National eHealth Programme

Exploring eHealth Education within pre-registration curriculum for Nurses, Midwives and Allied Health Professionals

Final Report

May 2010

Contents

1.0 Executive Summary

This project intended to demonstrate the extent of eHealth education currently delivered within Nursing, Midwifery and Allied Health Professions (NMAHP) pre registration curricula and identify barriers, enablers and examples of good practice. An NMAHP eHealth Education Steering Group was set up to lead this project and report findings to the Scottish Government's NMAHP eHealth Programme Board and NHS Education for Scotland (NES). The project was sponsored by the Chief Nursing Officer's Directorate and funded by NES. The steering group invited the Scottish Heads of Academic Nursing and Allied Health Professions (SHANAHP) to participate in the project in order to enhance co-operation in the identification of recommendations for future actions.

Higher Educational Institutions (HEIs) which provided NMAHP pre-registration education were the population for this project. The sample chosen to participate was the 10 HEIs associated with SHANAHP who deliver a total of 45 NMAHP pre registration programmes. Data was collected using a mixed-method, which included an online survey questionnaire and semi-structured telephone interviews. The survey adopted the seven "Learning to Manage Health Information" (LtMHI) themes, which each include a number of elements, as the basis for the questionnaire and interviews. They are:

- Protection of Individuals & Organisations
- Data, Information & Knowledge
- Communication & Information Transfer
- Health & Care Records
- The Language of Health: Clinical Coding & Terminology
- Clinical Systems & Applications
- eHealth: the Future Direction of Clinical Care

There were 16 valid responses to the questionnaire and 5 interviews undertaken. The projects limited sampling of AHP education providers and low response rate indicate that the results cannot be generalised across all NMAHP programmes however they provide insight into the current status of eHealth education in pre-registration NMAHP programmes.

The majority of LtMHI themes are considered important for pre-registration NMAHP education in order for students to understand how to use eHealth in clinical practice. The results indicate that some of the eHealth LtMHI themes and elements are well addressed while others are less well covered particularly where in-depth understanding of health informatics or examples of eHealth applications are required. There is a view that eHealth is deeply embedded in the current curricula, and while this is ultimately desirable, until eHealth is a mature tool that underpins healthcare ubiquitously across the NHS, it could be desirable to provide more overt examples to aid both students and educationalist understanding of the scope of eHealth. However these findings also highlighted the multiple interpretations of eHealth. Some survey respondents regarded eHealth as synonymous with eLearning. Many respondents believed eHealth education focused more on the technology than its application to clinical practice, although the related topic of information literacy was evident.

The identified barriers and enablers to integrating a comprehensive eHealth programme into pre registration curricula concur with the literature. Where barriers were perceived to exist they included:

- Limited knowledge and skills of eHealth nature and scope amongst some educators
- Limited understanding regarding the discipline of health informatics
- Low awareness of eHealth educational resources

- Limited space in the curriculum to incorporate eHealth
- Limited access and availability of eHealth applications for students (and educationalist) for authentic learning
- Perceived lack of control of student experience of eHealth in Clinical Placements
- Perceived poor IT skills of some students who find it difficult to understand its relevance to practice

There appears to be a high level of consistency in relation to what might address these barriers. These enablers included:

- Sharing knowledge in the form of good practice, learning and teaching resources
- Closer partnership working between Health Boards and HEI's to provide access to local eHealth applications
- Local eHealth Education Champions within HEI's
- Support for a national curriculum

Recommendations include:

- Shared the report with key stakeholders to explore actions based on the recommendations
- Raise awareness of nature and scope of eHealth, both local and national initiatives
- Support eHealth knowledge and skills development for educationalists
- Share good practice and resources for learning about eHealth and its application to clinical practice
- Develop partnerships between HEIs, NHS Boards and Local Authorities to authenticate learning for students and support educationalists

2.0 Introduction

2.1 Purpose of report

This report provides an overview of the results of a survey which reviewed the current provision of eHealth education within nursing, midwifery and allied health professions (NMAHP) pre-registration courses in Scotland. Its purpose is to feedback the results of the survey and recommendations to the participating organisations, the steering group and key stakeholders. This could then form the basis for further actions that may be identified to build NMAHPs eHealth capabilities through training, education and development.

2.2 Background and context

Scotland's strategic vision for eHealth is to support the overall NHSScotland goals as set out in the, Better Health Better Care, Action Plan. It intends to deliver an eHealth programme that will exploit the power of electronic information to help ensure that patients get the right care, involving the right clinicians, at the right time to deliver the right outcomes (Scottish Government 2008).

As healthcare delivery becomes increasingly e-enabled, clinicians will need to possess the necessary knowledge and skills to use technology appropriately and safely to deliver healthcare. The UK has been a world leader in the development of eHealth informatics education standards with the publication of "Learning to Manage Health Information: a theme for clinical education" (LtMHI) (NHS Connecting for Health, 2009). However the literature and anecdotal information indicates that integrating eHealth education into the curriculum is a significant challenge for most Higher Education Institutions (HEIs).

The NMAHP eHealth Programme Board existed as part of the Scottish Governments eHealth Directorates governance mechanism to support clinical engagement in the National eHealth Programme. This Programme Board identified the need to support NMAHP eHealth capabilities through training, education and development (Strachan 2007) as part of its programme of work. This resulted in the project, which intended to demonstrate the extent of eHealth education currently delivered within NMAHP curricula and identifying barriers, enablers and examples of good practice. It was sponsored by the Chief Nursing Officer for Scotland, commissioned by the NMAHP eHealth Programme Board and funded by NES. An NMAHP eHealth Education Steering Group was set up which reported to the NMAHP eHealth Programme Board and NHS Education for Scotland. The steering group invited the Scottish Heads of Academic Nursing and Allied Health Professions (SHANAHP) to participate in the project. It was believed that collaboration between Scottish Health Education Institutions, NHS Education Scotland, and the Scottish Government would encourage a good response to the survey and lead to enhanced co-operation in identifying and delivering future actions. A project team was established from 6 HEIs that are members of SHANAHP to conduct the survey. SHANAHP organisations, steering group members and project team members are listed in Appendix 1.

2.3 Defining eHealth

Scotland's eHealth Strategy defines eHealth as the use of computers, information and telecommunications in support of meeting the needs of patients and the health of citizens (Scottish Government 2008). It is recognised that eHealth encompasses a wide range of e-enabled healthcare activities including some functions which are not yet widely available or ubiquitous. Examples include, but are not limited to:

- The electronic patient record
- Telehealthcare to monitor, consult, diagnose, or treat remotely
- Software applications that support the management of health service resources
- Decision support systems
- Internet or intranet to access health information by patients and healthcare professionals
- eLibrary to support access to literature and information
- Teleconferencing, videoconferencing and computer based learning applications to support education and clinical networks
- The use of mobile technology such as mobile phones and portable devices to record, view and communicate information
- Email or other messaging devices to support communication

In the future, eHealth will underpin healthcare. "As these technologies mature and are embedded in clinical practice they will influence future deliver models of Healthcare. This in turn will lead to fundamental changes in the way that clinicians are expected to practice" (NHS Connecting for Health, 2009 p4). The implementation of these new technologies within clinical practice has major implications for the preparation and continuing professional development of all healthcare professionals.

3. Literature Review

Literature was searched using the Cumulative Index for Nursing and Allied Health Literature (CINAHL) database. The search string 'informatics AND barriers' was used, reflecting the terminology used within academic study. Results were limited to six-year currency, stemming from the national survey of health informatics training reported in 2004 (Murphy *et al.* 2004), with the exception of one UK paper of particular relevance from 2000 (Brittain and Norris 2000). Additional resources were located from separate searches of the NMAHP eHealth Managed Knowledge Network (MKN) located within the NHS Scotland eLibrary and the Embedding Informatics in Clinical Education eSpace area within NHS Connecting for Health. Relevance to the project aims was determined from an initial reading of abstracts. Seventy nine texts were obtained electronically; from further scanning of these, 24 documents form the basis of this review.

Learning to Manage Health Information (LtMHI) has been the key source of guidance within the UK for health informatics and information technology education and training since 1999 (Brittain and Norris 2000; Murphy*, et al.* 2004; NHS Information Authority 2004a). Learning to Manage Health Information was first developed in 1999 with the involvement of a wide range of professional organisations, to establish a common education framework in eHealth for all clinical professionals at pre and post registration levels in all areas of healthcare (NHS Information Authority 1999). NHS Connecting for Health in England have recently revised this framework (NHS Connecting for Health 2009). As part of the review of LtMHI, four research studies were commissioned to identify what progress had been made since the first version was published in 1999. These studies also helped to shape the 2009 iteration and offer a useful insight into the many potential barriers and enablers to using the LtMHI standards (NHS Information Authority 2002, NHS Information Authority 2004 [a, b, c, d]).

eHealth and Health Informatics are often used interchangeably and LtMHI defines Health Informatics as "the knowledge, skills and tools which enable information to be collected, managed, used and shared to support the delivery of healthcare and to promote health" (NHS Connecting for Health 2009). The LtMHI framework identifies seven themes within Health Informatics, each with a number of elements. (Appendix 2) These are:

- Protection of Individuals & Organisations
- Data, Information & Knowledge
- Communication & Information Transfer
- Health & Care Records
- The Language of Health: Clinical Coding & Terminology
- Clinical Systems & Applications
- eHealth: the Future Direction of Clinical Care

At an international level, Working Group 1 Committee of the International Medical Informatics Association (IMIA) has formulated recommendations for Health Informatics education for different professional groups (Brittain and Norris 2000). These have recently been updated (Mantas, et al., 2010). However, despite the existence of both national and international guidance, the integration of health informatics into clinical curricula does not appear to have happened (Murphy, et al. 2004). Murphy, et al., (2004) suggest the following factors may contribute to poor curricular embedding:

- Lack of understanding of Health Informatics among health science educators
- Lack of champions within clinical schools - an absence of trained qualified staff to promote Health Informatics and to teach it
- Crowded curricula which make it difficult to find time to innovate or experiment

- A focus on IT skills to the neglect of Health Informatics
- Too many competing directives, checklists and gold standards
- Lack of "buy-in" from senior managers, School Administrators and educational groups to the importance of integrating Health Informatics into the curriculum
- Insufficient liaison and co-ordination between educational providers and employers
- Confusion and uncertainty as to who is ultimately responsible for overseeing Health Informatics education and lack of an overview of how the different sectors and stages fit together
- Students on placement being denied access to "live" or simulated "live" clinical systems
- Lack of guidance and support from Health Informatics research and development groups (including Centres of Excellence)

From an educational, rather than health service perspective, the Quality Assurance Agency (QAA) has subject benchmarks for professional healthcare programmes which include "Information and Communication Technology" (ICT). Nevertheless, the problem of translating ICT content into curricula persists with ongoing confusion regarding the concepts of information technology and health informatics (Bond and Proctor 2009) with eLearning – the use of technology enhanced learning - and eHealth (Thompson and Skiba 2008). This is unsurprising since the term eHealth, albeit in various characterisations has been found to possess 51 unique definitions since first appearing in the literature around 1999 (Booth 2006).

Concerns regarding integration of eHealth education within pre-registration NMAHP programmes are not peculiar to the UK. Undergraduate nursing programmes within Canada have been described as lacking, with a third of nursing schools having no informatics content (Booth 2006). In the United States there is reported improvement since the 1990s within pre-registration nursing programmes but considerable gaps remain (McDowell and Ma 2007; Ornes and Gassert 2007) and uptake, particularly within nursing curricula, has been slow (Simpson 2006). A recent survey of health professionals in Australia indicates that many do not know what they need to know in relation to health informatics and do not possess the necessary skills for efficient working within a computerised care setting (Garge, et al*.,* 2006).

Information technology skills, as an essential foundation for health informatics education (NHS Connecting for Health 2009), and have become more prominent within healthcare education programmes (Murphy*,* et al*.,* 2004). Nevertheless, respondents to Murphy et al.'s UK survey in 2000-2002 indicated that this training varied widely across programmes, and generally remained insufficient. As the UK moves towards an all graduate healthcare profession for nursing (Staines 2008), the literature suggests that it may be time for pre-registration programmes to set prerequisites of particular computer skills. For example, email and word processing proficiency is required for entry to most Canadian programmes (Booth 2006). Within Taiwan, a consensus study on the important computer competencies for student nurses resulted in a set of recommendations of 94 competencies across seven domains (Jiang, et al., 2004). However, it was also recognised that in Taiwan due to the limited class hours in school, student nurses also required further education within the clinical setting (Hwang, et al,. 2008).

Booth (2006) and Skiba (2006) stress the importance of information literacy as an aspect of health informatics: *"The focus in nursing curricula should be on critiquing skills and evidence-based approaches to obtaining, managing, and organizing electronic information"* (Booth 2006). However, whilst computer competency and information literacy had been integrated within almost half of nursing schools in the US, informatics competencies were not addressed, but were instead confused with these different, albeit related, areas (Skiba, et al*.,* 2008).

