CHEST

Nurse Practitioners and Physician Assistants

Building a Team and Optimizing Practice in the Medical ICU

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The integration of nurse practitioners (NPs) and physician assistants (PAs) into the medical ICU (MICU) is becoming increasingly vital due to the rising number of critically ill patients and the shortage of board-certified intensivists. Successful recruitment and utilization of NPs and PAs in the MICU setting require a unique understanding of potential variations of the scope of practice based on state law and educational backgrounds, as well as the implementation of best practices around training and leadership support. The purpose of this article was to review the best strategies for creating a MICU team with NPs and PAs. Key strategies for identifying suitable NP and PA candidates include assessing their education, certification, licensure, and clinical experience, particularly in critical care settings. It is important for organizations to have structured orientation programs, which should define roles, establish clear reporting structures, and provide competency-based training to ensure effective team integration. Simulation-based training and professional mentoring are emphasized as critical elements for developing clinical competency and promoting job satisfaction. There are variations in state laws and institutional policies that affect NP and PA practice that should be understood by the organization to manage expectations for the NP and PA job responsibilities. Effective productivity measurement methods are proposed to accurately assess the contributions of NPs and PAs in the MICU. This article provides comprehensive strategies for successfully hiring, onboarding, and integrating these professionals into MICU teams, ensuring high-quality care delivery in critical care settings. CHEST 2025; 167(5):1451-1457

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The decision to employ nurse practitioners (NPs) and physician assistants (PAs) in the medical ICU (MICU) is one being made by community and academic centers across the country.[1,2] NPs and PAs have been recognized as providers in the ICU for > 20 years. The number of NPs and PAs employed by hospitals has increased exponentially. Possible reasons for this include an increased number of critically ill patients and reduced number of board-certified intensivists.[3] The most substantial data examining physician staffing in MICUs support high-intensity physician staffing in

ABBREVIATIONS: MICU = medical ICU; NP = nurse practitioner; PA = physician assistant

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which an intensivist is consulting on or managing all patients. This model reduces ICU and hospital mortality and shortens length of stay.[4,5] Several studies have highlighted the critical role of the NP and PA in improving the quality of care, reducing costs, and enhancing patient safety in the ICU.[1,6,7] With the impending shortage of intensivists, employing NPs and PAs in the MICU is a solution to meet workforce shortages while maintaining positive patient outcomes.[1]

Hiring and onboarding an NP or PA can seem daunting for multiple reasons, including differing state laws affecting NP and PA practice and lack of uniform productivity measurements. Adding to the complexity of understanding the role of NPs and PAs is the inconsistent titles given to NPs by different states, such as advanced practice registered nurse or advanced registered nurse practitioner. NPs and PAs have different educational and licensing requirements and may have varying job descriptions within the same organization. In addition, there is no nationally recognized model for onboarding and integrating NPs and PAs into the team. It is essential for institutions developing an NP and PA MICU team to select and train providers in a well-structured program to avoid turnover. The current article provides clarity about NPs and PAs and recommends programmatic strategies to successfully hire, onboard, and retain NPs and PAs in the MICU.

How to Identify the Correct Candidate

Identifying the most appropriate NP and PA candidates for the critical care team is imperative to success. NPs and PAs share similar professional responsibilities; however, understanding each profession's uniqueness is essential for aligning with regulations and optimizing the scope of practice and engagement for the NP or PA.

NPs are registered nurses who receive advanced education at the master's or doctoral level to prepare them for advanced practice as a provider. The DNP, or "Doctor of Nursing Practice," is a practice-focused doctoral degree in which students pursue a focused clinical or administrative track, including an independent scholarly project. NP academic programs include didactic and clinical education based on national standards that focus on attainment of core and population competencies. Graduates must pass the appropriate population-specific national board certification examination that their educational program prepared them for prior to obtaining licensure as an NP. The NP's scope of practice must be aligned with the individual NP's education and certification. The NP and the employer are responsible for ensuring that NP credentials adhere to the designated scope of practice as determined by their graduate-level training, certification, and licensing.[8] All NPs should be credentialed to practice to their full scope.

PAs are credentialed and licensed to manage all patient populations and acuity due to their broad education. PAs enter their educational program with a range of required clinical experiences such as scribe, emergency technician, phlebotomy, medical assistant, or respiratory therapy. Although this provides PAs with a foundation in clinical experience, the master's or doctoral programs provide subsequent training in general medicine for all ages. When evaluating PA candidacy, valuable insight can be gained from examining the PA's prerequisite clinical experience, prior clinical work history, and their exposure to critical care medicine during clinical rotations. Both professions offer doctoral degrees, although neither is a requisite for clinical practice.

