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# The Evaluation of Advanced Practice Providers Practice Patterns and Delivery of Care Models in the Specialty Practice Environment

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REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Katherine W. Rogers, Student

Dr. Sheila Melander, Advisor

DNP Final Project Report

The Evaluation of Advanced Practice Providers Practice Patterns and Delivery of Care Models in the Specialty Practice Environment

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University of Kentucky

College of Nursing

Spring, 2018

Sheila Melander, PhD, APRN, ACNP-BC, FAANP, FCCM, FAAN  – Committee Chair

Debra Hampton, PhD, MSN, RN, FACHE, NEA-BC - Committee Member

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Dedication

My DNP project is dedicated to Advanced Practice Providers who are devoted to improving the healthcare of patients. On a personal note, I dedicate this work to my family. I want to recognize my husband David for his patience and support of my career and educational quests. This would not have been possible without his understanding and encouragement. I would like to thank my parents for passing on their work ethic which has allowed me to juggle many hats at once. To my mother, my mentor, for sharing her love of nursing with me and remaining true to the nursing profession. To my children Nick, Sophia, and Anna, I dedicate this and I thank you for your understanding during the many hours I have focused on this work. I hope I have shown you that hard work and challenging yourself can add much contentment to life.

Acknowledgements

I would like to thank my advisor Dr. Sheila Melander for being my mentor during this journey.  Dr. Melander represents an advanced practice nurse that has excelled in the profession of nursing both locally and nationally.  I look forward to working with Dr. Melander in my future.  To my committee members Dr. Hester and Cheryl Martin, I thank you for your guidance and support not only on this project but on the many advanced practice initiatives we share. I would like to express sincere gratitude to Dr. Debra Hampton for sharing her knowledge and passion for nursing leadership.  My growth during this program is attributed to her hard work and dedication to the Executive Nurse Leader cohort.  The relevance of our didactic and clinical experience is secondary to her vision of what a nurse leader should be. I would like to thank my coworkers, specifically Dr. Mikos, for supporting my continued education and for being an ideal physician partner who has allowed me to reach my practice potential.  Lastly, I would like to acknowledge that this Doctor of Nursing Practice project and program of study was fully funded through the University of Kentucky College of Nursing and Norton Healthcare academic practice partnership.

EVALUATION OF APP SPECIALTY PRACTICE PATTERNS

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**Abstract**

**Background**:  Advanced Practice Providers (APPs), specifically Nurse Practitioners (NP) and Physician Assistants (PA), have been utilized in healthcare for decades to improve access to care for patients. Norton Healthcare's largest population of APPs is in specialty practices.  The expansion of APPs into the medical group has been rapid and without evaluation of value and role identification.

**Purpose**:  The purpose of this study is to evaluate Advanced Practice Provider (APP) practice patterns and care delivery models within specialty practices in a large medical group.  The outcome of the study will help to identify trends in practice and areas where standardization might be achieved.

**Methods**: The study employed a cross-sectional, correlational design with the outcome to describe characteristics of the advanced practice population. Survey data was utilized to identify delivery of care models based on reported relationship between APP and physician.

**Results**: Three groups emerged from the survey data based on the practicing relationship between the APP and their physician partners. There was no statistical significance between the groups when comparing patient satisfaction, provider engagement, practice productivity, and practice readmission rates.

**Conclusion**:  This study demonstrates the absence of APP standardization of practice in non-primary care practices.  An opportunity to improve utilization of APPs at top of license and areas where standardization could be achieved was identified. In addition, this study reported a volume of work being performed by APPs without a value metric to track their productivity.

The Evaluation of Advanced Practice Providers Practice Patterns and Delivery of Care Models in

the Specialty Practice Environment

Advanced Practice Providers (APP), specifically Nurse Practitioners (NP) and Physician

Assistants (PA), have been recognized as essential elements to the healthcare team since the mid

1960's.  NP's and PA's were added to the team of providers with the intent of expanding primary

care access and services to the public sector (Adams, Gardner, & Yates, 2016).  In recent years,

there has been an expansion of the APP's role into the private sector and specialty areas of

practice.  This expansion has provided an opportunity for analysis of this historical role in

various delivery of care settings.

In 1965, secondary to expanded health coverage and the loss of primary care physicians

to specialty practices, an advanced nursing role was established by a physician and nurse, to

meet the healthcare demands of the population (Fairman, 2010). This same year a physician at

Duke University began the physician assistant program to increase access to care (AAPA, 2017).

NPs and PAs account for the largest percentage of APPs in the United States.  In total there are

approximately 250,000 NPs and PAs; NPs make up 60% and PA's 40%.  Thirty-five percent

practice in the hospital setting or specialty areas, 10% in outpatient clinics, and 54% in

physicians' offices (US Bureau of statistics, 2016). The statistics represent a changing profile of

APPs from the primary care environment to practices that include specialty and acute settings

such as oncology, cardiology, and surgery.  The utilization of APPs in areas outside of primary

care provides an opportunity for analysis and evaluation of current baseline practice patterns and

delivery of care models. An in depth review of the role of APPs in specialty practices will help to

determine if standardization of practice is achievable.  Standardization of practice would allow

for a measurement of value of APPs in specialty practices.

