Nursing Informatics Australia and Health Informatics Society of Australia Submission

Review of Nursing Education:

Educating the nurse of the future needs to include digital transformation

The Health Informatics Society of Australia (HISA) and Nursing Informatics Australia (NIA) welcome this opportunity to provide input into the national review of nursing education. HISA and NIA representatives attended consultation sessions in four States.

It is our firm position that nurses and midwives need to be prepared to practice nursing in the digital age. Any review and recommendation that fails to address the significant technological and data changes impacting on healthcare, will offer limited ability to truly design education pathways that will meet the needs of current and future nurses and midwives.

Specifically, **we submit that the Review should recommend**:

- Clinical training of nurses as new entrants to the workforce is underpinned by a solid theoretical and practical foundation in data, information and analytics
- Capability in digital health is more than training in how to use particular tools or technologies. It requires development of competency where nurses are able to make deliberate choices by using and integrating knowledge, skills, judgement attitudes and personal values
- Direction and standardisation of the content for accredited nursing courses is needed
- University curricula to consider skills development that prepares nurses for roles that may not have been conceived today and which will enable nurses to confidently pursue emerging career opportunities
- Employers to consider technological 'solutions' to address workforce shortage and employ nurses and midwives who are well versed in digital health because they will be well placed to adapt to, deliver and lead the future of nursing

Why Digital Health? Why Now

Building digital health capability as part of the educational preparation of nurses and midwives is critical for a number of reasons.

Nurses and midwives represent the largest segment of the healthcare workforce comprising more than 57% [1] of all healthcare professionals. As such, they are the most significant workforce that will be impacted by advances in information technology, changing consumer needs and expectations for how they prefer to access healthcare and interact with healthcare providers, and the evolution of traditional models of care that technology and data will herald.

As has been well documented, Australia faces a national shortage of 123,000 nurses by 2030, with 25% of nurses over the age of 55[2]. In addition, the nursing workforce is experiencing attrition as nurses leave the profession a few years after graduating due to job dissatisfaction. [3] Employers will look to technological 'solutions' to address this workforce shortage and nurses and midwives who are well versed in digital health will be well placed to adapt to, deliver and lead the future of nursing.

About Nursing Informatics Australia (NIA) and the Health Informatics Society of Australia (NIA) HISA

Nursing Informatics Australia (NIA), the nursing arm of the Health Informatics Society of Australia (HISA) submits for the Review's consideration the following input into *educating the nurse of the future*. This Review is welcomed as it recognises a need to reflect on nursing curricula and provides opportunity to consider how education and skills development may change, how scope of practice may increase and what may be required to attract and retain nurses within the profession.

NIA provides thought leadership for nursing informatics and has done so since the 1990s. It promotes evidence-based, quality, cost-effective and outcome-driven care for patients and clients supported by the safe use of digital technologies and data with ongoing education and research as the mainstay for further development and discovery.

HISA is a not-for-profit member organisation representing over 13,000 people that make up Australia's digital health community. We act, to improve the health of the community by educating the public and health practitioners about digital health and health informatics. A key strategic pillar for HISA is to upskill all people working across healthcare on how information can be captured, used and shared to benefit patients, the healthcare system and the community as a whole. A digitally competent health workforce will be critical to achieving a connected healthcare system. Specifically, a strengthened role for nurses advocating and leading digital transformation is encouraged.

Accordingly, NIA and HISA in partnership with the Australian College of Nursing (ACN) developed a nursing informatics position statement. It is attached for information. HISA and NIA upskill nurses and midwives through offering professional development opportunities (NIA conference, CHIA) and a

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[1] Australian Government Department of Health (2017) Health Workforce Data.
https://hwd.health.gov.au/summary.html#part-1
[2] Nieves, R. (2019) Stemming the tide of nursing turnover. Hospital and Healthcare, 5 March
https://www.hospitalhealth.com.au/content/nursing/article/stemming-the-tide-of-nursing-turnover-1348599779#axzz5s7A9eS9w
[3] Haddad, L M and Toney-Butler, T. (2019) Nursing Shortage. Stat Pearls.
https://www.ncbi.nlm.nih.gov/books/NBK493175/

supportive network that spans clinical professionals, researchers, educators, executives and technologists across healthcare.

Our Submission

In preparing this submission, four areas were considered critical to informing the direction for changes in educating nurses of the future:

- Core features of nursing work
- Strategic alignment with the National Digital Health Strategy
- Role of the university sector in education of the nursing workforce
- Role of the health sector in education of the nursing workforce

Core features of nursing work

Educating nurses of the future starts with a sound understanding of the core features of nursing work: [4] Nursing informatics will be critical to facilitating all of these features:

Teamwork – whether it is interaction with other nurses, other healthcare providers, patients and their families, nurses provide care within a team context across a variety of healthcare settings.

