagree	4	5.5	5.6	100.0
	Total	72	98.6	100.0	
Missing	System	1	1.4		
Total		73	100.0		

7.1.6 Preparing Nurses

To prepare nurses for the future and to encourage an eHealth culture and connectivity, there will need to be a range of flexible methods adopted to deliver on the knowledge and skills required. Nurses were asked to rank from 1 to 5 their preferred way of learning with 1 being their first choice.

As can be seen in Table 8, the respondents ranked learning on the job with dedicated time as their first preference, however there was a lack of consistency in that view. There was more consistency in the view that learning on line in work time (ranked 4th) was not a preferred option.

Table 7 Ranked Preferences : Learning Methods

	N	Mean	Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Prefer to learn on the job with dedicated time	Ranked 1st (n=60)	2.0167	1.44377	2.084	2.487	.309
Prefer to learn on line in my own time with time off in Lieu	Ranked 5th (n=56)	4.0714	1.53572	2.358	-.374	.319
Prefer to learn on line in work time	Ranked 4th (n= 52)	3.9231	.85969	.739	-.619	.330
Prefer to learn formally at study days	Ranked 3rd (n=56)	2.5893	1.42417	2.028	1.712	.319
Prefer to learn Buddying-learning alongside an expert practitioner	Ranked 2nd (n=60)	2.2167	1.19450	1.427	.552	.309

Note : The lower the mean statistic the more that option is preferred by the respondents, e.g whilst the respondents selected on the job training with dedicated time as their first preference, there was significant variance in the results (1.44std.dev.; skew 2.48), meaning that there was a polarisation towards 3.0 (highlighted in blue). Therefore the gap between the first and second preference was narrow. On line learning in work time was ranked 4th as the least preferred option (3.9231), however this selection had the most consistency with the least variance of opinion as highlighted in red.

As for future learning, preparation in nursing informatics, followed by preparation in computer programming were the least popular programmes although there was a greater skew on these results, meaning that the views were quite polarised (Table 9). However there was less variance between the ranked preferences with a mean of 2.69 being ranked as first choice and mean 3.69 ranked as fifth choice, demonstrating some reluctance to embrace these programmes of learning. This could be due to uncertainty of the programme content as no explanation was given when the question was posed.

Table 8 : Preferred Education Programmes in eHealth

	N	Mean	Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic
Preparation Computer programmes	Ranked 4th n=63	2.9697	1.83948	3.384
Preparation Innovations in Healthcare Technology	Ranked 3rd n=63	2.7778	1.33736	1.789
Preparation Nursing Informatics	Ranked 5th n=65	3.1231	1.62507	2.641
Preparation Managing Care using Technology	Ranked 2nd n=63	2.6984	1.23960	1.537
Preparation Developing Technology for Practice	Ranked 1st n= 65	3.6923	1.53015	2.341

It was noted that a number of respondents did not complete questions described in Tables 7 & 8, possibly due to ambiguity in the instruction given for completion. The data gathered was inconclusive and therefore would require further investigation.

Table 9

Benefits of eLearning	Barriers to eLearning
• Reduces time out/travelling time/replacement costs • Good for mandatory training updates • Forms networks without Trust/ geographical boundaries • Fits in with work/life balance- doing in own time • Record of attendees/finish course • User friendly	• No dedicated time • No hardware • Lose the face to face contact/ opportu nity to network • Cannot clarify/use of verbal and non verbal communication • Overtime on the cheap/TOIL • Time on line clocked up/ recorded –big brother • Fear of Technology

Table 10

Wish List	Preferred Learning Media
• Idiots Guide to evidence base in electronic form – like a decision tree • All staff access to web • Courses/ eguides/user friendly on how to navigate web for information • Dedicated areas at work equipped with computers for learning/access to web/evidence	• Webcam on computers to link in & see lecturers • Interactive programmes – testing knowledge/videos • Clinical demonstrations e.g video link • Videoconferencing • Learning in own time at own pace - versus protected time at work

7.2.2 Management Theme

The four categories used to describe the data in the Management theme were Patient Care – eHealth solutions; Service –eHealth; Risks and Challenges; Wish List, as set out in Tables 11 & 12

