Hospital Medicine Competencies for Acute Care Nurse Practitioners in the Postgraduate Setting: A Crosswalk Analysis

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Abstract

The use of acute care nurse practitioners (ACNPs) has been increasing, and they are practicing in several different specialty areas, including hospital medicine. However, this expansion has outpaced the development and implementation of postgraduate ACNP specific competency standards. This project outlines the findings of a crosswalk analysis between the Society of Hospital Medicine's (SHM) Core Competencies in Hospital Medicine and the National Organization of Nurse Practitioner Faculties' (NONPF) Adult-Gerontology Acute Care Nurse Practitioner (AGACNP) Core Competencies. The primary aim of this examination is to evaluate the level of alignment between these two frameworks. Furthermore, recommendations for implementing these findings will be discussed in the context of developing local onboarding processes or Fellowships.

Hospital Medicine Competencies for Acute Care Nurse Practitioners in the Postgraduate Setting: A Crosswalk Analysis

The use of acute care nurse practitioners (NPs) has been increasing, with nearly 26,000 certified in the United States as of 2020 (American Association of Nurse Practitioners (AANP), 2020). This rise has coincided with an increase in demand created by the influx of newly insured persons provided by passage of the Affordable Care Act (Harper et al., 2017), as well as staffing changes related to restrictions placed on resident work hours (Johnson et al., 2020). The demand for NPs has been supported by a steady increase in the number of newly graduated NPs from programs across the country (AANP, 2020). While it has been widely documented that novice NPs are fully capable of practicing at the full extent of their license (AANP et al., 2019; Bush, 2014; Klein et al., 2021), many new NPs perceive that their programs had not adequately prepared them for the complexity of their new role (Klein et al., 2021). In response to this perceived gap, postgraduate training programs have been developed to smooth the transition from a novice to an experienced and confident provider. Postgraduate training programs facilitate this transition through mentoring, expanded clinical experiences, and competency assessment (Anglin et al., 2021). These programs, however, are often developed independently and generally use system or site-specific curriculums (Hicks et al., 2018; Kesten et al., 2021). This heterogeneity in programmatic content, outside that of specialty or population focus, precludes a standardized understanding of expectations between programs. Thus, it is important to identify what national standards are available, evaluate their alignment with national NP standards, and present recommendations for the future.

Background

Several key events in the last 20 years have influenced the expansion of the NP role and their increased use, especially in the hospital setting. First, the passage of the Affordable Care Act in 2010 increased both access and demand for healthcare services (Harper et al., 2017). This increase in demand also occurred in the setting of changes to resident work hours. In 2003, the Accreditation Council of Graduate Medical Education (ACGME) implemented restrictions on resident work hours, which were further revised in 2011, limiting the availability of residents (Johnson et al., 2020). There was also a concurrent decrease in funding for education and research, adding a financial burden on academic medical centers already contending with resident work hour changes (Johnson et al., 2020). Thus, an increase in both the number of patients, as well as the demand for services, in the setting of decreased staff hours and funding, provided an opportunity for NPs to demonstrate their ability to provide safe, effective, and cost-efficient care (Kapu et al., 2014).

However, this increase in utilization revealed difficulties in the transition from novice to an experienced and confident provider. Novice NPs provide safe and competent care after completion of their formal education, and this is further assured through required population-specific national certification (Kesten et al., 2021). Yet, both novice NPs and employers have voiced frustrations with the transition process. Novice NPs reported that this transition was associated with feelings of being underprepared for the complexities of their role (Le, 2016). Additionally, several employers have identified knowledge-based transition gaps that were inadequately addressed in NP graduate education and required supplemental training as a part of onboarding (Morgan et al., 2020).

In response to these concerns, health systems and other organizations have developed programs to smooth the transition of new NPs and narrow the perceived competency gaps. Margaret Flinter was the first to develop a residency program for novice NPs entering the Primary Care role (Flinter, 2011). This was followed by the establishment of a Primary Care NP Residency in an urban VA medical center (Goudreau et al., 2012). Since this early work in 2012, numerous residency and fellowship programs have been established across the country. Additionally, structured onboarding programs have been developed within private health systems (Anglin et al., 2021).

