

Telehealth and Telenursing

Carolyn Sipes, PhD, CNS. APRN, PMP, RN-BC, NEA_BC, FAAN

Core Faculty, PhD Nursing Program

Walden University

Agenda

- Overview of telehealth and telenursing.
- Distinguish among different types of telehealth/telenursing
- Discuss Application to Practice
 - Curriculum, Skills, Competencies
- Advantages/Disadvantages to telenursing practice.
- Identify Issues related to telenursing practice
 - Security, Interoperability, Legal, Regulatory
- Exemplars
- Self- Assessment Quiz

Telehealth Overview



What is telehealth?

Telehealth — sometimes called telemedicine — where a provider can provide care without a face-to-face office visit from a distance and is done primarily electronically, online with internet access with a computer, tablet, or smartphone. (CMS, n.d.).

Further definition of Telemedicine (includes Mobile Health or Health, Mobile, mHealth, Telehealth, and eHealth) *

Telehealth vs. Telenursing

Telehealth Nursing: Nurses apply telehealth technology as a tool to provide care in a variety of ways such as:

Addresses social determinants of health such as:

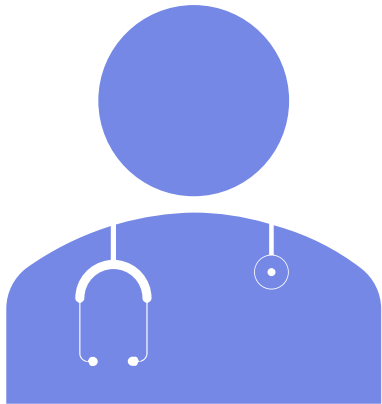
- Access for vulnerable patient groups, older populations
- Greater access for those who live rurally
- Living with multiple chronic conditions when travel is a burden
- Patient education, Remote patient monitoring

Telenursing Examples

Telehealth Nursing: Nurses apply telehealth technology as a tool to provide care in a variety of ways such as:

- Patient education, Remote patient monitoring
- Primary care – health promotion, assessment, diagnosis, treatment of acute and chronic diseases, e.g. care provision when quarantined
- Telepresenter – provides support to assist provider in remote areas
- Telenursing for school-based health care
- Telenursing to prevent direct exposure during pandemics and infectious epidemics such as COVID-19 *

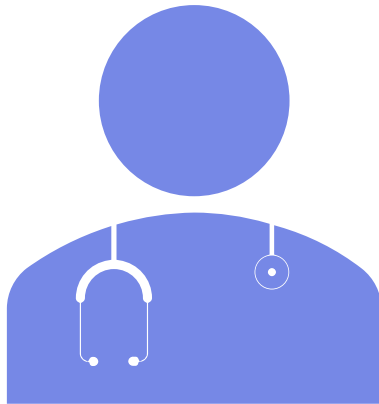
Telehealth/Telenursing Technologies & Application to Practice



Three main types of
Telehealth/Telenursing delivery
models:

- **Store and forward technologies** – enables transfer of diagnostic imaging and physiologic data
- **Live videoconferencing** – using advanced telecommunication technology
- **Remote monitoring** – when providers monitor patients remotely using technology

Telehealth/Telenursing Technologies & Application to practice (Cont.)



Store and forward technologies – enables transfer of diagnostic imaging and physiologic data

- data digitally generated, stored, then transferred when needed, patient does not have to be present
- examples: Vital signs, lab values, diagnostic medical imaging such as EKG, MRI, CT, ultrasound, x-rays, films

Telenursing Technologies & Application to practice (Cont.)

- **Live videoconferencing** – using advanced telecommunication technology; virtual two-way, real-time using computers, microphones, software for simultaneous audio and video transfer
- **Live videoconferencing** can be used for live “visits” such as mental health conferencing; urgent/emergent care, patient education, other care management

Telenursing Technologies & Application to practice (Cont.)

Remote monitoring - when providers monitor patients remotely using digital technology to collect medical information then transmit it to healthcare providers at another location (Center for Connected Health, [CCHP, n.d])

- Uses mobile devices, tablets in patients' home
- Can transmit daily vitals, lab values for more frequent access to care, eg diabetes, heart disease

Barriers to Telenursing Practice.

Telehealth- disruptive technology, changed access to health care and way provided when patients no longer have to travel to a provider.