Table 11

Patient Care – ehealth solutions
• International Normalised Ratio (INR) Testing for Patients on Warfarin therapy - near patient testing helps patients to monitor their condition/titrate their drugs/ could be used with a message system • Leg Ulcer Clinics – more accessible using picture imagery • Continence Review could be virtual and trigger a self completed questionnaire. Response could be scanned for alerts, with call back for new assessment and could link to product order. All this could be automated. • GP systems are not accessible for District Nurses, all different systems and not connected • Palliative Care – Webcam for patients linked to specialist nurses • Videoconferencing carers groups/support groups • Expert patient programmes on CD/or web based
Service – ehealth solutions
• Data access/discussion group/blogs for patients/carers/families o Book their own appointments o Update with information o Answer questions • Electronic pen to record nursing notes • Travel Calculator like SATNAV- measure mileage in the community -no more mileage forms- could be linked to an electronic payment system • Traceability & Security - lone worker tags/chip • Secure Web –e mail patient details

Table 12

Risks and Challenges
• Using numbers as identifiers –typed in wrong number patient recorded as deceased • Measuring performance- managers need to understand what they are measuring • Literacy is an issue -not computer literacy- making a succinct message or record • Telemonitoring: - patient anxiety - Unmet need –patient expectations - Long term dependency
Wish List
Mobile phones • Automated text messages • Appointment systems • Medication compliance/reminder messaging systems Lap Tops • Electronic Care Record with message system • Access to web e.g Nursing Guidelines • Onward Referrals Record Mileage automatically using SATNAV technology Remote access to medical records for - End of life care - Recent medical interventions - Medication prescribed.

7.2.3 Questions Raised by Nurses at the Workshops

A number of questions were raised and answered at the workshops, mainly clarification on the Remote Telemonitoring Service. A number of written questions were received and the responses were given by email following the workshops.

Phase 2

7.3 Discussion Groups

A group of education representatives and a separate group of management representatives were formed, the aim being to explore the preliminary findings from the survey and the focus groups held at the Nurse Workshops. The discussion was prompted by a dreamer/realist/critic tool. Notes were taken and content analysis was used to theme the data gathered, into three categories; future possibilities, making the possibilities a reality and a critique.

7.3.1 Education Discussion Group

Queen's University, University of Ulster, The Beeches Management Centre, Northern Education and Development Consortium, Northern Ireland Practice and Education Council (NIPEC), and RCN Professional Development Department were represented.

Future Possibilities

a) A blended approach with e-learning supported by traditional teaching methods would appeal to the majority of nurses.
b) Interactive and remote media to:
   i. Support but not replace teaching
   ii. Provide tutorials
   iii. Assess competencies 'on the job'
   iv. Provide multiple choice e-learning packages.
c) Partnerships with service providers to jointly develop e-learning programmes. It was felt that progress had been made with joint appointments between Trusts and Universities.
d) Using social networking, like Facebook and Twitter to share knowledge and interact with students on a bigger scale, appeal to pre-registered students. This style of mobile networking will be expected by the students of the future.
e) A web based 'Idiot's Guide' guide to nursing evidence is available but possibly not widely known of, unless the nurse is in some form of study programme (http://www.vts.intute.ac.uk/tutorial/nursing).

Making the possibilities a reality

a) Investment in infrastructure. Currently Trust firewalls prevent nurses from accessing University websites for e-learning and the use of certain medias, such as downloading video material. Access is denied to social networking sites. Building some form of independent platforms where authorised users can interact from their workplace is required.
b) Timely Access. Synchronisation of tutor and student availability presents difficulties at present and with more remote and interactive access to teaching staff a solution would have to be found.
c) Developing e-learning programmes and interacting remotely requires a particular expertise and most teaching staff would require further professional development.
d) Scoping off the shelf e-learning applications to ascertain local applicability and develop a communication plan to raise awareness.
e) Dedicated e-learning space in the workplace.

Critique
The discussion focused on the range of possibilities, and weighing up the pros and cons with a view to selecting realistic options to develop. Promoting web based communication and electronic learning to enhance practice and replace or support existing study programmes would be made easier with:

- Blogs/e discussion forums
- User -friendly guide to searching the e-library and web for evidence
- Dedicated computer suites for learning in the workplace

7.3.2 Management Discussion Group

There were five management representatives from four Trusts.

Future Possibilities

a) Every nurse requires email access, and internet access from their date of appointment as essential for the distribution of alerts, clinical updates and knowledge updates, Swine Flu communication was given as an example.
b) 3G Mobile Phones/Blackberries for senior practitioners in the community should be essential kit.
c) Electronic Care Record will ease the implementation of the Single Assessment and will negate duplication.
d) Data capture needs standardised coding for nursing across all areas of practice, possibly adapting data codes already in use.
e) A joined up whole system approach; integrated care needs integrated IT systems to cover the complete patient journey and linked to other providers, for example Marie Curie.
f) Mobile phone technology, using 3G phones to record data, transmit messages such as reminders to patients.