Norton Healthcare has a multispecialty medical group that employs greater than 280 NPs and PAs that practice in outpatient and inpatient settings. The medical group has grown rapidly over the past five years and has implemented the use of APPs to fill gaps in care and strengthen the specialty practice teams. The utilization of APPs in these practices has been ill defined and has no value measurement system in place. Over the past four years there has been an expansion of the DNP population, which has brought to light issues around best utilization of these resources.

### Background

A dearth of information was found in the literature that defined standardized practice patterns outside of primary care. The Institute of Medicine (IOM) issued a report that noted the value of the NP in primary care and recognized the need for role expansion and coverage into acute and specialty practice populations (IOM, 2011). An integrated review of literature on APP practice patterns in specialty practices demonstrated minimal literature related to practice outcomes of NPs and PAs in acute care. This may be due to the recent expansion of APPs into non-primary care fields and variability from one specialty to another.

Research related to the APP role in oncology, urology, and sleep medicine was noted. Quallich (2011) performed a survey evaluating the current role of the NP in urology and found that studying the role across urology practices not only identified reoccurring practice patterns but assisted with the revision of the advanced practice certification test provided by the Certification Board of Urologic Nurses and Associates. Quallich (2011) reported that standardization of scope of practice and a clear understanding of practice patterns allows for advancement of the profession. A survey of APPs practicing in sleep medicine defined current roles and educational backgrounds in this specialty. The result of the survey identified practice

patterns and gaps in education for the APP in sleep medicine (Colvin, Cartwright, Collop, Freeman, McLeon, Weaver, & Rogers, 2014). This review supported the need for assessment of practice patterns and educational levels of APPs in specialty practices in order to ensure competency of the practicing provider, as well as advancing the value of the APP in sleep medicine. Moreover, a study performed by the National Comprehensive Cancer Network acknowledged varied utilization of APPs between institutions. A survey addressing practice patterns and productivity was issued; the results defined characteristics in clinical practice that could assist with productivity benchmarks (Hinkel, Vandergrift, Perkel, Waldinger, Levy, & Stewart, 2010).

## Purpose

The purpose of this project is to evaluate current practice patterns and care delivery models within specialty practices. Defining the practice patterns and best care models is of great value to leadership in an effort to standardize practice, improve productivity, and optimize use of the APP in the team environment. The result of this evaluation will direct best practice arenas where the addition of an APP will enhance patient care, outcomes, satisfaction, and overall productivity of the practice. Defining the current state of practice allows for development of employment expectations, performance evaluations, educational opportunities, and alignment of incentive plans with practice. In conclusion, an enhanced understanding of the utilization of APP practice patterns in non-primary care disciplines will allow for Norton Medical Group leadership to measure the value of the APP in a specialty practice and assist with future recruiting and onboarding.

The goal of this study is to define current state of APP practice in a non-primary care practice environment. The practice patterns of NPs and PAs in specialty practices is ill-defined.

A secondary outcome of this comparative effectiveness study is to identify care delivery models that utilize APPs at the top of license and provide high quality care.

Specific objectives to be addressed in this study included:

1. Identify current APP practice patterns and care delivery models in non-primary care practices from January 1, 2017-December 31, 2017.

2. Compare the APP care delivery models identified as a result of the survey questions relating to physician and APP billing and documentation in collaboration with practice readmission rates, practice patient satisfaction, practice productivity, and provider engagement from January 1, 2017-December 31, 2017.

## Methods

**Design**

The study employed a cross-sectional, correlational design study with the outcome to describe characteristics of the advanced practice population.

**Setting**

The study was performed at Norton Medical Group (NMG), a branch of Norton Healthcare (NHC), in Louisville, Kentucky. Norton Healthcare is a healthcare system that is comprised of five hospitals, 14 Norton Immediate Care Centers and 190 physician practice locations. Norton Healthcare is a not-for profit organization that provides care to the people of Kentucky and Southern Indiana. NHC specializes in caring for patients across the lifespan. NHC's mission is to deliver high quality health care, which is rooted in the organization's faith heritage, to the community they serve. The vision of NHC is to be a leader in healthcare delivery for the region. Specifically, the focus of NMG is to provide care to the whole person and develop working partnerships between providers and patients.