Current barriers -

- Technology/infrastructure - limited access to high-speed broadband internet
- Cost – more prohibitive in remote areas
- Licensure - legal restrictions on practice areas, especially across state lines
- Living with multiple chronic conditions,
 - Those who have less access to online resources, from culturally and linguistically diverse backgrounds (Chesser A., Burke A., Reyes J., Rohrberg T)

Barriers to Telenursing Practice (Cont.)



Current barriers - (cont.)

- Reimbursement - low or lack of telehealth in some remote areas due to lack of reimbursement
- Resistance - lack of buy-in; resistance to change, lack of trust in technology, lack of patient acceptance and competencies
- Provider skill sets, competencies lacking,
- Human computer interface/usability - lack of computer/telehealth literacy e.g., vulnerable patient groups
- Older, live rurally, have less formal education, lower socioeconomic status

Issues Related to Telenursing Practice – Curriculum Development and KSAs

Research study to determine what knowledge, skills, and attitudes (KSA) are required for nurses to competently practice using telenursing:

- Professional Nursing Telehealth Entrustable Professional Activities (NT-EPAs): 14 NT-EPAs considered to be relevant for nursing practice

Each NT-EPA requires a specific set of core competencies (at least ten). In total, 52 competencies were identified in this research study as essential in telenursing.

Issues Related to Telenursing Practice; Curriculum Development

Developing Telenursing programs, based on research in Netherlands. All nursing telehealth activities - except for NT-EPA 7 and 8 - require multiple knowledge sources, ranging from 2-4 types.

- Clinical and procedural knowledge (what to do in case of an emergency) were the most frequently selected knowledge items
- Each NT-EPA requires a specific set of competencies (at least ten). In total, 52 competencies were identified as essential in telehealth

The core competencies, one or more core competencies required for telenursing in Major Categories of::

- coaching and communication skills,
 - ability to combine clinical knowledge and experience with telehealth,
 - ethical awareness, and
 - supportive attitude
 - general skills such as analytical
 - implementation skills
-
- Q: What knowledge, attitudes and skills do nurses need to acquire before they can be entrusted with the telehealth activities?

Telenursing Skills and Core Competencies

Nursing Telehealth Entrustable Professional Activities (NT-EPAs). NT-EPA —

Support patients in use of technology
2: Train patients in use of technology in order to strengthen their social network
3: Provide health promotion remotely
4: Triage incoming calls and alarms
5: Analyze and interpret incoming data derived from (automatic) devices for self-measurement

6: Monitor body functions and lifestyle
7: Provide psychosocial support
8: Encourage patients to undertake health promotion activities
9: Instruct patients and family care givers in self-care
10: Assess patient capacity to use telehealth


11: Evaluate and adjust patient care plan
12: Coordination of care with use of telehealth technology
13: Independent double-check of high-risk medication
14: Guidance and peer consultation



Advantages to Telenursing (TN) Practice

The impact of the pandemic on telenursing and patient outcomes:

Benefits to TN:

- Nurses Perceptions of improved quality of care due to increased access - visualization ("face-to-face") of provider/patient
- Social distancing for infection control
- Increase mobile workflow using iPADs, other mobile devices
- Reduces travel time and access to care
- Decrease wait times
- Improve patient care compliance 

Disadvantages to Telenursing (TN) Practice

Impact of the pandemic on telenursing and patient outcomes: Disadvantages to TN:

- For Nurses, difficulty with technology – equipment inconsistency, malfunction
lack of computer literacy, skills, competency
- Questionable therapeutic relationships using virtual visits. Empathy missing
- Lack of end-user adoption with lack of integration of new technologies in clinical practice workflow and daily activities.
- Adoption requires cultural and behavioral changes for use and reliance on telehealth technologies
- Low levels of digital, computer and health literacy in the general population, especially in the elderly

Security Issues Related to Telenursing Practice

Issues and Barriers:

Lack of data standards

Security, privacy, and trust - barriers to data collection, compilation, and transmission between healthcare providers, leads to lack of coordinated care.