Making the possibilities a reality

a) A whole systems approach and the electronic record would improve
    - patient safety
    - patient experience
    - assist with monitoring and improve nursing practice

b) Performance Management requires knowledge in data analysis to understand how to generate meaningful reports from IT systems, interpret and present the information, such as using dashboards. This will be a crucial training need for all nurses in the future.

c) Nurses, with skills in informatics could be more involved in IT design and programme planning. Nurses working with IT Analysts as an integral part of the team would save resources in the long term.

Critique
The discussion focused on the range of suggestions emanating from the nurse focus groups, weighing up the pros and cons with a view to selecting realistic options to develop. The SATNAV suggestion for community staff made by the Nurses at the workshops was explored. The group felt this may be a realistic possibility, the benefits being:

a) Efficiency savings on travel expenses
b) Could be used with scheduling and allocation of home visits
c) Could be used to track staff and redirect workload
d) Protect lone working staff, staff would safer and more valued
e) Could be used in performance management.

It was recognised that there could be staff resistance, but the group recommended that the feasibility of SATNAV technology should be explored.

7.4 Seminar for Strategic Leaders
A Seminar for Strategic Leaders was held in June to present the preliminary findings from the Nurse workshops and the discussion groups with Nurse Educators and Managers, the aim being to synthesise the information and through consensus test for content validity.

There was wide representation by senior nurse leaders across all sectors, including the Nursing and Midwifery Advisory Group at the DHSS&PS, five Trusts, both universities, provider support organisations, the Hospice, Royal College of Nursing, and the Patient and Client Council. Presentations were given by the Chief Nursing Officer, the Programme Director ECCH and the RCN/ECCH Professional Development Officer for eHealth, following which there was a discussion on the way forward.

The seminar discussion concluded that connectivity will change nursing practice and four elements need to be in place to optimise the change:

- Strategy
- Infrastructure
- Capability
- Patient experience and contribution

7.4.1 Strategy
Developing an eHealth culture within nursing is pivotal to developing and implementing an eHealth Strategy for Nursing. Technology in health care will permeate every aspect of patient care and nursing practice. A strategy will guide how connected health could create opportunities to maximise the effectiveness and efficiency of nursing practice for the benefit of patients, will support future nurse leaders in Nursing Informatics, and will provide the context for nursing informatics to contribute in academia, education, clinical practice, and management. Such a strategy will progress the modernisation of nursing services.

7.4.2 Infrastructure
Identifying the application of technology to nursing practice will require expertise in Nursing Informatics, essential in building a technology based infrastructure in health and social care. Appropriate and relevant application could drive IT system development in the future, making efficient use of resources.

Nurses have an innate sense of practicality with well developed skills in problem solving, particularly useful in technology and communication solution design. To do this, nursing staff require access to the full range of communication and technology applications applicable to their grade and job role, for example all nursing staff require an email address within one week of starting in post.

E-Learning and access to academic institutions for remote learning requires internet access. Providing links to the internet, through the organisation's intranet is fruitless if Nurses cannot gain access because the required permissions have not been granted.

7.4.3 Capability

Building nursing capability to contribute in a meaningful way to the eHealth culture and connected health systems will require access to further their knowledge and skill portfolio. It was recognised that e-Learning has not been very popular among nurses, possibly because the E-Learning element is completed outside the workplace. E-Learning in the workplace and using other media in protected time and in a protected space could be the way forward.

A 'can do' management culture in organisations will promote creative thinking, doing things differently, to redesign services. Modernisation and redesign will create the capacity and capability to move into new arenas of care using technology and connected health systems. However, there is a need to provide some resources to kick start change and provide support for services whilst waiting for workload balances to be reconciled.

Leadership in Nursing Informatics, working across practice and academia, would contribute to, and enhance an eHealth culture in Health and Social care.

7.4.4 The Patient Experience and Contribution

When it comes to advising on system and process design, patients can be 'experts' in their own right and could be included at the early stages of development. Nurses leading on nursing informatics could endeavour to work with patients in testing and evaluating new solutions. Seeing the process from the 'other side of the fence' would provide valuable insight for health and informatics professionals.

8.0 Discussion

8.1 Engaging with Nurses on the eHealth agenda has been insightful in terms of their interest and knowledge of eHealth and how connected health could be applied to their nursing practice. In particular, the focus groups indicated that nurses are already thinking about technology based solutions to many nursing issues with an essence of creativity, common sense and adaptability.