**Procedure and Sample**

This study employed an online survey of specialty practice providers as well as an analysis of practice-level outcomes data. See Appendix 4 for a copy of the survey instrument. The survey was created by the principal investigator and was reviewed by leadership, Human Resources, three APPs and the clinical mentor to establish face validity. An online survey was sent using REDCap (Research Electronic Data Capture) to all nurse practitioners (NP) and physician assistants (PA) practicing outside of primary care within NMG with a start date on or before September 2017 who were working at least 24 hours per week. Contracted APPs, primary care APPs, and those working in the immediate care centers were not invited to participate. An invitation to participate in the survey was sent to each participant's official NHC email address; REDCap assigned each respondent a unique identifier code to maintain anonymity of responses. Survey data was collected and managed using REDCap electronic data capture tools hosted at the University of Kentucky. REDCap is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources (Harris, 2009). Practice-level outcomes data were provided by Norton Healthcare Clinical Information Analysis and Decision Support Services. Provider engagement data was obtained from the human resources department of Norton Healthcare using the 2017 Safety and Engagement Survey. Approvals from the University of Kentucky Institutional Review Board (IRB) and Norton Healthcare Office of Research and Administration (NHORA) were obtained prior to the collection of data and survey dissemination.

**Measures**

Survey data included demographic characteristics, practice characteristics, and practice pattern items. The participants were asked to identify themselves as either a PA or a NP. Practice characteristics encompassed questions regarding specialty, certifications obtained, and procedures performed which were open custom response format.

Scope of practice was explored with response options including diagnosis and management of acute conditions, diagnosis and management of chronic conditions, and diagnosis and management of both acute and chronic conditions. Providers were asked to identify their practice setting as ambulatory, inpatient, subacute/long term care, telehealth or other.

Questions regarding relationship with physician partner and care delivery models were asked of the APP. The APP was asked what percentage of time they assist a physician partner with their documentation, with response options ranging in quarter increments from 0-25% to 76-100%. Participants were asked to identify their practice environment with the other providers in their practice as either a collaborative team environment or an individual practice environment.

Practice-level outcomes data and engagement included productivity, patient satisfaction, readmission rate, and percentage of engaged providers. Productivity included both APP and physician combined work related value units (wRVU). The percentage of productivity is the provider's total billed wRVU's compared to the national 60th percentile American Medical Group Association benchmark. The overall rating from the Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CGCAHPS) survey for each practice was used to measure patient satisfaction of the practice. The readmission rate was calculated from the

group's attributed panel of patients and reported as the percent of patients who returned to the

hospital within 30 days of discharge. Provider engagement data was obtained from the human

resources department of Norton Healthcare using the 2017 Safety and Engagement Survey. The

percentage of engaged was reported for specialty practices as a total percentage of engaged

providers, including both physicians and APPs in the practice.

**Data Analysis**

Descriptive statistics, including frequency distributions, means, and standard deviations

were used to describe APP demographic data.  Survey responses to the following three questions

identifying relationship of APP and physician partner in practice were used to group specialty

practices into one of three categories.

1. What percentage of time do you assist a physician partner with their documentation?

2. Do you perform pre-rounding for a physician in your practice?

3. Do you participate with a physician in split-shared billing or incident-to billing?

The three groups which emerged based on the answers to the above questions were;

**Group A**- less than 50% of the time APP assisted a physician partner with their

documentation, less than 50% of the APPs in the specialty performed pre-rounding, and

APPs in the specialty did not participate in split-shared or incident-to billing.

**Group B**- a combination of two of the three questions were answered identifying the

group as moderately attached to physician when performing clinical documentation of

work completed.

**Group C**- greater than 50% of the time APP assisted a physician partner with their

documentation, more than 50% of the APPs in the specialty performed pre-rounding, and

APPs in the specialty participated in both split-shared and incident-to billing.

The chi-square test of association was used to test for association between groups and each of the three questions identifying relationship of APP and physician partner in practice. This was done as a way to validate the grouping definitions above. Comparative analysis between the three groups and the quality/productivity metrics were performed using one-way Analysis of Variance (ANOVA). The analysis was conducted using SPSS version 22; an [*alpha*] level of 0.05 was used for statistical significance throughout.

## Results

### APP Characteristics

Of the 187 APPs who were invited to participate 123 APPs (28 PAs and 94 NPs) completed the survey (66% participation rate). The majority of the respondents were female (89%; see Table 1), Caucasian (97%) and Master's prepared (89%). The most frequently reported age group was 26-49 (46%). Sixty-one percent of respondents had less than 10 years of experience. The top four reported specialties were Oncology (21%; see Table 2), Orthopedics (14%), Hospitalist (14%), and Cardiology (13%). The respondents reported sixty different committee memberships (see Appendix 1), ten different board certifications, and eighteen professional certifications (see Appendix 2).

### APP Practice Patterns

The most frequently reported primary scope of practice was diagnosis and management of acute and chronic conditions (86%; see Table 1). Over half of the respondents described their practice setting as being ambulatory (62%) or inpatient (53%) and they reported spending more than 7 hours of their day providing direct patient care (70%). Almost half (48%) reported taking call: pager call (52%), surgical call (9%). Weekend coverage in addition to weekday hours was reported by a little over half (55%) of the respondents. The majority reported collaborating

physician on site greater than 50% of the time (62%) and had a collaborative team environment

(88%). The group reported 76 different types of inpatient and outpatient procedures performed

(see Appendix 3).