Significance

Currently, there are several different forms of onboarding for the postgraduate NP. However, there is significant heterogeneity in the assessment of a novice NP's competency, and in tracking their proficiency and progression in their first professional role (Klein et al., 2020). A recent survey of both FNP and ACNP postgraduate training programs in the United States revealed a lack of consistency in the source of their competencies (Kesten et al., 2021). The survey reported that core competencies from the National Nurse Practitioner Residency and Fellowship Training Consortium, National Organization of Nurse Practitioner Faculties (NONPF), ACGME, and others have all been implemented, with some programs choosing to use multiple competencies together or concerningly, none at all. Furthermore, several professional nursing organizations have established accreditations for postgraduate training curriculums; however, these certifications have not been pursued by most programs (Kesten et al., 2021). Given the variability in competency frameworks and the underutilization of accreditation, establishing best practice is challenging.

Local Problem

At the local level, health systems often develop internal competencies to suit their specific needs (Hicks et al., 2018). However, these metrics are frequently not aligned with national professional organizations, nor have they been used to fully demonstrate the effectiveness of their onboarding processes (i.e., proficiency or progression of new NPs) (Hicks et al., 2018).

Purpose

As there is an opportunity to standardize and align postgraduate training program competencies with existing national professional competencies, the purpose of this project is to conduct a crosswalk analysis between the 2016 NONPF Core Competencies for AG-ACNPs and the SHM Core Competencies in Hospital Medicine.

The 2016 NONPF Core Competencies for AG-ACNPs comprises nine competency domains covering *Scientific Foundations, Leadership, Quality, Practice inquiry, Technology & Information Literacy, Policy, Health Delivery System, Ethics,* and *Independent Practice*. All domains were included in this crosswalk analysis. Each domain provides both common NP Core Competencies as well as AG-ACNP specific competencies. The exception to this was the *Practice Inquiry* section which only has common Core Competencies. These competencies were developed, and are frequently refined, to establish the entry-level foundation for the novice AG-ACNP and build on the core competencies for all NPs (Thomas et al., 2016). Notably, the content of each domain is largely lacking any mention of specific conditions or disease processes. Supporting the use of this competency framework, nearly a third of established NP fellowship programs report the use of NONPF core competencies (Kesten et al., 2021). Additionally, NONPF has a long history of developing competencies, and their current

competencies offerings include measures for Doctor of Nursing Practice (Pohl et al., 2009). Lastly, the content of the NONPF competencies is broadly inclusive, covering competency domains from several other professional organizations (e.g., the Institute of Medicine, the Interprofessional Educational Collaborative, American Association of Colleges of Nursing, the Quality and Safety Education for Nurses) (Hicks et al., 2018).

The 2017 SHM Core Competencies in Hospital Medicine are divided into three sections covering *Clinical Conditions*, *Procedures*, and *Healthcare Systems*, respectively. For this project, only the first section was extracted for crosswalk analysis. This section is comprised of 21 different clinical conditions selected by the SHM Core Competencies Task Force. Existing competencies from the previous 2006 version were reevaluated for continued clinical relevance by the group in 2017, and two new conditions were added after identification from several sources, including the 100 most common adult medical diagnoses at hospital discharge (as reported in the 2010 Healthcare Cost and Utilization Project Database), recent SHM annual meeting curricula, and annual meeting survey responses (Nichani et al., 2017). Each clinical condition is described with a brief summary, and the relevant Knowledge, Skills, Attitudes, and System Organization and Improvements (KSASs) are presented. While not intended to be a comprehensive listing of topics or describe a standard of care, these competencies intend to serve as a measurable learning activity that aims to develop individual skills and improve patient care (Nichani et al., 2017).

The Core Competencies in Hospital Medicine from the Society of Hospital Medicine (SHM) and NONPF's Adult-Gerontology Acute Care Nurse Practitioner Core Competencies were selected for crosswalk analysis and further evaluated as a potential objective measures of novice NP competency and progression in their first year of practice.

Theoretical Framework

As highlighted by several authors (Kesten et al., 2021; Kopf et al., 2018; Morgan et al., 2020), significant gaps exist in postgraduate NP training. Concerningly among them is the lack of a standardized competency evaluation. The NONPF Core Competencies have proven to be robust and representative of the broader nursing professional space (Hicks et al., 2018). Furthermore, they provide a well-established and comprehensive basis to frame more population-specific competencies. As identified previously, knowledge gaps related to the needs of specific populations were frequently identified (Hicks et al., 2018; Kesten et al., 2021; Morgan et al., 2020). The use of SHM's Core Competencies for Hospital Medicine for clinical conditions provides a means to objectively measure both the proficiency and progression of the novice Hospitalist NP. Crosswalk analysis of the SHM Competencies to the NONPF Core Competencies also provides a means to demonstrate that these more physician-focused competencies align within a nursing framework that can then be foundational to either health system/site onboarding or Fellowship development.