Obstructs access to data for research purposes

Obstructs funding resources

Security Issues Related to Telenursing Practice

New **Protecting and Transforming Cyber Health Care** Act: new requirements for medical device and network security, even as ransomware and other cyberattacks have increased in scope and severity

Solution: the **PATCH** Act would:

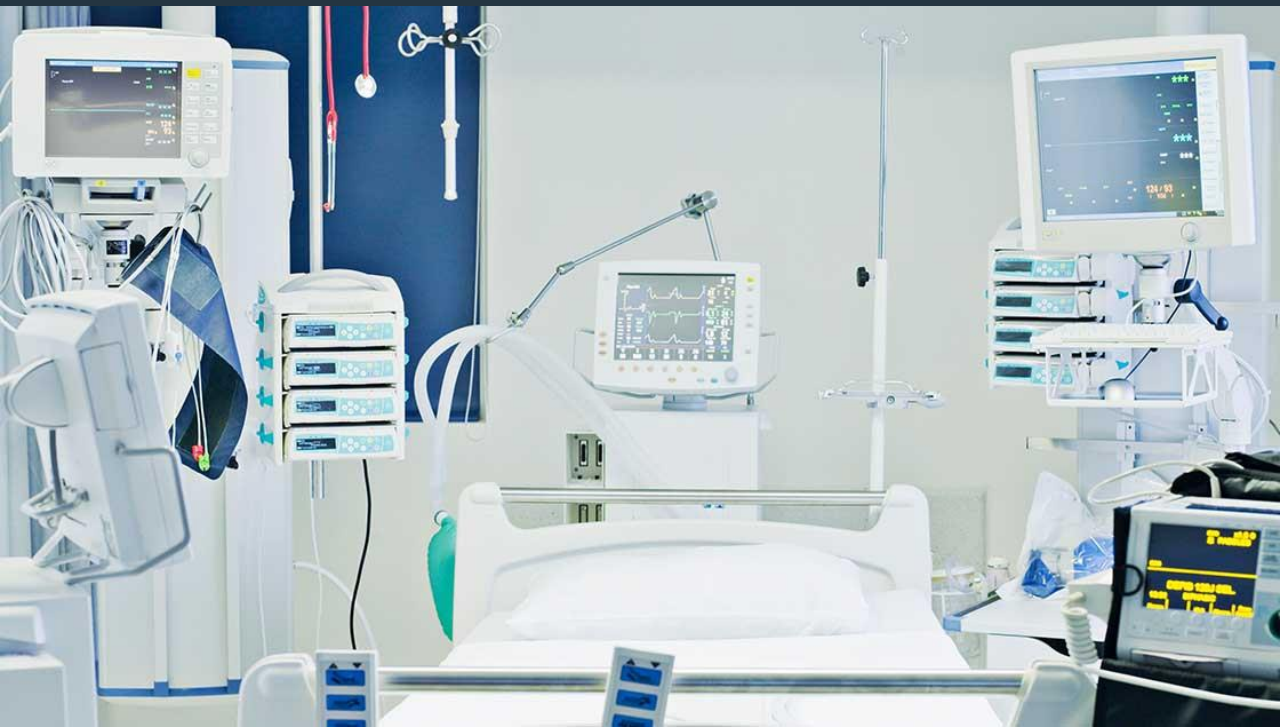
- Impose a series of cybersecurity requirements for manufacturers applying for premarket approval through the Food and Drug Administration
- Enable manufacturers to design, develop and maintain processes and procedures to update and patch the device and related systems throughout device lifecycles
- Establish Software Bill of Materials for devices provided to users
- Require development of plans to monitor, identify and address post market cybersecurity vulnerabilities
- Request Coordinated Vulnerability Disclosure to demonstrate safety and effectiveness of a device

Human Computer Interface/Usability

Telemedicine usability (Telemedicine Usability Questionnaire - TUQ) for cancer care during the COVID-19 pandemic.

- Questionnaire used for evaluating the satisfaction (49%), usability (34%), acceptance (11.5%), and implementation (2%) of telemedicine services
- TUQ evaluates computer usability questionnaires - designed to be a **comprehensive questionnaire that covers all usability factors** (i.e., usefulness, ease of use, effectiveness, reliability, and satisfaction).

TUQ - 7-point Likert scale, with a rating of seven indicating agree; higher ratings indicate better system usability



Exemplars in Practice – TUQ Usability Study

George Washington Cancer Center (GWCC) cancer care services via tele-visits for patients at high risk of morbidity and mortality secondary to COVID-19. - increased assess, usability of virtual cancer care delivery for patients and providers

5/5 for Interaction Quality (ItQ) and Ease of Use (EU),
4/5 for Usefulness (U),
Interface Quality u (IfQ) and Satisfaction (S), and

3/5 for Reliability (R).