8.2 The cohort of nursing participants in this engagement were not representative of the nursing workforce in Northern Ireland, in terms of age, job band, role or area of practice, as the majority were senior practitioners and specialist nurses from a community background. However, it could be argued that the bias towards senior and expert practitioners (82%) in this opportunistic sample was fortuitous and added to the quality of the data.

8.3 There have been a number of surveys carried out over the last few years, examining nurses access to, and attitudes towards technology (Royal College of Nursing, 2006; Community Practitioners & Health Visiting Association, 2006; DHSS&PS, 2007). The findings from this study reflect those earlier studies in some aspects, but there are some differences worthy of discussion.

8.4 Access and ICT infrastructure

8.4.1 In Northern Ireland, 95.6% of the respondents in this study had daily access to a computer compared to 91% in 2006, which was above the UK average at 88% (Royal College of Nursing, 2005) and 79% reported by community staff (Community Practitioners and Health Visiting Association, 2006). The percentage of nurses using email every day has increased slightly by 1.8%, and using at least weekly by 9%. However, Using the internet every day dropped significantly by 31% from 56% to 25%, although using the internet at least once a week has only seen a 2% drop (Royal College of Nursing, 2005).

8.4.2 It could be concluded that whilst access to the hardware has increased there is actually less usage of communication technology, and given the level of seniority within cohort of participants and specialist areas of practice, the reasons for this drop require further exploration. Indeed some specialist nurses never accessed the internet at work. It may be they do so outside their working hours at home, as 94.5% use the internet at home and at work. This concurs with another survey of health professionals carried out in Northern Ireland (DHSS&PS, 2007), which found that 93.7% used a computer at home for work purposes.

The qualitative data from this investigation indicates that there are two possible reasons for not using the internet at work:

- Trust firewalls are preventing full access to the web
- Staff, even senior clinical nurses with a remit for research, are not granted internet access in their Trust.

The result is that Nurses may not be optimising information in their daily practice and in turn not fulfilling their job description, unless they do so at home using their own ICT infrastructure.

8.5 The Use of Technology in Patient Care

8.5.1 There was a positive attitude towards using technology in patient care, with 91.5 % of the nurses believing that the use of technology will improve patient safety, although there was some concern regarding confidentiality (15.3%) and 9.7 % felt that technology would be detrimental to patient care. Yet, 67.1% felt that technology would improve patient care and 79% agreed that using technology will help patients manage their own health. However, only 53% felt that the use of technology could help patients remain at home for longer, so it seems that almost half of the respondents still envisage an acute based healthcare system. Considering the cohort of respondents was mainly community nurses, it may be that more information on future possibilities in remote telehealthcare at home and technology assisted health care near to home

8.6 The Role of Nursing in Informatics

8.6.1 Both the findings of the survey and the focus group indicate that Nurses are ready and willing to become involved in technology based nursing, and 95.8% felt that nurses had a role in developing technology in healthcare. The richness of the data gathered from the focus groups on 'blue sky' thinking was an indication of the level of creativity, with many workable solutions described on 'wish lists'. Given this level of enthusiasm, it seems that nurses should be encouraged to work with IT Analysts to 'fix' clinical and administrative systems they identify as 'blockers' to effective patient care. Simple solutions can have a big impact and the creativity, yet grounded approach of Nurses is yet to be exploited.

A nursing informatics curriculum to meet the needs of the nursing workforce in an eHealth culture would prepare nurses to apply their creativity in practice and eqip them with the understanding and language of ICT systems. This would help nurses to communicate the needs of nursing in the design and implementation of ICT systems in a meaningful way.

8.7 Knowledge and Skills

8.7.1 The participant's knowledge of current initiatives, such as the Electronic Patient Record (61.6%), the proposed Remote Telemonitoring Service (74%), and the Electronic Referral System (69.9%) indicated an awareness of forthcoming technology and over half (54.8%) knew of the ICT Strategy. However, when it came to expressing an interest in education courses, the response rate to those questions dropped (82% & 71% respectively), possibly because nurses have not grasped the application of technology in nursing practice as an area of expertise in it's own right.

8.7.2 As for preferred learning styles and media, the focus groups results indicate that nurses are receptive to e-Learning, but the survey results did not back that up, with e-Learning being ranked in the bottom two of preferences. Nurse Educators and the Nurse Leaders felt that uptake of e-Learning was poor and the programmes were expensive to produce. The answer to this may lie in the exploration of the findings on access to the internet in the workplace. If the infrastructure is not in the workplace for on line learning, then the uptake will be poor. Yet, the view overall was that on line learning does require development, especially for updates on statutory learning programmes.

