Eastern Association for the Surgery of Trauma &
Society of Trauma Nurses
Advanced Practitioner Position Paper

Optimizing the use of Advanced Practitioners in Trauma and Critical Care

Abstract

Nurse Practitioners and Physician Assistants, collectively known as advanced practitioners (APs), enhance the provision of care for the acutely injured patient. Despite their prevalence, institutions employ, train, and utilize these providers with significant variability. The Eastern Association for the Surgery of Trauma (EAST) and the Society of Trauma Nurses (STN) acknowledge the value of APs and support their utilization in the management of injured and critically ill patients. This position paper offers insight into the history of, scope of practice for, and opportunities for optimal utilization of APs in trauma, critical care, and acute care surgery services.

Introduction

Nurse practitioners (NPs) and Physician Assistants (PAs), collectively referred to as Advanced Practitioners (APs), have been members of the healthcare work force for over 50 years.[1,2] Opportunities for AP employment in trauma and critical care is well documented, and the need for APs rapidly expanded following implementation of the 2003 Accreditation Council for Graduate Medical Education resident workweek restrictions. Both EAST and STN recognize the benefits of APs in the seamless care for the acutely injured patient spanning the continuum from admission to discharge. Although the roles of APs may vary among institutions, their contributions have become increasingly important in the provision of care for a growing population and the maintenance of continuity of care. This paper endorses the use of APs in the care of the injured patient by reviewing their scope of practice, clinical and professional roles, and strategies to optimize the presence of NPs and PAs to improve the provision and quality of care for surgeons, patients, and the healthcare system.

Historical Overview of NPs and PAs

Since the 1950s, there has been a growing imbalance of physicians to patients given an aging population and increased physician specialization.[2] Recognizing the relative lack of primary care providers and the increasing complexity of medical care, Dr. Eugene Stead began exploring the possibility of training nurses to meet this demand.[3] Nursing organizations and nurse educators, however, were initially opposed to the training of nurses in the medical model, which created an obstacle for Stead.[1,3] During this time, young men experienced in acute medical care returned from the theater of war in the 1960s. These events subsequently provided Stead with the personnel to pursue an alternative practitioner program, leading to his launch of the first Physician Assistant program at Duke University in 1965.[3] That same year, and despite continued resistance from nursing

organizations, Dr. Loretta Ford and Dr. Henry Silver founded the first pediatric Nurse Practitioner program at the University of Colorado.[2,4] These programs and others, such as the MEDEX program at the University of Washington, offered pathways for non-physician trainees to supplement practicing physicians in patient care. Today, many titles are used to describe NPs and PAs, such as physician extender and midlevel provider. As these professions have matured, such terms have fallen out of favor as these labels no longer adequately reflect the roles and scope of practice of advanced practitioners, the more widely accepted title when referring to both professions.[5,6]

Education

Nurse Practitioners vary in their educational curricula based on the population focus of their practice, though there are many commonalities across these areas. The foundation of NP education is built upon a bachelor's degree in science in conjunction with bedside nursing experience. NPs subsequently receive advanced training, comprised of a master's or doctoral degree focused on their specific population of interest (e.g., adult-geriatric acute care, pediatric acute care, family practice, etc.). The key components of this education, both in the classroom and clinically, ultimately aims to target the patients that he or she will treat in practice.[7,8]

Physician Assistant education is structured upon the medical model. Before students enroll in a PA program, they must obtain a bachelor's degree that includes two years of courses in basic/behavioral health sciences similar to requirements that medical students must complete before entering medical school. The PA program may provide either a bachelor's or master's degree following approximately 26 months of rotations across multiple medical and surgical specialties.[7,9] Whereas NP training programs focus on a particular population, PA programs are broader and prepare candidates for a variety of practice settings.[7]

Both NP and PA programs must be accredited, with the former by a national body in cooperation with the state board of nursing, and the latter by the Accreditation Review Commission on Certification of Physician Assistants.[7]

Similarities and Differences

The primary difference between NPs and PAs is their educational foundation, with NPs focusing on the nursing model for patient-centered care and PAs concentrating more on the medical model of disease-centered care.[7]

Although the training of PAs and NPs differs, their role as practitioners in the acute care setting is virtually identical. Kartha et al. assessed APs from 118 acute care hospitals and found both groups performing similar clinical tasks, with only minor differences in terms of which group performed a particular task more often.[10] PAs, for example, were found to perform more procedures than NPs, but the authors were unable to identify a specific reason.[10] Of note, in a paper examining institutional hiring practices, Ponte et al. argue that the similarities between NPs and PAs are so great that institutions are best served by choosing the best candidate irrespective of the specific profession.[7]