In relation to identified barriers to embedding health informatics into NMAHP curricula, lack of knowledge and skills to provide academic leadership has been repeatedly cited as the most significant barrier to overcome (Brittain and Norris 2000; Murphy, et al., 2004; Booth 2006; Ornes and Gassert 2007; Bond and Procter 2009). 38% of pre-registration nursing schools in Murphy et al. (2004) survey were not aware of the *LtMHI* standards when designing their curricula and only 11% had a tutor with specialised health informatics training. The emphasis was seen to be far more on information technology or computer skills, where available, rather than health informatics. This is echoed in work from the US where the lack of integration of informatics into evidence-based practice is of prime concern (McNeil, et al., 2006).

Crowded curricula also often contributes to the lack of health informatics education (Murphy, et al .2004). Without particular incentives or penalties to include health informatics there has been a distinct lack of buy-in, compared with areas such as infection control or numeracy skills. This was the main reason for not including informatics in nursing curricula within the US (17% of respondents), alongside faculty members not being prepared to teach informatics (17%) and the topic not being a teaching priority (12%) (Thompson and Skiba 2008). Within the UK, the issue of pressure on staff time, as well as on the curriculum timetable, is emphasised with the proposal that staff be freed up to ensure that health informatics is fully integrated into each programme (NHS Information Authority 2004b).

The third barrier identified by Murphy, et al., 2004 concerns whose responsibility it is to oversee information technology and health informatics education. Lack of coordination between pre-registration, post registration and employment sectors has resulted in confusion about who is or should be facilitating this learning. Within England there has been little evidence of integration in this area between the NHS and HEIs, with the LtMHI standards given a relatively low priority (NHS Information Authority 2004a). A similar situation can been seen within the US, with 7% of nursing schools assuming that informatics was taught in general education courses (Thompson and Skiba 2008).

Proposed solutions by Murphy et al. include a national "teach the teachers" campaign regarding health informatics; a national health informatics curriculum; funding educational research regarding health informatics; and greater collaboration between specialist health informatics centres and the university departments providing clinical education (Murphy, *et al.* 2004). These recommendations are echoed by the NHS Information Authority (2004d) who advocate a network of resources, guidance and support for lecturing staff. Brittain and Norris (2000) and Simpson (2006) offer additional support for health-academic collaborations, alongside greater coordination of these.

Other strategies to develop eHealth education include informatics needs assessments of university faculties, focusing on research, advanced clinical practice and teaching (Booth 2006), including eHealth within contract specifications of educational programmes (Baker *et al.* 2007), and universities developing practice IT systems in conjunction with the health service in an attempt to simulate authentic healthcare practice for students (Ornes and Gassert 2007; Skiba, *et al.* 2008). More generally it is proposed that informatics be mapped to the wider NHS careers framework in order to guide those from all professional groups who wish to develop further within the informatics field coupled with a view that eHealth skills be integrated into all training and development plans as components of the basic skill set required for clinical care(Department of Health, 2008 [Section 5.3.2]).

The NHS Information Authority argues that Higher Education Institutions should not only focus on what is taught regarding health informatics, but what, where and how assessment takes place (NHS Information Authority 2004a). The need for staff to motivate students is paramount, but there is

also a need to develop engaging learning materials. High quality innovative learning material content, within both health and education sectors, is reported to exist already but requires to be wider discrimination (NHS Information Authority 2004b).

As a result of developing eHealth education, further beneficial opportunities are envisioned within the literature. Since eHealth has little or no historical inter-professional rivalry associated with it, Booth suggests that this is an area ripe for developing interdisciplinary ties, within both education and practice (Booth 2006). However, greater clarity of definition regarding health informatics/ eHealth concepts and terms is needed in order for such educational programmes to develop (NHS Information Authority 2004a).

When considering the data obtained about NMAHP health informatics education and associated barriers and enablers, it is clear that nursing is the profession examined most closely. Other NMAHP professional groups referred to in the literature reviewed include physical therapy within the USA (Lobach 2004). Lobach 2004.provides a general introduction to the relevance of clinical informatics within both physical therapy and other allied health programmes, stressing the need for this, in addition to information technology and information literacy, to be included within the core curriculum of allied health programmes.

From the literature, therefore, it is possible to identify the following suggestions to resolve the apparently poor integration of eHealth into healthcare curricula:

- Efforts to enhance clarity of understanding (amongst both clinicians and healthcare educators) regarding the nature and scope of healthcare informatics, with particular emphasis on the potential for improved patient outcomes (Bond & Proctor 2009)
- A drive towards providing both practical and simulated training (in eHealth) directly related to specific professional requirements (Ornes & Gassert 2007, Mantas et al 2010)
- Dissemination of current, relevant and high quality teaching / learning materials to both clinicians and educators (NHS Information Authority 2004b)
- Creation / identification of opportunities within healthcare institutions for the provision of recognised (perhaps assessable?) hands-on learning experiences with eHealth tools (Mantas et al 2010)
- Exploration and consideration by Professional Regulatory Bodies and HEIs of how to address (educators') perceptions and management of "crowded curricula" in order to find / create time and resources for eHealth teaching and learning (Murphy et al 2004, Baker et al 2007)
- Recognition by HEIs and healthcare providers of the need to promote eHealth as both an academic and practice discipline, perhaps through the appointment of "eHealth Champions", training and education of teachers who can provide good quality eHealth programmes and the establishment of institutes for health informatics (Booth 2006, Mantas et al 2010)
- Healthcare Informatics to be mapped to the wider NHS careers framework – this would emphasise the critical and fundamental importance of profession-specific eHealth skills and strengthen the case for inclusion within core healthcare curricula and continuing professional development strategies (Department of Health 2008, Mantas et al 2010).

4. Methodology

4. 1 Population and Sample

Higher Educational Institutions that provided NMAHP pre-registration education formed the population for this project. Some programmes are at undergraduate level while others are at Masters Level. Nursing includes adult, child, learning disability and mental health specialities. Midwifery is a single discipline. Allied Health Professions (AHP) refer to 13 distinct professions each with a specific pre-registration qualification, The AHP professions include: therapeutic radiography; diagnostic radiography; speech and language therapy; dietetics; physiotherapy; occupational therapy; podiatry; prosthetists; orthotics; orthoptics; music therapy; art therapy and drama therapy. While all nursing and midwifery programmes are delivered in health, nursing or life science schools or departments, this is not the case with AHP programmes which are sometimes provided out with health related schools.

It should be noted that in most HEIs, pre-registration programmes share common learning resources (such as modules) and learning outcomes which are often managed by the same programme leaders. Although programmes are discrete in terms of exit awards this does not imply that they are stand-alone entities – for example a BSc (Hons) programme is likely to share the vast majority of modules with an ordinary degree programme belonging to the same cognate grouping.

In accordance with the Project Initiation Document (section 2.5) the chosen sample was those HEIs that belong to SHANAHP (listed in Appendix 3). In total the SHANAHP HEIs deliver 45 pre-registration programmes identified as falling with the population of this project. This included 13 Nursing, 6 Midwifery, 6 Physiotherapy, 4 Occupational Therapy, 3 Podiatry, 2 Speech and Language Therapy, 6 Radiography (including diagnostic and therapeutic), 3 Dietetic, 1 Art and 1 Music Therapy pre-registration programmes. The academic level of pre-registration courses varied across undergraduate, graduate or masters levels

It should also be recognised that not all AHP education delivered in Scotland is provided within the HEIs that are members of SHANAHP. Together with the variation in school or departments hosting AHP programmes this meant not all AHP professions would be represented, which was a limitation of this sampling method. However the Project Board felt that the benefits of using SHANAHP to encourage and support the survey were sufficient to justify this approach.

4.2 Data Collection methods

A mixed-method was identified as the method of data collection. This included an online survey questionnaire (Appendix 4) and a semi-structured telephone interview schedule (Appendix 5). The survey adopted the LtMHI themes and elements as the foundation of its questions. Some LtMHI themes and elements were aggregated to simplify some of the complex language used in LtMHI, ensuring the questions retained clarity, consistency and the opportunity to identify key issues emerging from the collated data, whilst reducing the length of response time required.

Themes identified in the literature regarding barriers and enablers provided a suitable framework to design questions relating to barriers, enablers and good practice.

The online survey tool was approved by the Project Board prior to roll-out. Similarly, a semi-structured interview schedule was developed and peer reviewed for use in either telephone or face-to-face interviews.

Following a presentation at a SHANAHP meeting in March 2009, an introductory email was sent to SHANAHP Heads of School/ Deans to explain the purposes of the study and to ask Heads to recruit contributory Programme Leaders from each of their pre-registration NMAHP courses. These programme leaders were subsequently contacted directly to invite their participation, provide information on the purpose of the survey and explain how the results would be used.

The survey was made available online for 6 weeks via Bristol Online Surveys©. As part of the survey, respondents were asked if they were willing to be contacted to take part in an interview. The survey responses could be linked to the interviewee, which enabled the interviewer to pick up on responses given in the online survey. This allowed collection of deeper, richer data than were likely to be generated by the survey alone.

In an effort to boost participation numbers, reminder emails were sent to Heads when the online survey was initially made available. This was followed up a few weeks later by a further reminder and an extension of the survey availability period.

Ethics approval was not necessary for this project however good research governance was applied as appropriate including consent to participate, complying with data protections laws. All responses were anonymised once Interviewees were ascertained. Data were stored in offline electronic password-protected files accessible only by the Project Team. Confidentiality was maintained at all times.

4.3 Data analysis

The Bristol Online Survey© tool used for the quantitative data collection provides a report function which automatically generates some basic reports of the data. Additionally the data were exported into CSV (Excel) format, allowing further data manipulation as necessary.

The small sample size resulted in low data volume which was unsuitable for statistical analysis. Survey results are therefore presented as raw numerical data (Appendix 6).

In an attempt to seek a fuller understanding of the responses the project team reviewed the answers and "cleaned" the data via team peer review. To ensure robustness any unclear and/ or apparently conflicting responses were queried and explored during subsequent telephone interviews whenever possible.

The qualitative interview data were analysed using individual and collective thematic analysis. To ensure recording accuracy each interview respondent was asked to verify ("member check") the interviewer's short notes of her/ his interview.

5. Results

There were 16 valid responses to the questionnaire and 5 interviews. Two other submissions were deemed invalid because the data referred to programmes which were post-registration - Community Health and Occupational Health (both nursing). Of the 16 valid responses included in the analysis, 8 related to nursing curricula, 3 to midwifery, 2 to radiotherapy, 2 to podiatry and 1 to Occupational Therapy.

There were indications within the questionnaire's free text responses that not all respondents clearly understood the content or intention of some of the more complex technical questions, particularly those which included terms such as "use of aggregated data" – even though the survey deliberately adopted the terminology of LtMHI.

Five telephone interviews were carried out with Programme Leaders from four HEIs across the range of geographical areas and professional groups: Nursing (3), Midwifery (1) and Podiatry (1).

Most of the survey questions provided opportunities for supplementary free text responses. For clarity any verbatim textual responses are incorporated in the appropriately themed sub-sections below and are indicated by italicisation and post-text "(from survey)". On occasion reference is made to data collected from one-to-one interviews with respondents. These data are also indicated by italicisation, but the post-text is "(from Interviewee *X*).

Presentation of results combine responses to status questions ("Is this element currently included in your pre-registration programme?") and curricular preference questions ("Where should this element sit in curricula?" – which also offered an option of excluding an element or theme from future curricula). Adopting this approach in results presentation is designed to facilitate consideration of actual and preferred curricular structuring.

5.1 Protection of Individuals and Organisations (Questions 7 and 16)

There was general agreement that "Protection of Individuals and Organisations" which includes information governance and clinical governance, were well covered in pre-registration curricula of respondents. However, only five programmes included designing a clinical audit, with six covering carrying out such an audit.

Nine respondents agreed that data protection and security issues plus the principles of clinical governance and audit systems should be taught pre- and post-registration, though the arguably more complex skills of designing and carrying out clinical audits were viewed by ten respondents as belonging to the post-registration domain.

5.2 Data, Information and Knowledge (Questions 8 and 17)

The majority of elements identified in this theme were within current curricula. This included data and information; use, handling techniques, sources, dissemination and ethical awareness.

Three programmes do not include "Knowledge of Decision Support Tools". One respondent did not know. Five respondents believe this should be taught pre-registration, three at post-registration and eight across pre- and post- registration.

"The Use of Aggregated Data" is included in at least eight programmes, though six respondents were unable to say whether this element is included in their local programmes. Two respondents felt that the topic of aggregated data belonged in pre-registration, six in post-registration, five in both. Three respondents believe that aggregated data use should be excluded from programmes altogether.

In the telephone interviews these elements were most often discussed in relation to having a strong curricular theme of 'Evidence Based Healthcare'. Interviewee #5 (Podiatry) cited the delivery of a first year module "Understanding the Use of Evidence" as an example of Good Practice which encourages students to "access, appraise and put into practice healthcare information from the internet and other electronic sources". She adds "the use of the term "evidence" rather than research has helped make the subject more accessible to students"

All programmes bar one (Nursing) course include "Analysing sources of information about patient/ public views and expectations for healthcare and related services" during pre-registration. In response to Question 17f all respondents agreed this topic should be addressed in curricula, three respondents would place the topic in pre-registration, five in post-registration and eight across both levels.

