



# Digitalisation in Health – The times they are a changing...

**Gabrielle Koutoukidis**

**An International Specialised Skills Fellowship**

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# i. EXECUTIVE SUMMARY

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Worldwide, the health care industry is undergoing a radical transformation, due to the expectations of stakeholders, patients, governments, insurers, employers and providers. Organisations will be required to adopt both technology and process improvement strategies to enable secure access, exchange and analysis of patient information and to create greater efficiencies in both business and clinical processes. The aim of this Fellowship was to explore how learning and teaching strategies for health informatics and health technology is addressed and taught in nursing, health, aged and community care curricula, including simulated healthcare environments, to prepare student nurses to work in the rapid technology changing health care environment.

The research involved the Fellow, Gabrielle Koutoukidis, visiting The University of Minnesota (USA); University of Finis Terrae (Chile); Autonoma University (Chile) and the University of Auckland (New Zealand), over a three week period. These universities were chosen as they either have established health informatics departments and established courses on health informatics; a specific subject on health informatics within their Bachelor of Nursing programs; and simulated health care environments.

In addition, whilst in Santiago, Chile, Professor Erika Callaberro organised for the Fellow to also visit the following health care organisations: The Hospital Traumatologico (viewed use of electronic health records); Clinic Ensenada (viewed the telemedicine system) and the Accuhealth Centre (Digital hospital – viewed tele-monitoring). These experiences were invaluable to the Fellow, and she was able to see what graduate nurses will be doing in the workforce to help assist with what needs to be taught in undergraduate nursing courses.

The focus of the Fellowship was to:

1. Learn how to develop, incorporate and implement learning and teaching strategies for health informatics and health technologies for the Diploma of Nursing and health courses
2. Learn how to establish a digital simulation health laboratory, with the following components:
  - » Electronic medical health records: e-documentation, clinical decision support, notification of tasks to be performed, results that are abnormal
  - » Telehealth, using mobile phone applications for data, wearable technologies
  - » Smart phone communications link with nurse call systems
3. Obtain an understanding of clinical information systems, devices, how to maintain privacy and confidentiality, data and information technology
4. Identify the knowledge that educators will require to be able to teach health informatics and technologies within nursing and health courses.

Koutoukidis was overwhelmed by the experience and the collegiality shown to her by all academics she met with. They shared teaching resources willingly and their experiences teaching health informatics and health technologies in their courses/ subjects and development and implementation of nursing curricula.

Koutoukidis was able to explore the teaching pedagogies and approaches for including health informatics and health technology in nursing and health science curricula. Some approaches included use of case studies to explain data sets and information to students; evidence based practice in data; how to use data; include Australia's eHealth strategy in nursing courses; in subjects/ units where legal and ethics are taught; include issues with electronic health records (EHR) such as confidentiality and privacy concerns; have guest speakers in to discuss and demonstrate new technologies, and then have students work with the technology in simulation and review the technology.

The Fellow was also able to identify and explore teaching resources for health informatics and technologies. How teachers could use electronic medical health records and e-documentation to teach documentation and in nursing assessment classes will assist in preparing students to use EHR in the workforce.

## I. EXECUTIVE SUMMARY

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A common theme though from all universities was the importance of teaching students about critical thinking, so they don't just let the technology decide what they are going to do. In addition that they use a person centered approach in teaching, so students don't lose sight of the individual they are caring for. Some academics have noted that students are focusing on the technologies and forgetting they are looking after a real person.

In establishing a digital simulation laboratory, it was stressed to the Fellow that simulation and equipment resources for health informatics need to be built around the training package/ curriculum so that spaces are flexible and can be used for different scenarios.

Professional development requirements for educators of nursing, health, aged and community care courses to be able to teach and support students on the use of health informatics and technologies in the health care environment was another major area that most universities stressed was important. It was also noted that it is critical to ensure staff who are involved in simulation also undertake a course on simulation and debriefing.

On completion on the Fellowship, Koutoukidis would recommend the following:

- Encourage curriculum developers of nursing, health, aged and community care courses to consider developing a discrete unit on health informatics for the health training package
- Consider having health informatics integrated throughout specific units in nursing, health, aged and community related courses
- Include various teaching pedagogies and approaches for including health informatics and health technology in nursing, health, aged and community care curricula
- Utilise teaching resources for informatics and technologies such as: use of electronic medical health records and e-documentation to teach documentation and in nursing assessment classes, including clinical decision support; give examples of Smart phone communications link with nurse call systems to prepare nursing students to work in digital hospitals; utilise applications for mobile phones that students could use in their course – to encourage familiarity with technology
- Give examples in class of how Telehealth and telemonitoring, using mobile phone applications for data and wearable technologies are used so that students are aware of these applications if they come into contact with them depending on where they work
- Provide professional development to teaching teams on health informatics and technologies
- Ensure staff who are involved in simulation also undertake a course on simulation and debriefing
- Build simulation and equipment resources around the training package/ curriculum so that spaces are flexible and can be used for different scenarios
- Ensure students have access to computer laboratories.

Koutoukidis would also recommend that the Australian Government, ensure that My Health record (EHR) can be accessed by health care providers and individuals across health organizations in Australia, to ensure interoperability; (ii) the Nursing Profession in Australia discuss the possibility of a standardised language – when using EHR – so that data can be collected and used for quality improvement and research (iii) health care providers to partner with universities/VET providers for use of data for real research (iv) Course Advisory Groups within the VET and university sector, include technology and health informatics on the agenda, to ensure they are kept updated on what the industry is using.

Health informatics is beginning to evolve more now in Australia. Projects in some health care facilities are now commencing to implement electronic health care records and e-documentation. This fellowship has highlighted that now is the time to ensure that students in health care courses such as nursing; aged and community care, are educated and equipped to be able to use health informatics

## I. EXECUTIVE SUMMARY

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and emerging technologies, safely; maintaining privacy and confidentiality. That graduates of these courses are also critical thinkers and deliver person centered care in this digital age. In addition that support and education is provided to the educators of these students.

This report provides an over view of the Fellowship experience. It includes recommendations for education providers, educators, training package developers, government, and the nursing profession. Koutoukidis will be delivering presentations both in Victoria and at a National level to disseminate her findings. The Fellow would like to thank all those who have supported her to undertake this Fellowship, and hope that the findings can assist the vocational and education training sector to be leaders in educating students in nursing, health, aged and community care courses to be prepared to work in the digital age, in particular with health informatics and emerging technologies.



# TABLE OF CONTENTS

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	<b>i. Executive Summary</b>
<b>i</b>	<b>ii. Acronyms &amp; Abbreviations</b>
<b>1</b>	<b>1. About the Fellow</b>
<b>3</b>	<b>2. Aim of the Fellowship Program</b>
<b>5</b>	<b>3. The Australian Context</b>
<b>7</b>	<b>4. Identifying the Skills and Knowledge Enhancements Required</b>
<b>9</b>	<b>5. The International Experience</b>
9	6.1 The University of Minnesota, Minneapolis USA
11	6.2. University Finis Terrae
13	6.2.1 Autonoma University
14	6.3 The University of Auckland
<b>17</b>	<b>6. Knowledge Transfer: Applying the Outcomes</b>
<b>21</b>	<b>7. Recommendations</b>
<b>23</b>	<b>8. References</b>
<b>25</b>	<b>9. Acknowledgements</b>
<b>27</b>	<b>10. Appendices</b>
27	APPENDIX 10.1
31	APPENDIX 10.2
34	APPENDIX 10.3



## ii. ACRONYMS & ABBREVIATIONS

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<b>ANMAC</b>	Australian Nursing & Midwifery Accreditation Council
<b>DMF</b>	Decision Making Framework
<b>EHR</b>	Electronic Health Record
<b>ICT</b>	Information and communication technology
<b>NANDA NIC NOC</b>	North American Nursing Diagnosis Association – International, the Nursing Interventions Classification and the Nursing Outcomes Classification
<b>SBAR</b>	Situational, Background, Assessment, Recommendation; a technique used to facilitate prompt and appropriate communication in health care
<b>VET</b>	Vocational Education & Training



# 1. ABOUT THE FELLOW

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Gabrielle Koutoukidis is the Associate Director, Health & Community Care at Chisholm, with qualifications in nursing, midwifery, nursing education, public health and management.

