Excellence in NP Education

NONPF Supports Telehealth in Nurse Practitioner Education
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Introduction

Telehealth refers to the provision of health care services and education at a distance using technology. Since its inception in the 1950s, telehealth has demonstrated its ability to increase access to care, especially for those who possess adverse Social Determinants of Health, such as lack of transportation and limited access to health care (Butzner & Cuffee, 2021). Initial uptake of telehealth was slow, but due to the COVID-19 pandemic, telehealth use grew exponentially (O'Connor & Bowles, 2021) and is now a commonly used health care modality (Stoumpos et al., 2023). This pandemic-driven adoption has resulted in rapid advancements and improvements in telehealth technologies and platforms, as well as expanded regulatory and reimbursement support. This growth has highlighted the fact that many health care providers have not been adequately trained in the proper use of telehealth, leading to dissatisfaction by users (O'Connor & Bowles, 2021; Garber & Gustin, 2022). To increase adoption and expand health care to those populations who can benefit the most, telehealth education is essential for nurse practitioners (NPs). As leaders in healthcare, NPs should possess the knowledge and skills required to advocate for and utilize such technologies in practice.

The National Organization of Nurse Practitioner Faculties (NONPF) supports incorporating telehealth into NP education. It should be emphasized in NP education that telehealth is not a different type of health care, but rather evidence-based healthcare provided across distance. Faculty should ensure relevant content is incorporated into the curriculum and consider how these technologies could be used to 1) provide patient care, 2) conduct site visits, and 3) provide support to preceptors/clinical settings. The purpose of this paper is to provide faculty with an overview of telehealth modalities, discuss strategies to incorporate telehealth into the NP curriculum, and provide NONPF's recommendations.

Background

Telehealth includes live, as well as 'store and forward,' technologies using computers, mobile devices, cameras, and medical devices (peripherals) to connect patients, providers, and faculty for evaluation, management, and education. More recent advancements in technology now include Artificial Intelligence (AI) which is defined as human-like computer thinking, learning and rationalizing (Raymond et al., 2022). As such, NP education must incorporate content regarding the various telehealth modalities.

Telehealth Technology

There are two primary modalities used in telehealth:

- **Synchronous:** Live communications occur between the patient and provider through visual and/or audio technology (i.e., videoconferencing, telephone).
- **Store and Forward**: Patient information is collected, stored, and reviewed by a provider at a later time

Service Delivery Systems

There were initially four general service delivery systems used in telehealth: videoconferencing, store and forward, remote monitoring, and mHealth (Rutledge et al., 2017). Over time, phone, AI, and machine learning have been added. The integration of emerging technologies and AI into telehealth delivery systems is a critical evolution in healthcare that directly impacts NP education and practice. These technologies affect clinical decision-making, patient triage, and resource utilization. NPs must be prepared to understand and effectively utilize AI-assisted systems by validating and integrating AI-generated recommendations with clinical judgement and teach patients how to appropriately use tools for optimized self-care (Andrikopoulou, 2023).

- **Video conferencing technology** is used in telehealth to connect two or more people in a live conversation for purposes related to healthcare delivery or education using cameras TVs, microphones, software, and computer networks to transmit both audio and video data in real time (Health Resources and Services Administration [HRSA], 2024).
- **Store and forward technology** is used to collect patient data and transmit it to the provider for review, reducing the need for providers to meet with patients directly. Common store and forward applications include radiology and medical imaging, retinal photos, patient physiologic data, electrocardiograms, patient education and symptom survey data, dermatology/wound images, and pathology images. Direct-to-consumer virtual care models may collect patient history through online interviews using algorithms and transmit the assimilated data to a provider for review, diagnosis, and treatment (HRSA, 2024).
- **mHealth/wearable systems** use both live and store and forward technologies via mobile wireless electronic devices, such as mobile phones or wearable health devices. This format advances health, healthcare, health information, and education by allowing for access at any given time. Smart Monitoring includes advanced wearable technologies that provide continuous physiologic monitoring with automated alerts and data integration into telehealth platforms (HRSA, 2024).
    - **Remote patient monitoring** is a form of technology using sensors and devices that measure physiologic data. Remote monitoring systems work by collecting data at one site and then transferring that data to a device, a centralized monitoring program, or a healthcare provider for evaluation. Remote monitoring systems use medical peripherals (e.g., scales, pulse oximetry, stethoscopes, otoscopes, and ophthalmoscopes connected to technology) to record and transmit diagnostic information such as weight, oxygen saturation, and lung and heart sounds (HRSA, 2024). In addition to RPM, Remote Therapeutic Monitoring (RTM) may be used to monitor and collect non-physiologic data such as pain tolerance or medication adherence (HHS, 2022).
- **Audio only (telephone)** is used only when a patient is unable to access care via

telehealth due to digital disparities such as lack of technology/digital devices or lack of access to broadband service. It should only be employed when clinically appropriate and should not be used when other forms of telehealth are available (Kobeissi, 2024).