**Care Delivery Models**

**Group A-** encompassed specialty practices where the APPs reported assisting physician

partners with documentation less than 50% of the time and less than 50% in this group

performed pre-rounding.  APPs in this group did not did not participate in split-shared or

incident-to billing. The following specialty practices exhibiting these specific

characteristics were placed into Group A:

Mental/Behavioral Health

Cardiothoracic Surgery

Neurology

**Group B-** encompassed specialty practices where the APPs varied their responses

regarding time assisting physician partner with documentation reporting either more or

less than 50% of the time.  Also, greater or fewer than 50% in each practice reported

engaging in pre-rounding.  APPs in these practices participated in both split-shared and

incident-to billing.  The following specialty practices exhibiting these characteristics

were placed into Group B:

Obstetrics and Gynecology (OB/GYN)

General Surgery

Orthopedics

Cardiology

**Group C**- encompassed specialty practices where the APPs reported assisting a physician partner with their documentation more than 50% of the time and greater than 50% reported performing pre-rounding. More than 50% of the APPs in the specialty participated in both split-shared and incident-to billing. The following practices were defined exhibited these characteristics and were placed into Group C:

Gastroenterology

Hospitalist

Oncology

Neonatology

Neurosurgery

Women's Health

A chi square test of association validated the grouping (see Table 6).

## Quality/Productivity/Engagement

Patient satisfaction, provider engagement, practice productivity, and practice readmission rates were compared between Group A, Group B, and Group C (see Table 7). There was no statistical significance noted between the groups. There is practical significance in the years of practice experience and the lack of standardized practice patterns.

<div align="center">

**Discussion**

</div>

## APP Characteristics

The review of the demographic characteristics of the specialty practice APPs has allowed for a better understanding of the population of providers and opportunities for strategic planning around onboarding, development of competencies, continuing education, growth, and mentorship. The average age of the study group was 39. The AANP (2017) reports the average

age of the national NP population as being 48. This identifies the population at Norton Healthcare as young. Of those in the study 40% have practiced five years or less. With a young provider group an opportunity emerges for the development of continuing education programs to strengthen the knowledge of the advancing provider. A mentorship program would also benefit the new provider as he/she moves from novice to expert. A study performed by Doerksen (2011) recommended a mentorship program that continues throughout one's career and changes focus as needs change.

A robust list of board certifications and professional certifications identifies a group of advanced practice who have enhanced their knowledge through continued education. The strength of this group of providers is evidenced by the procedures they perform and the certifications they have obtained. The procedure and certification lists highlight areas of additional training that could be incorporated within an onboarding program. The list of reported procedures will help to build a competency component to an onboarding program as well as catalogue procedures being performed for credentialing purposes.

**APP Practice Patterns**

The evaluation of the practice patterns of the APPs in specialty practice included extended hours coverage, call coverage, weekend coverage, in both the ambulatory and inpatient environments. Understanding the work being performed after hours will assist with efforts to align compensation with volume of work performed. The majority listed their scope of practice as diagnosing and managing both acute and chronic conditions in a team environment. The utilization of advanced practice in management of chronic and acute conditions in a team environment has been shown to improve outcomes and patient satisfaction (Litaker et al., 2003).

The advanced practice professional is educated and trained to manage patients in the specialty environment as a part of the interprofessional team.

**APP Care Delivery Models**

Three models emerged regarding relationship between physician and APP in the practice environment. The three models grouped level of attachment to physician through documentation and billing. The variability between the groups was noted. This identified an absence of standardization of practice. The study identified redundancy of work around documentation. This may be by design for efficiency of the medical practice, but in return complicates the ability to track work performed by the APP. Use of an APP to document or pre-round for another provider is not an example of utilizing the APP at the top of license.

**Quality/Productivity/Engagement**

It can be difficult to measure quality and productivity of an APP who practices as a part of an interprofessional team in a specialty environment. Participation in an interprofessional team as opposed to having a primary panel of patients presents difficulty when analyzing quality and productivity of an APPs practice. The quality and productivity of the work is attributed to the billing physician. This adds complexity when trying to measure the value of an APP. A culture that supports top of license practice ensures maximum utilization of an APP despite not having a value metric for non-revenue generating work. In addition to top of license practice, the development of an attribution code for the APP that participates in a visit that is billed under the physician would help measure value.

## Limitations

Although the research accomplished the objectives described, several limitations were identified. The response rate of the survey was 123 (66% response rate). The data was collected

from only one system which may limit the impact of the study due to the unique utilization of

APPs in this system.  The survey tool used was not validated.  Responder bias is another

potential limitation of a voluntary self-reported survey.  Patient satisfaction was tied to the

physician not the APP; thus this did not represent the true patient satisfaction of the total care

delivered. This study included all non-primary care practices which was broad.  Comparing

surgical practices to ambulatory practices limited the ability to identify practice pattern trends.