Gabrielle is a Registered Nurse and Midwife with extensive experience in midwifery, community health, Indigenous health and nursing education (Diploma of Nursing and Bachelor of Nursing) and has a very strong background in management, leadership and partnership building skills. She previously worked as a Nurse Policy Officer for the then Nurses Board of Victoria where part of her role was to both develop and inform policies and guidelines in relation to the nursing profession. Gabrielle is also the senior editor and contributor of *Tabbners Nursing Care & Theory 4-7 Editions*, which is a major nursing textbook for the Diploma of Nursing both nationally and internationally.

## **Current Role:**

Associate Director, Health & Community Care at Chisholm. Role and responsibilities include:

- To facilitate strategically informed growth and drive new business development across the Faculty (i.e. nursing, community services, aged care and allied health)
- To enhance the reputation and footprint of Chisholm's health education nationally and internationally
- Actively engage industry and primary stakeholders (including government departments and agencies) for the purpose of establishing and maintaining sustainable and mutually beneficial partnerships that support program delivery.

## **Qualifications:**

- Diploma in Applied Science, Nursing, Lincoln Institute of Health Sciences, Vic, 1986
- Bachelor of Nursing, Midwifery, La Trobe University, Lincoln School of Health Science, Vic, 1989
- Graduate Diploma in Advanced Nursing, Education, La Trobe University, Lincoln School of Health Science, Vic, 1991
- Master of Public Health, Curtin University of Technology, WA, 2003
- Diploma of Business, Proteus Education & Training, 2009
- Vocational Graduate Certificate in Business Transformational Management, Holmesglen Institute, Vic, 2010.

Gabrielle is a Candidate of the Professional Doctorate in Education (Research), with the University of Canberra.

## **Publications:**

- Koutoukidis G, Stainton K, Hughson J. (2017). *Tabbner's Nursing Care: Theory and Practice*, 7 E. Elsevier, Sydney
- Koutoukidis G, Stainton K. (2017). *Essential Enrolled Nursing Skills: For Person Centered Care* 1E. Elsevier, Sydney
- Koutoukidis G, Stainton K, Hughson J. (2013). *Tabbner's Nursing Care: Theory and Practice*, 6 E. Elsevier, Sydney
- Funnell, R. Koutoukidis, G. Lawrence, K. (2009). *Tabbner's Nursing Care: Theory and Practice*, 5 E. Elsevier, Sydney
- Funnell, R. Koutoukidis, G. Lawrence, K. (2005). *Tabbner's Nursing Care: Theory and Practice*, 4 E. Elsevier, Sydney.

## 1. ABOUT THE FELLOW

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### **Professional Organisation / Membership:**

- Chair - Australian Nursing & Midwifery Accreditation Council, Enrolled Nurse Committee
- Chair – Moderation Delivery Committee (State-wide committee for Diploma of Nursing)
- Member Australian College of Nursing.

## 2. AIM OF THE FELLOWSHIP PROGRAM

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The aim of this Fellowship was to explore how learning and teaching strategies for health informatics and health technology is addressed and taught in nursing, health, aged and community care curricula, including simulated healthcare environments, to prepare student nurses for contemporary practice. The research involved the Fellow visiting The University of Minnesota (USA); University of Finis Terrae (Chile); Autonoma University (Chile) and the University of Auckland (New Zealand). These universities were chosen as they either have: established health informatics departments and established courses on health informatics; a specific subject on health informatics within their Bachelor of Nursing programs; and simulated health care environments.

The focus of the proposed Fellowship was to:

1. Learn how to develop, incorporate and implement learning and teaching strategies for health informatics and health technologies for the Diploma of Nursing, health, aged and community care courses
2. Learn how to establish a digital simulation health laboratory, with the following components:
  - Electronic medical health records: e-documentation, clinical decision support, notification of tasks to be performed, results that are abnormal
  - Telehealth, using mobile phone applications for data, wearable technologies
  - Smart phone communications link with nurse call systems
3. Obtain an understanding of clinical information systems, devices, how to maintain privacy and confidentiality, data and information technology
4. Identify the knowledge that educators will require to be able to teach health informatics and technologies within nursing, health, aged and community care courses.

As a result of the Fellowship, the Fellow as the Associate Director for Health and Community Care has been able to:

- Advise the architects who are redeveloping the Frankston Campus of Chisholm Institute, about ensuring student learning spaces are purpose built to reflect the health care work environment and therefore ensure that graduates are prepared for the workforce
- Have a better understanding of eHealth and emerging technologies in health
- Set strategic directions for the Health and Community Care Department that are in line with the Australian Nursing and Midwifery Accreditation Council (ANMAC) guidelines and State and Federal government health initiatives.



## 3. THE AUSTRALIAN CONTEXT

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Worldwide, the health care industry is undergoing a radical transformation, due to the expectations of stakeholders, patients, governments, insurers, employers and providers. Organisations will be required to adopt both technology and process improvement strategies to enable secure access, exchange and analysis of patient information and to create greater efficiencies in both business and clinical processes. These strategies will lead to more person-centered care through improved monitoring and management of wellness and chronic disease and improve overall delivery system health.<sup>1</sup>

Digital hospitals are enabling deployment of eHealth systems that provide online information, disease management, remote monitoring and telemedicine services. Benefits of digital hospitals for patients include:

- An increase in patient safety through a reduction in medical and clinical adverse events
- Improved communications between the patient and the carer
- Reduction in length of stay due to improved operational efficiency
- Rapid intervention during critical periods of care facilitated by real time alerts and reminders
- Improved medications management
- Access to modern day electronic media and social information.<sup>2</sup>

In 2008, Australian Health Ministers, through the Australian Health Ministers' Advisory Council (AHMAC), commissioned the development of a strategic framework and plan to guide national coordination and collaboration in E-Health.<sup>3</sup> A national vision for E-Health will "enable a safer, higher quality, more equitable and sustainable health system for all Australians by transforming the way information is used to plan, manage and deliver health care services."<sup>4</sup>

The My Health record has been established in Australia. This is a digital health record and is an electronic summary of an individual's key health information from their existing records. With the individuals consent, this information can be shared between health care providers involved in their care.<sup>5</sup> Currently (August 2016) only 17 per cent of Australians have a My Health record.<sup>6</sup>

In Australia, nursing informatics relates to knowledge and skills required by the nurse to integrate nursing science, computer science and information science to manage and communicate data, information and knowledge in nursing practice. Key to this is the effective use of information and communication technology (ICT).<sup>7</sup>

The Australian Nursing and Midwifery Accreditation Council (ANMAC) in December 2014 released an explanatory note for Health informatics and health technology. The explanatory note states that nursing education needs to consider both the technical aspects of health informatics and health technology but also how these technologies impact the lives of those involved with the health care system.<sup>8</sup>

ANMAC supports innovative approaches to the inclusion of support for the development and application of knowledge and skills in health informatics and health technology in an approved nursing program.<sup>9</sup>

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1 IBM Global Business Services. (2013).The digital hospital evolution: Creating a framework for the healthcare system of the future. White paper

2 IBM Global Business Services. (2013).The digital hospital evolution: Creating a framework for the healthcare system of the future. White paper; <http://ststephenshospital.com.au/about-us/ehealth-and-the-digital-hospital/benefits-of-ehealth>

3 [www.ahmac.gov.au](http://www.ahmac.gov.au) National E-Health Strategy Summary, December 2008.

4 [www.ahmac.gov.au](http://www.ahmac.gov.au) National E-Health Strategy Summary, December 2008.

5 [www.humanservices.gov.au](http://www.humanservices.gov.au) Getting Started with eHealth – Australian Government of Human Services. (March 3, 2016).

6 <https://myhealthrecord.gov.au>. My Health Record Statistics – at 19 June 2016.

