

Artificial Intelligence and Nursing: Enhancing Care, Not Replacing It

Artificial Intelligence (AI) has transitioned from a theoretical-futuristic concept to a practical technology in modern healthcare delivery. From predictive analytics to virtual assistants and workflow automation, AI has the potential to transform how care is delivered, how nurses work, and how patients experience the healthcare system. However, the extent to which AI enhances nursing practice may be the most critical determinant of its successful implementation in healthcare settings.

Nursing has always been a profession at the intersection of science, technology, and human compassion. Over the last century, nurses adapted to everything from digital intravenous pumps to Electronic Health Records (EHRs). Each technological advancement required learning new tools and competencies, often without decreasing the underlying demands of patient care. Unlike earlier technologies that increased administrative burden, Al has the potential to automate routine workflows and reduce both cognitive load and time demands on nursing professionals. For instance, "Nurses spend as much as 30-40% of their shift on documentation, time that could be returned to direct patient care through AI enabled technology" [1].

Some early real-world case studies illustrate this shift to Al adoption in healthcare. Mayo Clinic piloted Al-driven triage in its emergency department, using Al algorithms to assess vital signs and patient histories in real time to improve throughput and patient outcomes [2].

Cedars-Sinai tested an Al-virtual nurse assistant to answer common patient questions, reducing interruptions for nursing staff while improving patient satisfaction [3]. Several health systems are also piloting natural language nurse call systems, with early results showing faster response times, reduced alarm fatigue, and measurable gains in HCAHPS responsiveness scores.

Layering Intelligence and Automation on Top of a Life Safety Backbone

While AI has the potential to revolutionize many aspects of care, it is important to recognize that it will not replace them outright. As an essential life safety alerting and communication system between patients and staff, nurse call systems will not be replaced by AI, but stand to benefit by enhanced automated alerting and notification functionality.

Al inherently requires internet connection servers to function which are not guaranteed to be available 100% of the time. In contrast, as a hardened life-safety system, nurse call's core life-safety and alerting functionality must be available 24/7 without relying on servers, networks, and the internet. In emergencies, nurse call ensures rapid mobilization with a single button press that immediately alerts multiple caregivers or teams (e.g., a Code Blue), ensuring a fail-safe escalation pathway.





Future AI nurse call-related applications could include Natural Language Processing, Event-Driven Automation, and Operational Automation

Natural Language Processing (NLP):

This AI technology, like Chat GPT or Google Gemini could be used to interpret a patient or caregiver requests made audibly or text and converts them into actional tasks. Some application examples are:

For patients and families: A patient in bed, or a family member at the bedside, can verbally request assistance in any language, "I'm in pain," or "I need to go to the bathroom." Through the nurse call system, the request automatically appears on the dome light outside the patient's room and routes to the right caregiver who can then reassure the patient directly through the nurse call intercom that help is on the way.

For caregivers: Staff can verbally request help, "I need assistance" which triggers an alert on the dome light and notifies the appropriate responder. They can also request workflows from complementary staff through the nurse call.

Event-Driven Automation:

Where Al-enabled cameras with facial recognition, motion detection, and gesture recognition are utilized to identify patients, staff, and visitors. Some application examples include:

- Nurse call 'bed exit' alarms if a patient attempts to get out of bed.
- Fall alerts through the nurse call if a patient fall is detected in the patient room, bathroom, or hallway.
- Without having to manually press a button, distress recognition through facial expression, motion, or agitation can automatically alert caregivers through the nurse call.
- By staff simply walking into a patient room and interacting with the patient, patient rounding is acknowledged and logged automatically in the EMR for safety and satisfaction tracking.

Operational Automation:

Utilizing AI to analyze historical and current data to project future needs and at what point to escalate an event. For example:

- Staffing needs can be forecasted by analyzing historical and trending nurse call volume, response times, and environmental factors (e.g., flu season).
- Based on historical response time correlated to patient satisfaction and safety, Al determines at what point to escalate a patient request on the nurse call system that has been waiting too long.

Conclusion

The promise of AI is especially transformative for patient-centered care. The opportunity is clear; advanced nurse call systems with AI can enable more efficient workflow, faster response times and reduced alarm fatigue, while also improving patient satisfaction, reducing falls, enhancing staff safety, and driving better overall outcomes. Patients will feel seen and supported, not just by machines, but by nurses who have more to deliver human-centered care.

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