Compared to in-person visits, **70%** of patients agreed/strongly agreed that telemedicine made them feel safer,

63% agreed/strongly agreed that it reduced stress,

59% expressed interest in using it with other medical specialties.

For providers (n = 85), **88%** of surveys sent were completed and analyzed. Most providers were ages 30-39 (37%), 50-59 (23%), and 47% had 50 or more experiences with telemedicine.

Telenursing EHR Interoperability and Integration

Interoperability, or the secure sharing of health data across healthcare systems and organizations, where all electronic health record systems (EHRs) “speak” to one another, widely acknowledged

- answer to improving patient outcomes.

Needed due huge amounts of significant data needed for decision - making

- e.g., patient care decisions, especially since the COVID-19 pandemic.

Issues Related to Telenursing Practice – EHR Interoperability and Integration

Telehealth Nursing consists of EHRs, analytic systems, biometric monitoring, and other digital systems

- data must be integrated – automatic, not manual access interoperable across systems.
- clinicians at the point of care to improve patient diagnosis and treatment.

Office of the National Coordinator for Health Information Technology (ONC)

Users must be able find use information on both ends, whether sending or receiving

- Including third-party systems (independent IT vendors). Must have automatic access clinical information from when treating a patient.

Issues Related to Telenursing Practice – EHR Interoperability and Integration

Lack of interoperability:

- **limits data sharing, utilization, data comparison, algorithms, and approaches**

From the systems perspective:

- **too many stand-alone systems with nonintegrated data,**
- **many different databases provides = potential collapse and end-user discontent..**

Current lack of clinical standards for automated decision support,

- **no agreement in alarm and trend setting of devices.**
- **EHR systems do not currently facilitate data integration and automated analysis.**

Issues Related to Telenursing Practice – EHR Interoperability and Integration

System developers and administrators aware

- issues - time and cost limitations for improved validation, certification
- data issues - limited access and limited data flow impede progress.
- data flow into practice and hospital centers is strictly regulated, limits access to utilize for data mining and decision support (CDDS).

Issues Related to Telenursing Practice – EHR Interoperability and Integration

COVID-19 pandemic impact

- Improved interoperability > delivery of treatment > cost-effectiveness
- Improved transmission of patient data

High-impact projects addressing need for efficient information flow across health providers – nonexistent pre-pandemic

- Long-term, costly IT and interoperability projects were paused
- Priority patients in remote locations, in homes.
- Direct messaging capabilities now used to replace faxed workflows.

Issues Related to Telenursing Practice – EHR Interoperability and Integration



If a practice has data that is not liquid, it could be labeled a **data blocker** under the [Cures Act](#).



Civil penalties for data blocking inspire software vendors more compliant- **Cures Act Final Rule**- Providers accused of information blocking risk of civil penalties of as much as **\$1M**.



Seamless sharing of patient records reduces errors, improves patient outcomes and satisfaction. inconsistent information across the network is a huge problem. Providers place different pieces of data in multiple, often disparate, places, and health IT departments waste countless hours searching for them.

Issues Related to Telenursing Practice – EHR Interoperability and Integration



If data not transparent, labeled a data blocker under the Cures Act.

- civil penalties for data blocking --encourages software vendors compliance
- seamless sharing of patient records reduces errors and improves patient outcomes and satisfaction.
- Problem: inconsistent information across the network with different pieces of data in multiple, different places, where IT departments spend hours searching
- **Solution:** Adopt a single unified network and interface - now required by law.
- **Solution:** too expensive to hire someone to facilitate communication who expertise to verify data requests are appropriate and secure. Software packages available that verifies data requests, accuracy through process leveraging automation and human inspection.

Issues Related to Telenursing Practice – EHR Interoperability and Integration

Some not interested in sharing data with other providers, esp. where hospital systems compete for patients with urgent care clinics

Solution: Not whether but when to make data available. Be transparent, make it accessible to the right entities all the time. This requires some buy-in across the healthcare network, the Cures Act penalizes data blocking

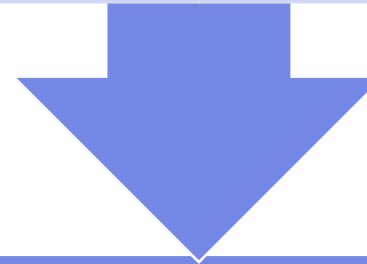
Solution: To maintain EHR interoperability and reduce expenses, use specialized software platform maintain EHR interoperability where the monthly cost of a base platform license is much less expensive than hiring someone.