8.8 Planning and managing nursing care

As for applying data and information to make practice decisions, the operational managers and strategic leaders felt this was not being fully optimised, although it was thought to be important in performance management. It may be that preparing nurses to make use of the data which information systems produce requires further attention, but firstly the data has to be labelled in a standardised format. Whilst there has been a lot of work carried out in describing nursing for information systems in America, the categories and language used are not easily transferable. However, efforts are underway in community nursing in Scotland (ISD: NHS Scotland, 2008) to articulate what nurses do in a language that can be used for specification in information systems.

8.9 New ways of working

As the healthcare environment moves towards an information culture, patients will become experts in their own care. Nurses will take on the role of broker, helping patients understand their condition and care options, using facilitation, interpretive and analytical skills. Nurses will continue to give direct care to patients and the use of technology and communication systems will become commonplace. The literature has demonstrated that new nursing roles, such as telenursing, are already emerging and almost 90% of the respondents demonstrated their interest in new developments in eHealth.

8.10 Nurse Leadership

The qualitative data from this opportunistic engagement with nurses has provided an insight into the need for nurse leadership in eHealth. All cohorts, the practicing nurses, the service managers, the nurse educators and the strategic leaders articulated their understanding of the eHealth agenda, future possibilities and ideas. Making it happen will require a focus on eHealth with a strategy and dedicated leadership across all sectors of nursing including policy, education, management and practice.

8.11 Summary

This first step in engaging with nurses on the eHealth debate has not only raised awareness among the nursing workforce but also provided a voice for Nurses from practice, education and management to articulate their views. Ultimately this will initiate further work and development in the area of Nurse Informatics and the contribution nursing can make in developing an eHealth culture in Health and Social Care.

9.0 Recommendations

1. To maximise the nursing contribution to eHealth a nursing strategy should be developed, with priorities for action and an implementation plan

2. A nurse lead role in eHealth and Nursing Informatics is required to advance a nursing strategy in eHealth

3. The science of data gathering, interpretation, analysis and application to nursing practice, education and management requires development

4. Enthusiasm in nursing practice for using existing technology and information systems to create solutions for current nursing issues should be strengthened

5. Education Providers should consult with nurses to understand their learning requirements and develop programmes to meet their needs

6. Courses in nursing informatics should be developed

7. Courses to raise awareness and promote nursing informatics should be provided in the workplace, either face to face or remotely using a range of media

8. Links between key stakeholders in policy, education and service delivery should be developed to drive forward the ehealth agenda in nursing.

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Appendix A

Definition of Common Terms

eHealth is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.
(Eysenbach,G. Journal Med. Internet Res 2001;3(2):e20)

Connected Health is a term used to describe a model for healthcare delivery that uses technology to provide healthcare remotely. It aims to maximize healthcare resources and provide increased, flexible opportunities for patients to engage with clinicians and better self-manage their care. Connected Health encompasses programs in telehealth, remote care (such as home care) and disease and lifestyle management, and is associated with efforts to improve chronic care. (Compiled from http://www.connectingforhealth.nhs.uk/ : http://www.wales.nhs.uk/ http://www.show.scot.nhs.uk/ : http://www.hscni.net/)

Telenursing is the use of telecommunications technology in nursing to enhance patient care. It involves the use of electromagnetic channels (e.g. wire, radio and optical) to transmit voice, data and video communications signals. (Skiba, D.J: (1998) Health-oriented Telecommunications in Nursing Informatics. Where Caring and Technology meet. M:J: Ball , et al., Editors. Springer: New York. P40-53)

Telemedicine is the use of audio, video, and other telecommunications and electronic information processing technologies to provide health services or assist health care personnel at distant sites. (American College of Physicians online, http://www.acponline.org)

Telecare is the remote or enhanced delivery of health and social services to people in their own home by means of telecommunications and computerised systems. Telecare usually refers to equipment and detectors that provide continuous, automatic and remote monitoring of care needs emergencies and lifestyle changes, using information and communication technology (ICT) to trigger human responses, or shut down equipment to prevent hazards. (http://www.jitscotland.org.uk/action-areas/telecare-in-scotland)

Nursing Informatics is a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, knowledge and wisdom in nursing practice. (2008: American Nurses Association's Scope and Standards for Nursing Informatics Practice)

Appendix B

Local Examples of Technology Applications in Nursing

Queen's University School of Nursing
E Discussion Forum for pre-Registered Students

The discussion forum enables teachers and students to participate in discussion at a convenient place and time. The discussions can be between students or between students and tutors. The discussions are recorded as a series of messages that can be viewed, reviewed, summarised, quoted and archived. Selected messages can be a basis for further discussions in class or for 'frequently asked questions'.