7 ANMAC. (2014). Health informatics and health technology – an explanatory note

8 ANMAC. (2014). Health informatics and health technology – an explanatory note

9 ANMAC. (2014). Health informatics and health technology – an explanatory note

### 3. THE AUSTRALIAN CONTEXT

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Currently in Australia there is not a standardised clinical care classification (an approach for documenting patient care in an electronic health record system), such as sabacare, which provides a standardised framework and a unique coding structure for assessing, documenting and classifying patient care by nurses and other clinical professionals. It consists of nursing diagnoses and nursing interventions.<sup>10</sup>

In addition, VET providers in Victoria have reported to the Fellow that when nursing students are on clinical placement, the health care facility does not allow students access to write progress notes on the patients EHR. Therefore students do not have the opportunity to practice the use of e-documentation on placement, which strengthens the need to ensure students have the opportunity to practice use of health informatics and technologies in a simulated environment in class.

In the current VET training context, the newly released Health Training Package has no distinct unit on health informatics or technologies and neither does the Diploma of Nursing. Based on the findings of this Fellowship, the VET sector could be positioned to provide leadership in Australia, in developing and implementing teaching education strategies/ resources to nursing, aged and community care students in preparing them to use health informatics, health technology and emerging technologies, in a dynamic health care system.

The following section will outline the four skill enhancement areas that were the focus of the Fellowship.

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10 [www.sabacare.com](http://www.sabacare.com)

# 4. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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The following four skill enhancement areas that were the focus of the fellowship are identified as follows:

## **1. Explore the teaching pedagogies and approaches for including health informatics and health technology in nursing, health, aged and community care curricula**

Koutoukidis spent time with academics in four universities in three different countries to discuss how informatics and technologies were integrated into nursing, health, aged and community care curriculum. Through this Koutoukidis:

- Compared the pedagogical approach the four universities used to include informatics and technologies into nursing and health science curricula
- Observed students undertaking simulation and inter-professional simulation activities.

### **Aim:**

To gather evidence and best practices to assist with developing and implementing learning and teaching strategies and approaches, for health informatics and health technology to be incorporated into the Diploma of Nursing, health, aged and community care courses.

## **2. Identify and explore teaching resources for informatics and technologies**

Koutoukidis spent time with academics in four universities in three different countries to discuss how informatics and technologies were integrated into curriculum. Through this Koutoukidis:

- Compared the resources the universities utilised in the classroom
- Compared the resources the universities utilised in simulated health care environments
- Reviewed and compared student assessment tasks
- Observed students undertaking simulation and inter-professional simulation activities.

### **Aim:**

To review teaching resources for health informatics and health technology to be incorporated into Diploma of Nursing, health, aged and community care courses and how to establish a digital simulation health laboratory, with the following components:

- Electronic medical health records: e-documentation, clinical decision support, notification of tasks to be performed, results that are abnormal
- Telehealth, using mobile phone applications for data, wearable technologies
- Smart phone communications link with nurse call systems.

## **3. Observe the use of informatics and technologies in health care organisations to inform teaching approaches and strategies**

Koutoukidis in Santiago, Chile visited the following health care organisations:

- Hospital Traumatologico - viewed use of electronic health records
- Clinic Ensenada - viewed the telemedicine system
- Accuhealth Centre (Digital hospital) – viewed telemonitoring.

## 4. IDENTIFYING THE SKILLS AND KNOWLEDGE ENHANCEMENTS REQUIRED

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### **Aim:**

To gain an understanding of what health informatics and health technologies are being used in the health care industry and what information and skills need to be incorporated into Diploma of Nursing, health, aged and community care courses.

### **4. Identify professional development requirements for educators of nursing, health, aged and community care courses to be able to teach and support students on the use of informatics and technologies in the health care environment**

Koutoukidis spent time with academics in four universities in three different countries to discuss how the academics were prepared/ educated/ supported to be able to teach and incorporate informatics and technologies into their courses. Through this Koutoukidis:

- Discussed and compared what the professional development requirements were for academics, in each of the universities so that they could use informatics and technologies and imbed into their courses.

### **Aim:**

Gather evidence to support the benefit of professional development for educators to teach health informatics and incorporate technologies, including simulation techniques in their subjects/ units/ courses.

The skills enhancement areas will also provide the following for the Fellow:

- To advise the architects who are redeveloping the Frankston Campus of Chisholm Institute, about ensuring student learning spaces are purpose built to reflect the health care work environment and therefore ensure that graduates are prepared for the workforce
- Offer an opportunity to provide leadership to the VET sector on how to incorporate education strategies and resources for health informatics and technologies into nursing, health, aged and community care courses
- To set strategic directions for the Health and Community Care Department at Chisholm that are in line with: ANMAC explanatory note and State and Federal government health initiatives.

The following section describes the International experience of the Fellowship in three countries: United States of America; Chile and New Zealand.

## 5. THE INTERNATIONAL EXPERIENCE

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The research involved the Fellow visiting The University of Minnesota (USA); University of Finis Terrae (Chile); Autonoma University (Chile) and the University of Auckland (New Zealand). These universities were chosen because they have, established health informatics departments and established courses on health informatics; a specific subject on health informatics within their Bachelor of Nursing programs; and simulated health care environments.

In addition, whilst in Santiago, Chile, Professor Erika Callaberro organised for the Fellow to also visit the following health care organisations: The Hospital Traumatologico (viewed use of electronic health records); Clinic Ensenada (viewed the telemedicine system) and the Accuhealth Centre (Digital hospital – viewed tele-monitoring). In Chile there are 169 nursing programs – with only three that have nursing informatics included as a subject.

### 6.1 The University of Minnesota, Minneapolis USA

The Fellow was at the University of Minnesota over two days, talking with Faculty and attended a research day.

The University of Minnesota School Of Nursing, is ranked in the nation's top five per cent of nursing schools and ranked second in the nation in nursing informatics education by US and World Report and is a leader in improving health care through research, education and service. It is the oldest continuing university-based school of nursing in the nation and has a combined undergraduate and graduate enrolment of approximately 850 students. The School of Nursing is part of the Academic Health Centre, one of the most comprehensive facilities for health professionals in the nation, fostering inter-professional study, research and education.<sup>1</sup>

The Fellow on arrival to the University of Minnesota, had meetings with several Faculty members. A major focus of the discussions was in relation to the Nursing Informatics Deep Dive Workshop (DDW) which addresses the opportunity to enhance the competencies of undergraduate Registered Nursing (RN) graduates, specifically in the area of health informatics. Funding for the workshop built upon two previous grants, which support local implementation of the evidence-based Quality and Safety Education for Nurses (QSEN) program and complement the existing QSEN program by developing and piloting an intensive, deep dive workshop to build nursing faculty and nurse educator competency in one of the six QSEN areas – health informatics.

Professional nursing organisations have established standards for nursing informatics to assist faculty integrate them into program curriculum. The workshop assists educators to integrate standards with a recommended curriculum and suggested methods, tools and learning resources to teach them.<sup>2</sup>

Despite the importance of new and practicing RNs having experience and competency in health informatics, most nursing school curricula do not incorporate specific content on health informatics. In addition, many nursing school Faculty members do not have the knowledge of current health information technologies and applications that will allow them to develop these competencies in their students.<sup>3</sup>

In today's complex healthcare environment, nurse educators are continuously challenged to stay abreast of the rapidly expanding field of nursing informatics. From electronic health records, social media, consumer informatics, mobile-health, smart phones and other applications, the expectations on nurse educators to prepare students for a data, information, and technology intensive healthcare environment are high. Information technology is an enabling tool that links data, information, knowledge,

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1 [www.health.umn.edu](http://www.health.umn.edu)

2 [www.nursing.umn.edu](http://www.nursing.umn.edu)

3 [www.nursing.umn.edu](http://www.nursing.umn.edu)

## 5. THE INTERNATIONAL EXPERIENCE

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and wisdom and facilitates problem solving and decision making. However, incorporating information technology in ways that educate students on these important concepts remains a challenge for many educators and is the focus of this program.<sup>4</sup>

The workshop included:

- **Overview of healthcare informatics**, including definitions, principles of information management, and case studies for how information management can be used for quality improvement and patient safety
- **Nursing informatics**, including roles, the electronic health record, meaningful use, and how nursing care should be documented within an electronic environment (including in relation to documentation by other healthcare professionals, including physicians)
- **Information Management**, including taxonomy
- **Privacy, Security, and Ethical Issues**
- **Current information technology and industry trends**, including methods to evaluate the impact of implementation of evidence-based guidelines through electronic health records
- **Health Information Systems**, including selection and change management strategies in implementing health information systems
- **Clinical Decision Support Systems**, including definitions and case studies.<sup>5</sup>

By design, the workshop focuses on healthcare informatics while highlighting the important role of nursing in using IT for high-quality patient care. The workshop highlights the roles of healthcare professionals within the healthcare team and the implications of these roles for the use of IT (e.g., how RNs and physicians use the electronic medical record for documentation).