Issues Related
to Telenursing
Practice – EHR
Interoperability
and Integration

Data Blocking:

Data not available per the Cures Act, - penalty enforced

Outdated EHR certification - equals failure to meet the new requirements of the Cures Act Final Rule. Cures Act pushing the industry compliance



Solution: Consistently export and store data to a single place with online portal that allows access to that central place

Telenursing Legal and Ethical Issues

Legal and ethical issues include:

- **Informed consent (information about the risks and benefits of remote therapy)**
- **Autonomy (87%),**
- **Patient privacy (78%) and**
- **Confidentiality (57%),**
- **Data protection and security (74%),**
- **Malpractice and professional liability/integrity (70%),**
- **Equity of access (30%),**
- **Quality of care (30%),**
- **Professional-patient relationship (22%),**
- **Principle of beneficence or being disposed to act for the benefit of others (13%).**

Telenursing Legal & Regulatory

Centers for Medicare & Medicaid Services (CMS) will reimburse telehealth visits in lieu of many in-person appointments for the duration of the COVID-19 public health emergency, (<https://telehealth.hhs.gov/>. 3/30 21).

CMS announced waiver allowing health care providers to furnish telehealth and other services using communications technology wherever the patient is located, including at home, even across state lines.

Practicing across state lines is still subject to requirements set by the states involved. Each state has to be contracted individually as this issue is not still universal.

Safety & Security – Connected Health

Connected health increased safety and security concerns.

lack of quality and evidence-based research highlighting the associated health benefits of the newest technologies.

Use of IoT devices in connected health means greater support for anywhere anytime solutions as well as real-time self-care or monitoring

transferring data from the point of collection, such as IoT devices, to remote servers, brings security and privacy concerns that need to be addressed

Practices of informed consent and privacy are well-established in digital health, there are still concerns surrounding patients' understanding of how their data is being processed and by whom

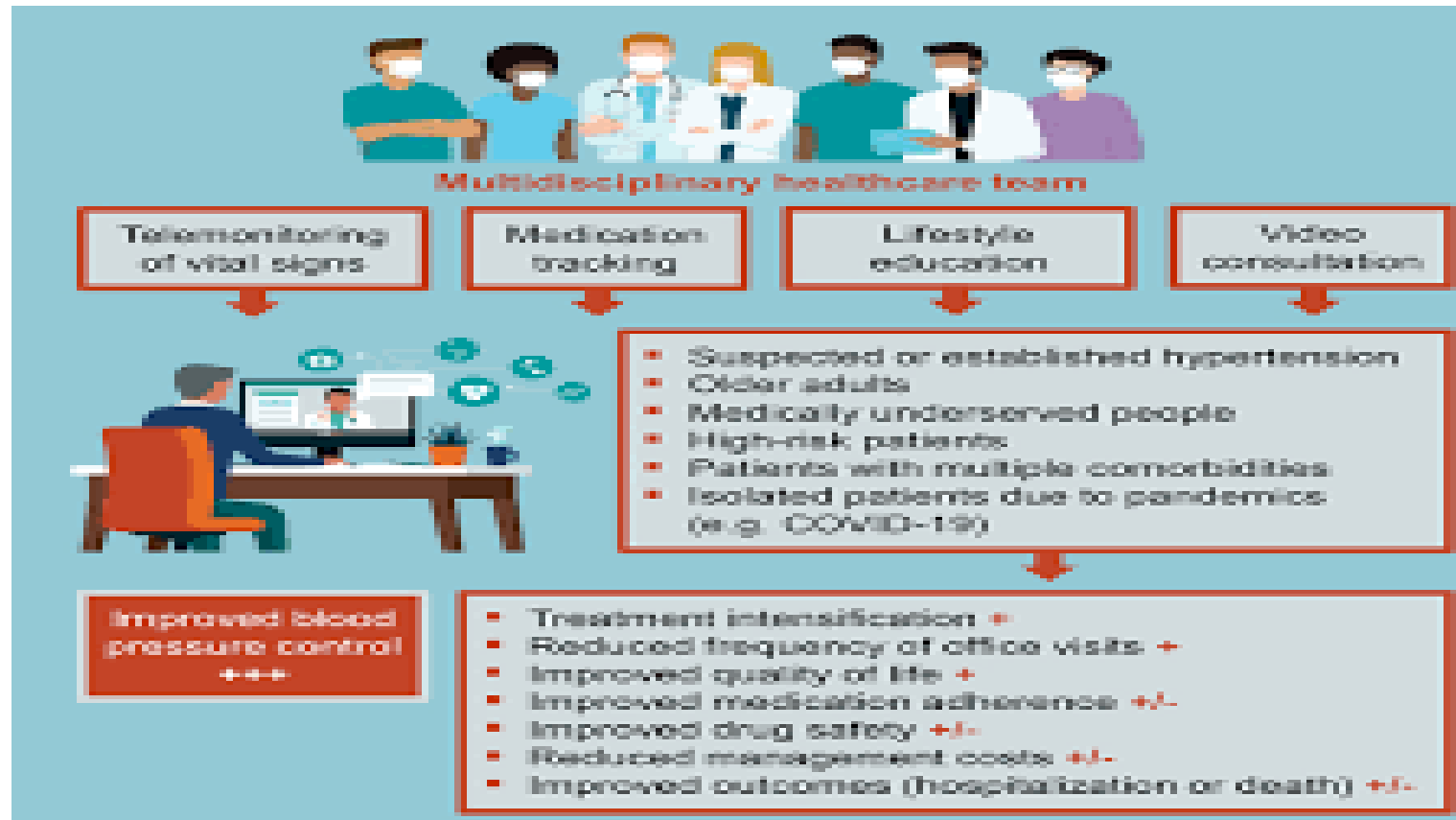
An emerging trend, not just in digital health, but in health research in general, is increased patient engagement, treating the patient as a stakeholder in research, not just a data source