Guiding this crosswalk analysis is the Knowledge to Action framework (Graham et al., 2006). This framework (Appendix A) consists of two nested processes: Knowledge Creation and the Action Cycle (Graham et al., 2006). A shared starting point for both is the identification of a problem, after which the change agent can proceed either up into the Knowledge Creation process to find and evaluate relevant literature, begin adapting known knowledge to the local context and start developing implementation strategies, or proceed with both processes simultaneously. The goal of this framework is to bridge the gap between what is known from research and the implementation of this knowledge to improve efficiency and outcomes (Graham et al., 2006). This framework has the added benefit of being useful beyond this initial stage of

crosswalk analysis and can be employed in all stages of project implementation, from problem identification to evaluation.

Knowledge Creation

As applied to this proposal, this model takes the identified problem (lack of standardization and heterogeneity of postgraduate training program) and starts in the Knowledge Creation process. This process describes the development of new knowledge and the refinement of that knowledge to something relevant to the identified problem and the problem's associated stakeholders (Graham et al., 2006). Knowledge creation in this framework is visualized as a funnel with Knowledge Inquiry (e.g., primary studies), Knowledge Synthesis (e.g., systematic reviews and meta-analyses), and Knowledge Tool (e.g., synopses or guidelines) comprising increasingly focused levels of information (Graham et al., 2006). Underlying all three levels of knowledge is the tailoring and interpretation of that knowledge for use by the stakeholders to address the problem.

As applied to this project, this guides the completion of a literature review and crosswalk analysis. Given the paucity of literature available on postgraduate training competencies, the bulk of information was gleaned from studies aligned with knowledge inquiry and knowledge tools. The completion of the crosswalk analysis was aligned with tailoring that discovered knowledge to the problem identified in this project

Moving forward, after the findings from the Knowledge Creation process have been established, the results can be moved through the implementation path and adapted to the local context. Barriers to implementation can be identified and strategies developed to promote successful adoption. Upon implementation, there is an expectation to monitor the status of competency adoption and the results of the program. These adoption and program results can

then be carried down the evaluation path and new problems or opportunities for improvement can be identified. The process of reevaluating results and identifying new issues allows for reentry into either the Knowledge Creation or Action Cycle pathway as appropriate. Furthermore, movement between stages in the framework is influenced by the results of the previous stage and can loop back on to themselves if needed. An example of this would be the identification of a new barrier to adoption that requires a reevaluation of strategies to overcome the newly identified resistance to change.

Key Concepts

It is important to recognize that there is a distinction between competency and competence, and its use as a continuous and dichotomous idea, respectively. Briefly, there are two prevailing interpretations of competency frameworks, largely present in literature from the United States and the United Kingdom. The US interpretation stemmed from an education background and views competencies as "accumulated attributes and is linked to performance in general" (Mills et al., 2020, p. 4). This interpretation views competency as continuous and evolving as the individual grows and progresses (Mills et al., 2020). The UK interpretation, on the other hand, arose from the need to standardize selection criteria during recruitment. As such, UK competencies reflect work standards and expected outcomes (Mills et al., 2020). This basis in performance outcomes led to a binary view; either an employee was able to complete their work in a standard and expected way, and thus was competent, or they were unable to reach that standard.

Being aware of these differences allows for a more concise and accurate description of what is being developed. These differences in measured endpoints have significant implications in the interpretation of reviewed articles and the development of recommendations.

Available Knowledge

A review of the literature was conducted with the aim of establishing how novice NP competencies are measured, both subjectively and objectively. CINAHL, PubMed, and Google Scholar were queried for relevant literature, with preference given to those results from the last ten years, applying combinations of the search terms: *acute care, competency, fellowship, measures, nurse practitioner, onboarding, postgraduate, residency, success, and training*. The resulting abstracts were assessed for relevance and selected if they contributed to the review of this topic. Furthermore, germane, and frequently cited works from selected articles were reviewed and included if they provided additional insights to the evaluation and/or development of novice NP competencies.

