



## Bringing Telehealth and Artificial Intelligence into Nursing Practice According to the International Council of Nurses' Vision

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**Abstract:** Digital health technologies, including telehealth and artificial intelligence (AI), offer unprecedented opportunities to transform nursing practice. These advanced innovations can potentially enhance access, improve quality, and support person-centered care globally. Aligned with the International Council of Nurses' strategic vision, this editorial explores the integration of telehealth and AI into nursing practice, highlighting benefits, challenges, and recommendations for ethical and effective implementation. Emphasis is placed on nurse leadership, education, digital competency, and equity to ensure sustainable, high-quality care in the digital era.

**Keywords:** Artificial intelligence, Digital health, International Council of Nurses, Nursing practice, Strategy, Telehealth

Received 1 May 2025; Revised 13 May 2025;  
Accepted 15 May 2025

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## **Introduction**

Digital health has become an essential pillar of contemporary healthcare, transforming how services are delivered and accessed.<sup>1</sup> Rather than being driven by past crises such as the COVID-19 pandemic,<sup>2,3</sup> the current momentum for digital health stems from ongoing challenges in healthcare delivery—such as workforce shortages, rising rates of chronic illness,<sup>4</sup> and growing demand for accessible, person-centered care.<sup>5</sup> These tools are changing the traditional way care has been provided, making it more accessible, efficient, and responsive. In this context, the International Council of Nurses (ICN) highlights nurses' substantial role in leading the digital revolution, framing them as leading actors to attain universal health coverage and the Sustainable Development Goals (SDGs).<sup>1,6</sup> Nurses contribute by designing, implementing, and evaluating digital health solutions that meet diverse population needs. This editorial explores how telehealth and artificial intelligence (AI) can be effectively integrated into nursing practice in alignment with the ICN's global vision and strategic priorities, ultimately supporting more responsive and equitable healthcare systems.

### **Nursing Practice and Telehealth**

Telehealth offers healthcare services to geographically separated people via electronic communication technologies. It has become an adaptable intervention for nurses in a range of application domains, including triage, chronic disease management (e.g., diabetes, heart failure, and hypertension), mental health support, and health education, especially in underserved and geospatially isolated populations.<sup>7</sup> The adoption of telehealth has been advantageous not only for increased timely access to care but also for reducing cost, improving patient satisfaction, and maintaining continuity of care during public health emergencies like pandemics. Additionally, telehealth can improve patient engagement through face-to-face communication, shared decision-making, and activation in self-management.<sup>8,9</sup> Nurses are uniquely

positioned to lead the development, implementation, oversight, and evaluation of telehealth programs, ensuring these services align with individual preferences and quality standards.<sup>10</sup> However, challenges remain, including technology accessibility, digital literacy, privacy and data security concerns, and limited reimbursement policies.<sup>11</sup> Conversely, opportunities for telenursing include expanding the nursing role in virtual care, promoting equitable health access, and leveraging data analytics to personalize individual care.<sup>12</sup>

### **Nursing and Artificial Intelligence**

AI encompasses the application of technologies like machine learning, natural language processing, and predictive analytics to enhance decision-making and optimizing processes within the healthcare sector. In nursing, AI holds significant potential for improving clinical decision support, optimizing workflows, and enabling real-time individual surveillance.<sup>13</sup> For example, AI-powered chatbots are now used for preliminary symptom triage and delivering individual education,<sup>14</sup> predictive algorithms or machine learning help identify individuals at high risk of deterioration by analyzing electronic health records,<sup>15,16</sup> and virtual nursing assistants provide medication reminders and follow-up information.<sup>17</sup> More complex applications include AI-supported intensive care systems that monitor vital signs to detect early signs of sepsis or respiratory failure, and image analysis tools that assist in wound assessment or pressure injury prediction.