Collaboration – effectiveness in collaboration stems from access to timely and integrated information at the point of care so that decisions about treatment and ongoing management is supported by all relevant contextual data. Fragmented healthcare has long been a problem for healthcare providers. As reported by the Australian Bureau of Statistics, around 16% of the Australian population saw more than three different health professionals for their chronic health condition, and of that number, 1 in 8 reported issues caused by **a lack of communication between their health providers** (Australian Bureau of Statistics, 2015-16).[5] Nurses work collaboratively to respond when patient health deteriorates, collect and communicate information for safe and quality patient care and execute care plans and treatment decisions.

Mobility – the close relationship that develops between nurses and their patients/clients during the course of providing care means that nurses collect data at the bedside, over the phone, in a person's home, or in a community care office. The ability for information to accumulate and be shared as healthcare transitions from community to hospital and back to community will also assist to support shifts in care focus to include prevention, early intervention and self-care efforts of individuals themselves. Nursing work makes nurses more visible during the course of care and so are typically the key point of contact for information delivery and exchange of information from all sources.

Clinical documentation - high quality and safe care relies on clinical notes available at the point treatment decisions are made. Tools and devices such as electronic medical records and wearables are welcomed as ways to systematise data capture and support aggregation and continuity of information for rapid communication and handover across the patient journey.

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[4] Moen, A and Knudsen, L.M.M. (2013) Nursing informatics: decades of contribution to health informatics. Healthcare Informatics Research. June, 19 (2): 86-92 http://dx.doi.org/10.4258/hir.2013.19.2.86

[5] Australian Bureau of Statistics. Patient Experiences in Australia: Summary of Findings, 2015-16. 4839.0 Canberra: Australian Bureau of Statistics; 2016 [Available from: http://www.abs.gov.au/ausstats/abs@.nsf/mf/4839.0.

From participation in the consultation sessions, NIA/HISA representatives noted concern for the divide between academic preparation of nurses and the real-life experience of the clinical environment. In response, NIA would suggest consideration to addressing the divide by designing learning modules around a sandpit or training EMR environment that enables students to experience "real-world" patient scenarios and exposure to volumes of data. This experiential training must go beyond a superficial orientation of the technical infrastructure. It needs to simulate the challenges of real-world technology use within a busy clinical environment and the nursing workflow.

Alignment with the National Digital Health Strategy

Digital transformation of healthcare as envisioned within Australia's National Digital Health Strategy[6] will be assisted by change management within the health workforce. In line with the Strategy's priority 6 "*a workforce confidently using digital health technologies to deliver health and care*" it is recommended we rethink how we educate nurses of the future to include:

- Demonstrating how to **evaluate the efficacy of digital health tools and services** and where appropriate, use to enhance the care provided by nurses
- Embed **digital-enabled innovation through all training pathways** - within university curricula, in-service training and across all areas wherever nurses work and engage in continuing professional education
- Demonstration of **evidence showing digital health solutions are built on best practice guidelines** and designed to deliver benefits and improve outcomes of care
- Strong **foundations in clinical informatics and data analytics as core skills for nurses** of the future
- Integration of **digital health into national nursing workforce accreditation** so that it is understood that the digital way is now routine clinical practice
- **Champions in nursing informatics to inspire entrants to the nursing profession** who may be natives or nomads to the digital economy

Suggestions for ongoing professional development include:

- A trusted resource or a library of endorsed medical apps for nurses would be helpful
- Regular feature articles in nursing journals on topics such as, artificial intelligence (AI) integration, block chain integration, would assist in developing digital health literacy especially for older nurses less confident with technology

Guidance on curriculum renewal may be obtained from a 2014 Report funded by the Commonwealth Government Office for Learning and Teaching, "Advancing Ehealth education for the clinical health professions"[7]. In that Report it states that building clinical capability in digital health is more than training in how to use particular tools or technologies. It requires development of competency where clinicians are able to make deliberate choices by using and integrating knowledge, skills, judgement attitudes and personal values. The report proposes the following competencies:

- Analyse clinical case studies using diagnostic decision support tools

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[6] https://conversation.digitalhealth.gov.au/australias-national-digital-health-strategy

[7] Gray, K. Dattakumar, A. Maeder, A. Butler-Henderson, K. and Chenery, H (2014) Advancing Ehealth education for the clinical health professions. Office of Learning and Teaching, Australian Government. Sydney

- Critically analyse a clinical decision rule for validity and utility in nursing practice
- Assess the strengths and weaknesses of selected decision support programs for application in nursing practice
- Create, solve and interpret a simple decision tree using software that supports expected value decision making methods
- Apply clinical and theoretical expertise to the review of interactive health communication resources
- Critically analyse web-based health content for literacy level and accuracy of information for clinical populations
- Select appropriate materials for a target population's health information and education needs related to a specific topic
- Develop a user-friendly health information and education web page on a chosen topic

It is NIA's view that roles and responsibility for educational preparation of nurses to meet future health, aged care and disability needs of the Australian community is shared across the university sector, the healthcare sector and through professional and peak bodies. In addition to alignment with Australia's National Digital Health Strategy as described earlier, there are specific areas of focus for stakeholders involved in the education and continuing professional development of nurses.