Literature Review

The literature regarding postgraduate NP training is varied. A total of seven articles identified in the literature review process were found to be relevant to the discussion of competency development. These articles ranged from broad overviews and organizational experiences with residency, fellowship, or hospital onboarding development, to small single-center reports on the implications of implementing postgraduate training programs. There was a paucity of quantitative literature evaluating competencies in both fellowships and onboarding programs. Notably, there were no studies identified that evaluated the merits of one set of competencies over another. There was one study that sought to establish what competencies were being used in the postgraduate setting.

Expert Consensus

The development of competencies at the postgraduate level often involves deliberation by expert panels on the content and relevance of proposed and/or established measures. Pohl and

colleagues (2009) participated in one such inquiry, cross-mapping Quality and Safety Education for Nurses (QSEN) competencies with the NONPF Core Competencies, as well as the NONPF DNP Competencies. NONPF has a long history of NP competency development, and this report supports their continued work in that space (Pohl et al., 2009). The goal of their work was to establish the level of congruence between the QSEN competencies, which focus on quality and safety at a prelicensure level, and the NONPF Core and DNP Competencies, which form a base expectation for postgraduate NPs. The group reported good congruence by consensus between QSEN Knowledge objectives and the NONPF Core and DNP Competencies with few areas needing strengthening or revision due to poor agreement amongst the group (Pohl et al., 2009). Notably, they constrained themselves to mapping only the 59 QSEN Knowledge objectives to the 75 NONPF Core and 24 DNP Competencies, forgoing mapping of the Skill and Attitude objectives (Pohl et al., 2009).

Competency development can draw on frameworks implemented in other disciplines as well. Kopf and colleagues (2018) describe their use of a modified Delphi technique to adapt ACGME Milestones for use with novice NPs transitioning into a Critical Care setting. Clinical competencies were adapted from existing ACNP curricula and utilized ACGME Milestones as a framework (Kopf et al., 2018). An initial set of 26 competencies categories related to Adult ICU topics were identified and then evaluated by an initial panel of four experts. After revision, nine categories were selected, and this preliminary set of competencies were sent as a survey to Schools of Nursing faculty or practicing critical care NPs for evaluation of relevancy. A total of 109 surveys were distributed, with 31 surveys being returned, 9 of which also contained qualitative data (Kopf et al., 2018). Interestingly, only practicing NPs completed the surveys, which may have influenced the results. While the respondents ranked all competency topics as

valid (all scores were >3.60 with 4 being very relevant to practice, 1 being least), *Management of Complex Diseases* was deemed as being highly relevant with an average score of 3.92 on a 4-point scale (Kopf et al., 2018). The competency, S*cientific Foundation,* had the lowest scored relevancy at 3.61 (Kopf et al., 2018). The authors attribute this finding to a perception that the S*cientific Foundation* category was more closely aligned to prelicensure education than the postgraduate transition period; however, this was gleaned from the qualitative data provided by the few respondents who provided additional free-text responses (Kopf et al., 2018). The results of this study are difficult to generalize given the small number of clinically active respondents; however, practicing NPs perceived clinical competencies (e.g., *Management of Complex Disease, Diagnostic Studies, Pharmacology*) as more relevant.

Qualitative Work

Another method of developing and evaluating NP competencies is by using semi-structured interviews that are further evaluated by qualitative means. Hicks and colleagues (2018) utilized this method to identify and characterize the core curriculum of postgraduate Primary Care NP training programs. They identified a total of 12 learning outcomes representing a shared core curriculum between the eight postgraduate training programs that provided information to the authors. They also identified a high level of congruence between reported learning outcomes and QSEN and NONPF competencies (Hicks et al., 2018). However, there were some variances identified with learning outcomes such as *Autonomy/confidence, Chronic Disease Management* specifically in programs serving communities with limited access to specialty care services*, Professionalism,* and *Resiliency/Stress Management* being unique to their respective programs. The authors also recognized a high frequency of learning outcomes mapped

to clinically relevant competencies while more abstract competencies (e.g., *Policy* and S*cientific Foundation*) being mapped less frequently (Hicks et al., 2018).