While studies comparing NPs and PAs are scarce, those comparing APs to physicians are more common. Bevis et al. assessed complication rates and proper placement of tube

thoracostomies and noted no significant differences other than more caudad directed tubes among physicians when compared to APs.[11] A study evaluating intracranial pressure (ICP) monitor placement complications between neurosurgeons and APs, however, reported major complications in 1.4% and minor complications in 5.7% for APs versus zero complications for physicians. Of note, the major complication rate in this study was deemed acceptable and the minor complications were managed with recalibration alone. Thereby, the authors ultimately declared that AP placement of ICP monitors was "not inferior" to placement by neurosurgeons.[12]

Scope of Practice

Ostensibly, NPs and PAs function similarly with the same scope of practice, especially in the acute care setting.[7] Subtle differences do exist between these practitioners' scopes and standards that are often determined at the state level. Both NPs and PAs are licensed to perform assessments, provide diagnoses, order and interpret studies, and perform procedures.[7] One major difference between these practitioner groups is that PAs must have a supervising physician whereas NPs are, in many states, independently licensed practitioners (although most do have a collaborating or supervising physician).[7,9,10] The prescriptive authority of each AP is determined by the state in which he or she practices and the degree of autonomy for NPs also remains state dependent.[7]

The 2008 consensus model for advanced practice registered nurses (APRNs) provides a framework for the scope of practice for nurse practitioners.[8] This consensus model was established to better regulate APRN roles and their population focus. APRNs are categorized into one of four roles: nurse anesthetists, midwives, nurse practitioners, or clinical nurse specialists. Each of these roles focuses on at least one of six populations: family, neonatal, pediatric, maternal/women's health, adult-geriatric, or mental health. The pediatric and adult-geriatric foci are further subdivided into primary and acute care. The consensus model was developed to provide clarity of the profession and to ensure that each patient population is under the care of an appropriately trained APRN. PAs are broadly trained and therefore do not have this limitation. As outlined in the consensus model, the expectation is that APRNs will practice within the field in which they were trained (e.g., adult-geriatric acute care NPs in the acute care setting) and not where the APRN has previous nursing experience alone. Furthermore, according to the 2008 consensus model, the ideal trauma, critical care, and acute care surgery nurse practitioner candidate is the Acute Care Nurse Practitioner.[8,13] EAST does support the grandfathering of non-acute care NPs continuing to work in trauma who began prior to implementation of the consensus model as their roles, and experience, have been well established.

Similarly, Physician Assistants have been utilized extensively in the trauma and critical care setting.[14] The American Academy of PAs regularly assesses PA practice and autonomy, determining these limits based upon state regulation and patient/facility needs.[15] Although PAs complete surgical and emergency medicine rotations during training, the skills needed by a PA or NP to practice effectively on a busy trauma and critical care service inevitably require additional site specific formal training.

The specific scope of practice for acute care nurse practitioners (ACNP) is outlined by the American Association of Critical-Care Nurses (AACN).[13] In the AACN's 2012 update, the

ACNP is allowed to "practice in any setting in which patients with acute, chronic, and/or complex chronic illness may be found."[13] With greater advances in healthcare, these settings now extend beyond the acute care arena to include a range from resuscitation and intensive care management to home reintegration. The AP working in trauma and critical care, whether PA or ACNP, possesses a scope well fitted for this patient population. Both professions can participate in trauma resuscitations, perform procedures, make diagnoses, order and analyze tests, initiate treatments, educate patients and families, prescribe medications, assist in the perioperative arena, and manage patients from admission to discharge.[7,9,13]

Practice environments

The institutional presence of APs in trauma, critical care, and acute care surgery may be isolated to one area (e.g., the ICU or surgical floor) or may span the spectrum of care from trauma bay resuscitations to outpatient clinic visits. The exact role an AP fills on the service may be determined by hospital size, availability of residents, service acuity, or many other factors.[16] Table 1 lists several potential practice environments within trauma and critical care.

The authors of this paper recommend training APs in a way that will maximize their flexibility and contribution specific to institutional service line needs. An AP that can perform consults, participate in resuscitations, admit and discharge patients, and manage patients throughout their hospitalization affords numerous opportunities. While such well-rounded APs may take years to cultivate, they certainly offer many advantages. When a resident is post-call, an appropriately trained AP can relieve him or her of these duties often with seamless care transitions. A patient requiring urgent surgery can be resuscitated and accompanied by the AP during the residents' protected learning time or the AP may assume the responsibilities of the resident in conjunction with the attending surgeon. One institution reported improved residents scores for the American Board of Surgery In-Training Examination following the integration of APs.[17] A well-trained AP is an investment to the service in that he or she may flex to assist where assistance is most needed each day, similar to that of their attending physicians. As the AP becomes more seasoned, he or she becomes a critical service line component by educating patients, residents, and other healthcare providers without the need for constant reeducation.