Online resources for this workshop were made available to the Fellow.

*See Appendix 10.1 for further details on online resources.*

Discussions with Faculty also highlighted the following for consideration, when including health informatics and technologies into nursing curricula:

- Patient centered care can be compromised – due to nursing students focusing on the technology instead of the patient
- Electronic Health Records need to be the same in each hospital for health professionals to be able to access an individual's health records
- Case studies can be used to explain to students:
  - » data sets and information
  - » evidence based practice in data
  - » how to use data
- Student assignments – can include use of robotics and bar codes in health care
- Need to teach students about critical thinking and to use a person centered approach – can't lose sight of the person whilst using technologies.

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<sup>4</sup> [www.nursing.umn.edu](http://www.nursing.umn.edu)

<sup>5</sup> [www.nursing.umn.edu](http://www.nursing.umn.edu)

Key Points:

- Importance of educating teaching staff on health informatics and technology, so they can then incorporate into their classes/subjects
- In teaching health informatics, use all types of informatics through use of case studies
- Ensure clinical decision making and evidence based practice is embedded throughout curricula.

### 6.2. University Finis Terrae

The fellow was at the University of Finis Terrae for five days, talking with Faculty, observing simulations and visiting health care organisations.

The School Of Nursing at the University of Finis Terrae is part of the Faculty of Medicine and incorporates the entire health team in their classrooms. Students have interaction with specialty physicians, Nurses, Psychologists, Engineers, Pharmacists receiving from them the tools of each discipline and much needed for their performance in the clinical world.<sup>6</sup>

Innovative teaching methodologies incorporating clinical simulation are used to prepare students with a strong level of knowledge and clinical skills supported by scientific thought. Students are taught:

- To develop autonomous thinking skills and use elements of leadership and teamwork
- Integrity in nursing work: regulations, laws and protocols established by the reforms and proposals on health, quality oriented, accreditation and standards compliance
- Use of health management tools, information management, use of health technologies and research methodologies.<sup>7</sup>

The University's Simulation Center is a place where it is possible to consolidate the teaching and learning of students, in a protected and safe environment, to enable them to acquire the necessary skills to develop quality work, respecting the dignity and ensuring patient safety.<sup>8</sup>

The Fellow met with the following Faculty members at University Finis Terrae:

- Eliana Escudero Zuniga: Director of School of Nursing
- Erika Callaberro – Professor Nursing Informatics.

Discussion was in relation to the Bachelor of Nursing course and integration of simulation and informatics into course. Also on UVISA – Erika's online course for nurses – nursing process, terminology, NANDA, NIC NOC.

Discussions held with Faculty over a week included the following.

- The nursing course is conducted over four years with simulation making up 15 per cent of the curriculum. There are no nursing standards or accreditation in Chile. Finis Terrae University has developed its own eight graduate competencies and have embedded these throughout the Bachelor of Nursing course. Informatics is taught throughout the course with students undertaking subjects in: evidence based nursing; standards of coding; nursing informatics (open EHR (web program) and philaxmed – a hospital information system) and nursing research.
- Prior to the establishment of the simulation centre at the University, they first developed the curriculum and then reviewed at what was required from an education perspective. Have 300 nursing students

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6 [www.facultadmedicina.uft.cl](http://www.facultadmedicina.uft.cl)

7 [www.facultadmedicina.uft.cl](http://www.facultadmedicina.uft.cl)

8 [www.facultadmedicina.uft.cl](http://www.facultadmedicina.uft.cl)

## 5. THE INTERNATIONAL EXPERIENCE

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across four years.

- When undertaking a simulation exercise they have usually four students in a simulation and the other six students in a debriefing room watching the simulation (via video streaming) and having a discussion about what is happening.
- Usually only have eight to 10 students in a nursing laboratory – highly resourced with teachers and have a simulation coordinator.
- The Director of School of Nursing requires that every teacher must have a qualification in simulation. Research reinforces this, educators need to know theory based simulation methods and debriefing.

Core subjects within the Bachelor of Nursing include:

1. Introduction to research, where use of technology and health informatics is discussed
2. Management of nursing records and health informatics
3. Standardisation and qualifications in health
4. Information analysis and evidence based nursing.

Technology used in the course to teach health informatics and technologies include:

- Open EHR
- Software – Archetype Editor
- Philaxmed (an EHR).

In the Bachelor of Nursing:

- Students develop own clinical pathways using open EHR
- Use the Ottawa decision making framework (DMF)
- Health informatics is also taught in third semester, using SBAR (a technique used to facilitate prompt and appropriate communication in health care) and students complete a nursing assessment and develop a clinical record on EHR. In the informatics course, they also cover management of systems/ models and the architecture of integrated information systems
- Teach students to use NANDA International NIC NOC (North American Nursing Diagnosis Association – International, the Nursing Interventions Classification and the Nursing Outcomes Classification), as well as the Omaha system (a standardised health care terminology consisting of an assessment component; an intervention component and an outcomes component); clinical care classification (sabacare – an approach for documenting patient care in an electronic health record system); use national nursing minimal data set and international classification for nursing practice (ICNP).
- Use Archetype editor ([www.openehr.org](http://www.openehr.org)) to teach students how to use EHR
  - » Students are given a case study and then place data into system – email to their teacher for correction
  - » Students are required to place in ranges e.g. blood pressure, pulse
  - » For example, using a case study with an individual with a pressure injury: students use the Braden scale, NANDA NIC NOC pick interventions and outcomes, and then develop a care plan using EHR
  - » Students have a class and then a workshop. Students write up and then place on archetype. Have five to six students in a class and this is in third semester.

The Fellow met with Professor Mario Mollina – University of Finis Terrae and Rene Letelier – teacher health informatics and technologies and discussed the following:

## 5. THE INTERNATIONAL EXPERIENCE

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- Teach technologies to students in health assessments and technology. Use of emergency and emerging technologies – how they can make them safe and secure for patients
- Have guest speakers in to discuss the new technologies – students then work with technology in simulation and review the technology: security and safety aspects – get them to critically think about the effectiveness of the technology
  - » Use the nursing process to get students to evaluate the technologies
  - » Taught in third semester and get students to analyse health technologies and read journal articles
  - » Students then do a project in this subject on a technology and do an assessment on the effectiveness of it
  - » Teach students to embrace technology.

The reason for including use of technologies in the course is that it is difficult to get health professionals to embrace technologies in the field and to move to paperless environments. Some health professionals are fearful of technology, so they teach the students the importance of embracing technology so they will be leaders when they are in the workforce. For example, some health care facilities buy equipment e.g. Infrared light to view veins for venipuncture, but staff don't know how to use the equipment and therefore don't use it.

Professor Mollina also mentioned that there is no national informatics strategy in Chile, from a government perspective, which then makes it difficult for the population to embrace digital health if they are not supported, promoted, publicised or informed.

### 6.2.1 Autonoma University

The Autonoma University is a Chilean private university, based in Temuco, Talca and Santiago (Providencia and Llano Subercaseaux). The Fellow met with Luisa Sepulveda – coordinator of Chilean Nursing Informatics Network and teacher in Bachelor of Nursing and Marie Angelica Vasquez – Director of Nursing Program at the Providencia campus.

Autonoma University offers a Bachelor of Nursing, they have 560 nursing students at the Santiago campus – all up they have 2000 nursing students across all three campuses. It is a five year course, which they have been conducting the course for 10 years.