- **Artificial intelligence (AI)/machine learning (ML)** is the use of machine-learning algorithms to help with diagnosis, treatment, and preventive disease strategies based on data entered by providers (Kuziemsky et al., 2019). It can help the provider with decision-making, identifying new diagnostic and/or treatment strategies. AI Enabled Support Systems can guide determining the appropriate level of care through symptom assessment and triage algorithms.

Nurse Practitioner Telehealth Competencies

NONPF (2022) identified the importance of the integration of technology education into NP education within its 2022 Nurse Practitioner Role Competencies *Domain 8: Technology and Information Literacy*. This is echoed by the American Association of Colleges of Nursing (AACN, 2021) Nursing Essentials *Domain 8: Informatics and Healthcare Technologies*. Both NONPF (2022) and AACN (2021) stress the importance of NP graduates' familiarity with the use of technology and its application in the provision of quality health care.

Telehealth competencies are consistent with the competencies required for face-to-face visits. These competencies are crucial for incorporating telehealth effectively within NP education and practice, ensuring that NPs are well-equipped to use telehealth technologies, maintain effective communication, uphold regulatory standards, and provide high-quality, person-centered care. The competencies listed below, based on the Nurse Practitioners *Domains 8: Technology and Information Literacy and 2: Person-Centered Care*, provide a suggested foundation for NP curricula. These competencies are further addressed within APRN telehealth competency sets described by Dzioba et al. (2022) and Rutledge et al. (2021):

1. Appraise and select appropriate telehealth and communication technologies for the provision of health care of patients and populations (NP 8.1)
2. Use healthcare technologies to gather and analyze data for use in knowledge generation and patient care (NP 8.2)
3. Demonstrate knowledge and understanding of the impact of policy and legislation on telehealth practice by
    a. Describing factors impacting cross-state telehealth practice and prescribing
    b. Applying Health Insurance Portability and Accountability Act (HIPAA) and Protected Health Information (PHI) requirements to telehealth and audio-only interactions
4. Apply ethical decision-making and a systematic approach to determine when telehealth should and should not be used (NP 8.5)
    a. Identify when a patient should be referred to in-person care
5. Demonstrate appropriate use of healthcare technology to conduct virtual visits through (NP 8.3)

    a. Positive telehealth etiquette and professionalism while videoconferencing
    b. Proficiency in history taking, performing an appropriate physical exam, and generating differential diagnoses using telehealth with and without peripherals

    c. Evidence-based clinical judgment during telehealth encounters
    d. Cultural competency and understanding of diverse populations when providing care across distances
    e. Proficiency in evaluating patient digital readiness and adapting telehealth approaches accordingly.
6. Demonstrate proficiency in the use of telehealth technology such as (NP 8.4)
    a. Synchronous and asynchronous telehealth technology
    b. Peripherals, such as an otoscope, stethoscope, and ophthalmoscope
    c. Remote patient monitoring strategies and interpreting data
    d. Navigating and troubleshooting technical difficulties during telehealth encounters
7. Apply appropriate documentation and billing codes for telehealth encounters
8. Collaborate interprofessionally using telehealth technologies
9. Identify the Digital Determinants of Health (DDoH) including digital literacy, technology access, infrastructure, and DDoH barriers for diverse communities, and demonstrate how to effectively apply solutions for equitable telehealth care. (Andrikopoulou, 2023).
10. Incorporate AI-enabled clinical decision support systems integration (differential diagnosis assistance, triage support tools, care pathways navigation) to enhance clinical decision-making (NP 8.2)
11. Develop and apply strategies to prevent burnout from telehealth encounters while maintaining therapeutic nurse-patient relationships (NP 2.2, NP 2.6)
12. Document comprehensive telehealth encounters that meet legal, regulatory, and professional standards while supporting continuity of care (NP 2.6, NP 8.4).
13. Apply motivational interviewing and therapeutic communication techniques specifically adapted for virtual environments to engage patients and their caregivers (NP 2.2)