Exemplars in Practice Access

John calls his providers office to say he can't make it for his appointment today because he is not feeling well. This initiates as telenursing return call back by the nurse to complete an assessment, ask questions and treatment referral if necessary:

- **Do you have a fever? What other symptoms do you have- cough, aches/pains, , other symptoms?**
- **John responds yes**
- **Since there has been an increase in COVID cases this week, the nurse encourages him to get tested for COVID. The nurse tells John to wear a mask, get tested at the xxx location and if positive can start treatment immediately but to stay home in order to not expose others and maintain distancing from family as well.**

Exemplars in Practice – Management of Arterial Hypertension



Exemplars in Practice – Use of Secure Platforms

Julie is “seeing” her nurse via telenursing while she is recovering from COVID-19. She will be using a secure platform from the COVID-19 Interactive Remote Monitoring Program.

She wants to travel to a friend's house but wants to use a different platform such as Face-Time to continue her “visits” with the nurse. Instead of using the equipment that was provided.

During this time, she can use Video Chat, Google Hangouts Video, Apple Face Time or Skype but needs to continue to use the HIPPA compliant to continue the monitoring needed with her telenurse.

What’s allowed during COVID-19?

HIPPA Compliance: Under this notice, covered health care providers may use popular applications to deliver telehealth as long as they are “non-public facing.” Examples of non-public facing applications include:

Exemplars in Practice – Use of Secure Platforms

Video chat applications

Apple FaceTime

Facebook Messenger video chat

Google Hangouts video

Zoom

Skype

Text-based applications

Signal

Jabber

Facebook Messenger

Google Hangouts

WhatsApp

iMessage

Self-Assessment Quiz

A: Telehealth includes face-to-face office visits where patients have to use a computer.

1. True
2. False

Self-Assessment Quiz

B: Which of the following are included in Telenursing:

1. Patient education, Remote patient monitoring
2. Primary care – health promotion, assessment, diagnosis, treatment of acute and chronic diseases, e.g. care provision when quarantined
3. Telepresenter – provides support to assist provider in remote areas
4. Telenursing for school-based health care
5. Telenursing to prevent direct exposure during pandemics and infectious epidemics such as COVID-19

(More than one answer may be correct: Post answer here _____)

Self-Assessment Quiz

C: Cost and Infrastructure are current barriers to Telenursing in the US..

List three other barriers:

- 1.
- 2.
- 3.