- The University has just developed a new curriculum for the Bachelor of Nursing, with nursing informatics included. It is an integrated curriculum and includes nursing informatics competence.
- Developed a matrix of competencies and graduate outcomes and included informatics.
- Developed graduate attributes.
- Second semester in first year – students are taught basic nursing and commence evidence based nursing care.
- Do a literature review in evidence based nursing and work with Benner and the Ottawa Decision Making Framework.
- In informatics subject discuss: Chiles ehealth agenda, international agenda, digital systems (hospital, primary care, mobile health).
- Model similar to the University of Finis Terrae.
- Discuss nursing science and technology and have a competency on this.
- Use philaxmed.
- Assess students by: care plans; literature review and then – using philaxmed and archetype editor,

## 5. THE INTERNATIONAL EXPERIENCE

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students write care plans on an HER.

- They use an application from Elsevier on NANDA NIC NOC – which is used online by students.
- Students analyse the International Council of Nursing (ICN) e-health program in the course.
- In the health education subject, teachers use second life avatar and survey monkey. Students then do a self-evaluation on their health e.g. stress, smoking, alcohol. This gets students to use technology and then set up a university community. Students need to consent to participate. The data is presented to the students and then they have to do a health plan/education plan – about what the major health issues are of the community (class group) and then write a paper on this.
- In second life use case scenarios.

See Appendix 10.2 for further information on the visits undertaken by the fellow to the following health care organisations: *The Hospital Traumatologico* (viewed use of electronic health records); *Clinic Enseñada* (viewed the telemedicine system) and the *Accuhealth Centre* (Digital hospital – viewed tele-monitoring).

### 6.3 The University of Auckland

The Fellow was at the University of Auckland for four days, talking with Faculty and observing students and Faculty participating in inter-professional simulation.

Founded in 1883, The University of Auckland is New Zealand's largest university with over 40,000 students, nearly 10,000 of whom graduate annually. The main campus is in the heart of Auckland city and they have four specialist campuses. The School of Nursing is widely recognised as the training institution of choice in New Zealand, with all clinical programmes accredited by the Nursing Council of New Zealand.<sup>9</sup>

The Nursing Council of New Zealand currently does not identify any specific computer or information literacy skills within competencies that registered nurses are required to attain; even though many of the competencies stated involve information management and communication that are often achieved using computer and information technology. Adoption and inclusion of informatics has varied between schools of nursing, often depending on resources, including both physical and appropriately prepared Faculty.<sup>10</sup>

The School of Nursing at the University of Auckland have taken an integrated approach to health informatics education, where the health informatics content is blended with other content, rather than a specific course in health informatics. Michelle Honey, Senior Lecturer, School of Nursing, The University of Auckland referred me to a paper presented in 2004, which outlines how informatics is integrated within their curriculum, which applies still today.

The Bachelor of Nursing, at the University of Auckland is an integrated curriculum, consisting of areas of practice, capabilities or competencies and content threads. Content threads run through each semester. Health informatics is one of the threads that permeate each semester. Alongside the knowledge and skills taught to students, students also undertake clinical placements and are exposed to health informatics in practice.

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<sup>9</sup> [www.auckland.ac.nz](http://www.auckland.ac.nz)

<sup>10</sup> Honey, M., & Baker, H. (2004, July 27-29). *Integrated undergraduate curriculum for health informatics*. Paper presented at the HINZ 2004 Third National Health Informatics Conference. Towards a Healthy Nation, Wellington, New Zealand.

## 5. THE INTERNATIONAL EXPERIENCE

**Summary of Health Informatics within the curriculum<sup>11</sup>**

Year	Course	Health Informatics concepts	Informatics skills
1st	101	<ul style="list-style-type: none"> <li>• Historical, political, economic and socio-cultural influences on nursing practice</li> <li>• Ethical and legal issues pertaining to the collection, string and use of health information</li> </ul>	<ul style="list-style-type: none"> <li>• Word processing</li> <li>• Electronic mail</li> <li>• Web based learning management system</li> <li>• Beginning library skills</li> </ul>
	102	<ul style="list-style-type: none"> <li>• Management of client information, sources, collection and types of information</li> <li>• Acknowledging sources</li> </ul>	<ul style="list-style-type: none"> <li>• Word processing</li> <li>• Electronic mail</li> <li>• Web based learning management system</li> <li>• Beginning library skills</li> <li>• Introduction to clinical information systems</li> </ul>
2nd	201	<ul style="list-style-type: none"> <li>• Evidence based practice – how to search for information, discerning credibility of information, synthesis of information to present a summary</li> <li>• Awareness of ethical and legal issues related to confidentiality and informed consent</li> </ul>	<ul style="list-style-type: none"> <li>• Word processing</li> <li>• Electronic mail</li> <li>• Web based learning management system</li> <li>• On-line multi choice questions</li> <li>• Searching electronic databases</li> </ul>
	202	<ul style="list-style-type: none"> <li>• Refined searching for information, discerning credibility of information, analysis of information as part of a literature review and research critique</li> <li>• Client education – assessing information for appropriateness for specific client health education</li> </ul>	<ul style="list-style-type: none"> <li>• Word processing</li> <li>• Electronic mail</li> <li>• Web based learning management system</li> <li>• On-line multi choice questions</li> <li>• Searching electronic databases</li> <li>• Presentation technology e.g. PowerPoint, multimedia, graphics</li> </ul>
3rd	301	<ul style="list-style-type: none"> <li>• Searching for information and analysis of a research article demonstrated by the writing of a critically appraised topic</li> </ul>	<ul style="list-style-type: none"> <li>• Report writing – word processing, long document, spreadsheets, graphs and tables</li> <li>• Electronic mail</li> <li>• Web based learning management system</li> <li>• Searching electronic databases</li> <li>• Presentation technology e.g. PowerPoint, multimedia, graphics</li> </ul>

<sup>11</sup> Honey, M., & Baker, H. (2004, July 27-29). *Integrated undergraduate curriculum for health informatics*. Paper presented at the HINZ 2004 Third National Health Informatics Conference. Towards a Healthy Nation, Wellington, New Zealand.

## 5. THE INTERNATIONAL EXPERIENCE

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Year	Course	Health Informatics concepts	Informatics skills
	302	<ul style="list-style-type: none"><li>• Promote continuous quality improvement</li><li>• Change management</li></ul>	<ul style="list-style-type: none"><li>• Word processing</li><li>• Electronic mail</li><li>• Web based learning management system</li><li>• On-line multi choice questions</li><li>• Searching electronic databases</li></ul>

Assessments within the curriculum encourage development of health informatics skills and knowledge.

Faculty note that the challenges of having health informatics integrated within the curriculum, is that it may seem as less significant. Faculty need to be comfortable and able to role model and demonstrate a positive approach to technology as part of their teaching practice, therefore ongoing staff development opportunities are essential.

*See Appendix 10.3 for further information on the visit, simulation centre and inter-professional simulation.*

The following section will outline some strategies that teachers of nursing, health, aged and community care courses could utilise to introduce health informatics and use of technologies into units/ subjects.

## 6. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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### Teachers:

Koutoukidis would encourage teachers of nursing, health, aged and community care courses to implement the following to introduce health informatics and use of technologies into units/ subjects.

- Through the use of case studies incorporate the range of health informatics in teachings and to explain data sets and information to students, evidence based practice in data and how to use the data collected from HER.
- Student assignments, could include patients and use of robotics and bar codes and the aspects of security, privacy and confidentiality.
- Teach students about critical thinking; person centered approach, important that they don't lose sight of the person whilst using technologies.
- Include Australia's ehealth strategy in the course.
- In legal and ethics unit include concerns with use of EHRs such as confidentiality and privacy.
- Introduce use of technologies in health assessments and technology. Use of emergency and emerging technologies – students to reflect and analyse how to ensure patient safety and security in use of technologies.
- Invite guest speakers to classes to discuss and demonstrate new and emerging technologies. Students then have the ability to work with the technology in simulation and review the technology: security and safety aspects. Students then critically think about the effectiveness of the technology.
- Have students use the nursing process to evaluate and analyse the technologies, including reading journal articles. Students could then do a project on a technology and do an assessment on the effectiveness of it.
- Teach students to embrace technology.
- Have the health care industry come in and talk about use of technology in workplace e.g. EHR – what they are using so to keep students updated.
- With Course Advisory Groups, include technology on the agenda, to ensure kept updated on what the industry is using.
- Clinical decision making and evidence based practice is embedded throughout the courses.
- Develop relationships with vendors of packages so that students can have access to EHRs to utilise.
- Explore applications that can be accessed by students to use Electronic medical health records and e-documentation to teach documentation and in nursing assessment classes, including clinical decision support; notification of tasks to be performed and results that are abnormal. This will prepare students to use EHR in the workforce. Example: [openmrs.org](http://openmrs.org)
- Include emerging technologies such as telehealth, remote patient monitoring, wearable technologies, when teaching students.