An example of this has been used within a final year module to discuss assignment topics. The module coordinator sets up the discussion to allow students to post messages to the module coordinator and other students regarding the management assignment. It is very useful to get questions answered by the teacher or peers, or to query something that they have found in the literature while researching for their assignment. In addition students can put forward ideas or useful references they may have found.
Evaluation of using the forum had been favourable and students particularly commented on the ease of use, and efficient answering of their questions by the module coordinator.

Southern Trust
Teledermatology

Issue
Meeting Departmental targets for referral to treatment for patients with suspected skin cancer had placed an increased demand on the dermatology service.

Solution
Teledermatlogy Co-Ordinator (Nurse) makes an initial assessment over the telephone and can offer the patient an appointment.

Outcome:
From December 2008 to May 2009 335 patients were seen. Tele-dermatology has enabled patients with potential skin cancers to be seen within the timescale set out in Departmental targets. It has also enabled the dermatology service to get the right patient to the right clinician in a timely fashion and patients do not have to wait for diagnosis over a protracted period of time.

Joint work by Belfast Trust, South Eastern Trust and EHSSB
Tissue Viability Service: Digital Pen Project

Service need
To develop an outcome focused service there was a need to record specific patient information, streamline audit arrangements and produce reports and at the same time reduce the amount of time spent on paperwork and manual data entry, as well as improve information retrieval and filing.

Solution
Digital pens are used like ordinary pens on ordinary paper. The pen contains the electronic capability of storing time stamped content and the paper is infused with irregular dots which act as coordinates, enabling the pen to know which form is being used, what is being written and where. Each pen has a unique identifier allowing all information recorded by it to be traced back to source.

The data stored in the pen is transmitted through a docking station linked directly to a PC or via a compatible Bluetooth Blackberry or Mobile phone to a central server for storage, further processing/manipulation and analysis/reporting, or transmission to colleagues. (Figure 1)

Advantages
Information is encrypted, logged and identified, with automatic back-up on a secure web portal allowing for traceability, creation of reports and an audit trail.
Progress
The digital forms have been created and tested in local pilot sites, the electronic data base is almost formulated and it expected that the Pen will go 'live' this year.

Southern HSC Trust GP Out of Hours Service
Using e Links

Issue
Frontline line staff in GP Out of Hours needed access to the most up to date guidance on swine influenza

Solution
The Service Manager (from a nursing background) set up a link from their in house Operational Guidelines electronic folder to a Swine Flu Operational Protocol. There were four steps for GPs to follow from Screening & Assessment, Management, Coding and Infection control.

Each step had links to the relevant website, for example Screening - was linked to the DHSS&PS site and the recommended HPA algorithm - staff were able to check the most up to date version for any changes in screening questions, geographical locations etc.

Each DHSS&PS communication was reviewed against the GP Service operational protocols and these were updated for staff, highlighting any changes in process.
A protocol for obtaining influenza swabs during the out of hours period was developed, with links to the relevant DHSS&PS guidance documents for ease of reference for staff. This protocol was then placed onto the Trusts intranet for access by Nursing staff as well as GPs in this new process.

Outcome
The work undertaken was in advance of the DHSSPS setting up a dedicated webpage on swine flu for staff. The Service Manager learned how to use hyperlinks, and as a result was able to set up a folder for DHSS&PS swine flu communications and link these to the service operational protocols. With this simple solution Staff could access the current versions of Swine Flu guidance in real time, thereby reducing the risk of acting on invalid information.

Belfast HSCT, Southern HSC Trust & Northern HSC Trust
The eCAT Tool
The electronic Caseload Analysis Tool provides District Nurses, Team Leaders, Operational and Strategic Managers with a method of describing and benchmarking patient caseloads, allied to the staff resource, and will assist towards a workload analysis and staff allocation. The Tool can be used to describe:

- the demography of the caseload in the context of the total population served
- the number of patients on the total caseload and on the 'working caseload'
- casemix in terms of the primary nursing need of patients
- visiting patterns, that is the number of patients according to the frequency of visiting
- the location of care, described in the number of patients receiving care in categories of location
- patient dependency, scored according to Activities of Daily Living and separately scored according to the dependency on the team
- throughput as measured by the number of referrals, including inappropriate, one-off, short care referrals, the number of admissions to the caseload and the number of discharges, and onward referrals to other agencies.
- The number of reviews and reassessments in categories of care.