In addition, the study participants were all practicing in the state of Kentucky and state

regulatory bodies determine scope of practice which affects practice patterns. An additional

limitation regarding the sample group was that advanced practice included both PAs and NPs.

Not only does training differ between these two groups but state scope of practice varies.

<div align="center">**Recommendation for Future Studies**</div>

Following an assessment of current state, future studies should focus on detailed analysis

within the specialties.  A comparison of PA and NP practice could provide useful data regarding

variation in practice patterns between the two groups.  As the DNP population grows there is

opportunity to study the impact of the doctorate prepared NP compared to the master's prepared

NP.  A comparison of APP utilization in specific surgical practices could identify the impact of

APPs on quality, efficiency, and practice productivity.   The practice productivity data identified

several disease specific NP only practices.  A value analysis of independent NP clinics may

identify an opportunity to replicate such practice models. Evaluation of interprofessional models

between groups, as well as, the cultural acceptance of APPs in specialty practices would help to

further identify the role of the APP in specialty practices and perhaps provide opportunity for

further role enhancement and expansion.

**Conclusion**

The opportunity to evaluate current state of specialty practice APPs in a medical group helped to identify current characteristics, practice patterns, and relationship with physician partners in practice. The specialty APPs are a diverse group that perform procedures, are board certified, have continued their education through additional certifications, and provide after-hours care in various settings. The opportunity for onboarding and mentorship programs was identified which would strengthen the performance of the APP at all stages of his/her career. Three groups emerged related to relationship of APP to physician partner as it pertained to billing, documentation, and pre-rounding. There was no difference between the three groups in terms of provider outcomes: quality, productivity, provider engagement and patient satisfaction. The opportunity to standardize practice and to develop a tracking method for work performed by the APP during a shared visit was noted. The literature supports the utilization of APPs in specialty practices to strengthen the interprofessional team and expand access. The development of a value metric for APP practice is essential to the specialty practice model. A value metric for shared visits or non-revenue generating work would allow for tracking of productivity, alignment of incentive plans, and data guided provider ratios.

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EVALUATION OF APP SPECIALTY PRACTICE PATTERNS

Table 1. *APP Characteristics* (n=123)

| | |
|---|---|
| **Gender** | |
| Female | 110 (89.4%) |
| Male | 12 (9.8%) |
| Transgender | 1 (0.8%) |
| **Age** | |
| No response | 18 (5.6%) |
| 26-39 | 57 (46.3%) |
| 40-49 | 29 (23.5%) |
| 50-59 | 15 (12.1%) |
| 60-64 | 4 (3.2%) |
| **Race** | |
| Asian | 2 (1.6%) |
| Black or African American | 2 (1.6%) |
| White or Caucasian | 111 (91%) |
| Hispanic | 3 (2.5%) |
| Native Hawaiian or Pacific Islander | 1 (0.8%) |
| More than one race | 3 (2.5%) |
| **Highest Level of Education** | |
| Bachelors | 3 (2.4%) |
| Masters | 110 (89.4%) |
| Doctorate | 10 (8.1%) |
| **Provider type:** | |
| PA | 28 (22.8%) |
| APRN | 94 (76.4%) |
| Other | 1 (0.8%) |
| **Primary Scope of Practice** | |
| Diagnosis and Management of Acute Conditions | 12 (10.7%) |
| Diagnosis and Management of Chronic Conditions | 4 (3.3)% |
| Diagnosis and Management of Acute/Chronic Conditions | 105 (86.1%) |
| **Practice Setting** | |
| Ambulatory | 76 (62.3%) |
| Inpatient | 64 (52.5%) |
| Subacute/long term care facility | 3 (2.5%) |
| Telehealth | 1 (0.8%) |
| Other | 16 (13.1%) |
| **Number of years as provider** | |
| Missing | 10 (8.1%) |
| 1-5 years | 49 (39.8%) |
| 6-10 years | 27 (21.9%) |
| 11-15 years | 16 (13%) |
| 16-20 years | 11 (8.9%) |
| 21-25 years | 5 (4.1%) |
| 26-30 years | 2 (1.6%) |
| **Specialty** | |
| Missing | 12 (9.7%) |

