Nurse practitioners (NPs) have been caring for children since L.C. Ford and H.K. Silver pioneered the concept in the 1960s, and now, NPs also care for children in subspecialty, acute, and critical care (Silver, Ford, & Day, 1968). Reductions in resident duty hours in 2003 and 2011 (Schwartz et al., 2011) coupled with the primary care focus of the pediatric resident curriculum (Guralnick et al., 2010) have resulted in a dearth of providers to deliver evidence-based care for the critically ill child. While NPs have served in PICUs for years (Gaedeke & Blount, 1995; Martin, 1999; Teicher, Crawford, Williams, Nelson, & Andrews, 2001), many new programs have been implemented in the last decade to fill these gaps.

Verger, Marcoux, Madden, and Bojko (2005) first identified variability in PICU-NP job structure, management, and scope of practice. The National Association of Children's Hospitals and Related Institutions (NACHRI) PICU FOCUS Group noted this variability and created an updated survey to describe the current scope of practice and professional facets of PICU NPs.

Materials and Methods

Each participating hospital obtained local Institutional Review Board (IRB) approval, with the first author’s hospital serving as primary site. The survey was conducted using Zoomerang (www.zoomerang.com, MarketTools Inc, 2008) with invitation letters to the PICU and cardiac intensive care unit (CICU) medical directors identified from the NACHRI database. The primary site’s IRB stipulated that permission from each unit’s medical director was required for participation.

The three-part survey included a) hospital demographics, b) 5 medical director questions, and c) 73 PICU-NP questions. The initial survey was a modification of the Verger survey and used with permission (personal communication, 2007 (Personal communication with Judy Verger, May 2007).

Results

Respondents

Survey invitations were issued to 128 units. All major U.S. geographical regions were represented by 31 hospitals. Thirty-four (27%) medical directors from 27 hospitals and 51 individual NPs responded. Thirteen PICUs returned all three survey components. Hospitals varied by type and configuration.

Authors’ Note: The authors have prepared this article on behalf of the Children’s Hospital Association PICU Focus Group.

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NP Qualifications and Supervision
And Scope of Care

All respondents required state licensure or certification (see Table 1). Few require onsite intensivist supervision. Another NP or intensivist was responsible for the majority initial orientation. Most orientation programs (74%) matriculated for 3 to 6 months, and (83%) required the completion of formal competencies (see Table 2). NPs reported a variety of clinical roles and procedures with considerable homogeneity in responses (see Figures 1-2). Nearly all (85%) reported writing independent orders, although many states required physician co-signature for certain drug categories. The majority (83%) were expected to participate in committees, research, education, and performance improvement, yet few (36%) were provided scheduled time for such activities.

Professional Satisfaction

The majority of NPs reported a high degree of professional satisfaction, but there was not a direct relationship with autonomy (see Figure 3). Commonly cited stressors included clinical acuity/volume, communication issues, clinical self-doubt, time management, and practice variation.

Medical Director Responses

Most medical directors (66%) had established NP programs, while 11% planned to institute a program within the next 1 to 2 years.

The primary reason given for hiring NPs was lack of resident coverage (30%) and additional operational support (41%). The majority (93%) described the current role of the NP as a patient care partner. Some cited operational advantages in resident supervision, continuity of care, and performance of procedures. The majority reported plans to increase both NP personnel (64%) and provider role (86%) in areas of education (50%), research (29%), and performance improvement (29%).

Discussion

Since the conclusion of this survey, the publication Consensus Model for APRN (Advanced Practice Registered Nurse) Regulation: Licensure, Accreditation, Certification and Education (APRN Consensus Work Group and the National Council of State Boards of Nursing APRN Advisory Committee, 2008) has been published and supports national standardization of licensure, accreditation, certification, and education. The model calls for education to focus on one of four APRN roles (such as NP), a specific population (pediatrics), and specialty area (acute/critical care). The model requires congruency in education (at the doctoral level), certification, and scope of practice, along with a national standard in which NPs are licensed as independent practitioners with a standardized formulary. Another area of heterogeneity our study identified was the duration and content of NP orientation. We recommend standardized written competencies that declare the NP “fit” for independent practice.

Medical directors were positive in their assessment of the NP contribution to quality care in the PICU. Few articles describe development of a PICU NP program (Brown, Besunder, & Bachmann, 2008; Derengowski, Irving, Koogle, & Englander, 2000; Molitor-Kirsch, Thompson, & Milonovich, 2005), but there has been a recent surge in literature describing the orientation and integration of the NP into the PICU (Brown et al., 2008; Sorce, Simone, & Madden, 2010).