Self-Assessment Quiz

D: In the research study to determine what knowledge, skills, and attitudes (KSA) are required for nurses to competently practice using telenursing (Professional Nursing Telehealth Entrustable Professional Activities (NT- EPAs): 14 NT-EPAs), **14 core competencies were identified:**

List three of these:

- 1.
- 2.
- 3.

Self-Assessment Quiz

E. List three advantages to Telenursing

1.

2.

3.

Questions - Discussion



References

Ackerman, M. J., Filart, R., Burgess, L. P., Lee, I., & Poropatich, R. K. (2010). Developing next-generation telehealth tools and technologies: patients, systems, and data perspectives. *Telemedicine journal and e-health : the official journal of the American Telemedicine Association*, 16(1), 93–95. <https://doi.org/10.1089/tmj.2009.0153>

American Hospital Association | February 2019 <https://www.aha.org/system/files/2019-02/fact-sheet-telehealth-2-4-19.pdf>

Cavanaugh, C. (2021). Top 5 Challenges with Healthcare Interoperability (& How to Solve Them) <https://www.healthjump.com/blog/5-challenges-with-healthcare-interoperability>

Chesser A., Burke A., Reyes J., Rohrberg T. Navigating the digital divide: a systematic review of eHealth literacy in underserved populations in the United States. *Inform Health Soc Care*. 2016;41:1–19.

Christian Miller, Rebecca Davidson Kaltman, Andrea Leon, Andrea Gesteira, Samuel Duffy, and Paula Brooke Burgess (TUQ) DOI:10.1200/JCO.2020.38.29_suppl.265 *Journal of Clinical Oncology* 38, no. 29_suppl (October 10, 2020) 265-265.

Cummins, N., & Schuller, B. W. (2020). Five crucial challenges in digital health. *Frontiers in Digital Health*, 38.

References

- Hajesmaeel-Gohari, S., Bahaadinbeigy, K. The most used questionnaires for evaluating telemedicine services. *BMC Med Inform Decis Mak* **21**, 36 (2021). <https://doi.org/10.1186/s12911-021-01407-y>
- Halwas N., Griebel L., Huebner J. eHealth literacy, Internet and eHealth service usage: a survey among cancer patients and their relatives. *J Cancer Res Clin Oncol*. 2017;143:2291–2299.
- Health Resources and Services Administration (HRSA). Telehealth: Health Care from the Safety of Our Homes. Available online: <https://telehealth.hhs.gov/> (accessed on 2 November 2021).
- McGrowder, D. A., Miller, F. G., Vaz, K., Anderson Cross, M., Anderson-Jackson, L., Bryan, S., Latore, L., Thompson, R., Lowe, D., McFarlane, S. R., & Dilworth, L. (2021). The Utilization and Benefits of Telehealth Services by Health Care Professionals Managing Breast Cancer Patients during the COVID-19 Pandemic. *Healthcare (Basel, Switzerland)*, 9(10), 1401. <https://doi.org/10.3390/healthcare9101401>
- Miller, C., Kaltman, R., Leon, A., Duffy, S., Burgess, P. (2020). Telemedicine usability for cancer care during the COVID-19 pandemic; https://doi.org/10.1200/JCO.2020.38.29_SUPPL.265

References

Milliard, M. (April 01, 2022) PATCH Act seeks to shore up security for medical devices, IoT networks, <https://www.healthceitnews.com/news/patch-act-seeks-shore-security-medical-devices-iot-networks>

Solimini R, Busardò FP, Gibelli F, Sirignano A, Ricci G. Ethical and Legal Challenges of Telemedicine in the Era of the COVID-19 Pandemic. *Medicina*. 2021; 57(12):1314. <https://doi.org/10.3390/medicina57121314>

Scott Kruse C., Karem P., Shifflett K., Vegi L., Ravi K., Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. *J Telemed Telecare*. 2018;24:4–12.

Stefano Omboni. Hypertension. Evidence and Recommendations on the Use of Telemedicine for the Management of Arterial Hypertension, Volume: 76, Issue: 5, Pages: 1368-1383, DOI: (10.1161/HYPERTENSIONAHA.120.15873)

Telehealth.HHS.gov (n.d). Policy changes during COVID-19; <https://telehealth.hhs.gov/providers/policy-changes-during-the-covid-19-public-health-emergency/>