### Training Package designers:

Koutoukidis would encourage curriculum developers of nursing and health courses to consider the following:

- Developing a discrete unit on health informatics for the health training package
- Having health informatics integrated through specific units in health related courses
- Have a discrete unit as well as health informatics integrated through specific units.

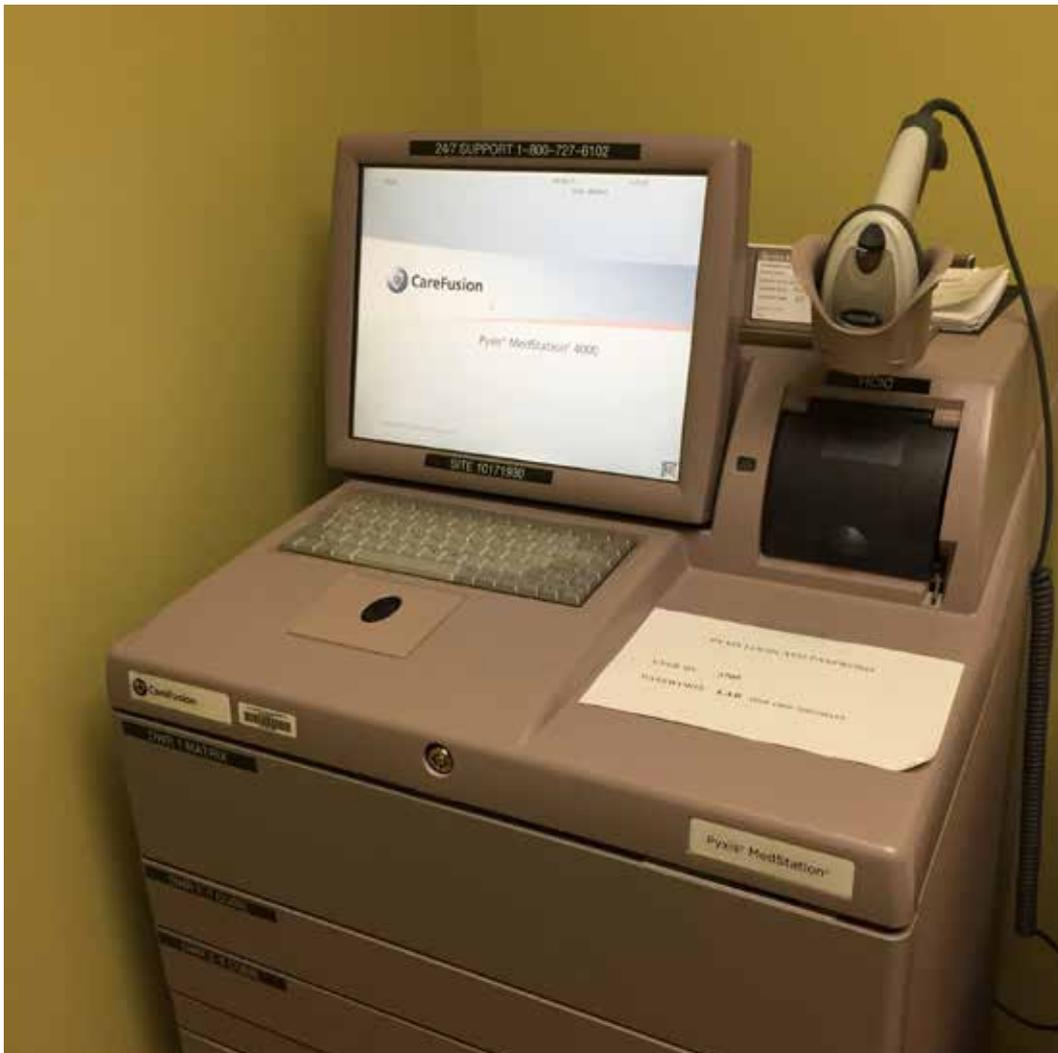
## 6. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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### Vocational Education Training (VET) providers of nursing courses:

Koutoukidis would encourage education providers of nursing and health courses to consider providing the following resources:

- Importance of educating teachers on health informatics and technology. Provide professional development
- Development of professional development courses on informatics for teachers
- Simulation and equipment that reflect the contemporary digital environment of health care facilities e.g. automated medication dispensing systems (Pyxis Medstation)
- Flexible learning spaces.



Automated Medication Dispensing System – University of Minnesota

## 6. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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*Barcode scanner and EHR – University of Minnesota*

In addition, the Fellow has also been asked to develop a separate report for Chisholm Institute so as to advise the Institute and architects who are redeveloping the Frankston campus, about ensuring student learning spaces are purpose built to reflect the health care work environment and therefore ensure that graduates are prepared for the workforce. Also to set strategic directions for the Health & Community Care Department that are in line with ANMAC guidelines and State and Federal government health initiatives.

## 6. KNOWLEDGE TRANSFER: APPLYING THE OUTCOMES

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### Dissemination of findings:

Koutoukidis has commenced dissemination of the findings through:

- Presentation to the Moderation Delivery Committee (MDC – State wide committee in Victoria for all education providers who offer the Diploma of Nursing) in August 2016 – on how they could include health informatics in their courses – particularly with new training package release and education providers requiring to submit either new course accreditation submissions or transition document
- Submitted an article to be published in Australian College of Nursing online journal that was accepted
- Conducted a presentation to Diploma of Nursing team at Chisholm Institute.

Koutoukidis intends to further disseminate the findings through the following avenues:

- Presentation to ANMAC on how health informatics could be demonstrated in Diploma of nursing courses
- Presentation to Nursing Informatics Australia at annual conference (HISA)
- Present to Victorian Clinical Informatics Advisory Group, Department Health and Human Services (DHHS)
- A report for Chisholm Institute and conduct a workshop with teachers in the Diploma of Nursing and the Certificate III Individual Support.

The following section offers recommendations to prepare students in nursing, health, aged and community care courses to work in the rapidly changing technology health care environment.

## 7. RECOMMENDATIONS

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It should be noted that the Fellow believes that the recommendations following here are applicable in both the higher education and VET sectors. This would then allow for a common approach to prepare nursing, health, aged and community care students to work in the rapidly changing technology health care environment.

### **Vocational Education Training and Higher Education providers of nursing, health, aged and community care courses to:**

1. Introduce teaching pedagogies and approaches for including health informatics and health technology in nursing, health, aged and community care curricula
2. Obtain teaching resources for informatics and technologies
3. Build simulation and equipment resources around the training package/ curriculum so that spaces are flexible and can be used for different scenarios
4. Ensure students have access to computer laboratories
5. Explore applications for mobile phones that students could use in their course – to encourage familiarity with technology
6. Use of health informatics and technologies in health care providers to inform teaching approaches and strategies e.g. give examples in class of how Telehealth and telemonitoring, using mobile phone applications for data, wearable technologies are used so that students are aware of these applications if they come into contact with them depending on where they work
7. Provide professional development requirements for educators of nursing, health, aged and community care courses to be able to teach and support students on the use of health informatics and technologies in the health care environment
8. Ensure staff who are involved in simulation also undertake a course on simulation and debriefing
9. With Course Advisory Groups, include technology on the agenda, to ensure kept updated on what the industry is using
10. Once a standardised language – when using EHR – is agreed on, to teach this to nursing students so they can be prepared as graduates.

### **Training Package designers:**

1. Develop a discrete unit on health informatics for the health training package
2. Have health informatics integrated through specific units in health related courses
3. Have a discrete unit as well as health informatics integrated through specific units.

### **Australian Government:**

1. The Fellow would recommend that the Australian Government consider how the My Health record (EHR) can be accessed by health care providers and individuals across health organisations in Australia and ensure interoperability.