| | |
|---|---|
| Cardiology | 14 (12.6% |
| Cardiothoracic Surgery | 3 (2.7%) |
| General Surgery | 5 (4.5%) |
| Gastroenterology | 3 (2.7%) |
| Hospitalist | 15 (13.5%) |
| Neonatology | 5 (4.5%) |
| Neurology | 6 (5.4%) |
| Neurosurgery | 7 (6.3%) |
| OB/GYN | 5 (4.5%) |
| Oncology | 23 (20.7%) |
| Orthopedics | 16 (14.4%) |
| Mental/Behavioral Health | 4 (3.6%) |
| Women's Health | 5 (4.5%) |
| **Hours per day direct patient care** | |
| 0-3 | 3 (2.5%) |
| 4-6 | 33 (27.0%) |
| 7-8 | 57 (46.7%) |
| 9-10 | 17 (13.9%) |
| >11 | 12 (9.8%) |
| **Hours per day on administrative task (computer)** | |
| 0-2 | 52 (42.3%) |
| 3-4 | 43 (35%) |
| 5-6 | 15 (12.2%) |
| 7-8 | 5 (4.1%) |
| >8 | 8 (6.5%) |
| **Average Call  (n=59)** | |
| Pager Call | 64 (52%) |
| Surgery Call | 5 (8.5%) |
| **Weekend Coverage in addition to M-F (n=118)** | |
| No | 53 (44.9%) |
| Yes | 65 (55%) |
| **Collaborating Physician on site (n=122)** | |
| <25% | 35 (28.7%) |
| 26-50% | 12 (9.8%) |
| 51%-75% | 23 (18.9%) |
| >76% | 52 (42.6%) |
| **Working Environment (n= 121)** | |
| Collaborative Team Environment | 106 (87.6%) |
| Individual Environment | 15 (12.4%) |
| **APP Included in Group Meeting (n=120)** | |
| Yes | 60 (50%) |
| No | 60 (50%) |

Table 2.  *Specialty Practices Identified*

| Specialty | Frequency | % |
|---|---|---|
| Cardiology | 14 | 12.6 |
| Cardiothoracic Surgery | 3 | 2.7 |
| General Surgery | 5 | 4.5 |
| Gastroenterology | 3 | 2.7 |
| Hospitalist | 15 | 13.5 |
| Neonatology | 5 | 4.5 |
| Neurology | 6 | 5.4 |
| Neurosurgery | 7 | 6.3 |
| OB/GYN | 5 | 4.5 |
| Oncology | 23 | 20.7 |
| Orthopedics | 16 | 14.4 |
| Mental/Behavioral | 4 | 3.6 |
| Women's Health | 5 | 4.5 |

Table 3. *Physician Documentation*

| What percentage of the time do you assist a MD partner with their documentation? | | | | |
|---|---|---|---|---|
| Specialty | 0% | 1%-25% | 51%-75% | 76%-100% |
| Cardiology | 35% | 50% | 7% | 7% |
| Cardiothoracic Surgery | 67% | 33% | 0% | 0% |
| General Surgery | 40% | 40% | 0% | 20% |
| Gastroenterology | 0% | 0% | 0% | 100% |
| Hospitalist | 7% | 36% | 36% | 21% |
| Neonatology | 20% | 60% | 0 | 20% |
| Neurology | 100% | 0 | 0 | 0 |
| Neurosurgery | 0 | 14% | 43% | 43% |
| OB/GYN | 80% | 0 | 0 | 20% |
| Oncology | 9 | 64% | 14% | 14% |
| Orthopedics | 31% | 44% | 25% | 0 |
| Mental/Behavioral | 100% | 0 | 0 | 0 |
| Women's Health | 50% | 25% | 25% | 0 |

EVALUATION OF APP SPECIALTY PRACTICE PATTERNS

Table 4.  *Pre-rounding*

| Do you perform pre-rounding for a physician in your practice? | | |
|---|---|---|
| **Specialty** | **No** | **Yes** |
| Cardiology | 9 (64%) | 5 (35%) |
| Cardiothoracic Surgery | 9 (67%) | 1 (33%) |
| General surgery | 0 | 5 (100%) |
| Gastroenterology | - | - |
| Hospitalist | 4 (29%) | 10 (71%) |
| Neonatology | 2 (40%) | 3 (60%) |
| Neurology | 6 (100%) | 0 |
| Neurosurgery | 1 (14%) | 6 (86%) |
| OB/GYN | 0 | 5 (100%) |
| Oncology | 10 (43%) | 13 (57%) |
| Orthopedics | 13 (81%) | 3 (19%) |
| Mental/Behavioral Health | 4 (100%) | 0 |
| Women's Health | 0 | 5 (100%) |

Table 5.  *Split-shared/Incident-to Billing*

| Do you participate with a physician in split-shared or incident-to type visits? | | |
|---|---|---|
| **Specialty** | **No** | **Yes** |
| Cardiology | | X |
| Cardiothoracic Surgery | X | |
| General surgery | X | |
| Gastroenterology | | X |
| Hospitalist | | X |
| Neonatology | | X |
| Neurology | X | |
| Neurosurgery | | X |
| OB/GYN | X | |
| Oncology | | X |
| Orthopedics | X | |
| Mental/Behavioral Health | X | |
| Women's Health | | X |