5.3 Communication and Information Transfer (Questions 9 and 18)

All four of the elements of the "Communication and Information Transfer" theme are included in thirteen of the curricula reported. Two programmes omit "information flows / pathways and communication systems" (one OT and one nursing programme).

Survey responses relating to curricular inclusion preferences are overwhelmingly in favour of addressing the "Communications and information transfer" theme in both pre- and post-registration programmes.

The telephone interviews revealed that most examples of eHealth systems in "Communication and Information Transfer" related to basic electronic communication systems (mainly email) and basic information management software such as word processing programs. These were often delivered as part of IT skills modules or short courses rather than patient related eHealth applications such as the Electronic Health Record.

However, one University's midwifery students have individual password-controlled access to the local NHS PAS system and the K2MS Guardian package (http://www.k2ms.com/index.html) currently adopted by local clinicians. (Interviewee #1)

5.4 Health and Care Records (Questions 10 and 19)

This theme included four elements.

The first element, "Knowledge and understanding of patient health records, including electronic patient records and patient held records" is currently included in fifteen out of the sixteen curricula surveyed (the other respondent selected "Don't know"). Ten respondents supported inclusion across both pre-and post-registration courses, whilst no one sought exclusion.

Element two, “Awareness of access levels to the different parts of personal health records” features in twelve programmes – though four respondents did not know. All respondents agreed this element should be included in programmes, seven supporting both pre- and post-registration, four for post-registration only and five for pre-registration.

Element three, “Knowledge of patient held and patient accessible clinical information” appears in at least eleven programmes, though five respondents were not aware of their local situation. Eight respondents supported inclusion across pre-and post-registration, three supported post-registration only and five supported pre-registration only.

Element Four, “Awareness of the implications of direct patient access to their records” appears in thirteen programmes. Two respondents did not know, with one respondent answering “no” (not included). Eight respondents supported inclusion across pre-and post-registration, three supported post-registration only and five supported pre-registration only.

The telephone interviews broadly reinforced these findings, with the five interviewees appearing confident that most issues relating to electronic record keeping are currently adequately covered in their own programmes. However, four respondents to Question 10b and five for Question 10c report themselves as unsure whether these topics were currently covered.

Student access to “live” / “actual” eHealth tools in clinical practice placements presents an inconsistent picture across NHS/ geographical regions (Interviewees 1-5). Interviewee #5 (Podiatry) reported that students on the same programme would / would not have access to “electronic case notes and the intra/internet” if they were undertaking placement out with local areas, although local “issues” have been “largely ironed out”. A further example of student access inconsistency is reported earlier (section 4.3) regarding the K2MS Guardian package.

5.5 The Language of Health: Clinical Coding and Terminology (Questions 11 and 20)

Clinical coding and its terminology are poorly addressed within most pre-registration programmes, with only five respondents reporting “awareness of coding systems” as included and three programmes including “Understanding the importance of coding” (for practice and management). This reflects inclusion intentions addressed by Question 20.

There is a clear wish to incorporate deeper understanding of the Language of Health (Coding and Terminology) at mainly post-registration level.

There was no agreement as to whether raising awareness should be included discretely in either pre or post registration curricula, though seven respondents would support an across-the-board approach. No one disagreed with inclusion at some point. No further details were elicited from the telephone interviews.

5.6 Clinical Systems and Applications (Questions 12 and 21)

Fourteen respondents currently include the element “Understanding of how IT supports clinical practice” in their curricula. “Understanding of different clinical systems across healthcare services and users” appears in nine programmes, three respondents are unaware of its presence and four do not know. Half of respondents include “Understanding of projects, policies and drivers which inform the development of healthcare information technology”, three do not know and this element is

omitted from five programmes. The same picture is presented for the final element "Awareness of limitations of different clinical systems".

Six respondents would include "Understanding of how IT supports clinical practice" in their pre-registration curricula, only one believes this should be located solely in post-registration, whilst nine respondents would have this element across both levels.

Inclusion in pre-registration of "Understanding of different clinical systems across healthcare services and users" and "Understanding of projects, policies and drivers which inform the development of healthcare information technology" was supported by four respondents, with nine and eight respectively opting for inclusion at both pre- and post-registration level.

Pre-registration inclusion of "Awareness of limitations of different clinical systems" drew a similar response to the above, though six respondents believe this element is more at home in post-registration, with seven in favour of inclusion across both levels.

All respondents agreed that all listed elements of "Clinical Systems and Applications" theme should be incorporated into programmes – albeit across different levels.

The influence of national/ local policies and external drivers upon eHealth curricular content is complex. Three interviewees mentioned their local NHS eHealth strategies as being important drivers and enablers in their eHealth planning, with one (Interviewee # 4 - Nursing) reported working in partnership with local NHS representatives to plan and deliver eHealth content. Only one respondent (Interviewee #4) mentioned LtMHI (Connecting for Health) as important in planning and taking forward their curricula, whilst one interviewee (Interviewee # 1 – Nursing) described the Scottish eHealth Strategy as "the main resource" for eHealth curricular development.

5.7 eHealth: the Future Direction of Clinical Care (Questions 13 and 22)

Half of the respondents confirmed that "Understanding the concepts, scope and practice of eHealth" was present in current curricula however seven stated this element was not present. Six respondents would see this element incorporated in pre-registration, one in post-registration only and nine across both levels.

Ten programmes currently consider "The Implications of eHealth applications", though five do not. Six respondents would see this element included in pre-registration, one in post-registration and nine across both levels.

Similarly nine programmes include "Understanding the application and varieties of assistive technologies", though this is omitted in six courses. Five respondents view this element as pre-registration, three as post-registration and eight as desirable across both levels.

5.8 Essential IT skills for Clinicians (Question14)

There is very little uptake of existing NHS-sponsored Information Technology training packages and other educational resources.

No respondents are using NHS Elite.

Only three respondents access NHS Health (NHS e-Learning for Health information System).

Only one respondent employs EITS (Essential IT Skills Programme).

ECDL (European Computer Driving Licence) is active in two programmes.

All respondents indicated that University-based (IT skills training) is available for students, with four respondents indicating that "other" training might also be available. Unfortunately the survey did not elicit any details regarding "other" training.

5.9 eHealth modules (Question 15)

Two universities have eHealth specific modules. According to our telephone interviews, one of these (University of Abertay, Dundee) is delivered by cross-disciplinary teaching by Nursing, IT services and the Computing school. Glasgow Caledonian University (Nursing) recently delivered a specialised eHealth module (currently suspended) and Glasgow Caledonian University also provides modules relating to Telehealthcare and Contemporary Perspectives on Assistive Technology (both currently under review).

5.10 How is eHealth described and delivered in the curriculum? (Data drawn mainly from interviews)

eHealth terminology has multiple interpretations, with a number of respondents and interviewees reporting that they did not use the terms "eHealth" or "Health Informatics", whilst "electronic technology" and "computing" seemed to be more commonly used to describe eHealth-like activities and curricular content.

This was an important issue when trying to identify instances of eHealth within the curriculum. In an attempt to clarify definitions, various examples of eHealth instances were described in the survey preface. Nevertheless, prompting and explanation was often required by the interviewees.

Several survey respondents equated the use of Virtual Learning Environments (e.g. Blackboard™ or Moodle™) as examples of eHealth within the curriculum. Similarly online learning packages such as Flying Start, HAI, Authentic World, and the Learning Disability online resource "Same as you" were cited as examples of eHealth.

With the notable exceptions cited in the previous section, responses from the interviews suggest that eHealth is generally "embedded" or is "an underlying theme" within curricula. During the interviews this was confirmed via detailed discussion regarding the scope of eHealth. The general approach appears to be one of deep embedding, rather than high visibility or overt mapping within curricula or programme descriptor documents.

Interviewee #2 (Nursing) describes eHealth as being "delivered by……students analysing websites, and reflection on practice". Interviewee # 3 (Nursing) offers an example of eHealth embedding, citing a Professional Practice module which "includes understanding of some technology-related concepts, including information literacy and databases". Interviewee #1 (Midwifery) adds that her/his students "encounter eHealth issues throughout each module they undertake …… study(*ing*) specific packages that combine eLearning with eHealth". Interviewee # 5 (Podiatry) suggests that "a

theme of eHealth filters through" her/his programme but offers no explanation for how this might occur.

In relation to nursing one respondent highlighted difference between the pre-registration branch programmes in terms of the eHealth content that is delivered during campus based learning. Her / his adult nursing pre-registration programme had a specific eHealth module that was not part of the other pre-registration Branch programmes at that HEI.

Clinical placement (practice located) eHealth learning was felt to be largely out of the HEIs hands, despite the fact that learning outcomes from practice placements are requested by HEIs. However some HEIs have been proactive – as shown by negotiated exposure to the K2MS Guardian and NHS PAS (described by Interviewee #1 Midwifery) and eHealth session delivery by an NHS clinical representative (Interviewee #4 Nursing)

5.11 Educationalists' attitudes and beliefs and knowledge about eHealth (Question 23)

From the survey results, it appears that respondents perceived many educationalists do not have a clear understanding or knowledge of the scope of eHealth. Seven respondents agreed that "most staff" have knowledge and understanding of eHealth, but six disagreed and three were unsure. Interviewee #3 (Nursing) made the points that "the intertwined nature of eHealth/information (technology) means they can often be "hidden" …… in the curriculum" and "some people may not recognise elements of eHealth in their curriculum".

Other respondents also made similar points about not appreciating what eHealth entailed, thus they were not in a position to know whether or not they were engaging with it. There are also concomitant concerns about trying to help students to develop an appreciation of eHealth's relevance and importance to practice.

Seven respondents supported the proposition that eHealth is focused more on technology than on clinical practice, with eight disagreeing and one unsure. These responses are reiterated in the interview data. One respondent felt that eHealth continued to be "totally misunderstood, both educationally and clinically" in that most practitioners thought it "referred primarily to the skills associated with the technology rather than the full range of ways that eHealth impacts on practice". This respondent explained that (in her view) "Practitioners are engaging in aspects of eHealth without being aware that these came under the umbrella of eHealth."

Eight respondents confirmed the presence of teaching staff with eHealth expertise. Five disagreed, with three unsure. However, it was clear from the interviews that where there is a member of staff with in-depth understanding of eHealth s/he can have a powerful impact on eHealth delivery within that School. Interviewee #4 (Nursing) reports the local eHealth Champion as putting forward "a strong case" – a sentiment echoed by Interviewee #3.

Seven respondents said their departments accepted responsibility for teaching basic computer skills. However, nine disagreed with this. Since all respondent HEIs (to Question 14) offer University-based IT Skills training, it would appear that much training related to informatics is provided out with NMAHP schools.

Although the vast majority of HEIs appear to be adequately equipped with technology (fifteen respondents), three quarters of respondents suggested this is not mirrored on clinical placements. The interview data leads us to believe that not only are e-Health systems limited in some clinical

areas, but also, and more significantly perhaps, where eHealth systems are available, student access to eHealth systems whilst undertaking clinical practice placement is very restricted (Interviewees #4, #5). Three interviewees considered that ensuring routine and consistent access for students to NHS intranets and other electronic information sources is crucial to bridge theory and practice. Closer working relationships with local NHS were felt to be important to achieve this.

One quarter of respondents report that students do not appear to enjoy ICT skills aspects of programmes. Nine out of the sixteen disagree with this proposition, though one interviewee made the point that "eHealth comes as something of a shock to students", whilst another (Interviewee #4 Nursing) said "Students find it difficult to understand the relevance of eHealth".

Timetable space and other resources are at a premium - described by several respondents as "a very crowded curriculum". This is further compounded by the prevailing view (ten respondents) that resources are scarce for developing and delivering eHealth within curricula.

Opportunities for students to transfer eHealth knowledge and skills from university to clinical practice – authentic learning - appear to be limited. The Healthcare Associated Infection (HAI) and Flying Start initiatives were seen as examples of national eHealth initiatives that were successful and helped to make eHealth real to practitioners - confirming the earlier point at the beginning of this section that there is confusion between eHealth and eLearning.

The challenges for an educationalist to be skilled and experienced in eHealth were highlighted in the interview data. It was noted that "Keeping up to date" with the emerging technologies was seen to be difficult and time consuming. Interviewee #5 Podiatry typifies this sentiment "We would like to do more, but there are not enough hours in the day to do the research and keep up-to-date".

Three of the interviewees described themselves as either "champions of eHealth" or aware of at least one other staff member in their department with this perceived accolade. Several others (survey respondents) saw themselves as "interested" in this area – yet only one respondent described herself as having a "positive attitude to eHealth". All interviews acknowledged that the level of understanding and technical knowledge required to teach eHealth concepts and practices effectively were not widespread amongst educationalists.

Educationalists are reporting that they see themselves as ill-equipped from a knowledge and skills perspective. They have very limited (if any) experience of live eHealth systems (such as electronic health records), and feel unable to deliver authentic eHealth learning experiences in a University environment which is disconnected from mainstream eHealth technologies. This is further compounded by the reported lack of student opportunities to access live or simulated eHealth technologies (several survey respondents and interviews).