Next, the candidate's clinical experience and expertise should be considered. An NP or PA with ICU experience or postgraduate training, such as a critical care residency, fellowship, or other structured educational program, is an excellent candidate, especially when resources or time for orientation are short. Postgraduate training programs increase job confidence and leadership skills while decreasing the time required for orientation.[9,10] With $>$ 20 ICU postgraduate NP and PA training programs nationwide, efforts can be made to recruit from this population. The most comprehensive collection of NP and PA postgraduate training programs can be found at the Association of Postgraduate PA Programs (https://www.appap.org) and the Association of Post Graduate APRN Programs (https://apgap.enpnetwork.com). Comparatively, newly graduated NPs and PAs who have not attended a postgraduate training program require more resources and time for orientation. However, there is a benefit to training a motivated provider within the dimensions of the team.

Finally, the candidate should be subjected to a holistic evaluation. Due to their constant presence, NP and PA teams significantly influence the culture of a critical care unit. It must be ensured that the NP or PA candidate has strong communication, teamwork, leadership, flexibility, initiative, and problem-solving skills, typically evidenced through references and interviews.

Regulatory Requirements for NPs and PAs

Understanding how to incorporate NPs and PAs into the MICU requires an understanding of state laws, national certifications, and how health care organizations privilege these professionals.[11] NPs and PAs are certified nationally, and health care organizations should align NP and PA practice with their certification. Specific to NPs, an acute care-certified NP (eg, AGACNP-BC or ACNP-BC) best fits the scope of practice for patients requiring critical care services. The Consensus Model for APRN Regulation released in 2008 clarified the scope of practice for acute care NPs. However, organizations and lawmakers may be unaware of the consensus model and continue to hire NPs into positions for which their certification is not aligned.[12] Reasons cited by health care leaders for not hiring board-certified acute care NPs for hospital roles include the lack of workforce availability.[12,13] Potential consequences of NPs practicing outside their scope of practice include disciplinary action by the state board of nursing, professional liability, and inability of the NP to meet the patient's health care needs. Although state licensing laws dictate the level of educational attainment and physician involvement for NPs and PAs, marked variation remains in the institution-level implementation of these laws due to medical staff privileging policies.[14] State laws are dynamic and continue to change; no single source documenting NP and PA regulation across the United States is available.[15]

Training and Onboarding

A critical element of creating an ICU team of NPs and PAs is developing a structured orientation program. Structured training and onboarding can facilitate role transition and increase job satisfaction.[16] The NP and PA workforce is growing,[17,18] and many NPs and PAs hired into critical care roles will be entering into practice for the first time. Graduate educational programs for NPs (those in acute care programs) and PAs provide training in acute and critical care management; however, variability remains in the backgrounds and clinical experiences of new NPs and PAs. Therefore, a structured orientation program is essential to build upon the NP and PA education, enhance critical care competencies, and promote autonomous practice.[19,20]

A vital precursor step in developing a structured orientation program is to clearly define the role of the NP or PA on the MICU team, considering, for example, the care delivery model that will be used. Clearly defined roles communicated and understood by all team members will help create reasonable expectations and facilitate integration of the NP or PA into the ICU team.[19] A clear reporting structure should also be established and understood by all team members.

Structured orientation programs for NPs or PAs in critical care units typically last 3 to 6 months. A competency-based approach should be used to develop a program in which the expected competencies of the NP or PA are aligned with those endorsed by professional organizations.[19,21,22] The orientation program should also include an intentional mechanism to evaluate clinical competency and provide ongoing feedback to facilitate professional growth, transition to practice, and team integration.[19,23,24] An orientation program should also include a plan to address the long-term professional goals of each NP and PA. Discussions should be held about a sustainable and objective path for career development. This could include joining professional organizations, leading quality improvement projects in the ICU, or returning to school for further education. Detailed curriculum for onboarding will vary based on the specifics of each unit and institution. Figure 1 provides a general guide for developing a structured orientation program.

A stepwise approach is often used in which the NP or PA begins by shadowing a physician or experienced NP/PA, progressively increasing their level of independence and the number and acuity of patients. Didactic content is provided either in an immersion format at the beginning or on a regular schedule throughout the orientation period.[20,23-25] Examples of didactic content may include lectures, case studies, or journal clubs, with possible delivery modalities being in-person, online, synchronous, or asynchronous.[23,26] If the MICU team also includes fellows or residents, combining NP and PA didactic and simulation training with interdisciplinary providers will facilitate collaboration, teamwork, and overall efficiency.[26,27]

Another consideration is to create an orientation manual as a reference for the NP or PA. The manual may include the orientation framework and timeline, hospital protocols and contacts, standard critical care guidelines and tools, and learning resources.[19,24] Lastly, professional mentoring is essential to the NP or PA orientation program. Mentoring positively affects role transition, job satisfaction, and retention and contributes to professional development.[19,23] Guidelines may be helpful as the NP or PA establishes a relationship with