Role of the university sector in education of nursing workforce

Clinical training of nurses as new entrants to the workforce needs to be underpinned by a **solid theoretical and practical foundation in data, information and analytics**. While data and information has always been the currency of healthcare, evaluation of trends and insights about disease, care management and patient experience across patient populations have not been available through traditional documentation and research approaches. Skills in nursing analytics are currently absent from curricula and need to be addressed as a matter of urgency if nursing care is to reap the benefits of the increases in data enabled by digital health.

Within a digitally-enabled healthcare system nursing inquiry will need to consider the explosion of data volume and diversity that will be available through multiple sources. Symptoms reported by patients and signs confirmed by diagnostic tests will be complemented by other data sources, such as, devices and sensors worn by patients or embedded internally.

To be clear, digital transformation of healthcare does not simply mean the presence of technology peppered throughout healthcare facilities. Instead, it is making sense of your data, transforming data into information and being confident about its quality and security. Increasing awareness of the criticality of data for informed decisions and patient safety will reinforce what is critical to successful digital health.

While recording clinical notes does continue on paper, increasingly documenting electronically is becoming the norm. University programs in nursing must be prepare graduands for hybrid methods of clinical documentation (paper and electronic) to ensure they transition easily into clinical practice. Moreover, the **sociotechnical aspects of digital work environments** need to be addressed. Lack of effective communication has long been identified as the major contributor to iatrogenic errors, and unfortunately, the introduction of technology can lead to new unintended consequences.

In relation to standards, the Australian Nursing and Midwifery Accreditation Council (ANMAC) develops accreditation standards that assess and accredit nursing and midwifery programs of study to ensure they are contemporary and aligned with Australian and international best practice. Within Standard 4, Program Content, criteria 4.4 (e) makes specific mention of program content supporting the development and application of knowledge and skills in **health informatics and health technology[8].** However, there is no further direction or standardisation of the content for these accredited courses and currently limited education available for the university educators to upskill them to educate our next generation of nurses in this area.

New career options for nurses of the future are likely and may continue to evolve with nurses taking a nursing data scientists pathway. University curricula need to consider skills development that prepares nurses for roles that may not have been conceived today and which will enable nurses to confidently pursue emerging career opportunities.

From participation in the consultation sessions, NIA/HISA representatives noted work readiness deficits in the following areas:

- safe medication preparation and administration
- use of technology
- poor understanding of what shift-work requires and its impact on social life
- ward busyness
- ongoing communication with patients/families/ medical team
- ability to communicate clinically - use of text message language in official records and communications

There was widespread support for a fourth year added to the undergraduate program although there were mixed views as to whether this would be a 4th year to the program or a guaranteed graduate year placement. For many graduates the 3-6month delay between completion of University and commencement of graduate placement can erode confidence.

In addition, there were many comments about the knowledge and skill in using required technology such as telehealth, electronic medical record (EMR), shared records, ongoing education, and support for rural and remote staff and patients to minimise travel to larger centres for care.

Role of the health sector, professional and peak bodies in education of the nursing workforce

Complementing the university sector are professional and peak bodies and the healthcare system itself which have a responsibility to support ongoing professional development of nursing knowledge and clinical practice.

Once nurses are situated within their workplace and settings where healthcare is provided (including home-based care), practical insights into models of care, benefits of interoperability, addressing regional needs, support for consumer-focused digital health solutions and championing a co-design and coordinated approach to accelerating progress in digital health is an area nurses can be supported to lead.

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[8] https://www.anmac.org.au/sites/default/files/documents/ANMAC_RN_Accreditation_Standards_2012.pdf

HISA in partnership with the Australasian College of Health Informatics (ACHI) and the Health Information Management Association of Australia (HIMAA) have developed the Certified Health Informatician Australasia (CHIA) credentialing program. The CHIA credential provides a level of formal recognition of knowledge and skills for individuals in the health informatics workforce. The competency framework for CHIA is review and updated regularly by the CHIA Board and Examination Committee.

Micros courses in informatics are currently being developed by peak bodies to support professional and career development needs of clinicians seeking to better prepare for roles that demand expertise and knowledge in digital health and data analytics.

Closing Remarks

Nurses and midwives are the most significant workforce that will be impacted by advances in information technology. Clinical training of nurses as new entrants to the workforce needs to be underpinned by a solid theoretical and practical foundation in data, information and analytics. Roles and responsibility for educational preparation of nurses to meet future health, aged care and disability needs of the Australian community will be shared across the university sector, the healthcare sector and professional and peak bodies. NIA and HISA applauds the commitment to a review of education of nurses of the future. We offer our support and look forward to collaborating with the Review Committee on this important initiative.