5.12 Barriers, Solutions, Drivers and Enablers (Question 24)

Barriers and solutions:

Nine survey respondents do not see students' attitudes towards ICT related activities as a significant barrier to developing eHealth within curricula. Seven respondents do, however, consider these attitudes to be a barrier, although one interviewee (Interviewee # 4) suggested that employing exemplars from clinical practice could overcome this effectively by demonstrating the relevance of ICT skills.

Ten HEIs report a potential problem with poor basic computer skills among students. Although all HEIs have central provision of ICT skills training (from Question 14), only the University of Abertay appears to have managed to directly influence ICT training content (and therefore relevance) by working closely with their Computing department (telephone interview).

Six HEIs report no issues with accessing IT facilities (on campus and in placements). On the other hand ten respondents are experiencing difficulties with this. A potential solution to this challenge lies in negotiating student access to local NHS systems (University of Stirling) and developing opportunities for teaching contributions from local NHS eHealth practitioners (University of Abertay).

Cost constraints (including resources for purchasing equipment and staff time) presented obstacles for fifteen respondents. There are no "off-the-shelf" solutions to this problem, however the development of closer working partnerships between HEIs and Health Board eHealth might produce opportunities for resource sharing and joint working.

Thirteen survey respondents considered that staff knowledge and attitudes towards eHealth, were significant barriers. One respondent's free text suggested "staff attitudes" might be an issue – echoing the responses to Question 24. Another respondent suggested that lack of staff knowledge presented problems – again mirroring responses to Question 24. Potential solutions to each of these issues (from free text responses in the survey) are: the appointment of local eHealth Champions; the creation of a national eHealth Champion Support Network, and the sharing of Good Practice (and maybe teaching resources).

Twelve respondents cite the lack of a consistent curriculum across Scotland as a significant barrier to eHealth curriculum enablement. Solutions put forward to address this include "Direction (from Central Government and / or Professional Regulatory Bodies) on what to include in the eHealth curriculum" (telephone interviewees and free text in survey responses); "Access to local NHS systems" – for students and pertinent HEI staff (telephone interviewees and survey responses); "Developing skills based criteria to enable Telehealth within a simulated environment" (one interviewee and several survey respondents).

Drivers and Enablers:

Within the interview and survey data a number of drivers and enablers have been identified which might promote inclusion of eHealth in pre-registration curricula.

It is the expectation of several respondents and interviewees that opportunities to include eHealth overtly might be presented by forthcoming curricular reviews (particularly nursing and midwifery).

The roll-out of eHealth and particularly Telehealthcare services is cited as a "strong driving force to inclusion" (Interviewee #2), as is the feedback from students returning from practice placements.

By far the most commonly cited potential enabler is the appointment of local (some suggested national) eHealth Education Champions, with the skills and experience to lead/ offer consultation for practice focused eHealth educational development was strongly supported (interviewees and survey respondents). Although there is cost constraints associated with such appointments, this has been addressed in one HEI (University of Dundee) by the appointment of a Senior Lecturer with a joint remit for eLearning and eHealth.

In the light of these responses we briefly explored how organisations such as NHS Education for Scotland and the Scottish Government might support eHealth curricular design and delivery. Four of the respondents (plus two interviewees) suggested that a national curriculum and implementation guidance would be helpful. Elements of such a curriculum would include learning outcome indicators/ guidance and exemplars of good practice focussing clearly on discrete eHealth components and competencies.

The notion of developing a national eHealth learning and teaching resource, such as re-usable learning objects, was also muted as a possible enabler and driver. Almost two thirds of educationalists feel that access to nationally developed eHealth teaching and learning resources would be useful, even though more than half of respondent HEIs report academic staff with eHealth expertise.

6. Good Practice Exemplars

Please note that all content in module descriptors remains the intellectual property of the originating University.

a) K2MS Guardian (Midwifery) record keeping package in practice delivered in University of Stirling. This software allows full electronic capture of patient information during childbirth including, CTGs, partograms, all labour events, outcome information, foetal blood sampling results and cord blood gases direct from the blood gas analyser (K2 Medical Systems Ltd). This software provides opportunities for student midwives to access and consider the use of aggregated data within both a simulated and actual clinical context.
Further information from:
Collette MacIntosh
Department of Nursing and Midwifery
University of Stirling
Stirling, FK9 4LA

b) Evidence Based Healthcare module delivered by Queen Margaret University.
See module descriptor in Appendix 7
Further information from:
Dr Mairghread JH Ellis MSc FHEA
Programme Leader, BSc Hons Podiatry
School of Health Sciences
Queen Margaret University, EH21 6UU

c) Telehealth and Telecare module delivered by Glasgow Caledonian University.
See module descriptor in Appendix 7
Further information from:
Audrey Cund
Glasgow Caledonian University
School of Health
Govan Mbeki Building
70 Cowcaddens Road
Glasgow, G4 OBA

d) eHealth module recently delivered by Glasgow Caledonian University.
The module descriptor not included
Further information may be available from:
Audrey Cund
Glasgow Caledonian University
School of Health
Govan Mbeki Building
70 Cowcaddens Road
Glasgow, G4 OBA

e) Specialised eHealth module delivered by University of Abertay (Nursing).
See module descriptor in Appendix 7
Further information may be available from:
Ann Grodzicka, Programme Tutor
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7. Discussion

The survey data indicates that many of the themes and elements of LtMHI are included in the current curricula of the majority of NMAHP pre-registration programmes, with some noticeable exceptions.

Themes that were well covered but with the exceptions of some elements include:

- Protecting Individuals and Organisations
- Data, Information and Knowledge
- Communication and Information Transfer
- Health and Care Records

Elements within LtMHI themes missing from some current curricula include:

- Designing and carrying out a clinical audit
- Knowledge of decision support tools
- Use of aggregated data
- Awareness of the access levels to different parts of personal health records
- Knowledge of patient held and patient accessible clinical information

Themes that are visible but not well covered in the current curricula are:

- Clinical Coding and Terminology
- Clinical Systems and Applications
- eHealth: the Future Direction of Clinical Care

Although ICT skills are recognised as essential by all respondents and generic knowledge management activities are evident in the curricula, they are usually not linked specifically to healthcare applications since ICT skills training is often provided by a central HEI resource. The provision of computer skills and information literacy training in curricula without the health informatics link is also evident in the US (Skiba et al 2008).

This scoping exercise highlighted the multiple interpretations of eHealth. This is consistent with the literature (Murphy 2004, Booth 2006). Some survey respondents regarded eHealth as synonymous with eLearning – mirroring the findings of Bond and Procter (2009). Many respondents believed eHealth education was focused more on the technology than clinical practice. The impact of a lack of clarity of educationalists' understanding of the scope of eHealth and its implications for clinical practice both currently and in the future, presents a challenge to successfully integrating eHealth into the curriculum. Undoubtedly the changing scope of eHealth as it matures and limited awareness or experience of using eHealth systems reinforces this misunderstanding. This is further damaged by the very limited opportunities for educationalists and students alike to gain the requisite knowledge and skills on either "live" or simulated eHealth technologies. This is compounded by lack of availability to eHealth tools and technologies in clinical practice.

The predominant view of respondents is that eHealth is currently embedded rather than highly visible in the curriculum, despite significant content gaps, which suggests a limited understanding of the scope, concepts, practice and implications of eHealth. Curricular guidance supported by training events could encourage curricular developments, easing the transition as eHealth matures and becomes more ubiquitous. Until there is a wide consensual understanding of eHealth and its impact, it will be difficult to embed it seamlessly into the curriculum. It could also be suggested that those areas that can more easily be taught in theory are well covered and those themes or elements that

required deeper understanding of health informatics (i.e. Clinical Coding and Terminology) or experience (i.e. Clinical Systems and Applications) are less well covered.

Perhaps unsurprisingly, the barriers previously identified in the literature are relevant to current curriculum in Scotland. In particular this project highlighted educationalists' limited knowledge and skills of eHealth concepts and practices; limited understanding regarding the discipline of health informatics; a generally low awareness of educational eHealth resources; limited space in the curriculum to incorporate eHealth, and limited opportunities for students and educationalist to access eHealth applications to authentic learning. Perceived lack of control of student experience of eHealth in clinical placements could be viewed as confusion about responsibility for eHealth education and the fact that eHealth is not currently used ubiquitously across the service. Perceived poor IT skills of students who find it difficult to understand its relevance to practice were noted. The reasons for these barriers are likely to be interrelated, as are the solutions.

Respondents' views about solutions to address barriers to better integration of eHealth in the curricula is supported by the NHS Scotland's theme of mutuality and partnership promoted in "Better Health Better Care: An Action Plan" (Scottish Government 2007). Respondent's suggestions included sharing knowledge in the form of good practice, learning and teaching resources and closer partnership working between Health Boards and HEI's to provide access to local eHealth applications. Local eHealth Education Champions within HEI's was strongly supported. These enablers have also been identified in the literature (NHS information Authority 2004d, Ornes and Gassert 2007, Skiba et al 2008). Examples of integration may already exist but HEIs may not be aware of them. There was general support for a national curriculum, and although LtMHI provides a useful outline for a curriculum, only one respondent was aware of its existence.

While not identified in this survey, there are other examples of good practice across Scotland. For example, in NHS Tayside, staff from eHealth visit HEIs to teach students. In NHS Ayrshire and Arran students are given unique passwords to eHealth systems in clinical areas and have access to a training module of the eHealth systems used in practice. These and other examples of good practice could be shared and adopted more widely.

8. Limitations of this Project

The project initially intended to survey pre and post registration programmes. However, due to resource constraints it was decided to focus on pre-registration curricula. The survey intended to cover Nurses, Midwives and Allied Health Professionals but due to the limited membership of AHP academic heads within SHANAHP, and the low response rate, the results cannot be considered as representative of AHP education. It is also noted that the response rate overall was low. In addition to reducing the generalisability of the results, this may explain why limited examples of good practice were noted.

9. Conclusions

Despite the limitations, the project team believe that the results provide an insight into the current status of eHealth in pre-registration NMAHP programmes and a basis to make a number of recommendations. While this survey may not have provided a complete picture of how well eHealth is integrated into the pre-registration education across Scotland, it would appear that there is progress and some good practice. The majority of LtMHI themes are considered important for pre-registration NMAHP education in order for students to understand how to use eHealth to deliver safe, effective, person centred care within a context of robust information governance. Some of these themes and elements are currently well covered, while others are less well covered. There is a view that eHealth is deeply embedded in the current curricula, and while this is ultimately desirable, until eHealth is both a mature tool that underpins healthcare ubiquitously across the NHS, it could be desirable to provide more overt examples to aid both students' and educationalists' understanding of the scope of eHealth.

The barriers to integrating eHealth into pre registration curricula appear to be consistent with the literature, as do the suggested enablers. There appears to be a high level of consistency in relation to what might be done to overcome these barriers. Clearly this cannot be done by each HEI alone and requires a partnership approach to creating solutions if future NMAHPs are to be adequately prepared for e-enabled Healthcare. This partnership between the HEIs, NHS Boards, Scottish Government and NHS Education for Scotland could address the interrelated issues for both students and educationalists. Solutions and opportunities exist that, if shared and adopted, would ultimately support HEIs to better equip NMAHPs with the necessary understanding, knowledge and skills to use both the information and the technology to underpin the delivery of better eHealth and better care, now and in the future.

9. Recommendations

The following recommendations will support HEIs to integrate eHealth more comprehensively into current pre-registration NMAHP curricula.

- Share the report – NMAHP eHealth Education Steering Group should share the results of this survey with HEIs and other key stakeholders to explore the recommendations and address integration of eHealth into pre-registration curricula.

- Raise awareness of eHealth – the Scottish Government eHealth Directorate and NHS Boards should continue efforts to raise awareness, particularly with HEIs, of Scotland's eHealth agenda and both local and national initiatives

- Support eHealth knowledge and skills development – HEIs should support the development of eHealth knowledge and skills for educationalists through the development of a Scottish Network of eHealth Education Champions and explore links with existing eHealth networks including Telehealthcare and NMAHP eHealth.

- Share good practice and resources – HEIs should use the Clinical eHealth Managed Knowledge Network (eLibrary) as a mechanism to raise awareness of existing learning and teaching resources and promote understanding of eHealth.

- Develop partnerships - HEIs, NHS Boards and Local Authorities should explore opportunities for students and academic staff to access live or simulated eHealth systems in order to improve knowledge and skills for educational staff and create authentic learning opportunities for students.

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Appendix 1

Participating Organisations

Organisational members of the Scottish Head of Academic Nursing and Allied Health Professions invited to participate in the data collection exercise:

- Glasgow Caledonian University
- Edinburgh Napier University
- Queen Margaret University
- Robert Gordon University, Aberdeen
- University of Abertay, Dundee
- University of Dundee
- University of Edinburgh
- University of Glasgow
- University of Stirling
- University of the West of Scotland

NES Steering Group Members

Heather Strachan, NMAHP eHealth Lead, eHealth Directorate
Michael Sabin, Chief Nurse Directorate, Scottish Government
Christine Hoy, Programme Manager, Self Management, Scottish Government, Health Department
David Lamont, Nursing Practice Education Facilitator
Maggie Grundy, Programme Director, NES
Helen McFarlane, Programme Director, NES
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Collette MacIntosh, Royal College of Midwives
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Project Team Members

Terry Corcoran (Project Manager)	Glasgow Caledonian University
Martyn Main	Robert Gordon University Aberdeen
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Hugh Masters	Edinburgh Napier University
Sam Young	University of Stirling

Appendix 2

Learning to Manage Health Information (LtMHI) Themes, Learning Outcomes and Level of Education (Connecting for Health 2009)

Essential Information Technology Skills for Clinicians: As a minimum, all clinical staff should attain the IT knowledge and skills provided by NHS Elite and NHS Health.