Telehealth Curriculum

Exposure to telehealth during the academic careers of NPs has been shown to increase comfort and future adoption post-graduation (Gartz & O'Rourke, 2021). As such, NP curricula should provide content that prepares students to meet the recommended set of telehealth competencies (Jones et al., 2023). These competencies can be taught using the 4 Ps of Telehealth: Planning, Preparing, Providing, and Performance Evaluation (Rutledge et al., 2021). To provide a rich, well-rounded education, this exposure to health care technology education may be offered through didactic programs, simulation/hands-on experiences, and practicum experiences (Rutledge et al., 2017; Chike-Harris, 2021). To maximize comprehension and knowledge longevity, it is recommended that telehealth components be scaffolded throughout NP education (Chike-Harris, 2021). Education must include the application of HIPAA and PHI requirements to telehealth as well as telehealth policy and compliance related to NP practice. Telehealth policy is governed at the state and federal levels and continues to evolve (HHS, 2025). Understanding key considerations and how to identify legislative and regulatory factors impacting NP practice is essential as the telehealth landscape continues to unfold (Garber et al., 2023).

An initial needs assessment of the current curriculum should be performed (Guenther et al., 2021). Once completed, curriculum mapping using the 4 Ps of Telehealth (Rutledge et al., 2021) and the NONPF NP Role Competencies (NONPF, 2021) should be used to identify areas where telehealth education can be placed in a manner that does not overburden already heavy course content (Jones et al., 2023). The National Telehealth Toolkit for Faculty has been developed to

provide content that can be used to integrate curriculum within NP programs (Center for Telehealth, Innovation, Education & Research [C-TIER], 2025). This includes didactic content, simulation cases, evaluation tools, videos, and practicum materials. The NONPF Telehealth Portal provides additional resources to assist faculty with the integration of telehealth within their NP curricula (NONPF, n.d.).

As telehealth continues to evolve into a mainstream component of healthcare delivery, it becomes reasonable that NP students should receive clinical or practicum credit for providing care using telehealth. Provided that telehealth is being used to deliver patient care from a clinical site, the hours should be no different than those accrued through an in-person encounter. However, there must be a mix of in-person and telehealth encounters. Telehealth visits must be precepted visits and should allow for participation and delivery of care by the student, rather than observational visits.

Competency-Based Evaluation of Students

Simulation. Integration of virtual simulation and training tools can be utilized to provide students with a realistic telehealth practice environment, enhancing their readiness for real-world telehealth delivery. In addition, it can be used to assess student competencies in the delivery of care utilizing telehealth. Simulations can be used to develop and evaluate telehealth etiquette, clinical skills, and collaboration with interprofessional providers (Cook et al., 2022; Alam et al., 2024; Wittler et al., 2025). Simulations are based on the best practices of simulation by the International Nursing Association for Clinical Simulation and Learning (2021) and the NONPF Simulation Guidelines and Best Practices for Nurse Practitioner Programs (NONPF, 2023). Standard simulation casebooks can be adapted with telehealth components based on the iSOAP framework (Chike-Harris et al., 2021).

Practicum. To further expand competencies in telehealth delivery, students should have opportunities to utilize telehealth in practice. The iSOAP model can also be used to assess the clinical proficiency of students during a telehealth encounter. Preceptors should be provided with tools to assess student performance regardless of whether they deliver care in person or via telehealth. The expectations of student performance should be outlined with emphasis on the demonstration of knowledge and skills as opposed to observational activities (Johnson et al., 2021).

Site Visits. NONPF believes that face-to-face site visit should be the preferred way to evaluate students in clinical settings. With evidence suggesting that telehealth results in the provision of quality care, NP educators might embrace telehealth as an additional tool for assessing students clinically at a distance. With the emergence of many online programs, it is critical that students are evaluated by faculty during clinical encounters. Telehealth allows students to be observed with patients and provides for more opportunities than what may occur with a single site visit (Johnson et al., 2021). Refer to each state's nursing laws and regulations to determine specific education requirements related to clinical site visits.

NONPF Position

Telehealth overcomes barriers to care for those with limited access who require various types of health services, including specialized care. It improves outcomes through innovative models of care using technology to improve the frequency and quality of communications and patient engagement. The use of telehealth reduces direct and indirect healthcare costs by improving the treatment and management of chronic diseases, reducing hospital readmission rates, and improving provider efficiency. Additionally, it provides a solution to patients whose barriers to accessing healthcare are related to travel or finances (McLean, et al., 2013; Adams et al., 2021).

NONPF believes that NPs who are prepared to deliver care through telehealth can make strong contributions to nursing and healthcare as they emerge from programs as future nursing leaders. It is essential that NPs are empowered with telehealth knowledge and hands-on skills so that they can be a creative force for innovations in telehealth within practice and healthcare systems. NP programs should be at the forefront of health care as they develop telehealth education programs and prepare to respond to the challenges ahead by promoting innovation through telehealth education.

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