In the first of a three-part series describing several organizational aspects of onboarding for NPs and Physician Assistants (PAs), Morgan and colleagues (2020) categorize the considerations of onboarding program directors into several broad administrative themes. During their interviews, themes around the general goals of onboarding and program design were identified. Some of these goals are particularly relevant to this discussion, namely, to ensure quality care and to improve competence in underdeveloped areas (Morgan et al., 2020). These underdeveloped areas pertained to some ancillary skills like coding and billing, but others were related to the care and management of specific patient conditions (Morgan et al., 2020). In discussing program design, the interviewees described the components required in a successful onboarding program. There was a wide range of descriptions used covering the development of onboarding checklists and the development of practice-specific assessment tools. The authors describe how some programs structure their training around an existing didactic curriculum (Morgan et al., 2020).

Sanchez and colleagues (2020) focused on the curricular content of these programs in the next part of the series. Again, the authors identified several broad categories which they framed on adapted definitions established by Klein and Heuser (Sanchez et al., 2020). Of these categories, the descriptions of task proficiency are relevant. The authors highlight responses from the program directors, who describe actions to address deficiencies in skills related to navigating the electronic health record, documentation, and importantly, medical knowledge (Sanchez et al., 2020). The respondents identified common knowledge deficits amongst their new hires and sought to provide additional experiences to address these gaps (Sanchez et al., 2020).

In the final article of the series, Anglin and colleagues (2021) describe strategies for onboarding. These strategies consider the unique advantages and challenges presented by providing learning in a non-academic professional setting. Workload, staffing, and access to subject matter experts can be barriers to learning in this setting. However, exposure and response to real patient problems under a mentor's supervision provides a unique advantage to postgraduate training in this setting (Anglin et al., 2021). Additionally, this exposure to complex patients, observation of others, and being observed allows for a more active learning style which is preferred by adult learners (Anglin et al., 2021). The respondents assessed competency by using chart reviews, direct observation, checklist utilization, and formal and informal assessments. Of interest to this review are the formal and informal assessments, of which the respondents described as a dynamic process with scheduled reviews that took place at certain intervals (e.g., 30, 60, and 90 days) along with frequent (i.e., daily to biweekly) check-ins (Anglin et al., 2021). This allowed for both as-needed feedback for specific and relevant issues, as well as a broader tracking of progression through the program (Anglin et al., 2021).

Quantitative Work

Kesten and colleagues (2021) conducted an exploratory study using a quantitative design to better understand the characteristics, content, and implementation of postgraduate NP residency and fellowship programs in the United States. The authors developed a survey tool that was distributed to a total of 88 NP residency and fellowship programs. This inventory of postgraduate programs currently represents the most complete accounting yet reported. Of the 88 programs contacted, 49 program directors responded, with 41 meeting the inclusion criteria of completing the survey in its entirety (Kesten et al., 2021). An important finding from this group was the quantification of the lack of standardization of competencies in the postgraduate training

space. Both nursing and physician competencies were utilized, either singularly (61%), in combination (29%), or not at all (10%) (Kesten et al., 2021). Additionally, even though there are national accreditations available through National Nurse Practitioner Residency & Fellowship Training Consortium, Commission on Collegiate Nursing Education, American Nurse Credentialing Center for these Residency and Fellowship programs, only 25% of respondents chose to seek these credentials (Kesten et al., 2021).

Methods

Project Design

This project was conceptual in nature and sought to substantiate the level of alignment between the SHM Core Competencies in Hospital Medicine and the NONPF AGACNP Core Competencies. Given the time constraints associated with the completion of this DNP project, only the *Clinical Conditions* section of the SHM competencies were extracted for analysis. This narrow focus aligns with the Knowledge Creation step of the Knowledge to Action Model. This analysis also provides a foundation for further development and integration into a larger system-level onboarding template or fellowship program. This project was submitted to the Oregon Health & Science University Institutional Review Board for evaluation as research and deemed exempt.

Results

Crosswalk

A crosswalk analysis was completed between the 21 Clinical Conditions KSAS sections of the SHM Core Competencies in Hospital Medicine and the nine competency domains of the NONPF Core Competencies for AG-ACNPs (full crosswalk presented in Appendix B). High or low alignment was based on whether ≥ 50% of subcategories aligned with the NONPF domains.

Broadly, there is a high degree of alignment between the two competency frameworks at the level of KSASs, with the only significant gap noted between the SHM *Knowledge* and *Skills* sections and the common Core Competency of the NONPF Policy Domain. Of note, this gap was not present when compared to the AG-ACNP specific competencies for that domain. While this broad view of the competency frameworks provides preliminary evidence in support of alignment, upon closer inspection of the content of the SHM KSASs, a more granular understanding of the competencies can be appreciated.