Busier institutions may find the establishment of guidelines and standard operating procedures quite helpful, particularly as their responsibilities relate to those of resident physicians. The goal of AP service line integration is not to replace residents rotating through the trauma services, but to establish a credible, long-term resource in addition to physicians for the service line. As such, APs should not be viewed purely as someone to fill gaps in coverage, but rather as an integral component of the team in the continuum of care. The AP on the trauma service should be a leader, a master of clinical practice guidelines, and a resource to other members of the team, particularly for the resident physicians who may only rotate through the service line episodicically.

Hiring Advanced Practitioners

The hiring process for advanced practitioners varies among institutions and is influenced largely by the environment in which the AP will be working (ICU, ward, operating room,

etc.), the resources available for training, and the service line role that the AP will fulfill. Ultimately, the authors of this paper support the practice of hiring the best candidate for the expected role and do not favor one profession over the other, NP versus PA, as addressed in Ponte et al. in 2013.[7] However, as with any hiring process, certain procedures should be observed to ensure the best candidate is selected. While every institution prefers to hire an AP with extensive experience according to institutional needs, this is not always possible. Sometimes, advantages exist in hiring less experienced APs, such as a lower starting salary and the ability to train a new-to-practice AP to institutional preference.[18]

One advantage to hiring a physician assistant is the flexibility in patient populations and environments. With their broad medical training, a PA is well poised to treat populations ranging from pediatrics to geriatrics if the service line requires. ACNPs, on the other hand, are certified in either pediatrics or adults and should therefore only be utilized to care for their respective population of focus. If the team's population is either adult or pediatric, they need only to hire the best PA or NP candidate; if the team cares for both pediatrics and adults, they should consider hiring a PA or a dual certified NP.[8,13] If hiring an NP for a trauma and critical care service line, the ideal candidate would be a board certified ACNP with prior bedside nursing experience in trauma, critical care, or emergency medicine, thereby providing a merger of nursing and advanced practice for the role.[19]

Another common practice area for consideration involves the surgical arena and the potential need for procedural assistance in the operative theater. PAs often receive more operative training in comparison to NPs and may better serve the need as a surgical assistant. Many ACNPs also receive operative training and are prepared to assist in surgery, but not all possess this skill set. Furthermore, in accordance with the Association of periOperative Registered Nurses' (AORN) recent position statement on advanced practice nurses in the perioperative environment, many NPs are now seeking registered nurse first assist (RNFA) certification .[20] Although the AORN supports "grandfathering" NPs currently functioning in first assistant roles, the organization recommends that new NPs in the first assistant role receive formal education as an RNFA.[20]

Training APs in Trauma, Critical Care, and Acute Care Surgery

Much like the hiring of AP candidates is specific to team and institutional needs, training requirements will also vary based on the role that the NP or PA will perform and their prior experience in the discipline. One training plan for all APs will not suffice due to the numerous factors affecting the transition from new-hire to fully capable team member. For example, a new graduate will require more support and education than an AP with prior trauma and critical care experience. Furthermore, even experienced candidates may struggle to unlearn practices ingrained from prior roles or institutions. The physicians and APs responsible for the training of new employees should understand the advantages and barriers of prior experience during the training process and adjust the process accordingly.

Procedural training and credentialing of the APs should also be addressed during this process. Table 2 depicts many commonly performed procedures pertinent to trauma and critical care APs. Services should specify procedures that APs will be credentialed to perform and develop a step-wise approach for APs to demonstrate and maintain

competence in these tasks. Often, programs adopt the "observe-then-perform"approach.[21] However, we would support a more tiered approach, where an AP's position and responsibilities expand with time and experience.[16] However the instruction is delivered, the practitioner should not perform any procedure independently until competently trained and deemed able to perform the procedure safely and correctly. Furthermore, this process should specify the number of procedures to be completed both for initial certification and maintenance of procedural certification.

Other areas of training must be considered according to the specific AP practice needs. New to the 2014 edition of *Resources for Optimal Care of the Injured Patient* is the requirement that all APs successfully complete and maintain Advanced Trauma Life Support if they are a member of the trauma team.[22] We support the incorporation of the ATLS program early in the training of newly hired APs not only as a necessary educational resource for the care of injured patients but also to maintain compliance with current American College of Surgeons' standards.

Although not a prerequisite for APs to work in trauma and critical care, transition to practice programs (sometimes referred to as a fellowship or residency) are increasing and offer extensive preparation for the specialty. Currently, little data is available to assess the potential benefits or outcomes of these programs. As future experience and data become available, EAST and STN recognize the need to assess the potential advantage of this additional and structured training provided by these transition to practice programs.