Key to tables:

Level A First health professional qualification (undergraduate) level

Level B Post first qualification (post-graduate) level or for Continuing Professional Development (CPD)

Level C Clinical and related management development

Theme 1: Protection of Individuals and Organisations

	Description of Learning Outcomes	Applicable Level of Education
1	Demonstrate understanding of the conformance legislation, regulatory guidance and NHS protocols regarding the security and confidentiality of patient identifiable information.	A, B, C
2	Apply policies and practices in respect of requests from patients (or their representative) and clinicians for access to health records and related information.	A, B
3	Demonstrate understanding of the information governance and local "Caldicott Guardian" arrangements, and the implications for health record keeping.	B, C
4	Demonstrate understanding of the different arrangements and the associated responsibilities of clinical staff for security of all types of clinical information, especially electronically held, and for using such data for "secondary" purposes.	A, B
5	Demonstrate understanding of the purpose, principles and practice of clinical governance in health organisations, how patients can be involved and the implications of the emergence of the expert patient.	A, B, C
6	Explore the principles and practice of clinical audit and appreciate how this contributes to clinical governance, improving overall clinical practice, personal clinical practice and performance, and, if applicable, reaccreditation.	A, B, C
7	Demonstrate understanding of the various sources of information needed for effective clinical governance and audit, including access to appropriate evidence-based information.	A, B
8	Design and carry out audit with relevant supporting information.	A, B

Theme 2: Data, Information and Knowledge

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the relationship and differences between data and information and how both can be used to support clinical practice and service management.	A, B, C
2	Demonstrate understanding of the principles of effective quality control and validation of data and information in clinical practice.	B, C
3	Demonstrate understanding of the nature of decision support tools and how they are used to support clinical activity.	A, B
4	Summarise, evaluate, appraise and present information/evidence relevant to a particular healthcare issue obtained from accredited online and other sources.	A, B
5	Describe and demonstrate understanding of current key NHS initiatives and developments in the field of IT-based knowledge resources.	A, B, C
6	Demonstrate understanding of the implications of computerised care pathways and clinical guidelines for patient care.	A, B
7	Analyse sources of information about patient and public views and expectations for healthcare and related services.	B, C
8	List the range, purposes, benefits and potential risks of aggregating clinical data.	A, B
9	Outline the secondary uses of patient information for health research and managing & planning care.	B, C
10	Demonstrate an understanding of the use of patient data for research.	A, B
11	Understand how direct access to their records provides patients with evidence-based information to help them make decisions about self-care.	A, B

Theme 3: Communication and Information Transfer

Description of Learning Outcomes		Applicable Level of Education
1	Explore and describe the information flows which take place between different sectors of health and social care.	A, B, C
2	Demonstrate understanding of different communication methods and technologies and their appropriate application in support of clinical practice.	A, B
3	Analyse why recorded information might vary between practitioners and understand the nature and importance of *shared meaning* for inter-professional communications.	B, C
4	Demonstrate understanding of, and evaluate the communications arrangements between different professionals in a team and with other professionals in related services.	A, B
5	Demonstrate understanding of the principles of acceptable, effective communications and information exchange with patients and carers and be able to demonstrate how this can be achieved in clinical practice.	A, B
6	Ability to effectively send and receive information from other professionals, in written or electronic formats within guidelines of confidentiality and security.	A, B
7	Review the current arrangements for electronic communications with patients or carers and the scope for further development.	B, C

Theme 4: Health and Care Records

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the purpose, basic structures, use and storage of patient health records, including paper-based and electronic patient records, and patient held records.	A, B
2	Demonstrate an understanding of the differences and importance of both structured, coded records and free text.	A, B
3	Demonstrate understanding of the importance of the primary care sector in the creation and collation of electronic healthcare records.	A, B, C
4	Demonstrate understanding of the level of access required to different parts of the personal health record.	A, B
5	Demonstrate understanding of consent models, confidentiality and security to ensure appropriate individual and team access to patient records.	A, B, C
6	Understand and discuss the implications of patient held and patient accessible clinical information for inter-professional clinical practice and multidisciplinary care.	B, C
7	Demonstrate understanding of the implications of the integration of patient identifiable clinical information within the NHS.	A, B
8	Demonstrate how to support patients when accessing their full GP record, maximising the benefits and minimising the risks.	B

Theme 5: The Language of Health: Clinical Coding and Terminology

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate an understanding of the difference between terming, coding and grouping.	A, B
2	Demonstrate understanding of the basis, application and limitations of different clinical coding systems, classifications and related vocabularies.	A, B, C
3	Demonstrate understanding of the national standards and conventions used by the NHS in coding clinical data.	A, B
4	Demonstrate understanding of the use of clinical terms in preparing and updating records.	A, B
5	Explain why high quality coded clinical data is essential for the quality of clinical practice, the safety of patients and the communication of clinical information.	A, B, C
6	Discuss the importance of coded data for clinical research, epidemiology, Public Health and the conduct of national audit.	B, C
7	Explain how coding impacts on the information that patients are able to access.	A, B
8	Demonstrate understanding of the importance of coded data for supporting administration, Payment By Results (PBR), Quality and Outcomes Framework (QOF) and business models.	B, C

Theme 6: Clinical Systems and Applications

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of how and why information technology is able to support clinical practice and new ways of working.	A, B, C
2	Demonstrate understanding of the functionality of the clinical systems and applications used in healthcare practice.	A, B
3	Demonstrate an understanding of the advantages and disadvantages of patient focused versus specialty, procedure or disease focused systems.	A, B
4	Demonstrate understanding of the key NHS national projects, initiatives and developments in the field of healthcare information technology.	B, C
5	Demonstrate skill in the use of clinical systems in a range of settings, including sharing the personal health record between clinician and patient.	A, B, C
6	Demonstrate awareness of clinical systems errors/reliability (e.g. transfer of data between platforms; data entry errors).	A, B, C
7	Demonstrate awareness of emerging information and communications technologies and their application in health.	A, B, C

Theme 7: eHealth: the Future Direction of Clinical Care

Description of Learning Outcomes		Applicable Level of Education
1	Demonstrate understanding of the concepts, scope and practice of eHealth.	A, B
2	Demonstrate understanding of the implications of eHealth applications for patients and clinical staff, clinical practice and communications.	B, C
3	Demonstrate understanding of the patient experience and perspective of eHealth applications.	A, B
4	Demonstrate understanding of the main assistive technologies and applications currently available and in development and their applicability to local services.	B, C

Appendix 3

NMAHP pre-registration Courses* delivered by SHANAHP Affiliated HEIs – listed according to Registration outcome

* Not all Registration courses are discrete programmes

HEI	Programme	Comment
Glasgow Caledonian University 9 programmes	Registered Nurse (Adult / Child / Learning Disabilities / Mental Health)	Registered Nurse is a generic programme with Branch specific outcomes and exit award at Diploma or Baccalaureate Level
	Registered Midwife	
	BSc(Hons) Podiatry	
	BSc (Hons) Diagnostic Imaging Science	
	BSc (Hons) Radiation Oncology Science	
	BSc (Hons) Physiotherapy	
	MSc Physiotherapy (Pre-registration)	
	BSc (Hons) Occupational Therapy	BSc (Hons) Occupational Therapy is a generic Programme with 6 possible outcome awards
	MSc Occupational Therapy (Pre-registration)	
Edinburgh Napier University 2 Programmes	Registered Nurse (Adult / Child / Learning Disabilities / Mental Health))	Registered Nurse is a generic programme with Branch specific outcomes and exit award at Diploma or Baccalaureate Level
	Registered Midwife	
Queen Margaret University 15 programmes	Registered Nurse (Adult)	Includes BSc (Hons) Nursing and Graduate Diploma
	BSc(Hons) Podiatry	
	BSc Podiatry	
	BSc (Hons) Speech and Language Therapy	
	Graduate Diploma in Speech and Language Therapy	
	BSc (Hons) Diagnostic	

	Radiography	
	BSc (Hons) Therapeutic Radiography	
	MSc Radiotherapy and Oncology	This programme includes an exit award option of PgDip in Radiotherapy and Oncology
	BSc (Hons) Physiotherapy	
	MSc Physiotherapy (pre-registration)	This programme includes an exit award option of PgDip Physiotherapy (Pre-registration)
	BSc (Hons) Occupational Therapy	
	BSc (Hons) Dietetics	
	MSc Dietetics	This programme includes an exit award option of PgDip Dietetics
	MSc Art Therapy	
	MSc Music Therapy (Nordoff Robbins)	
Robert Gordon University Aberdeen 7 programmes	Registered Nurse (Adult / Child / Mental Health)	Registered Nurse is a generic programme with Branch specific outcomes and exit award at Diploma or Baccalaureate Level
	Registered Midwife	
	BSc (Hons) Diagnostic Radiography	
	BSc (Hons) Physiotherapy	
	MSc Physiotherapy (Pre-registration)	
	BSc (Hons) Occupational Therapy	
	BSc (Hons) Nutrition and Dietetics	
University of Abertay Dundee 2 programmes	Registered Nurse (Adult)	
	Registered Nurse (Mental Health)	
University of Dundee 4 programmes	Registered Nurse (Adult)	BN - Also offered as PgCert
	Registered Nurse (Child)	BN - Also offered as PgCert

	Registered Nurse (Mental Health)	BN - Also offered as PgCert
	Registered Midwife	BM -Also offered as PgCert
University of Edinburgh **1 programme**	Registered Nurse (Adult)	BN (Hons) only
University of Glasgow **1 programme**	Registered Nurse (Adult)	Exit award may be either BN or BN (Hons)
University of Stirling **2 programmes**	Registered Nurse (Adult / Learning Disabilities / Mental Health)	Registered Nurse is a generic programme with Branch specific outcomes
	Registered Midwife	
University of West of Scotland **2 programmes**	Registered Nurse (Adult / Child / Mental Health)	Registered Nurse is a generic programme with Branch specific outcomes
	Registered Midwife	

Appendix 4 Survey Questionnaire

Section 1: General information

1. Name
2. Email address
3. We are really interested in speaking with you further about the programme you are responsible for. If you are willing to
participate in a telephone interview (approximately 20 mins), please supply a telephone number where we can contact you
4. Please select the institution in which you work (dropdown list).
5. Give the title of the programme for which you are completing this questionnaire.
6. Please choose your own professional group from the drop down list

Section 2: Current provision

7. Protection of individuals and organisations

(Options: Pre-registration/Post-registration/Both/Neither**)**

7.a Understanding of data protection issues in relation to patient information – Included?
7.a.i. Understanding of data protection issues in relation to patient information -- Comment
7.b. Awareness of data security issues relating to health records -- Included?
7.b.i. Awareness of data security issues relating to health records -- Comment
7.c. Principles of clinical governance -- Included?
7.c.i. Principles of clinical governance -- Comment
7.d. Principles of audit systems -- Included?
7.d.i. Principles of audit systems -- Comment
7. e. Designing a clinical audit -- Included?
7. e.i. Designing a clinical audit -- Comment
7. f. Carrying out a clinical audit -- Included?
7. f.i. Carrying out a clinical audit -- Comment

8. Data, information and knowledge

(Options: Pre-registration/Post-registration/Both/Neither**)**

8. a. Using data and information to support clinical practice -- Included?
8. a.i. Using data and information to support clinical practice -- Comment
8. b. Understanding of appropriate data handling techniques -- Included?
8. b.i. Understanding of appropriate data handling techniques -- Comment
8. c. Knowledge of decision support tools (e.g. algorithms / clinical pathways, used by telephone triage, such as NHS 24) -- Included?
8. c.i. Knowledge of decision support tools (e.g. algorithms / clinical pathways, used by telephone triage, such as NHS 24) -- Comment
8. d. Using evidence to support clinical practice -- Included?
8. d.i. Using evidence to support clinical practice -- Comment

8. e. Awareness of NHS initiatives using IT to disseminate information (e.g. NHS Scotland e-Library) -- Included?
8.e.i. Awareness of NHS initiatives using IT to disseminate information (e.g. NHS Scotland e-Library) -- Comment
8.f. Analysing sources of information about patient / public views and expectations for healthcare and related services -- Included?
8.f.i. Analysing sources of information about patient / public views and expectations for healthcare and related services -- Comment
8.g. The use of aggregated data -- Included?
8.g.i. The use of aggregated data -- Comment
8.h. Awareness of the ethical use of data -- Included?
8.h.i. Awareness of the ethical use of data -- Comment

