



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



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/>



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.

Benefits of Technology on Nursing Transforming the Present



- 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

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

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



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



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

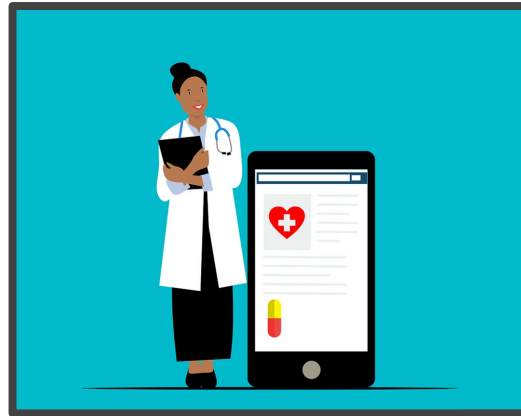


- Adoption
 - Patients/clinicians
- Implementation
 - Trainers/Champions
 - Education
- Patient Outcomes
- Patient/Clinician Relationship
- Barriers to use
 - Accessibility/Education level

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





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)



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(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



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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