EVALUATION OF APP SPECIALTY PRACTICE PATTERNS

Table 6. *Chi Square Test between groups*

|  | Group 1<br>% yes | Group 2<br>% yes | Group 3<br>% yes | p |
|---|---|---|---|---|
| Assist with Documentation | 0 | 20.00 | 45.45 | .001 |
| Rounding | 7.69 | 45.00 | 60.70 | .002 |
| Split Billing | 53.8 | 60.00 | 82.76 | .017 |

Table 7. *APP Group Comparison and Quality/Productivity*

| Comparison Between Groups | Group A (n=6 practices) Mean (SD) | Group B (n=12 practices) Mean (SD) | Group C (n=20 practices) Mean (SD) | *F* (p) |
|---|---|---|---|---|
| Productivity | 41.44  (28.59) | 29.96 (37.19) | 37.74 (70.45) | .170 (.845) |
| Readmission rate | 10.5    (3.31) | 5.73  (4.61) | 9.45 (5.97) | 2.66 (.086) |
| Patient satisfaction | 74.05  (36.33) | 86.97 (.937) | 77.15 (26.78) | 1.36 (.296) |
| Engagement | 26.7 | 49.02 (21.06) | 37.42 (6.54) | 1.03 (.403) |

Appendix 1. *Committee and Meeting Representation*

| Reported Committee /Meeting Representation | |
| --- | --- |
| Bravehearts-Norton Children's Foundation | System orthopedic steering committee |
| Norton Heart Specialists Group Meetings | Fracture fragility committee |
| APP Quarterly Practice Meeting | Neuroradiology conference |
| Afib Meeting | Clinical Leadership Council |
| Afib Marketing | System Medical Executive Committee |
| NCI APP Meeting | Advanced Practice Provider Leadership |
| Integrated Medicine Committee | Council |
| Hematology Meetings | EPIC Optimization Committee-Norton |
| Coding | Medical Group |
| Norton Neuroscience Institute Case | Medication Management Committee Norton |
| Presentation and M&M Conference | Medical Group |
| Norton Cancer Institute Central Nervous | Provider Governance Board-Norton |
| System (CNS) Oncology Research Subgroup | Medical Group |
| committee member | Norton Medical Group Clinical |
| University of Kentucky and Norton Healthcare | Administration Committee |
| Physician Assistant Advisory Committee | Primary Care Leadership Council-Norton |
| Member | Medical Group |
| Norton Inpatient Care, Stroke M&M | Norton Medical Group Analytics Team |
| Fetal Boards  MFM Provider Meeting | Advanced Practice Professionals Committee |
| Norton Inpatient Care Specialists | Product, Privileging, and Procedure |
| TOC (take over care) Meetings  Maternal | Committee-Norton Medical Group |
| Boards | Cardiology Advanced Practice Committee |
| Norton Advanced Professional Practice | Opioid Task Force |
| Committee | Lung Cancer Screening/CT Screening |
| Norton Children's Hospital Advanced | Committee |
| Professional Practice Committee | Lung Cancer Alliance Advisory Board |
| Norton Children's Hospital Patent Safety | Bellarmine University, Lansing School of |
| Committee | Nursing Advisory Board |
| Norton Children's Neonatology/University of | Norton Healthcare Critical Care Committee |
| Louisville Joint Venture Committee | Advanced Practice and Credentialing |
| NNI Friday morning conference | Committee |
| NNI monthly stroke meetings | Fetal Board |
| Refractory epilepsy conference | Pelvic health Committee |
| Patient care VAT | Spine conference |
| Neuroscience Case presentations | Total joint committee at NWC |
| Tumor Conference | NWC ERAS committee |

Appendix 2. *APP Reported Certifications*

| Board Certifications | Professional Certifications |
|---|---|
| Acute and Primary Care Nurse Practitioner-Dual Certified | Basic Life Support |
| Adult Nurse Practitioner-Board Certified | Advanced Cardiac Life Support |
| Adult Gerontology Acute Care Nurse Practitioner-Board Certified | Certified Neuroscience Registered Nurse |
| Family Nurse Practitioner-Board Certified | Stroke Certified Registered Nurse |
| Neonatal Nurse Practitioner-Board Certified | STABLE |
| Women's Health Nurse Practitioner-Board Certified | Neonatal Resuscitation Program Certification |
| Advanced Oncology Nurse Practitioner-Board Certified | Registered Nurse First Assist |
| Advanced Oncology Certified Nurse Specialist-Board Certified | Emergency Neurological Life Support |
| National Commission on Certification of Physician Assistants-Board Certified | Wound Care Certified Ostomy Management Specialist Certification |
| Psychiatric Mental Health Nurse Practitioner-Board Certified | Department of Transportation Medical Examination Certification |
|  | Chemotherapy and Biotherapy Certification |
|  | Collaborative Institutional Training Initiative (CITI) certified |
|  | NovoTTF-100A System (Novocure) Certified |
|  | Lactation Consultant |
|  | Society of Clinical Research Associates Certification |
|  | CAQ Orthopedic Surgery |