9. Communication and information transfer
(Options: Pre-registration/Post-registration/Both/Neither**)**

9.a. Understanding of different forms of electronic communication within the healthcare service (e.g. email) -- Included?
9.a.i. Understanding of different forms of electronic communication within the healthcare service (e.g. email) -- Comment
9.b. Understanding of information flows / pathways and communication systems in the health and social care sectors -- Included?
9.b.i. Understanding of information flows / pathways and communication systems in the health and social care sectors -- Comment
9.c. Awareness of communication and language issues among practitioners and among different professional groups -- Included?
9.c.i. Awareness of communication and language issues among practitioners and among different professional groups -- Comment
9.d. Awareness of communication and language issues between practitioners and patients / carers -- Included?
9.d.i. Awareness of communication and language issues between practitioners and patients / carers -- Comment

10. Health and care records

(Options: Pre-registration/Post-registration/Both/Neither**)**

10.a. Knowledge and understanding of patient health records, including electronic patient records and patient held records -- Included?
10.a.i. Knowledge and understanding of patient health records, including electronic patient records and patient held records -- Comment
10.b. Awareness of the access levels to different parts of personal health records -- Included?
10.b.i. Awareness of the access levels to different parts of personal health records -- Comment
10.c. Knowledge of patient held and patient accessible clinical information -- Included?
10.c.i. Knowledge of patient held and patient accessible clinical information -- Comment
10.d. Awareness of the implications of direct patient access to their records -- Included?
10.d.i. Awareness of the implications of direct patient access to their records -- Comment

11. The language of health: clinical coding and terminology

(Options: Pre-registration/Post-registration/Both/Neither**)**

11.a. Awareness of different coding / classification systems used within healthcare records -- Included
11.a.i. Awareness of different coding / classification systems used within healthcare records -- Comment
11.b. Understanding of the importance of coding of data for clinical practice, research and communication, at local and national levels -- Included
11.b.i. Understanding of the importance of coding of data for clinical practice, research and communication, at local and national levels -- Comment
11.c. Understanding of the importance of coding of data for healthcare service management -- Included
11.c.i. Understanding of the importance of coding of data for healthcare service management -- Comment

12. Clinical systems and applications

(Options: Pre-registration/Post-registration/Both/Neither**)**

12.a. Understanding of how IT supports clinical practice -- Included?
12.a.i. Understanding of how IT supports clinical practice -- Comment
12.b. Understanding of different clinical systems across healthcare services and users -- Included?
12.b.i. Understanding of different clinical systems across healthcare services and users -- Comment
12.c. Understanding of projects, policies and drivers which inform the development of healthcare information technology -- Included?
12.c.i. Understanding of projects, policies and drivers which inform the development of healthcare information technology -- Comment
12.d. Awareness of limitations of different clinical systems -- Included?
12.d.i. Awareness of limitations of different clinical systems -- Comment

13. eHealth: the future direction of clinical care

(Options: Pre-registration/Post-registration/Both/Neither**)**

13.a. Understanding of the concepts, scope and practice of eHealth -- Included?
13.a.i. Understanding of the concepts, scope and practice of eHealth -- Comment
13.b. Implications of eHealth applications to patients, clinical staff, clinical practice and communications -- Included?
13.b.i. Implications of eHealth applications to patients, clinical staff, clinical practice and communications -- Comment
13.c. Understanding of the application and varieties of assistive technologies available (eg. telehealth or telecare) -- Included?
13.c.i. Understanding of the application and varieties of assistive technologies available (eg. telehealth or telecare) -- Comment

14. Essential information technology skills for clinicians

(Options: Pre-registration/Post-registration/Both/Neither**)**

14.a. NHS Elite (NHS E-Learning IT Essentials) -- Which, if any, of these do you use in your curriculum?
14.a.i. NHS Elite (NHS E-Learning IT Essentials) -- Comment
14.b. NHS Health (NHS E-Learning for Health Information Systems) -- Which, if any, of these do you use in your curriculum?
14.b.i. NHS Health (NHS E-Learning for Health Information Systems) -- Comment
14.c. EITS (Essential IT Skills Programme) -- Which, if any, of these do you use in your curriculum?
14.c.i. EITS (Essential IT Skills Programme) -- Comment
14.d. ECDL (European Computer Driving Licence) -- Which, if any, of these do you use in your curriculum?
14.d.i. ECDL (European Computer Driving Licence) -- Comment
14.e. University based -- Which, if any, of these do you use in your curriculum?
14.e.i. University based -- Comment
14.f. Other -- Which, if any, of these do you use in your curriculum?
14.f.i. Other -- Comment

15. Do you have any eHealth modules?

(Options: Yes/No)

15.a. If you answered yes to the question then please tell us the title(s) of the eHealth module(s)
15.a.i. Can you supply us with learning outcomes and / or descriptor?
Section 3: From your overall experience, at what educational stage/ stages should these be included?
(Options: Pre-registration/Post-registration/Both/Neither**)**

Section 3: From your overall experience, at what educational stage/ stages should these be included?

16. Protection of individuals and organisations

(Options: Pre-registration/Post-registration/Both/Neither**)**

16.a. Understanding of data protection issues in relation to patient information -- Include at:
16.a.i. Understanding of data protection issues in relation to patient information -- Comment 16.b. Awareness of data security issues relating to health records -- Include at:
16.b.i. Awareness of data security issues relating to health records -- Comment 16.c. Principles of clinical governance -- Include at:
16.c.i. Principles of clinical governance -- Comment
16.d. Principles of audit systems -- Include at:
16.d.i. Principles of audit systems -- Comment
16.e. Designing a clinical audit -- Include at:
16.e.i. Designing a clinical audit -- Comment
16.f. Carrying out a clinical audit -- Include at:
16.f.i. Carrying out a clinical audit -- Comment

17. Data, information and knowledge
(Options: Pre-registration/Post-registration/Both/Neither**)**

17.a. Using data and information to support clinical practice -- Include at:
17.a.i. Using data and information to support clinical practice -- Comment
17.b. Understanding of appropriate data handling techniques -- Include at:
17.b.i. Understanding of appropriate data handling techniques -- Comment
17.c. Knowledge of decision support tools (e.g. algorithms / clinical pathways, used by telephone triage, such as NHS 24) Include at:
17.c.i. Knowledge of decision support tools (e.g. algorithms / clinical pathways, used by telephone triage, such as NHS 24) -- Comment
17.d. Using evidence to support clinical practice -- Include at:
17.d.i. Using evidence to support clinical practice -- Comment
17.e. Awareness of NHS initiatives using IT to disseminate information (eg. NHS Scotland e-Library) -- Include at:
17.e.i. Awareness of NHS initiatives using IT to disseminate information (eg. NHS Scotland e-Library) -- Comment
17.f. Analysing sources of information about patient / public views and expectations for healthcare and related services -- Include at:
17.f.i. Analysing sources of information about patient / public views and expectations for healthcare and related services -- Comment
17.g. The use of aggregated data -- Include at:
17.g.i. The use of aggregated data -- Comment
17.h. Awareness of the ethical use of data -- Include at:
17.h.i. Awareness of the ethical use of data -- Comment

18. Communication and information transfer

(Options: Pre-registration/Post-registration/Both/Neither**)**

18.a. Understanding of different forms of electronic communication within the healthcare service (e.g. email) -- Include at:
18.a.i. Understanding of different forms of electronic communication within the healthcare service (e.g. email) -- Comment
18.b. Understanding of information flows / pathways and communication systems in the health and social care sectors -- Include at:
18.b.i. Understanding of information flows / pathways and communication systems in the health and social care sectors -- Comment
18.c. Awareness of communication and language issues among practitioners and among different professional groups -- Include at:
18.c.i. Awareness of communication and language issues among practitioners and among different professional groups -- Comment
18.d. Awareness of communication and language issues between practitioners and patients / carers

-- Include at:
18.d.i. Awareness of communication and language issues between practitioners and patients / carers -- Comment

19. Health and care records

(Options: Pre-registration/Post-registration/Both/Neither**)**

19.a. Knowledge and understanding of patient health records, including electronic patient records and patient held records -- Include at:
19.a.i. Knowledge and understanding of patient health records, including electronic patient records and patient held records -- Comment
19.b. Awareness of the access levels to different parts of personal health records -- Include at:
19.b.i. Awareness of the access levels to different parts of personal health records -- Comment
19.c. Knowledge of patient held and patient accessible clinical information -- Include at:
19.c.i. Knowledge of patient held and patient accessible clinical information -- Comment
19.d. Awareness of the implications of direct patient access to their records -- Include at:
19.d.i. Awareness of the implications of direct patient access to their records -- Comment

20. The language of health: clinical coding and terminology

(Options: Pre-registration/Post-registration/Both/Neither**)**

20.a. Awareness of different coding / classification systems used within healthcare records -- Include at:
20.a.i. Awareness of different coding / classification systems used within healthcare records -- Comment
20.b. Understanding of the importance of coding of data for clinical practice, research and communication, at local and national levels -- Include at:
20.b.i. Understanding of the importance of coding of data for clinical practice, research and communication, at local and national levels -- Comment
20.c. Understanding of the importance of coding of data for healthcare service management -- Include at:
20.c.i. Understanding of the importance of coding of data for healthcare service management -- Comment

21. Clinical systems and applications

(Options: Pre-registration/Post-registration/Both/Neither**)**

21.a. Understanding of how IT supports clinical practice -- Include in:
21.a.i. Understanding of how IT supports clinical practice -- Comment
21.b. Understanding of different clinical systems across healthcare services and users -- Include in:
21.b.i. Understanding of different clinical systems across healthcare services and users -- Comment
21.c. Understanding of projects, policies and drivers which inform the development of healthcare information technology -- Include in:
21.c.i. Understanding of projects, policies and drivers which inform the development of healthcare information technology -- Comment

21.d. Awareness of limitations of different clinical systems -- Include in:
21.d.i. Awareness of limitations of different clinical systems -- Comment
22. eHealth: the future direction of clinical care
22.a. Understanding of the concepts, scope and practice of eHealth -- Include in:
22.a.ii. -- Comment
22.b. Implications of eHealth applications to patients, clinical staff, clinical practice and communications -- Include in:
22.b.ii. -- Comment
22.c. Understanding of the application and varieties of assistive technologies available (e.g. teleHealth, telecare or electronic health records) -- Include in:
22.c.ii. -- Comment

Section 4: Provision / expectations in your programme

(Options: Strongly agree / Agree/ Disagree/ Strongly disagree)

23. Please read the statements below and indicate your agreement / disagreement with them.

23.a. Most staff in my department have knowledge and understanding of eHealth
23.b. There is a general perception that eHealth is focused more on technology than on clinical practice
23.c. There are teaching staff with expertise in eHealth within my department
23.d. Teaching basic computer skills to students is currently a responsibility of my department
23.e. Support for learning basic computer skills is necessary for many of our students
23.f. Basic eHealth skills are expected of students on placement
23.g. Generally speaking, there are adequate IT resources within clinical areas used for student placements
23.h. Generally speaking, there is adequate provision of IT resources in the University
23.i. Access to nationally developed eHealth modules and resources would be very useful in my programme
23.j. Students do not particularly enjoy ICT aspects of the programme
23.k. It is difficult to identify time in the curriculum to address eHealth competencies
23.l. Resources (time and financial) are scarce for developing and delivering eHealth in my programme

Section 5: Barriers and enablers

24. For each of the barriers to eHealth listed below, please indicate how significant a barrier you think this is in your programme.

(Options: Not significant at all/ Can sometimes be a significant barrier/ Quite a significant barrier generally / A very significant barrier)

If relevant please also give information on what you think would help to overcome the barrier, or give examples of good practice you already have in place, which address the barrier.

24.a. Cost constraints (including resources for purchasing equipment cost of staff time) -- How significant a barrier is this in your programme?

24.a.i. Cost constraints (including resources for purchasing equipment cost of staff time) -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.b. Access to IT facilities (on campus and in placements) -- How significant a barrier is this in your programme?
24.b.i. Access to IT facilities (on campus and in placements) -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.c. Staff issues, including staff knowledge of eHealth, staff development and attitude of staff to eHealth / ICT -- How significant a barrier is this in your programme?
24.c.i. Staff issues, including staff knowledge of eHealth, staff development and attitude of staff to eHealth / ICT -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.d. Poor basic computer skills among students -- How significant a barrier is this in your programme?
24.d.i. Poor basic computer skills among students -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.e. Negative attitude of students towards ICT related activities -- How significant a barrier is this in your programme
24.e.i. Negative attitude of students towards ICT related activities -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.f. Time constraints in the curriculum - eHealth seen as low priority content -- How significant a barrier is this in your programme?
24.f.i. Time constraints in the curriculum - eHealth seen as low priority content -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.g. Lack of a consistent curriculum across Scotland -- How significant a barrier is this in your programme?
24.g.i. Lack of a consistent curriculum across Scotland -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?
24.h. Focus of eHealth seems to be away from practice towards technology -- How significant a barrier is this in your programme
24.h.i. Focus of eHealth seems to be away from practice towards technology -- What do you think could help to overcome this barrier in your programme and / or can you give examples of good practice you have in place which address this barrier?