Despite this advancement, AI cannot replace nurses. Instead, it is a tool that supports nursing practice by handling routine or time-consuming tasks, allowing nurses to focus on providing compassionate, patient-centered care.<sup>18</sup> Challenges include ensuring data quality, addressing ethical and privacy concerns, mitigating algorithmic bias, and preparing nurses to interpret and apply AI outputs effectively through education and training.<sup>19</sup> Used thoughtfully, AI can increase efficiency, customize care to individual needs and improve health outcomes. Yet no technology can

replicate the empathy, communication, and clinical judgment that nurses bring to complex, human moments—like comforting a dying patient with gentle words, holding the hand of a fearful family member, listening to the quiet sorrow of a grieving spouse, calming an anxious child, or recognizing the silent plea in a terrified teenager’s eyes. These are the moments when nurses interpret unspoken fears, navigate life-and-death decisions, and bring meaning to the emotional and cultural contexts of each person’s unique experience.<sup>20,21</sup>

#### **Aligning with ICN’s Strategic Directions**

ICN, a federation representing more than 130 national nursing associations, envisions a world where all people benefit from competent and compassionate nursing care.<sup>6</sup> This vision underpins its Strategic Directions for Nursing and Midwifery (SDNM) 2021–2025, highlighting digital health as a central priority.<sup>1</sup> The ICN emphasizes strengthening digital health capacity through comprehensive educational curricula and supportive policy environments.<sup>22</sup> This vision addresses emerging issues such as AI in nursing practice by promoting ethical, informed, and evidence-based use of technology in patient care. It also calls for empowering nurses to innovate in clinical practice, health education, and service delivery such as using AI tools for early disease detection or telehealth systems to enhance care access. Furthermore, improving nurses’ digital competence—through training in data literacy, AI decision-support tools, and electronic health records—will better equip the profession to meet future healthcare demands and support the ICN’s goal of achieving universal, equitable, and quality care for all.<sup>22</sup>

#### **Education and Digital Competency**

To effectively prepare nurses for the demands of technology-driven healthcare systems, nursing education must evolve to integrate digital health and AI into core curricula. This includes structured learning in telehealth communication, AI-assisted clinical decision-making, electronic health record (EHR)

systems, data analytics, and cybersecurity. For instance, nursing students can be trained to use AI tools for early detection of sepsis or to monitor patient deterioration using predictive algorithms in clinical simulations. Moreover, ethical and legal considerations of AI, such as data privacy and algorithmic bias, should be embedded in coursework to develop responsible digital practitioners.<sup>23</sup> Continuous professional development is equally essential; simulation-based education, AI-focused micro-credentialing, and interdisciplinary workshops on digital health technologies can help current nurses stay competent. In real-world practice, these competencies support safe, efficient, patient-centered care, such as using virtual reality for patient education or remote monitoring systems in chronic disease management. By embedding digital health into nursing education, the profession will be better equipped to navigate and lead innovations in clinical care.

#### **Ethical and Equity Considerations**

Despite the potential benefits of digital health technologies, they also raise ethical and social concerns that need to be addressed. These are issues around data privacy and patient consent affecting clinical practice, algorithmic bias and the pervasiveness of digital divides when it comes to access, especially in rural or low-resource settings. ICN calls for ethical frameworks and enabling policies to prevent the marginalization of vulnerable populations in a digital world.<sup>24</sup> Nurses have an ethical responsibility to promote equity in care and support culturally congruent care provision, particularly during virtual encounters, where customary interpersonal clues and relationships might be temporally obscured.

#### **Barriers and Problems of Integration**

Although digital health has gained significant momentum, several barriers continue to hinder its full integration into nursing practice. These barriers include poor infrastructure such as inadequate internet connectivity in rural health settings limited digital literacy among healthcare providers,<sup>25,26</sup> resistance to adopting new technologies,<sup>27</sup> inadequate models for

telehealth reimbursement,<sup>28</sup> and regulatory confusion.<sup>29</sup> If these barriers are left unaddressed, the gap between healthcare innovation and frontline practice will widen, potentially leading to disparities in care quality, delays in treatment, and decreased patient safety. To address these challenges, targeted strategies are needed. For example, improving infrastructure through national broadband investment, providing structured digital literacy training for nurses, and offering change management support can ease resistance and enhance adoption. Nursing associations need to actively engage in national and international efforts to influence digital health policies and to make the case for investments that would enable equitable and sustainable technology use.<sup>26</sup>

#### **The Role of Nurse Leadership**

Nursing administrators are well-positioned to lead our healthcare systems in digital health. Beyond providing direct patient care, nursing administrators can shape health policy, lead interdisciplinary teams in implementing digital solutions, evaluate technology efficacy in clinical settings, and mentor future digital health champions. To strengthen this leadership, there is a pressing need to support nurse-led research in areas such as telehealth, AI, and digital therapeutics to generate evidence that informs policy and practice. Establishing nursing innovation hubs and research programs at institutions can help drive the creation of context-sensitive digital health tools.