The tool was tested in three Trusts during 2008 and independently evaluated by the University of Ulster.

Progress
The project is being progressed by a consortium of interested parties, including the Belfast Trust, University of Ulster, Yarra Software and the Community Practitioner and Health Visiting Association, and they have just been successful in gaining financial support from Invest NI. It is hoped the eCAT electronic tool will be rolled out in some Trusts this year.

South Eastern Trust
Virtual Wards

Issue
Improving Community Based Services to prevent hospital admissions for patients with chronic disease

Solution
The 'Virtual Ward' is a system of care based on remote communication between team members who use the systems and care model of a hospital ward for patients in the community. The staff communicate in real time, using a software package and lap tops to record information in the patients home. Each Patient is allocated a 'virtual' workspace - a secure workspace where healthcare professionals can assemble all the content and care documents relating to that individual. The information is immediately available to any authorized personnel working with that patient. The care team can store information about patients which may be needed by another member of the team, including assessment forms, notes from consultations, photos and other content. The pilot project ran from the 1st January to the 31st March 2009.

Progress
During the 12 week pilot 18 potential patients were identified through the PARR tool. These 18 potential patients were enrolled onto the virtual ward and were visited by the case co-ordinator and screened. It was the responsibility of the case co-ordinator to coordinate the care and clearly communicate with all members of the team. A system was also put in place to 'flag' the patients on the virtual ward so that they were easily identifiable as being a virtual ward patient. This was vital to ensure that if a patient presented at A&E or required medical input from GP 'Out of Hours' services the attending doctors would be aware of their status and could access information regarding their ongoing care and treatment plan.

This 'Virtual Ward' model of care also incorporated remote telemonitoring when necessary and only required one additional member of staff, yet had significant impact (Table 1). This small project demonstrates the how an eHealth culture can impact on outcomes.

Table 1: Impact of Virtual Ward on Secondary Care

		% Decrease via virtual ward
Number of Admissions	20	122%
A/E Attendances	14	600%
Hospitals Beddays Used	157	313%

Appendix C

QUESTIONNAIRE

This Questionnaire should take approximately 15 minutes to complete.
All the information is confidential and cannot be attributed to you in any way.
When completed, please place in the envelope provided by the group facilitator

Thank you for your co-operation

PLEASE TICK YOUR RESPONSE

1. Who is your employer?	Please tick one box	For Office Use only
Trust, please State		1,1-1,5
GP Practice		6
Nursing Home		7
Voluntary Organisation		8
University/Education provider		9
Other, please state		10

2. Which of the following best describes your job?	Please tick one box	For Office Use only
Staff Nurse		2,1
Sister/Charge Nurse		2
Practice Nurse		3
Service Manager		4
Specialist Nurse		5
Other, please state		6

3. Where do you work?	Please tick one box	For Office Use only
Community		3,1
Hospital		2
Primary Care		3
Nursing Home/Hospice		4
Other, please state		5

4. Area of Practice?	Please tick one box	For Office Use only
Adult/Older people		4,1
Children's Nursing		2
Mental Health		3
Learning Disability		4
End of life care		5
Other, please state		6

5. What qualifications do you have	Please tick one box	For Office Use only
Degree		5,1
Masters		2
Post Grad Cert/Diploma		3
Post registration Cert/Diploma		4
Degree & Masters		5
Degree, Masters & PG Cert/Diploma		6

6. How long have you been a registered nurse?	Please tick one box	For Office Use only
0-5 years		6,1
5-10 years		2
10-15 years		3
15-20 years		4
20-30years		5
More than 30 years		6

7. Before this workshop, had you heard about eHealth/IT developments in the NHS?	Please tick one box	For Office Use only
Yes		7,1
Not Really		2
No		3

If NO, please proceed to question 10

8. If yes or not really, did you hear about eHealth	Please tick one box	For Office Use only
at work, through internal information		8,1
from a colleague		2
at a study day/education course		3
through nursing journal/own research		4
Other, please state		5

9. If yes or not really, did you learn more about eHealth today?	Please tick one box	For Office Use only
Yes		9,1
Not really		2
No		3

10. Where do you access a computer?	Please tick one box	For Office Use only
Only at work		10,1
Only at home		2
Both work and home		3
No access		4

11. How often do you use a computer at work?	Please tick one box	For Office Use only
Daily or more often		11,1
Once or twice a week		2
Once or twice a month		3
Occasionally/rarely		4

12. How often do you use email at work?	Please tick one box	For Office Use only
Daily or more often		12,1
Once or twice a week		2
Once or twice a month		3
Occasionally/rarely		4
No access		5

Note: the Intranet is the web page provided by your employer and usually comes onto the screen when you open your computer. It allows you to limited access to the internet.