### **The Nursing Profession:**

1. The nursing profession in Australia to discuss possibility of the use of a standardised language – when using EHR – so that data can be collected and used for research. Also so that this can be taught to nursing students, so they can be prepared as graduates.

## 7. RECOMMENDATIONS

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### **Health Care Providers:**

- Health care providers to partner with universities/ VET providers for use of data for real research.
- Health care facilities to enable students to have access to write progress notes on the patients EHR to prepare them for the workforce.

## 8. REFERENCES

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ANMAC. (2014). Health informatics and health technology – an explanatory note

IBM Global Business Services. (2013). The digital hospital evolution: Creating a framework for the healthcare system of the future. White paper

Honey, M., & Baker, H. (2004, July 27-29). *Integrated undergraduate curriculum for health informatics*. Paper presented at the HINZ 2004 Third National Health Informatics Conference. Towards a Healthy Nation, Wellington, New Zealand.

### **Teaching Resources:**

<http://www.nursing.umn.edu/nursing-informatics-education-and-resources/index.htm>

Note: All resources may be utilized with attribution. Integrating AACN Essentials, QSEN KSA's and TIGER Competencies for Nursing Informatics. Thomas R. Clancy, MBA, PhD, RN, FAAN

### **Websites:**

<https://myhealthrecord.gov.au>. My Health Record Statistics – at 19 June 2016.

<http://ststephenshospital.com.au/about-us/ehealth-and-the-digital-hospital/benefits-of-ehealth>

[www.ahmac.gov.au](http://www.ahmac.gov.au) National E-Health Strategy Summary, December 2008.

[www.auckland.ac.nz](http://www.auckland.ac.nz)

[www.facultadmedicina.uft.cl](http://www.facultadmedicina.uft.cl)

[www.humanservices.gov.au](http://www.humanservices.gov.au) Getting Started with eHealth – Australian Government of Human Services. (March 3, 2016).

[www.nursing.umn.edu](http://www.nursing.umn.edu)



## 9. ACKNOWLEDGEMENTS

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The Fellow would like to thank the following individuals and organisations who generously gave their time and their expertise to assist, advise and guide them throughout the Fellowship program.

### International Specialised Skills Institute (ISS Institute) – The Awarding body

The ISS Institute exists to foster an aspirational, skilled and smart Australia by cultivating the mastery and knowledge of talented Australians through international research Fellowships.

The International Specialised Skills Institute (ISS Institute) is proud of its heritage. The organisation was founded over 25 years ago by Sir James Gobbo AC CVO QC, former Governor of Victoria, to encourage investment in the development of Australia's specialised skills. Its international Fellowship program supports a large number of Australians and international leaders across a broad cross-section of industries to undertake applied research that will benefit economic development through vocational training, industry innovation and advancement. To date, over 350 Australian and international Fellows have undertaken Fellowships facilitated through ISS Institute. The program encourages mutual and shared learning, leadership and communities of practice.

At the heart of the ISS Institute are our individual Fellows. Under the International Applied Research Fellowship Program the Fellows travel overseas and upon their return, they are required to pass on what they have learnt by:

- Preparing a detailed report for distribution to government departments, industry and educational institutions
- Recommending improvements to accredited educational courses
- Delivering training activities including workshops, conferences and forums.

The organisation plays a pivotal role in creating value and opportunity, encouraging new thinking and early adoption of ideas and practice. By working with others, ISS Institute invests in individuals who wish to create an aspirational, skilled and smart Australia through innovation, mastery and knowledge cultivation.

For further information on ISS Institute Fellows, refer to [www.issinstitute.org.au](http://www.issinstitute.org.au)

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## 9. ACKNOWLEDGEMENTS

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### **The Sponsor, Higher Education & Skills Group**

#### **Government**

- State Government of Victoria, Department of Education & Training

#### **Industry**

- Industry Mentor - Janette Gogler Nursing Informatics Specialist, Eastern Health

#### **Professional Associations**

- Australian Nursing & Midwifery Accreditation Council
- Victorian TAFE Association

#### **Education and Training**

- Chisholm Institute
- University of Minnesota, Minneapolis United States, Institute for Health Informatics, School of Nursing
- University Finis Terrae, Faculty of Medicine, Santiago, Chile
- Autonoma University, Faculty of Health Sciences, Santiago, Chile
- The University of Auckland, New Zealand, Health Systems Section, School of Population Health
- Erika Caballero - Professor University Finis Terrae, Faculty of Medicine, Santiago, Chile
- Eliana Escudero Zunigo – Director School of Nursing, University Finis Terrae, Faculty of Medicine, Santiago, Chile
- Mario Mollina - Professor University Finis Terrae, Faculty of Medicine, Santiago, Chile
- Connie Delaney – Professor & Dean School of Nursing The University of Minnesota, Minneapolis, US
- Thomas Clancy – Associate Dean The University of Minnesota, Minneapolis US
- Karen Monsen – Associate Professor School of Nursing The University of Minnesota, Minneapolis, US
- Bonnie Westra – Associate Professor Director Centre for Nursing Informatics The University of Minnesota, Minneapolis, US
- Dr Karen Day – Programme Director for Health Informatics, The University of Auckland, New Zealand
- Michelle Honey – Senior Lecturer, School of Nursing, The University of Auckland, New Zealand

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- Maria Peters, CEO Chisholm Institute
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- Report Writing Mentor - Helen McNamara – Executive Director – Corporate Planning & Institute Governance
- Chisholm Institute

# 10. APPENDICES

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## APPENDIX 10.1

### **The University of Minnesota, Weaver Densford Hall, Minneapolis, US**

Ranked second in the nation in nursing informatics education by U.S. & World Report, the University Of Minnesota School Of Nursing prepares nurses and nurse educators to utilise and teach effective use of technology in health care. The school's internationally-renowned informatics faculty are uniquely qualified to teach the essential and advanced competencies in nursing informatics and deliver:

- hands-on experience with the latest technology
- small class sizes
- mentoring in big data management and research to improve outcomes
- offering individual courses, workshops, doctoral programs.



*Simulated ward – University of Minnesota*

## 10. APPENDICES

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*Simulated community apartment– University of Minnesota*

### **Degree Programs**

- **Doctor of Nursing Practice in Nursing Informatics:** For those who wish to combine their nursing experience with health IT to expand their impact on health outcomes.
- **PhD in Nursing** with a focus on big data research: For those with a desire to understand and harness big data for discovering patterns and correlations leading to breakthrough health discoveries.

### **Certificate**

- **Leadership in Health IT Professional Certificate:** For those wanting to lead the successful deployment and management of a health IT system.

### **Professional Development**

- **Telehealth Nurse Presenter** - This is an online continuing education course to teach essential knowledge about the role of the telehealth nurse presenter.

- **Interprofessional Health Informatics (part of AMIA 10x10 program)** - This course examines the implications of informatics for practice, including nursing, public health, and health care in general. It will discuss electronic health record issues and relate ethical and political issues of informatics.
- **Patient Engagement in Health Information** - Participants identify a project in their own organization and develop an action plan to engage patients in accessing their health information for shared decision-making with their health care providers.

### Visit with faculty:

The Fellow met with the following faculty members:

1. Connie Delaney – Professor & Dean School of Nursing
2. Thomas Clancy – Associate Dean
3. Karen Monsen – Associate Professor School of Nursing
4. Bonnie Westra – Associate Professor Director Centre for Nursing Informatics.

Through discussions the Fellow discovered the following:

- Can use EHR charts through Elsevier Sim Chart and Champs – Nightingale notes – public health community notes
- Also Apple research kit and Apple health kit can assist students with using technologies
- Patient centered care can be compromised, with health professionals focusing on the technologies
- Recommended the following books:
  - » Duhigg C (2016). Smarter, Faster, Better: The secrets of being productive. Random House

### Nursing Research day

The Fellow attended the University of Minnesota - Nursing Research Day: Transforming Health Care through Nursing research and evidence based practice, April 22nd 2016, McNamara Alumni Centre.