First, the SHM competencies are written in a more closed-ended and discrete manner (e.g., be able to recognize the indications for specialist consultation, serve as an advocate for patients, lead multidisciplinary teams). Additionally, the individual competency can be grouped together by the like terms used and grouped into several subcategories (see Appendix C). This grouping allows for further details to emerge. Each competency section now shows varying levels of alignment with the NONPF competency domains. When viewed in this manner, there was perfect alignment between the NONPF Competency domain of *Independent Practice* and all SHM KSASs. Moreover, the System Organization and Improvement section showed the highest level of alignment across all the NONPF competency domains. While all the NONPF competencies domains are addressed by the SHM KSASs, except as noted with *Policy*, there are varying levels of alignment when evaluated within the subcategories. Furthermore, there is differing levels of agreement between the SHM KSASs and the common Core Competencies and the AGACNP specific competencies.

Knowledge

The *Knowledge* competencies, when grouped, divide into 10 subcategories describing competency expectations, such as being able to define and differentiate between various

conditions and recognizing the indications for pursuing a specialist consult (Appendix C). With the competency sections arranged in this manner, the SHM KSASs retain a high degree of alignment with the NONPF Competency domains *Scientific Foundations*, *Health Delivery*, and *Independent Practice*. However, there was a lower level of alignment with domains related to *Leadership*, *Quality*, *Practice Inquiry*, and *Ethics*. As noted previously, a difference between the common Core Competencies and the AGACNP specific competencies was identified in the Policy domain. Within this domain, the *Knowledge* competencies were determined to be out of alignment with the common Core Competencies; however, the AGACNP specific Competencies were congruent with define/differentiate, testing, interventions, and consultation subcategories.

Skills

The SHM *Skills* section was also divided into 10 subcategories and demonstrated a similar pattern of alignment as the *Knowledge* section. The NONPF competency domains of *Scientific Foundations, Quality, Technology & Information Literacy, Health Delivery,* and *Independent Practice* all show a high level of agreement. There was a similar difference in the *Policy* domain between the common Core Competencies and the AGACNP specific ones.

Attitudes

The Attitude Section subcategories reflect a change in focus to more teamwork, communication, and prevention-related topics. With this change, there is broader alignment than the first two sections, with a greater number of NONPF domains achieving a high level of alignment. However, a few exceptions were identified, most notable being *Scientific Foundations* and *Practice Inquiry* which both showed a low level of alignment.

System Organization and Improvement

System Organization and Improvement subcategories had a high level of alignment across all domains except for *Scientific Foundations* and *Ethics*.

Discussion

After reviewing the findings of the Crosswalk Analysis in the context of the reviewed literature, the SHM and NONPF competencies show a high level of congruence with some interesting nuances and discrepancies.

Congruence

The level of alignment between the SHM and NONPF core competencies is in agreement with findings from the literature. As discussed by Hicks et al. (2018), the NONPF Core Competencies were found to have broad alignment with other national professional organization competencies sets. This broad alignment was also identified in the results of this work, with the NONPF competency domains found to be broadly congruent with the SHM sections. Additionally, viewing at the more granular level of the identified subcategories allowed for better identification of potential gaps between the two sets. By grouping the competencies into common thematic subcategories, this decreased the total number of competencies to a more manageable amount. Furthermore, it allowed for analysis of the entirety of the Clinical Conditions competency set, instead of narrowing to just one aspect. This analysis was undertaken following the reporting by Pohl et al. (2009), that due to the breadth of the number of competencies to cross-map, they only chose the QSEN Knowledge objectives to map against the NONPF.

Pursuing the use of the SHM competencies also serves to address current shortcomings in NP onboarding, as identified by Morgan et al. (2020), namely the perception of underdeveloped

knowledge competencies for certain diseases and medical conditions. The SHM competencies cover a wide breadth of common conditions as identified by the SHM Core Competencies Task Force. Conveniently, the thematic subcategories as found in this analysis provide a template for expansion to other conditions that might be identified by an implantation team.

Nuance

Several more nuanced findings emerged when the subcategory results were compared to findings from the literature. As discussed previously, more clinically relevant competencies were considered to be more important in the context of onboarding development (Kopf et al., 2018). This crosswalk analysis found a high level of alignment at both the broader SHM KSAS level, and when subcategorized, with the NONPF *Scientific Foundations* domain. The difference in the findings of Kopf et al. (2018) and the results of this project are interesting as the respondent of that study thought disease management to be more relevant to the postgraduate NP training than scientific foundations; however, our results found that the two are in alignment.

