Nurses should be at the forefront of any implementation of technological advancement affecting nursing practice, as nurses have the most interaction with patients and are most attuned to their needs. To better prepare nurses for rapid technological transformation in the care setting, educators should routinely update nursing education and competency requirements related to informatics and health care technologies.

- Nurses and key stakeholders must be involved selecting and designing technology used in patient care.
- Nurses and key stakeholders must be aware of the potential for unintended consequences related to health technologies, remain vigilant, and report issues and near misses as well as recommending solutions.
- All nursing practice issues that are examined by a peer review committee, the Texas Board of Nursing, employers, or others must always include a critical analysis of all associated technologies, including electronic health records (EHRs), and the impact they may have had.
- Technology vendors should ensure that technologies meet the needs of nurses in providing safe care, remedying known issues in a timely manner.

In addition, employers and purchasers of health technology should stay abreast of technology issues and routinely evaluate the safety and accuracy of technologies being used in the care of patients, make necessary changes (including updates to the technology), and create mechanisms for nurse to report issues and near misses, ensuring communication of these as well as solutions to nurses in a timely and effective manner.

**TECHNOLOGICAL ADVANCES**

The transformation of health care is accelerating in the digital age, bringing new technologies that affect nursing practice. For example, intravenous (IV) infusion therapy advance from manual infusions with plastic roller clamps to electronic pumps. Today, smart pumps interface with EHRs whereby a provider inputs the order, a pharmacist verifies it, and a nurse validates the information to start the infusion. Volume and infusion rate data are transmitted to the EHR. Around 75-80% of hospitals use smart pumps, now the standard of care for reducing IV medication errors.¹²⁻³ Hospital must regularly update pumps with the latest drug library, use clinical best practices, and institute updated policies and procedures.⁴ Infusion therapy, like other technologies, will continue to become more accurate and efficient.
Emerging technology increasingly dominates health care delivery as the industry moves forward and unintended consequences occur daily with technology, such as EHRs, robotics, and artificial intelligence. Although technology can improve clinical practice and patient outcomes, appropriate evaluation and testing are necessary for patient safety.  

For example, technology helps advanced practice registered nurses provide effective and affordable care across state lines, but has increased risk since licensing requires differ in each state. Technology also brings a risk of data breaches; providers must protect patients with secure technology. Nurses must be actively involved in selecting technology and have space to maintain confidentiality.

### REMEDYING CHALLENGES

Texas nurses, along with nurses across the country, practice in an increasingly technological environment. They see the positive and negative effects technology has. They understand alert fatigue from false alarms. They know the challenges of unplanned downtimes and limited communication between different EHR modules. They struggle to find information among all the data still in silos, inaccessible to all members of the health care team.

What nurses need to know is how technology can negatively impact nursing practice, for three reasons:

- Nurses can prevent issues using strategies such as creating new workflows or requesting redesigns.
- Nurses can fix underlying causes of issues, recognizing that training nurses cannot fix a faulty design.
- Nurses can recognize the role of technology in nursing incidents, allowing a more targeted and accurate fix at the level of the human-computer interaction.

---

**Telemedicine**

- Clinic-based
- ICU, NICU, ED

**Remote management**

- Home-based
- Long-term care

**Mobile health**

- Community-based
- Wearables, sensors, apps

---


