

The Role of Technology in Transforming Care

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Overview of HealthCare Technology

- Technology of modern allopathic medicine- 19th century
- Advancement in diagnosing, treating and management was traced to 1950s
- Technology has transformed healthcare delivery in current year
- Technological invention has become an essential feature of our daily life
- Technology invention include wearable devices, information technology, virtual reality, and Internet



https://healthcareweekly.com/health-technologies/

(Darr & Nowicki, 2021; Shayevitz, 2023; Stoumpos et al., 2023,)

The challenge with technology and how it impacts the U.S. Healthcare System

- Health information technology

  A) Design and Development

  B) Implementation and Use

  C) Monitoring, Evaluation, and Optimization

- Technology Challenges- Loss of previous patient data, patient data privacy and lack of synchronization



https://www.selecthub.com/medical-software/practice-management/7-categories-healthcare-information-technology

(Lamo, et al., 2016; Sittig et al., 2020)

The challenge with technology and how it impacts the U.S. Healthcare System

Electronic Health Records

- Human Challenges- Errors from the EHR include med error due to the selection of the wrong item (medication)
- Knowledge Deficit among users
- Communication challenges- Speaking different languages hinder workflow

(Lamo, et al., 2016; Sittig et al., 2020)

The challenge with technology and how it impacts the U.S. Healthcare System



https://mobisoftinfotech.com/resources/blog/wearable-technology-in-healthcare/

Challenges with Wearables Technology

- High Cost
- Incompatibility
- Extraction of useful and actionable health-related data from the large volume of data
- Stigma
- Maintenance

(Dunn & Snyder, 2018; Lamo, et al., 2016).

The challenge with technology and how it impacts the U.S. Healthcare System

Telemedicine

- Measurement of wearable devices
- Acceptability and Long-Term Adherence
- Cost of Technologies and their Integration into difficult environments



https://acu.edu/2022/04/04/telemedicine-the-future-of-healthcare/

(Chirra, et al., 2019)

Historical Perspective

- HITECH Act (2009):
  - Enacted in 2009 as part of the Accountable Care Act.
  - Aimed at improving patient safety, efficiency, standardized documentation, and data interoperability.
- 21st Century Cures Act (2016):
  - Designed to accelerate medical research.
  - Promoting innovation in healthcare technology.
  - Improving access to mental health services.
  - Sharing of health data to providers and patients.
  - Development of personalized medicine.

(Gettinger, et al., 2021)

Benefits of Technology on Nursing
Transforming the Present



(Darr & Nowicki, 2021; Walker-Czyz, 2016)

- Enhancing patient safety
  - Improve quality and continuity of care.
  - Reduce medication errors.
- Communication and collaboration
  - Leverage secure messaging portals.
  - Foster interdisciplinary collaboration.
- Utilizing technology
  - Use of clinical decision-making tools.
  - Automating routine tasks.
- Ensuring data accessibility

Challenges of Technology on Nursing
Balancing Progress

- Technology overload
  - Rapid advancements, managing EHR, monitoring devices, multiple software.
- Training and skill acquisition
  - New skills and adaptation to new tools and systems.
- Data security and privacy
  - Adherence to strict regulations and protocols to safeguard information.
- Human touch versus automation
  - Maintaining the human connection.



(Booth, et al., 2021; Buchanan, et al., 2020)

Empowering Nurses as Technology Innovators

- Analysis
  - Needs assessment
  - Technology evaluation
- Planning
  - Nurse Input
- Design
- Testing and validation
- Implementation
  - Training and maintenance
- Safety and quality assurance

(Mohan, V. 2022)

Shaping the Future

- Emerging technologies will continue to shape nursing through:
  - Data analytics and informatics.
  - Predictive analytics.
  - Clinical mobility.
  - Artificial intelligence.
  - Virtual and augmented reality.
  - Personalized medicine.

(Buchanan, et al., 2020)

The Impact of Technology with Delivery of Care

- Patient Safety
  - Delivery of care
  - Availability/Participation
- Video Monitoring
  - Patient Safety/Satisfaction
- Patient Portal
  - Secure messaging
  - Barriers and strengths
- Tele-Health
  - Care Delivery/Quality of Care



The Impact of Technology with Delivery of Care

Patient Safety



- Delivery of care
  - Accuracy of health information
  - Care Coordination
  - Clinical training
    - Education
    - Burnout
- Patient participation
  - Elderly
  - Socioeconomic

(Hays & Skootsky, 2022; Bruce et al., 2020; Buyl et al., 2020; Kelly et al., 2020)

The Impact of Technology with Delivery of Care

Continuous Video Monitoring

- Safety
  - Patient
    - Falls/Lines/drains/tubes
    - Self-harm
  - Patient violence/abuse
  - Infection
- Care delivery satisfaction
  - Rounding/Efficiencies
- Staffing



(Abbe & O'Keeffe, 2020; Quigley et al., 2019)