Table 1. Hospital-Required Certifications and Credentialing

<table>
<thead>
<tr>
<th>Hospital-Required Certifications/Credentialing</th>
<th>Affirmative Responses n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State NP license or certificate of authority to practice</td>
<td>20 (100)</td>
</tr>
<tr>
<td>RN license</td>
<td>16 (80)</td>
</tr>
<tr>
<td>National certification</td>
<td>17 (85)</td>
</tr>
<tr>
<td>Acute care PNP curriculum</td>
<td>11 (55)</td>
</tr>
<tr>
<td>Medical staff office credentialing</td>
<td>21 (100)</td>
</tr>
</tbody>
</table>

Notes: All NPs reported a state requirement for licensing to practice and all are credentialed by their local medical staff office. While most reported requiring an RN license and national certification, completion of an acute care PNP curriculum was required for only 55%.

Table 2. Pediatric Intensive Care Nurse Practitioner Orientation

<table>
<thead>
<tr>
<th>Pediatric Intensive Care Nurse Practitioner Orientation</th>
<th>Affirmative Responses N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who is responsible for your orientation?</td>
<td></td>
</tr>
<tr>
<td>Other NP</td>
<td>37 (79)</td>
</tr>
<tr>
<td>Intensivists</td>
<td>32 (68)</td>
</tr>
<tr>
<td>Hospital</td>
<td>15 (32)</td>
</tr>
<tr>
<td>Unit</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Fellows</td>
<td>2 (4)</td>
</tr>
<tr>
<td>RN manager</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Orientation Guidelines</td>
<td></td>
</tr>
<tr>
<td>Hospital-required</td>
<td>34 (78)</td>
</tr>
<tr>
<td>Unit required</td>
<td>32 (74)</td>
</tr>
<tr>
<td>Other national guidelines</td>
<td>2 (5)</td>
</tr>
<tr>
<td>American Organization of Nurse Executives (AONE)</td>
<td>1 (2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration of PNP Orientation</th>
<th>Affirmative Responses N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 months</td>
<td>10 (21)</td>
</tr>
<tr>
<td>3 to 6 months</td>
<td>20 (43)</td>
</tr>
<tr>
<td>More than 6 months</td>
<td>2 (4)</td>
</tr>
<tr>
<td>Variable; depends on PICU experience</td>
<td>4 (9)</td>
</tr>
<tr>
<td>Variable; depends on NP experience</td>
<td>11 (23)</td>
</tr>
</tbody>
</table>

Note: Orientation patterns reflect multidisciplinary input and a tendency toward colloquial orientation guidelines. Duration of orientation appears highly variable. There are currently no national guidelines regarding the content and duration of the pediatric intensive care nurse practitioner orientation.
A National Survey of PICU Nurse Practitioners – Opportunities to Standardize Practices and Optimize Service Delivery

**Figure 1.**
PICU NP Scope of Practice: Procedures

- Suture removal
- Initiate/adjust IV fluids
- Insert IV lines
- Initiate/adjust mechanical ventilation
- Lumbar puncture
- Insert arterial lines
- Insert gastric/transpyloric feeding tube
- Endotracheal intubation
- Place central lines
- Suture lines in place
- Chest tube (CT) removal
- Needle thoracentesis/CT placement
- Suture wounds
- Insert PICC lines
- Remove intracardiac lines
- Place umbilical lines

**Note:** While NPs consistently reported a wide variety of procedures they were expected to perform, there was greater homogeneity reported regarding expected clinical skills ($p = 0.006$, ANOVA).

**Figure 2.**
PICU NP Scope of Practice: Clinical Decision Making

- Interpret common lab/diagnostic tests
- History/physical exam
- Order medications
- Interpret common radiologic tests
- Order common lab/diagnostic tests
- Initiate/adjust nutritional support
- Document on progress notes
- Initiate/adjust IV fluids
- Order blood therapy
- Initiate/titrte vasoactive drugs
- Interpret ECG

**Note:** While NPs consistently reported a wide variety of procedures, they were expected to perform, there was greater homogeneity reported regarding expected clinical skills ($p = 0.006$, ANOVA).

Adult ICU-NP programs improve both cost-effectiveness and efficiency (Kleinpell, 2005; Mick & Ackerman, 2000; Rudy et al., 1998). NPs provide continuity of care for complex patients who frequently return to the PICU, orchestrate improved multidisciplinary/family communication, and have been recognized as cost-effective, clinically capable providers (Brown et al., 2008; Derengowski et al., 2000; Kline, Reider, Rodriguez, & Van Roeyen, 2007).

**Limitations**
There are several limitations to this survey. Our response rate was low and likely due to our IRB stipulation that prior medical director permission was required for completion. We speculate that surveys may have been de-prioritized, spammed, or not distributed for other reasons. Future surveys should directly target PICU/CICU NPs via professional organization databases. The small sample size limits the generalizability of our findings.
Conclusion

While primarily direct care providers, NPs are an integral component in the educational, research, and quality improvement activities of the PICU. Currently, the lack of a standardized national credentialing mechanism restricts professional mobility. We strongly support the APRN Consensus Document in efforts to standardize licensure, accreditation, credentialing and education guidelines to allow professional mobility for all NPs.

References