Importantly, there is a high level of congruence between all KSASs and NONPF *Independent Practice*. The high level of alignment between the SHM competencies and the NONPF *Independent Practice* Domain provides strong support for the use of SHM core competencies as a competency metric for novice NPs. Given that the DNP is expected to be the entry level degree into NP practice, having competencies that align with quality improvement and system-level leadership is highly desirable characteristic.

Discrepancies

Major discrepancies between the two competency groups were not readily identified. However, several gaps were found between the two frameworks when evaluated with the thematic subcategories. These gaps were largely centered around those subcategories that dealt

with narrow clinically focused topics such as *Pathophysiology, Complications and Severity,* and *Symptoms and Mimics* from the *Knowledge* section or *Complications* and *Risk Factors* from the *Skills* sections. This is not unexpected given the differences in how the frameworks were intended to be used. The SHM competencies intend to serve as a measurable learning activity (Nichani et al., 2017), while the NONPF competencies are intended to be inclusive of both clinical and professional topics (Thomas et al., 2016).

Limits

Few studies looked at ACNPs and in hospital competencies or postgraduate training programs (Anglin et al., 2021; Kesten et al., 2021; Kopf et al., 2018; Morgan et al., 2020; Sanchez et al., 2020). The bulk of the reviewed literature was from experience with postgraduate training for the FNP role, which may limit the applicability to the inpatient setting. While new NPs universally make the transition from student to provider, regardless of setting, any differences in this transition were not discussed. Additionally, this project represents the work of one author and their opinion on how to group and categorize the competencies.

Implications for Further Investigations

To support implementation of these results into an ANCP onboarding process or as a part of developing a Hospitalist Fellowship program, further investigations would need to be completed, namely refinement and external validation.

The first stage of further investigation would be to refine the competency sets to address the gaps identified as presented in the discussion. By addressing these gaps, a more complete competency framework would be developed. Furthermore, this would provide an improved template for other diseases and conditions.

As previously discussed, there were thematic areas identified by this author. However, in the absence of validation, this serves largely as opinion. The refined competencies should be externally validated for relevancy. The Delphi process would be well suited to this end as it provides for expert review while seeking consensus amongst reviewers (Kopf et al., 2018). This process would provide external validation of the relevance of the competency sets to the postgraduate transition period.

Conclusion

As the number of ACNPs continues to grow, providing standardized competencies for the postgraduate transition period can help to provide new NPs with guidance and support. The SHM Core Competencies in Hospital Medicine provide a well-aligned and clinically relevant set of measures complementary to the NONPF AG-ACNP core competencies. Furthermore, the results demonstrate that the SHM Core Competencies could be utilized as foundational competencies in a larger system-level onboarding processes or integration into Hospital Medicine Fellowships. However, the findings of this work would likely benefit from external validation, such as through the Delphi Method.