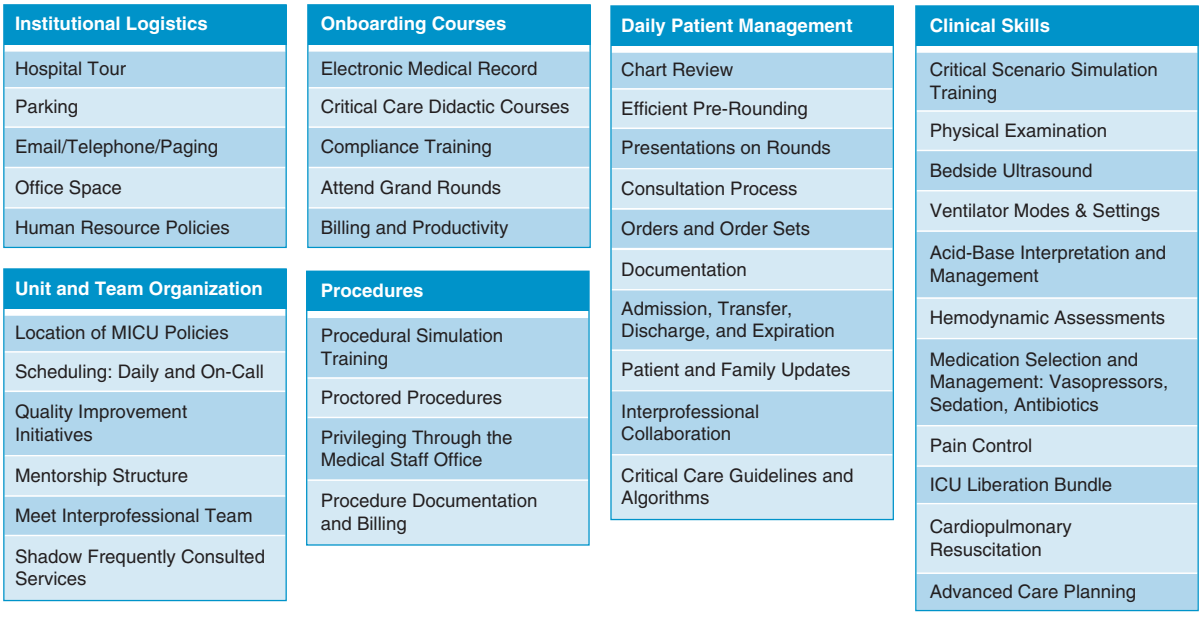

Figure 1 – *Sample orientation curriculum. MICU = medical ICU.*

their mentor, who could be another experienced NP or PA or a physician.

Simulation is helpful for deliberate practice and competency development and can be incorporated into the orientation program. Simulation provides structured learning opportunities in a controlled environment, in addition to critical reflection through facilitated debriefing. There are various modalities for simulation, such as task trainers, high- or low-fidelity manikins, standardized patients, and virtual reality. Simulation is functional in critical care for various scenarios, including high-risk, low-frequency events; communication and teamwork; and procedural and skills training.[28,29] Simulation may be beneficial for NP or PA orientation to provide procedural training. NP and PA graduate education includes significantly less time in procedural training than physicians receive, and there is significant variation in clinical exposure to performing procedures. NPs and PAs are qualified and capable of performing critical care procedures; however, they may require additional procedural training during orientation. The organization should develop a process for teaching and assessing procedural competency that aligns with credentialing and privileging guidelines.[30] Procedural competencies can also be included in the evaluation tools for the orientation program. If simulation resources are not readily available, there are many professional conferences that offer high-quality simulation education that the NP/PA could attend.

Unit Staffing Structure

Substantial variation exists in how NPs and PAs are employed to staff patients in MICUs; this variation is a result of many contributing factors, including the number of MICU beds, acuity of patients, experience of NPs and PAs, and presence of other learners.[31] We support integrating NPs and PAs into high-intensity staffed, intensivist-led teams with a goal patient census of $\leq$ 14. This recommendation is based on data from academic medical centers that show an unfavorable impact on mortality, ICU length of stay, education, staff well-being, and patient care when the intensivist-to-patient ratio exceeds 1:14.[32-34] The utilization of an NP or PA on such a team can be designed in several different ways to meet the needs of the MICU, including an assignment to manage a portion of the daily census or a dedicated role providing admitting and procedural services, which can add value by limiting disruptions to the rounding team. When NPs or PAs are assigned a portion of the daily census to manage in a closed MICU, we recommend that the goal NP- or PA-to-patient ratio be at most 1:6. The volume of admissions and consults, patient acuity, and experience of the NP and PAs should be weighed carefully when making such assignments. A survey of 233 NPs and PAs in ICUs described a mean patient-to-provider ratio of 1:5 with a range of 1:3 to 1:8.[34] It has been shown that there is no negative impact on length of stay or mortality outcomes when transitioning the NP- or PA-to-patient ratio from 1:4 to 1:6 in a high-acuity academic medical center.[31,35]

It should be noted that available data are generally representative of ICUs in academic medical centers rather than community settings where fewer resources exist. In community settings, consideration of acuity level and intentional planning regarding workload can facilitate a staffing model that includes NPs and PAs, which may help to improve existing provider-to-patient ratios.