Attended sessions on Big data science/informatics. Koutoukidis was able to see that through a partnership with the local hospital, students undertaking doctoral programs were able to access real data from hospitals – through gaining access on a particular area of research from information on patients EHRs and be able to assist their research topic. Patients in hospitals give consent when they are admitted to hospital that data collected on assessment can be used for research purposes. Data is de-identified.

### Online teaching resources:

A wide range of tools for nurse educators including presentations and teaching guides can be accessed via:

<http://www.nursing.umn.edu/nursing-informatics-education-and-resources/index.htm>

All resources may be utilised with attribution. **Integrating AACN Essentials, QSEN KSA's and TIGER Competencies for Nursing Informatics.** Thomas R. Clancy, MBA, PhD, RN, FAAN

## 10. APPENDICES

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Online resources include:

- Presentations – Introduction to Informatics
- Internet resources: Professional Health Informatics Organisation Websites
- Guidelines/Standards/Reports and Resources for Health Informatics
- Information literacy
- Sample assignments
- Readings
- Sample quiz
- Presentations
- Exercises
- Clinical decision support tutorial
- Personal health record activity
- Telehealth activity.

### APPENDIX 10.2

In Chile, Santiago, the Fellow was hosted by the University of Finis Terrae for five days and Erika Callabero was with the Fellow for whole trip and organised all visits.

#### Visit to Traumatologico Hospital:

The Fellow met with and discovered:

- Dr Mario Reyes – Director of Traumatologico Hospital
- Professor Mario Mollina – University of Finis Terrae
- The Fellow was able to view the philxamed EHR in use. A demonstration was given by one of the nurses and how everything is recorded electronically for the patient. It is still a requirement of the hospital that they print a paper copy of day's plan for each patient
- Dr Mario Reyes then gave a presentation and demonstrated use of the system from a doctor's view. Was able to see in real time – patients having surgery/ where they were up to – all documentation done online. Medications, post-operative treatment plan, doctor's certificate, physical assessment
- Have yet to use data for research. The hospital has now got 10 years of data and will now try to do some research.
- Finding less errors in medication and documentation with use of EHR
- The EHR doesn't follow patient to other hospitals.
- Staff learn on the job how to use the EHR, which takes about three to four days to learn.



*Dr Mario Reyes – Medical Director of Traumatologico Hospital, Chile Santiago nursing staff and Fellow*

## 10. APPENDICES

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### Visit to Clinic Ensenada Santiago – view telemedicine system

- Fellow spoke to team via teleconference in Salamanca – 300 kms from Santiago. Only a doctors clinic – no nurses – also have an administrator and an IT support person
- 80 per cent of clinical presentations is for general medicine: cardiology patients, diabetes, cholesterol and hypertension
- They schedule appointments weekly with Clinic Ensenada for consults with intensivists
- Salamanca will call when there is an emergency for consultation with a specialist
- Tele-medicine – is just doctors
- 10 per cent of patients need to be transferred to a hospital
- No operations are conducted
- A 20 bed hospital is being built – they will have a robot – camera and microphone –which will travel to each bed so that intensivist in Santiago can view each patient and consult.

### Visit to Accuhealth – met with Noelia Espinoza (nurse supervisor)

- Called a digital hospital
- Patients are monitored at home: e.g. heart monitor, vital signs, blood glucose levels (BGLs), medications
- Has been running for five years
- Criteria to participate include an individual who: is commencing new medications; need support at home; require hospital in the home; chronic heart conditions; chronic disease
- The system interconnects with the individual's local doctor
- Have telemonitors – which an individual does either on a daily basis or every two days
- Can generate reports for data collection
- Has shown a 40 per cent decrease admission to emergency
- Makes patients more aware of taking care of themselves – monitoring BGLs, can make changes to health – empowers the patient
- Share data with local health service
- Both public and private hospitals are involved
- They monitor 2000 patients every day
- Telemonitoring or phone calls – SMS recorded messages. If patient is hospitalised they go onto telemonitoring
- Recategorise patients – as they improve: self-care - moderate care - high care
- Have a doctor and pharmacist in call centre
- Nurses on computers and give 24 hours monitoring.



Left: AccuHealth Digital Hospital, Chile Santiago

Below: AccuHealth Digital Hospital equipment for telemonitoring, Chile Santiago



## 10. APPENDICES

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### APPENDIX 10.3

#### University of Auckland

Opened in mid-2011, the Simulation Centre for Patient Safety (SCPS) is a purpose-built facility suitable for the simulation needs of a wide range of healthcare professionals, with the ability to provide outreach activities at clinical sites. With the goal is to improve patient safety through simulation-based education and research. Core activities include undergraduate education, postgraduate research and delivery of short courses for continuing professional development in acute care. The Simulation Centre for Patient Safety houses the Department of Anaesthesiology's simulation team and equipment in its multiple training rooms, ward and operating room areas.

Staff offer a special interest and expertise in the important contribution of human factors to patient safety. Enhancing teamwork skills including communication strategies is fundamental to their programme. Course participants can expect to work in multidisciplinary teams where this would be the case in clinical practice.

The Simulation Centre for Patient Safety has large simulation spaces which are supported by access to several breakout / seminar rooms, reception and refreshment areas. Simulation techniques available depend on learner needs but include part-task trainers for technical skills, scenarios with facilitated debriefing, use of standardised patients (actors), computer-based activities, videos and educational games.<sup>1</sup>

#### **Simulation Spaces (flexible configurations are possible):**

- Ward /Emergency Bay
- Operating Theatre / Intensive Care
- Adult Training Room
- Paediatric Training Room
- Airway Laboratory
- Viewing Room (multipurpose).<sup>2</sup>

#### **Manikins:**

- METI HPS and BabySim
- Laerdal Simman 3G, Simman, ALS, NewB (neonate), ResusAnnie, MegaCode Kid.

#### **Other Simulation Equipment:**

- Part task trainers for basic and advanced airway management
- Intravenous access trainers
- CPR basic trainers
- AED
- Bronchoscopy skill trainers.<sup>3</sup>

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1 [www.auckland.ac.nz](http://www.auckland.ac.nz)

2 [www.auckland.ac.nz](http://www.auckland.ac.nz)

3 [www.auckland.ac.nz](http://www.auckland.ac.nz)

### **Clinical Equipment includes:**

- Patient beds and ward furniture
- Oxygen outlets and suction with associated disposables
- Fully stocked resuscitation trolleys with Phillips Heartstart Defibrillators
- A highly realistic operating theatre with operating table and lights, Aestiva anaesthesia machine / Datex monitoring / Safersleep system, wide range of surgical equipment
- Other acute care disposables – e.g. fluids, intravenous access devices and tubing
- Difficult intubation aids including fibreoptic scopes.<sup>4</sup>

### **Audio-Visual Equipment:**

- High quality projectors and viewing monitors
- Research-quality configurable recording and playback system
- Easy event marking and analysis (Studiocode)
- Remote viewing possibilities.<sup>5</sup>

### **Two days of inter-professional simulations**

- The Fellow observed medical students; third year nursing students and final year pharmacy students undertake two days of inter-professional simulations.
- All nursing and medical students undertake a simulation with each other – this is timetabled throughout the year, so all students get an opportunity to participate in the simulations. Which means that simulations need to suit where the learners are in their course.
- Faculty work with each other to design the simulations to ensure students can undertake the skills required.
- Highly resourced with faculty from medicine, nursing and pharmacy assisting on the day.
- Worked very well with some student groups doing simulations and then other groups undertaking activities e.g. documentations, prioritisation of care.
- Students from nursing and medicine stayed together over the two days, with the pharmacy students joining the simulation on day two.

### **Visit Director for Health Informatics:**

- The Fellow met with Dr Karen Day – Programme Director for Health Informatics - who also teaches post graduate and undergraduate courses in health informatics and conducts research on patient access to medical records; self-care applications and telehealth. Discussed NZ National Health IT programme
- Students undertaking health informatics course do an assessment on whether EHR does harm to a patient
- Students develop a glossary of terms – need to learn the language
- Innovation is discussed with students.

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<sup>4</sup> [www.auckland.ac.nz](http://www.auckland.ac.nz)

<sup>5</sup> [www.auckland.ac.nz](http://www.auckland.ac.nz)