13. How often do you use the organisation's INTRANET at work?	Please tick one box	For Office Use only
Daily or more often		13,1
Once or twice a week		2
Once or twice a month		3
Occasionally/rarely		4
No access		5

14. How often do you use the INTERNET at work?	Please tick one box	For Office Use only
Daily or more often		14,1
Once or twice a week		2
Once or twice a month		3
Occasionally/rarely		4
No access		5

15. In your immediate clinical area, about how many people share access to the computer?	Please tick one box	For Office Use only
I have sole use of it		15, 1
I share it with one more person		2
2 to 4 people		3
4-10 people		4
More than 10		5
I do not need a computer		6

16. Can you access a computer?	Please tick one box	For Office Use only
Any time I need to		16, 1
Sometimes I have to wait		2
Often I have to wait		3
I never get access when I need it		4

17. Before this workshop had you ever heard of the following?	YES	NO	For Office Use only
Health and Care Number			17, 12
Electronic care record			18
Remote telemonitoring in Northern Ireland (RTNI)			19
ePrescribing			20
ICT Strategy			21
European Centre for Connected Health			22
Emergency Care record			23
Electronic Referral System			24
NI Picture Archiving and Communication System (NIPACS)			25

18. How do you feel using technology in nursing will affect the nursing relationship with patients?	Please tick one box	For Office Use only
Be detrimental		26, 1
Be somewhat detrimental		2
Have little or no effect		3
Be somewhat beneficial		4
Be beneficial		5

19. How do you feel using technology in nursing will affect the confidentiality of patients?	Please tick one box	For Office Use only
Be detrimental		26, 1
Be somewhat detrimental		2
Have little or no effect		3
Be somewhat beneficial		4
Be beneficial		5

20. Do you feel using technology in nursing will improve patient safety?	Please tick one box	For Office Use only
Yes		28. 1
Partly		2
No		3

21. New developments in eHealth, like Telemonitoring and Telecare, interest me	Please tick one box	For Office Use only
Strongly agree		29. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

22. Using technology improves patient care	Please tick one box	For Office Use only
Strongly agree		30. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

23. Using technology will not improve patients' involvement in their own care	Please tick one box	For Office Use only
Strongly agree		31. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

24. Nurses have a role in developing technology in healthcare	Please tick one box	For Office Use only
Strongly agree		32. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

25. Using technology will help patients manage their own health	Please tick one box	For Office Use only
Strongly agree		33. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

26. Using technology will help patients remain in at home for longer	Please tick one box	For Office Use only
Strongly agree		34. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

27. Nurses need more preparation in terms of knowledge and skills for the technological age in nursing	Please tick one box	For Office Use only
Strongly agree		35. 1
Agree		2
Don't Know		3
Disagree		4
Strongly disagree		5

28. How do you prefer to learn?	Please rank 1=1st preference	For Office Use only
On the job with dedicated time		35
On line – in my own time with time in lieu		36
On line – in work time		37
Formally at study days		38
Buddying- learning alongside an expert practitioner		39

29. To prepare you for developments in health technology, how would rank the following topics, ?	Please rank 1=1st preference	For Office Use only
Using Computer programmes e.g word, excel, powerpoint		40
Innovations in healthcare technology		41
Nursing Informatics		42
Managing care using technology		43
Developing healthcare technology in practice		44
Other suggestions, please state		

Thank you for taking the time to complete this questionnaire

Appendix D

FOCUS GROUP QUESTIONS

Method
There were three to four groups at each workshop. The groups were given two questions each to discuss, randomly distributed.

1) Each person, think about your practice and identify one issue or problem which could be rectified or eased, using technology as a solution. Note these issues/problems with a proposed solution/idea.

2) As a group, discuss the solutions/ideas identified and agree those which could happen now with existing technology. Refer to some of the examples you have heard today. As a group agree one priority.

3) Some BLUE SKY thinking
Each person think of an idea, something simple where using a tele-solution could improve patient care. Note the ideas and discuss as a group.

4) Each person: Think about your nursing practice and imagine working without a telephone or computer. What wouldn't get done? Make a list.

5) How would working without a phone, computer or technical aids impact on patient care?

6) eLearning is becoming more popular. If eLearning was the only method available to you, what would be the benefits and the disadvantages?

7) If you won a million pounds tomorrow for your nursing team to spend on technology to improve nursing practice and patient care, what would you buy and why. Make a list and prioritise.

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