Appendix A

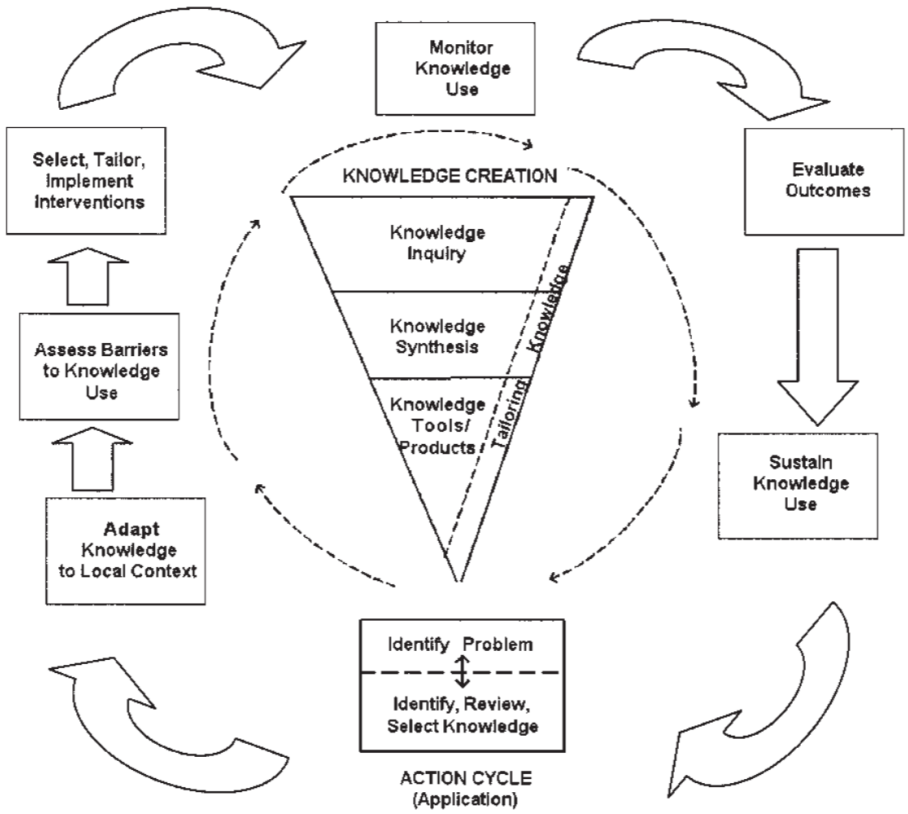

Figure 1 Knowledge to action process

From Graham et al., 2006

Appendix B

SHM KSAS Crosswalk

Note: Two boxes in a domain indicate common Core Competencies followed by AGACNP specific competencies

NNONPF AGACNP Core Competencies / SHM Hospitalist Core Competencies	Scientific Foundations		Leadership		Quality		Practice Inquiry	Technology & Information Literacy		Policy		Health Delivery Systems		Ethics		Independent Practice	
Knowledge	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Skills	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Attitudes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
System Organization & Improvement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Appendix C

SHM Thematic Crosswalk

Key: Knowledge Skills Attitudes System Organization & Improvement

Note: Two boxes in a domain indicate common Core Competencies followed by AGACNP specific competencies

NONPF AGACNP Core Competencies / SHM Hospitalist Core Competencies	Scientific Foundations		Leadership		Quality		Practice Inquiry	Technology & Information Literacy		Policy		Health Delivery Systems		Ethics		Independent Practice	
Define/ Differentiate	X	X						X			X					X	X
Pathophysiology	X	X														X	X
Complications/ Severity	X	X										X	X			X	X
Symptoms/ Mimics	X	X												X	X	X	X
Testing	X	X			X	X	X	X	X		X	X	X	X	X	X	X

Intervention	X	X			X	X	X	X	X		X	X	X	X	X	X	X
Consultation		X	X	X			X		X		X	X	X			X	X
Risk Factors	X	X										X	X			X	X
Risk Scoring	X	X			X	X	X	X	X			X	X			X	X
Transitions of Care			X	X	X	X			X			X	X	X	X	X	X
H&P Data Collection	X	X					X	X	X		X	X	X			X	X
Data Synthesis	X	X			X	X	X	X	X		X	X	X	X	X	X	X
EBM	X	X	X	X	X	X	X	X	X		X	X	X			X	X

Complications	X	X										X	X			X	X
Risk Factors	X	X										X	X			X	X
Risk Screening	X	X			X	X	X	X	X			X	X			X	X
Intervention	X	X			X	X		X	X		X	X	X			X	X
Communication			X	X				X	X		X			X	X	X	X
Collaboration			X	X	X	X		X	X		X	X	X	X	X	X	X
Transition of Care			X	X				X	X			X	X	X	X	X	X

Multidisciplinary Team			X	X				X	X	X	X	X	X	X	X	X	X
EBM	X	X	X		X	X	X	X	X		X	X	X			X	X
Collaboration			X	X	X	X	X	X		X	X	X	X	X	X	X	X
Patient/Family Centered Approach			X	X				X						X	X	X	X
Efficiency/LOS					X	X		X	X	X	X	X	X			X	X
GOC/Rapport			X	X									X	X	X	X	X
Pain Management	X	X														X	X
Prevention			X		X	X						X	X			X	X

Protocol Development	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Process Improvement	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Align to National Standards			X	X	X	X	X	X	X	X	X	X	X			X	X
Safety			X	X	X	X	X	X	X	X	X	X	X			X	X
Education			X	X				X	X	X	X	X	X			X	X
Resource Efficiency			X	X	X	X	X	X	X	X	X	X	X		X	X	X

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