Advantages of Advanced Practitioners

Multiple studies assessing the utilization of APs in the acute care setting demonstrate decreased hospital and intensive care unit length of stay.[23-27] While this has become regarded as the obvious benefit of integration of APs into the trauma service, other studies have examined the role of the AP in other practice settings. Althausen et al. evaluated the role of PAs on an orthopedic trauma service and found statistically significant improvements in time to initial patient evaluation and subsequent time to surgery. The authors also discovered greater compliance in post-operative deep vein thrombosis prophylaxis guidelines and a reduction in post-operative complications.[28] Gillard et al. reported that the addition of APs at a level I trauma center yielded fewer incidents of urinary tract infections on their trauma service.[25] Another study evaluating resource utilization found a reduction in unnecessary emergency department visits following discharge from their surgical service following the integration of APs. The authors of this study observed similar rates of medically necessary readmissions comparing patients in the NP versus non-NP groups further suggesting that appropriate telephone triage was occurring.[29] Other advantages have been reported, such as enhanced resident satisfaction with their program with the presence of APs contributing to improvements in operating time and workweek hour compliance.[23,30,31] While some residents commonly report that nurses contact APs before residents with patient care issues, this also highlights the perceived importance of advanced practitioners to their respective service lines. Improvements in duty hour compliance, decreased lengths of stay, reduction in visits to the ED, and enhanced quality represent only a few of the many advantages that APs bring trauma and critical care service lines.

Investing in the Advanced Practitioner as a Leader

Once a mature AP program is established, fostering the development of the AP as a leader serves to further maximize their institutional and service line benefits. For teaching hospitals, every July presents the challenge and opportunity for the education of new residents. Furthermore, throughout the year, these residents frequently rotate among services on a monthly basis. The integration of APs within dedicated service lines or practices allows for the natural evolution into a team leader with invaluable experience. The experienced AP is often ideally positioned to educate residents and students on daily structure and clinical practice guidelines related to the care of the team's specific patient population. APs provide service line continuity and ensure seamless transitions in care. When team members encounter problems or inquiries, the AP is often the initial point of contact as he or she is readily available and viewed as a non-threatening provider by those who seek assistance. However, as a leader, the AP must also recognize when clinical situations or personnel issues are beyond his or her expertise and require the assistance of an attending physician. Advocating for regular and clear communication between APs and attending physicians will promote early contact between these team members when deemed necessary.

An essential component of the investment in the AP as a leader is to support their involvement in non-clinical professional growth. While this comes in many forms, such as research, conference attendance, or national organization membership, these activities stimulate APs to publish, teach, and further contribute to the medical profession. Supporting an AP's professional growth serves as a return on investment in multiple ways. For example, American College of Surgeons-verified level I trauma centers are required to publish at least 20 papers per review cycle.[22] APs may certainly contribute to the publication process thereby promoting both the trauma center and the AP's personal growth. Many organizations, such as the Eastern Association for the Surgery of Trauma and the Society of Critical Care Medicine, fully support the utilization of APs in these professional endeavors.

Conclusion

Physician assistants and nurse practitioners are not merely midlevel providers, but rather, advanced practitioners who, when utilized to the extent of their licensure, strengthen trauma, critical care, and acute care surgery service lines. With 50 years of professional experience and constantly evolving scopes of practice, APs will continue to grow in number and should be viewed as a valuable asset in the healthcare community. Although some differences do exist between the PAs and NPs, they share more similarities than differences. Hiring practices should focus on the best candidate rather than the specific profession when a practice is seeking to expand its providers. Developing APs as team leaders, researchers, and members of national organizations serves to further enhance their contributions and dedication to institutional service line and quality initiatives. The Eastern Association for the Surgery of Trauma in conjunction with the Society of Trauma Nurses fully endorses the utilization of APs in trauma, critical care, and acute care surgery service lines and encourages incorporating these providers in ways to best ensure optimal service line performance and quality patient care.

TABLE 1

Practice environments for advanced practitioners in trauma
Trauma bay
Emergency department
Operating room
Surgical floor
Intensive care unit
Outpatient clinic
Administrative/Quality
Research

TABLE 2

Procedures performed by Advanced Practitioners in Trauma, Critical Care, and Acute Care Surgery
Central line placement
Arterial line placement
Ultrasound guided peripheral IV and central line placement
Focused Assessment with Sonography in Trauma (FAST)
Thoracostomy placement/removal
Surgical first assist
Laceration repair – simple and complex
Wound care management
Ventilator management
Bronchoscopy
Endotracheal intubation
Surgical airway - cricothyrotomy
Vasopressor initiation and titration
Paracentesis / thoracentesis
Lumbar puncture
Placement of ICP monitors

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