25. Please use the area below to tell us about any other barriers you feel are significant in your programme
(Free text areas)
25.a. The first additional barrier in my programme is... -- Barrier to eHealth in my programme
25.a.i. The first additional barrier in my programme is... -- How significant is the barrier you have identified?
25.a.ii. The first additional barrier in my programme is... -- What do you think could help to overcome this barrier within your own programme?
25.b. The second additional barrier in my programme is... -- Barrier to eHealth in my programme
25.b.i. The second additional barrier in my programme is... -- How significant is the barrier you have identified?

25.b.ii. The second additional barrier in my programme is... -- What do you think could help to overcome this barrier within your own programme?
25.c. The third additional barrier in my programme is... -- Barrier to eHealth in my programme
25.c.i. The third additional barrier in my programme is... -- How significant is the barrier you have identified?
25.c.ii. The third additional barrier in my programme is... -- What do you think could help to overcome this barrier within your own programme?
25.d. The fourth additional barrier in my programme is... -- Barrier to eHealth in my programme
25.d.i. The fourth additional barrier in my programme is... -- How significant is the barrier you have identified?
25.d.ii. The fourth additional barrier in my programme is... -- What do you think could help to overcome this barrier within your own programme?
25.e. The fifth additional barrier in my programme is... -- Barrier to eHealth in my programme 25.e.i. The fifth additional barrier in my programme is... -- How significant is the barrier you have identified?
25.e.ii. The fifth additional barrier in my programme is... -- What do you think could help to overcome this barrier within your own programme?

Section 6: Other information

26. If there is any other information you think would be relevant to this questionnaire, or if you have any other comments to make then please note these in the box below.
We will be carrying out follow-up interviews. If you would be willing to take part in this then please give us a contact telephone number, if you have not already done so earlier in the questionnaire.

Appendix 5: Telephone Interview Schedule

eHealth Scoping Project: Telephone Interview Schedule

Thanks for agreeing to take part in this interview.

XXX will phone at XXX pm/am on XXX date – we expect the interview to take no longer than 30 minutes. The schedule below includes the questions we would like to ask, however if there any areas that you would also like to discuss we are happy to include these. If you wish you can add text to the template and email back to me either before or after the interview. I will make notes of the interview as we talk and then send these to you so that you can verify they are accurate.

Also included is a 'Good Practice Template' which we would be grateful if you could complete with any examples you would like to highlight and then return to me. This information may be shared in the report, but we will confirm this with you before we publish.

Section 1: Clarifying Your eHealth Questionnaire responses
Can you clarify (refer to survey responses)
Can you tell me a bit more about?
Your responses perhaps show that your programme has found it challenging to develop EHealth in these areas……?
Can you say a little about why you feel that is?

Section 2: Identifying examples of Good Practice
Can you tell me about any examples of good practice that you would like to highlight? (Would you be willing to fill in the attached 'Good practice' form and return to me?)

Section 3: Your experiences, views and opinions about eHealth in the programme you lead
How has eHealth developed within your programme in the last few years?
What in your experience has been the single biggest barrier?
And the biggest single enabler or driver?

Section 4: Embedding eHealth in the curriculum
Do you have any plans in place to develop eHealth in the programme in the next few years?
What aspect of eHealth do you think you do best in your programme? Why is that?
What UK and Scottish policies are you aware of in relation to eHealth?
Are you aware of the 'Learning to Manage Healthcare Information' document?
Do you think there is a need for any National initiatives in this area?

Section 5: Attitudes
How would you describe your own attitudes, skills and experience in relation to eHealth?
Would you see yourself as a pioneer/champion/pathfinder in this area?
Are their people that you recognise as having these qualities teaching in your programme?

Section 6: Additional Comments
Anything else you would like to add or any areas that you feel have not been covered?

Many thanks for your time in completing the questionnaire and taking part in the interview. I will send notes of our discussion to you for to verify the content. You will be sent a copy of the final report of the scoping project.

Appendix 6 Results

Please note that Questions 1 – 6 of the questionnaire refer to demographic data – the aggregated responses to which are given in section 3.1 of the Report main text.

Current Provision and Preferred Stages for eHealth Content inclusion

Theme: Protection of individuals and organisations

7a & 16a Understanding of data protection issues in relation to patient information

Currently included in Pre-registration?

Yes	16
No	0
Don't know	0

Preferred inclusion level:

Pre-registration	6
Post-registration	1
Both	9
Neither	0

7b & 16b Awareness of data security issues relating to health records

Currently included in Pre-registration?

Yes	16
No	0
Don't know	0

Preferred inclusion level:

Pre-registration	6
Post-registration	1
Both	9
Neither	0

7c & 16c Principles of clinical governance	
Currently included in Pre-registration?	
Yes	16
No	0
Don't know	0
Preferred inclusion level:	
Pre-registration	6
Post-registration	1
Both	9
Neither	0

7d & 16d Principles of audit systems	
Currently included in Pre-registration?	
Yes	14
No	2
Don't know	0
Preferred inclusion level:	
Pre-registration	5
Post-registration	2
Both	9
Neither	0

7e & 16e Designing a clinical audit	
Currently included in Pre-registration?	
Yes	5
No	10

Don’t know	1
Preferred inclusion level:	
Pre-registration	1
Post-registration	10
Both	5
Neither	0

7f & 16f Carrying out a clinical audit	
Currently included in Pre-registration?	
Yes	6
No	10
Don’t know	0
Preferred inclusion level:	
Pre-registration	2
Post-registration	10
Both	4
Neither	0

Theme: Data, information and knowledge

8a & 17a Using data and information to support clinical practice	
Currently included in Pre-registration?	
Yes	16
No	0
Don’t know	0
Preferred inclusion level:	
Pre-registration	6

Post-registration	2
Both	8
Neither	0

8b & 17b Understanding of appropriate data handling techniques	
Currently included in Pre-registration?	
Yes	14
No	1
Don't know	1
Preferred inclusion level:	
Pre-registration	6
Post-registration	2
Both	8
Neither	0

8c & 17c Knowledge of decision support tools (e.g. algorithms / clinical pathways, used by telephone triage such as NHS24)	
Currently included in Pre-registration?	
Yes	12
No	3
Don't know	1
Preferred inclusion level:	
Pre-registration	5
Post-registration	3
Both	8
Neither	0

8d & 17d Using evidence to support clinical practice	
Currently included in Pre-registration?	
Yes	16
No	0
Don't know	0
Preferred inclusion level:	
Pre-registration	4
Post-registration	1
Both	11
Neither	0

8e & 17e Awareness of NHS initiatives using IT to disseminate information (e.g. NHS Scotland e-Library	
Currently included in Pre-registration?	
Yes	16
No	0
Don't know	0
Preferred inclusion level:	
Pre-registration	4
Post-registration	1
Both	11
Neither	0

8f & 17f Analysing sources of information about	

patient / public views and expectations for healthcare and related services	
Currently included in Pre-registration?	
Yes	15
No	1
Don't know	0
Preferred inclusion level:	
Pre-registration	3
Post-registration	5
Both	8
Neither	0

8g & 17g The use of aggregated data	
Currently included in Pre-registration?	
Yes	8
No	2
Don't know	6
Preferred inclusion level:	
Pre-registration	2
Post-registration	6
Both	5
Neither	3

8h & 17h Awareness of the ethical use of data	
Currently included in Pre-registration?	
Yes	16
No	0

Don’t know	0
Preferred inclusion level:	
Pre-registration	5
Post-registration	1
Both	10
Neither	0

Theme: Communication and information transfer

9a & 18a Understanding of different forms of electronic communication within the healthcare service (e.g. email)	
Currently included in Pre-registration?	
Yes	15
No	0
Don’t know	1
Preferred inclusion level:	
Pre-registration	5
Post-registration	1
Both	10
Neither	0

9b & 18b Understanding of information flows / pathways and communication systems in the health and social care sectors	
Currently included in Pre-registration?	
Yes	13
No	2
Don’t know	1

Preferred inclusion level:	
Pre-registration	5
Post-registration	3
Both	8
Neither	0

9c & 18c Awareness of communication and language issues among practitioners and among different professional groups	
Currently included in Pre-registration?	
Yes	15
No	0
Don't know	1
Preferred inclusion level:	
Pre-registration	6
Post-registration	2
Both	8
Neither	0

9d & 18d Awareness of communication and language issues between practitioners and patients / carers	
Currently included in Pre-registration?	
Yes	16
No	0
Don't know	0
Preferred inclusion level:	
Pre-registration	6

Post-registration	2
Both	8
Neither	0

Theme: Health and care records

10a & 19a Knowledge and understanding of patient health records, including electronic patient records and patient held records	
Currently included in Pre-registration?	
Yes	15
No	0
Don't know	1
Preferred inclusion level:	
Pre-registration	5
Post-registration	1
Both	10
Neither	0

10b & 19b Awareness of the access levels to different parts of personal health records	
Currently included in Pre-registration?	
Yes	12
No	0
Don't know	4
Preferred inclusion level:	
Pre-registration	5
Post-registration	4
Both	7

Neither	0

10c & 19c Knowledge of patient held and patient accessible clinical information	
Currently included in Pre-registration?	
Yes	11
No	0
Don't know	5
Preferred inclusion level:	
Pre-registration	5
Post-registration	3
Both	8
Neither	0

10d & 19d Awareness of the implications of direct patient access to their records	
Currently included in Pre-registration?	
Yes	13
No	1
Don't know	2
Preferred inclusion level:	
Pre-registration	5
Post-registration	3
Both	8
Neither	0

]

Theme: The language of health: clinical coding and terminology

11a & 20a Awareness of different coding / classification systems used healthcare records	
Currently included in Pre-registration?	
Yes	5
No	9
Don't know	2
Preferred inclusion level:	
Pre-registration	3
Post-registration	6
Both	7
Neither	0

11b & 20b Understanding of the importance of coding of data for clinical practice, research and communication, at local and national levels	
Currently included in Pre-registration?	
Yes	3
No	11
Don't know	2
Preferred inclusion level:	
Pre-registration	2
Post-registration	8
Both	6
Neither	0

11c & 20c Understanding of the importance of coding of data for healthcare service management	
Currently included in Pre-registration?	
Yes	3
No	11
Don't know	2
Preferred inclusion level:	
Pre-registration	2
Post-registration	9
Both	5
Neither	0

Theme: Clinical systems and applications

12a & 21a Understanding how IT supports clinical practice	
Currently included in Pre-registration?	
Yes	14
No	1
Don't know	1
Preferred inclusion level:	
Pre-registration	6
Post-registration	1
Both	9
Neither	0

12b & 21b Understanding of different clinical systems across healthcare services and users	
Currently included in Pre-registration?	
Yes	9
No	4
Don't know	3
Preferred inclusion level:	
Pre-registration	4
Post-registration	3
Both	9
Neither	0

12c & 21c Understanding of projects, policies and drivers which inform the development of healthcare information technology	
Currently included in Pre-registration?	
Yes	8
No	5
Don't know	3
Preferred inclusion level:	
Pre-registration	4
Post-registration	4
Both	8
Neither	0

12d & 21d Awareness of limitations of different clinical systems	
Currently included in Pre-registration?	
Yes	8
No	5
Don't know	3
Preferred inclusion level:	
Pre-registration	3
Post-registration	6
Both	7
Neither	0

Theme: eHealth: the future direction of clinical care

13a & 22a Understanding the concepts, scope and practice of eHealth	
Currently included in Pre-registration?	
Yes	8
No	7
Don't know	1
Preferred inclusion level:	
Pre-registration	6
Post-registration	1
Both	9
Neither	0

13b & 22b Implications of eHealth applications to patients, clinical staff, clinical practice and communications	
Currently included in Pre-registration?	
Yes	10
No	5
Don't know	1
Preferred inclusion level:	
Pre-registration	6
Post-registration	1
Both	9
Neither	0

13c & 22c Understanding of the application and varieties of assistive technologies (e.g. Telehealth or telecare)	
Currently included in Pre-registration?	
Yes	9
No	6
Don't know	1
Preferred inclusion level:	
Pre-registration	5
Post-registration	3
Both	8
Neither	0

Essential information technology skills for clinicians (Tools currently in use)

Which if any of these do you use in your curriculum?