The Impact of Technology with Delivery of Care

Patient Portal and Secure Messaging



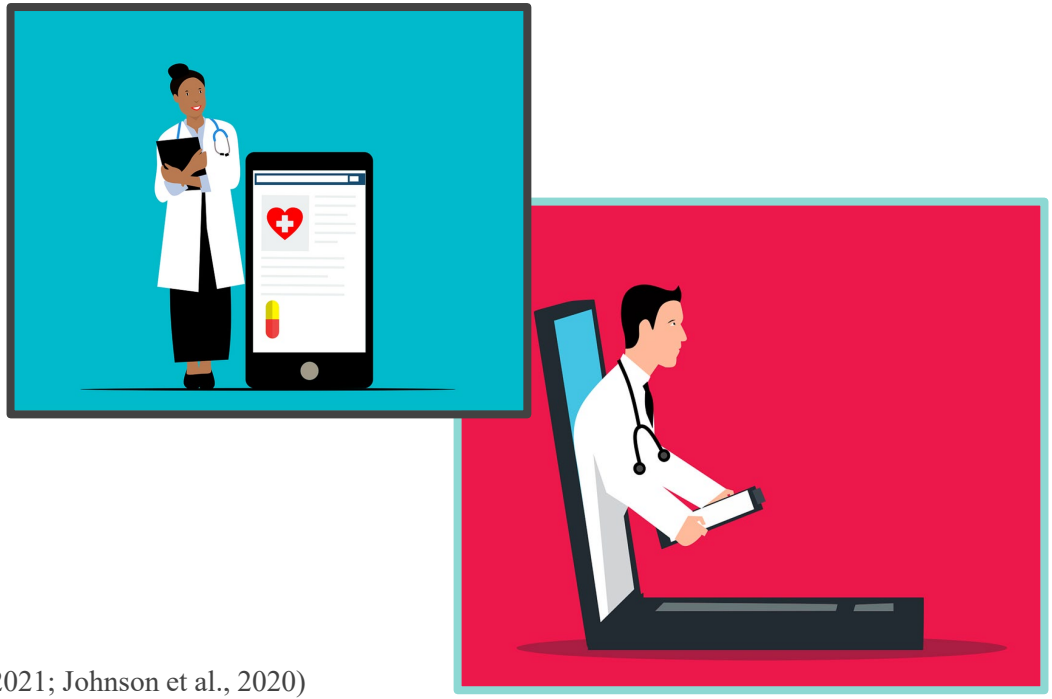
- Adoption
  - Patients/clinicians
- Implementation
  - Trainers/Champions
  - Education
- Patient Outcomes
- Patient/Clinician Relationship
- Barriers to use
  - Accessibility/Education level

(Khadjesari et al., 2023; Forgie et al., 2021; Wilson et al., 2021; Hefner et al., 2020)

The Impact of Technology with Delivery of Care

Tele-Health

- Care Delivery
  - Ethical Principles
  - Privacy
  - Clinician/patient relationship
  - User-friendly
- Technical issues
  - Connectivity
  - Devices
  - Cost
- Quality of care
  - Efficient and effective



(Keenan et al., 2021; Tayefi et al., 2021; Ziebland et al., 2021; Johnson et al., 2020)

The Impact of Technology for Nursing Leadership

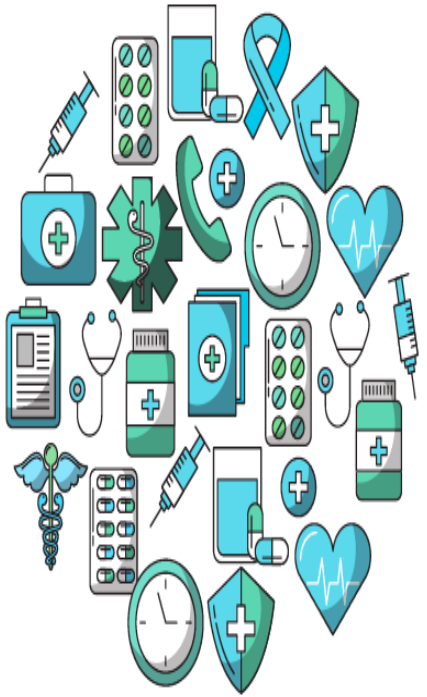


- Culture change journey- helping others understand how all connected
  Competencies for Technology and Innovation Leadership
  - Assessment of organizational capacity for innovation
  - Acknowledgement of responsibility of all leaders to create an innovation-rich environment
  - Provision of education, skill building and coaching
  - Sustaining practice culture of innovation, embrace failures

  (Strudwick et al., 2019; Weatherford et al., 2018)

The Impact of Technology as Big Picture Thinking

- Set standards, develop plans, identify tools, based on evidence while building trust, allowing risk taking
- Getting and maintaining a seat at decision making table
- Creating structures for nurses to participate in selecting, adopting, using and evaluation technologies for safe, efficient, value based and quintuple aim informed care/practices
- Cornerstone of relational communication and coordination



(Albert et al., 2022; Stoumpos et al., 2023)

The Impact of Technology As Dynamic Chaos



- Cross complex adaptive organization tailoring, alignment to vision and strategic plan
  - Implementation and use of technology (big data) for quality and safety measurement
- Nurses as codesigners, nurse engineers
- Understanding the benefits and negative consequences across groups, discipline, organization
- Leveraging professional governance structures to ensure input of front line nurses (McBride et al, 2023; O'Grady & Clavelle, 2021)

The Impact of Technology On Nursing Workforce



- Workflow interaction and management of work-arounds
- Consequences on retention of nurses (cognitive workload, role conflict, unfinished tasks)
- Burnout related to technology related practices or values
- Future of Nursing report (worsens disparities, TH reimbursement, ethics & costs)
- Technology competency development AACN Essentials for professional nursing education (Domain 8)
    - New Roles Development and Culture of Inquiry

(AACN, 2021; NASEM, 2021)

The Impact of Technology for Nursing Value



- Use of EHR big data to add identify value of nurse surveillance through **Early Warning Scores** (Cato et al., 2020; Rossetti et al., 2021)
- Innovation leader and innovation continuum
- Culture shift for how AI informed technologies broaden/improve clinical reasoning for people and populations (Laukka et al., 2022)
- Clinical Decision Support - Nursing Wisdom

Questions?

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