Staffing models using 24/7 NP and PA coverage are standard and expected of these integral members of the MICU team. Positions with night, weekend, and holiday coverage are more demanding and, in our experience, suffer from higher attrition rates compared with positions with weekday coverage only. For this reason, 24/7 positions demand a higher salary to recruit and retain high-caliber talent competitively. Most schedules are built around a 40-hour work week with a 2-part goal: provide continuity of care and create equity around night, weekend, and holiday staffing requirements. When designing a 24/7, 12-hour shift practice model, we recommend a minimum of 3 consecutive days of service to provide a continuity of care benefit to patients with a maximum of 7 consecutive days. The rationale for limiting the number of consecutive days to 7 is to avoid excessive fatigue and possibly compromised care. Studies of provider burnout suggest that the opportunity for self-scheduling may be one of many solutions to mitigate burnout among ICU providers.[36]

Productivity Measures

Before starting the MICU NP/PA team, methods to measure NP and PA productivity should be established. Institutional-based guidance on developing a productivity dashboard is needed to understand NP and PA productivity in the ICU, or the value of the NP and PA will not be appreciated.[37] Since 2002, NPs and PAs treating patients jointly with physicians have used split/shared billing when all billing requirements are met,[38] concealing the care provided by the NP or PA in routine metrics. Other methods should therefore be implemented to understand the productivity of the NP and PA beyond routine billing productivity.

Methods of productivity measures can vary significantly based on institutional resources and structure, making no one method ideal across the board. One option is to use data analytic tools in the electronic medical record to capture the number of patients for whom the NP or PA documents clinical care. However, using this method does not allow for an analytical understanding of the acuity of the patients or the total time spent. A second option is to create a freestanding Health Insurance Portability and Accountability Act-protected database in which the NP or PA documents the number of patients seen per day, including 4 to 5 acuity variables and procedures completed. The challenge with this option is the administrative burden on the NP and PA. A third option requires the NP or PA to submit a nonbillable code in the electronic medical record, which can be tailored to institution-specific metrics such as level of care, time spent, and more. There is limited available evidence to support the single best productivity measure. However, we advocate for the use of nonbillable codes because they can be tailored to institutional productivity measures, mirror the workflow of physicians with minimal administrative demand, and provide clear data on various aspects of NP and PA productivity. Regardless of the strategy used to measure productivity, volume-based key performance indicators need to be piloted for success to understand the implications for the NP and PA.

Interprofessional Team Integration

Successfully integrating NPs and PAs with fellows on critical care teams can optimize patient care and satisfaction and improve the efficiency of the team.[39] Being a member of a high-functioning team and sharing care among a team can also enhance professional and job satisfaction. A study by Joffe et al[40] also showed that most critical care program directors believed that NPs and PAs positively affected fellowship training. In addition, high-functioning teams can decrease workload and may reduce burnout.[41] One study found that burnout and depression were high in critical care fellows,[42] and thus optimizing team efficiency and interprofessional relationships is imperative to wellness for all team members.

Although limited data exist regarding best practices for successful team integration, creating a high-functioning critical care team that includes fellows and NPs/PAs requires an intentional plan. Recognizing common challenges, including role clarity and communication[43] and developing a clear plan when onboarding new NPs/PAs and fellows, is imperative to success. In addition, co-learning through interprofessional simulation has been shown to foster teamwork and improve team effectiveness.[27,29] Other suggested strategies for successful integration and team building include joint participation in quality improvement projects and regular team meetings. More research is needed to

inform best practices, including team models, that improve outcomes and optimize the working environment for NPs/PAs and fellows.

Interpretation

Creating a MICU team that includes NPs and PAs can meet the increasing needs of the MICU workforce. Providing hiring managers and physician leaders with the right information is critical to creating an effective team. Appropriate planning prior to hiring an NP or PA is important to the success of the team, with continuous process evaluation and long-term data collection needed to justify contributions of the NP or PA on the MICU team. There is limited information about how to create the right ICU team, and the variability of state laws and hospital regulations makes standardization of the team difficult. However, we have highlighted some commonalities that exist to enhance understanding of how to create a high-performing team. As the number of patients in the MICU continues to grow, NPs and PAs will have an increasing presence and therefore an important role on MICU teams of the future.

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