In parallel, governments play a critical role in enabling this transformation. Policymakers must invest in digital health infrastructure, create supportive regulatory frameworks, and fund educational initiatives that build nurses' digital competencies. Collaborative efforts between government agencies and nursing organizations can ensure that national digital health strategies include nursing perspectives and promote equity in care delivery.

Booth et al.<sup>23</sup> highlight the importance of transforming the nursing profession into a digitally empowered field to enhance patient care outcomes. They underscore the importance of nurses acquiring

competencies in data analytics, virtual care models, and collaborating with patients to co-create digital healthcare solutions. Additionally, promoting the development of leadership skills in current informatics tools—clinical decision support, electronic health records, mobile technologies—is a critical need. The authors call for investing by all tiers of junior nursing into a profession enriched and augmented by digital technology.

### **Recommendations and Suggestions for Future Research**

There are some recommended actions to meet the ICN's digital health strategy and its vision of nursing practice. First, the spread of digital health modules to all levels of nursing education to establish basic competencies. Secondly, there is a need for countries to develop a national legislative framework to inform the safe and effective utilization of telehealth and telemedicine services. Third, public-private partnerships should be encouraged to advance global digital inclusion. Fourth, nursing schools ought to develop research and innovation centers to support the development of evidence-based digital health practices. Finally, ethical guidance should be provided in the nursing profession regarding AI applications, to guarantee that AI can be applied in line with patients' professional values and rights.

### **Conclusion**

Digital health, propelled by advances in telehealth and AI, is transforming the landscape of nursing practice. Grounded in the ICN's strategic vision and guided by its principles, nurses are well-positioned to lead this transformation. By integrating digital technologies into care delivery ethically and equitably, nurses can enhance person-centered care and contribute to the development of a more inclusive, efficient, and sustainable global health system.

### Statement on AI Usage

The author confirms that generative AI tools were used solely to support language refinement and clarity during the manuscript preparation process. All ideas, analyses, and conclusions presented in the article are the author's original work. The use of AI did not involve content generation or data interpretation, and the final manuscript was thoroughly reviewed and edited by the author to ensure accuracy and integrity.

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## การนำเทคโนโลยีการแพทย์ทางไกลและปัญญาประดิษฐ์สู่การปฏิบัติการพยาบาลตามวิสัยทัศน์ของของสภาการพยาบาลระหว่างประเทศ

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**บทคัดย่อ:** เทคโนโลยีสุขภาพดิจิทัล ได้แก่ การแพทย์ทางไกล (telehealth) และปัญญาประดิษฐ์ (artificial intelligence: AI) ก่อให้เกิดโอกาสที่ไม่เคยมีมาก่อนในการพลิกโฉมการปฏิบัติการพยาบาล นวัตกรรมล้ำสมัยเหล่านี้มีศักยภาพในการเพิ่มการเข้าถึงบริการสุขภาพ ยกกระดับคุณภาพการดูแล และสนับสนุนการดูแลที่เน้นผู้รับบริการเป็นศูนย์กลางในระดับโลก บทบรรณาธิการฉบับนี้ สอดคล้องกับวิสัยทัศน์เชิงยุทธศาสตร์ของสภาการพยาบาลระหว่างประเทศ (International Council of Nurses: ICN) ที่มุ่งเน้นการบูรณาการการแพทย์ทางไกลและ AI เข้ากับการปฏิบัติการพยาบาล โดยกล่าวถึงประโยชน์ ความท้าทาย และข้อเสนอแนะเพื่อการประยุกต์ใช้อย่างมีจริยธรรมและมีประสิทธิภาพ พร้อมทั้งเน้นย้ำบทบาทผู้นำของพยาบาล การพัฒนาการศึกษา ความสามารถทางดิจิทัล และความเสมอภาคในการเข้าถึงเพื่อส่งเสริมการดูแลสุขภาพที่มีคุณภาพและยั่งยืนในยุคดิจิทัล

*Pacific Rim Int J Nurs Res 2025; 29(4) 689-695*

**คำสำคัญ:** ปัญญาประดิษฐ์ สุขภาพดิจิทัล สภาการพยาบาลระหว่างประเทศ การปฏิบัติการพยาบาล ยุทธศาสตร์ การแพทย์ทางไกล

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