14a NHS Elite (NHS E-Learning IT Essentials)

Yes	0
No	15
Don't know	1

14b NHS Health (NHS E-Learning for Health Information System)

Yes	3
No	12
Don't know	1

14c EITS (Essential IT Skills Programme)

Yes	1
No	14
Don't know	1

14d ECDL (European Computer Driving Licence)

Yes	2
No	12
Don't know	2

14e University based (IT skills training)

Yes	16
No	0

Don’t know	0

14f Other

Yes	4
No	10
Don’t know	2

Delivery of eHealth Modules

15 Do you have any eHealth modules?

Yes	2
No	14
Don’t know	0

15a Can you supply us with learning outcomes and/or descriptor? (Free text responses)

Learning Outcomes only	0
Modules Descriptor only	0
Both Learning Outcomes and Modules Descriptor	2
Neither	0
Nil Response	14

Provision / expectations in your programme

23 Please read the statements below and indicate your agreement / disagreement with them

23a Most of the staff in my department have knowledge and understanding of eHealth

Strongly agree	0
Agree	7
Disagree	5

Strongly disagree	1
Not sure	3

23b There is a general perception that eHealth is focussed more on technology than on clinical practice

Strongly agree	2
Agree	5
Disagree	8
Strongly disagree	0
Not sure	1

23c There are teaching staff with expertise in eHealth within my department

Strongly agree	1
Agree	7
Disagree	5
Strongly disagree	0
Not sure	3

23d Teaching basic computer skills to students is currently a responsibility of my department

Strongly agree	4
Agree	3
Disagree	7
Strongly disagree	2
Not sure	0

23e Support for learning basic computer skills is necessary for many of our students

Strongly agree	5
Agree	5
Disagree	5

Strongly disagree	1
Not sure	0

23f Basic eHealth skills are expected of students on placement

Strongly agree	2
Agree	7
Disagree	3
Strongly disagree	0
Not sure	4

23g Generally speaking, there are adequate IT resources within clinical areas used for student placements

Strongly agree	1
Agree	3
Disagree	6
Strongly disagree	4
Not sure	2

23h Generally speaking, there is adequate provision of IT resources in the university

Strongly agree	8
Agree	7
Disagree	1
Strongly disagree	0
Not sure	0

23i Access to nationally developed eHealth modules and resources would be very useful in my programme

Strongly agree	2
Agree	8
Disagree	1
Strongly disagree	1
Not sure	4

23j Students do not particularly enjoy ICT aspects of the programme

Strongly agree	0
Agree	4
Disagree	8
Strongly disagree	1
Not sure	3

23k It is difficult to identify time in the curriculum to address eHealth competencies

Strongly agree	0
Agree	5
Disagree	7
Strongly disagree	1
Not sure	3

23l Resources (time and financial) are scarce for developing and delivering eHealth in my programme

Strongly agree	1
Agree	9
Disagree	4
Strongly disagree	1
Not sure	1

Barriers and enablers

24 For each of the barriers to eHealth listed below, please indicate how significant a barrier you think this is in your programme. If relevant please also give information on what you think would help to overcome the barrier, or give examples of good practice you already have in place, which address the barrier.

24a Cost constraints (including resources for purchasing equipment and cost of staff time)

Not significant at all	1
Can sometimes be a significant barrier	7
Quite a significant barrier generally	7
A very significant barrier	1

24b Access to IT facilities (on campus and in placements)

Not significant at all	6
Can sometimes be a significant barrier	9
Quite a significant barrier generally	1
A very significant barrier	0

24c Staff issues, including staff knowledge of eHealth, staff development and attitude of staff to eHealth / ICT

Not significant at all	3
Can sometimes be a significant barrier	7
Quite a significant barrier generally	4
A very significant barrier	2

24d Poor basic computer skills among students

Not significant at all	6
Can sometimes be a significant barrier	8
Quite a significant barrier generally	2
A very significant barrier	0

24e Negative attitude of students towards ICT related activities

Not significant at all	9
Can sometimes be a significant barrier	6
Quite a significant barrier generally	0
A very significant barrier	1

24f Time constraints in the curriculum – eHealth seen as low priority content

Not significant at all	6
Can sometimes be a significant barrier	6
Quite a significant barrier generally	4
A very significant barrier	0

24g Lack of a consistent curriculum across Scotland

Not significant at all	4
Can sometimes be a significant barrier	8
Quite a significant barrier generally	3
A very significant barrier	1

24h Focus of eHealth seems to be away from practice towards technology

Not significant at all	3
Can sometimes be a significant barrier	12
Quite a significant barrier generally	1
A very significant barrier	0

Appendix 7: Module Descriptors

a) Evidence Based Healthcare module delivered by Queen Margaret University (QMU© 2010)

Queen Margaret University
EDINBURGH

Module Descriptor

Title	**EVIDENCE BASED HEALTH CARE 1 – Understanding the Use of Evidence**			Code (if known) **C1137**
SHE Level	1	Semester & Mode of Study	Semester1 Full time	Credit Rating
SCQF Level	7			10
Module Co-ordinator		Dr Mairghread Ellis		
Module Team				
Pre-requisites		Standard entry requirements		
Co-requisites		None		
Prohibited Combinations		None		

Aims

The aims of this module are to develop knowledge of current evidence relevant to podiatric practice, and competence in sourcing and evaluating such evidence according to set criteria.

Learning Outcomes On successful completion of the module the student will be able to:		Assessed in this module	A	B	C	D
L1	Demonstrate effective use of the LRC and its resources to identify and retrieve information from texts, journals and electronic sources	✔	✔	✔	✔	✔
L2	Perform electronic searches for information, with appropriate choice of search terms and sources	✔	✔	✔	✔	✔

L3	Demonstrate a working knowledge of electronic databases relevant for informing podiatric practice	✔	✔		✔	✔
L4	Explain the concept of evidence based practice, and describe the nature and purpose of evidence based guidelines for practice	✔	✔	✔		✔
L5	Evaluate 'evidence' for quality according to set criteria including authorship, ownership, currency, and category of evidence.	✔	✔	✔		✔
L6	Construct an accurate citation of information source, for both paper and electronically source material	✔	✔	✔	✔	✔

A – Knowledge and Understanding

B – Intellectual Skills

C – Practical Skills

D – Transferable Skills

Learning Experiences

The module will engage the student in the following types of learning experiences:

Lectures, discussions, workshops (Learning Resource Centre and computer workshops) self-directed study

10 hours of classroom teaching (lectures, facilitated discussion)

10 hours of computer workshops (tutor facilitated, practical experiential learning)

80 hours of independent learning

Assessment Pattern

Coursework:
A practical exercise: an electronic evidence search for literature appropriate to Clinical Studies 1, with a written submission of search strategy and comment on the quality of the evidence sourced

Can this Module be Anonymously marked? Yes/No If No please provide an explanation.

YES

Content

- The concept of 'evidence based practice' and what constitutes evidence
- Sourcing general/specific material; refining search terms
- Introduction to LRC and databases, e.g. Medline, Cinahl, BMI, Cochrane Library, SIGN, NICE
- Electronic libraries, eg NeLH, NHS Education e library (Scotland)
- Internet appraisal tools
- Citation of information sources (text, journal, electronic), Harvard and Vancouver referencing, Write and Cite
- Introduction to the concept of plagiarism, introduction to TurnitinUK,

Main Texts

Other relevant details

none

Completed by	Date
Mairghread JH Ellis	February 2009

b) Telehealth and Telecare module delivered by Glasgow Caledonian University (GCU ©2009)

Glasgow Caledonian University

Module Status

Module Descriptor

Module Title: Perspectives of Telehealth and Telecare (to be confirmed)

Module Code	Module Abbreviation	Available from Session	URL
		2009/2010	

Module Level	Division	School	Status
Level 11			

Credit Points	Semester	Max No	Min No	Est No
15	A and B	20	10	12

Pre-Requisite Knowledge

Post registration Nurses and Allied Health Professionals

Co-Requisite Knowledge

None

Prohibited Combinations

None

Module Structure FT PT Other

Lectures		6	
Practical's			
Seminars		5	

Tutorials			
Independent Learning		**134**	
Assessment		**5**	
Directed Learning			
Other			
Other			
Other			
Notional Student Effort		**150**	

Summary of Content

Study in this module will provide nurses and allied health professionals with the opportunity to critically explore the concept and development of Telehealth and Telecare within contemporary practice. This module will appeal to practitioners currently working within the field of Telehealth and Telecare or those with a specific interest in this emerging area of practice.

Study of this module will focus on theoretical, ethical and research perspectives in relation to Telehealth and Telecare. It will enable the learner to evaluate the range and effectiveness of health technology in the delivery of health services within urban and rural areas of Scotland.

Learning Outcomes

On successful completion of this module, students should be able to:

- Critically evaluate the development of Telehealth and Telecare and reflect on its implications and application in contemporary health care.
- Critically examine and evaluate the political, professional, technological, and social developments associated with Telehealth and Telecare, nationally and internationally.
- Critically reflect and evaluate the ethical and legal challenges associated with Telehealth and Telecare.
- Critically examine the legislation relating to information governance and demonstrate, through critical analysis, the implications for professional practice.
- Embed decisions and analysis of the practical use of assistive technology and telemedicine within theoretical, ethical and research perspectives
- Critically appraise the evidence to support the use of technology in clinical practice.

Teaching/Learning Strategy

This module features a range of learning and teaching strategies. Lectures will be used `to present the core theoretical concepts, followed by seminars, to analyse and debate the link between theory and practice. The virtual learning environment Blackboard ©

will provide the student with a range of eLearning resources to support them throughout the module. In addition, a variety of clinical site visits will be made available, to enable the student, to develop their knowledge and understanding of the subject area.

Syllabus

Contemporary perspectives in Telehealth and Telecare

- National and International perspectives
- Policy, research and theoretical contexts
- Benefits and challenges of Telehealth and Telecare
- Patients/user experience

Information and Communication Technology

- Essential components of a Telehealth consultation (at a point of care delivery / at a distance)
- Epistemology of Assistive technology
- Current and future perspectives on technology
- Levels of assistive technology
- Assessment, diagnosis, treatment and Monitoring of health using technology
- Pervasive computing and forms of interaction – active, passive, coercive
- User perspective on the use of technology

Information Governance

- Legal and ethical issues
- Privacy, security and issues of control

Transferable Skills

Transferable Skills which students are expected to develop and undertake throughout the module are detailed as follows:

- Work in a self directed manner, taking responsibility for one's own learning and personal development.
- Study information technology skills to underpin their continued and effective learning
- Critical thinking in the context of the subject which can be transferred within different clinical settings.
- Advance critical thinking and problem solving skills in a range of situations
- Advance communication skills, written, oral, listening and presentational

e) eHealth Module delivered by University of Abertay, Dundee

Module Code : HE0935A
Module Title : e-Health

Principal Domain : Social and Health Sciences
Principal Division : Tayside Institute of Health Studies **Weighting :** 100%

Level : 9
SCQF Credits : 15
Status : Approved School Executive
Semester : Semester 2 **Academic Session :** 2009/10
Last Updated : 01/06/09

External Examiners : TOPPING, PROFESSOR ANNE

Module Tutor : GRODZICKA , ANN

Brief Description
This module explores e-Health and its impact on patient care within the contemporary health care environment and provides the student with some basic familiarity with technology tools and concepts currently utilised in e-Health settings.

Aim
The aim of this Module is to provide the student with: an understanding of the uses of electronics in support of health and the opportunities that technology offers in health care settings for professionals and patients.

Learning Outcomes
By the end of this module the student should be able to:
1. Develop an understanding of national and local e-Health policy and strategies.
2. Develop relevant IT knowledge and skills.
3. Develop an understanding of systems modelling in health care.
4. Demonstrate awareness the use of computer-based technologies to inform and enhance health care.

Indicative Content

1. *e-Health in practice:*
Developing an understanding of national and local e- Health policy and strategies and the implications and challenges that e Health presents for practice.
2. *IT Skills*
Develop knowledge and skills of Microsoft packages; file management; data protection and information governance.
3. *Database technology in health care*
Develop an understanding of database technologies in a health care context in terms of data storage, input, reporting and relevant legal issues.
4. *Systems modelling in a health care*
Develop an awareness of the benefits of systems modelling in a health care context in terms of system description, representation, simulation and interpretation.
5. *Using computer-based technologies to inform and enhance health*
Recognise how existing practice can be informed and enhanced by computer-based technologies including databases, systems modelling and teleHealth provision.

Statement on Teaching, Learning and Assessment
There is a mix of lectures, tutorials and computer based activities. The lectures provide background knowledge and a theoretical framework for the module. The tutorials enable the student to engage in enquiry based learning activities. The computer based activities enable the student to develop their IT skills to meet the requirements of the clinical area. This module includes input the Information Services department, the School of Creative and Computing Technologies and from clinical experts. Assessment of the learning outcomes is achieved via the development of a practical project and an essay. Additional supportive reading is provided by lecturers. This module is delivered over a shortened period of nine weeks before students commence clinical placement.

Teaching and Learning Work Loads :

Total : 150 hours
Lecture : 27 hours
Supervised Practical Activity : 16 hours
Assessment : 24 hours
Independent : 83 hours

Assessment

Practical 1 project development
Weighting : 50%
Workload : 12 hrs
Issue Week : 17
Submission Week : 34
Return Week : 38
Associated Learning Outcomes : 2,4,5
Assessment Tutor : BOWN , JIM

2 Essay 2 2000 words
Weighting : 50%
Workload : 12 hrs

Issue Week : 17
Submission Week : 34
Return Week : 38
Associated Learning Outcomes : 1,3
Assessment Tutor : GRODZICKA , ANN

Additional Assessment Information
The practical project development is a computer based assessment.

Additional Tutors :
Guest Speakers

Supportive Reading
Hinchcliffe S, Norman S, Schober J, Eds. 2008 *Nursing practice and healthcare.* Oxon: Hodder Arnold
Scottish Government 2007 *Better health, Better Care Action Plan* Edinburgh: Scottish Government
Scottish Executive 2006 *Delivering Care, Enabling health* Edinburgh: Scottish Executive

Teachability Issues for this module are :
Oral,Visual,Aural,Computer Based,Reading,Writing,Collaboration,Professional

Key Transferable Skills for this module are :
Communication,Team Work,Problem Solving,ICT Skills,Interpersonal,Leadership,Professionalism