Appendix 3. *APP Procedures Performed*

| Reported Procedures Performed | |
|---|---|
| Intubation | Umbilical Line Placement |
| Central Line Placement | Paracentesis |
| Arterial Line Placement | PICC Line Placement |
| Thoracentesis | Frenotomy |
| Pacemaker Programming | Exchange Transfusion |
| ICD Programming | Intraosseous Insertion |
| Chest tube Insertion | Suprapubic bladder aspiration |
| Chemical Cardioversion | Ventricular Reservoir Tap |
| Pace Termination | Ligation of extra digits |
| Botox Injections | Pericardiocentesis |
| Occipital Nerve Blocks | Pericardial tap |
| SPG Nerve Blocks | UAC/UVC Placement |
| Pericranial Nerve Blocks | PAL Placement |
| Bone Marrow Biopsy | Trigger Point Injections |
| Intrathecal Chemotherapy | External Ventricular Drain Placement |
| Orthopedic Mobilization | Lumbar Puncture Shunt Taps |
| Laceration Repair | Shunt patency test |
| SUH Drainage | IUD insertion |
| Irrigation and Debridement | IUD removal |
| Wound Vac management | Nexplanon Insertion |
| Application of placental matrix | Vulvar/Vaginal Biopsy |
| Callous Parring | Endometrial Biopsy |
| Wound Closure | EMB |
| Nail Removal | Colposcopy |
| Nailbed Repair | Ommaya-IT chemotherapy |
| Placement of Nexplanon | Intra-articular joint injections |
| Circumcision | Intra-articular joint aspirations |
| Lumbar Puncture | Carpal Tunnel Injections |
| Cast Application | Tendon Sheath Injections |
| Splinting | CMC Injections |
| EVD, subdural, lumbar drain maintenance | Ganglion cyst excisions |
| VAD-tap | Fracture/Dislocation Reduction |
| Pin Removal | Endo Vein Harvesting |
| Clubfoot Ponseti Casting | IABP-placement/removal |
| Bladder Instillation | Emergent Sternotomy (reopen) |
| Neurostimulator Interrogation | Saline Infused Sonohysterogram |

Appendix 4. *APP Specialty Practice Survey Codebook*

| Variable / Field Name | Field Label *Field Note* | Field Attributes (Field Type, Validation, Choices, Calculations, etc.) |
|---|---|---|
| Instrument:**APP Specialty Practice Survey**(app_specialty_practice_survey) | | |
| 1  record_id | Record ID | text |
| 2  gender | Define your gender: *Select the response that best fits* | radio<br><br>| 1 | Female |<br>| 2 | Male |<br>| 3 | Transgender |<br><br>Custom alignment: LV |
| 3  age | Document your age: | text<br>Custom alignment: LV |
| 4  race | Which of the following best describes your race: *Select the response that best fits* | radio<br>American Indian or Alaskan Native<br>Asian<br>Black or African American<br>Hispanic/Latino<br>Not Hispanic/Latino<br>Native Hawaiian or other Pacific Islan<br>White or Caucasian<br>More than one race<br>Prefer not to answer<br><br>Custom alignment: LV |
| 5  educ | Highest level of education obtained: *Select the response that best fits* | radio<br><br>| 1 | Associate |<br>| 2 | Bachelors |<br>| 3 | Masters |<br>| 4 | Doctorate |<br><br>Custom alignment: LV |
| 6  aprn_pa_status | Are you: | dropdown<br><br>| 1 | PA |<br>| 2 | APRN |<br>| 3 | Not an APRN |<br><br>Custom alignment: LV |
| 7  years_as_provider | List number of years as a provider: | text<br>Custom alignment: LV |
| 8  rn_years | If an APRN, enter the number of years as a practicing RN prior to becoming an APRN (if less than one year enter 0): | text<br>Custom alignment: LV |

| 9 | collaborating_yrs | List number of years in practice with collaborating or supervising MD: | text<br>Custom alignment: LV | |
|---|---|---|---|---|
| 10 | certifications_obtained | List any certifications obtained | notes<br>Custom alignment: LV | |
| 11 | specialty_practice | List current specialty of practice: | text<br>Custom alignment: LV | |
| 12 | subspecialty | List current subspecialty of practice: | text<br>Custom alignment: LV | |
| 13 | scope_of_practice | Primary scope of practice:<br>*Select the response that best fits* | radio | |
| | | | gnosis and management of acute ditions | |
| | | | gnosis and management of chronic ditions | |
| | | | gnosis and management of both acut⟩<br>ɔnic conditions | |
| | | | Custom alignment: LV | |
| 14 | practice_setting | What describes your practice setting:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | checkbox | |
| | | | ctice_setting___1 | Ambulatory |
| | | | ctice_setting___2 | Inpatient |
| | | | ctice_setting___3 | Subacute/long ter⟩ |
| | | | ctice_setting___4 | Telehealth |
| | | | ctice_setting___5 | Other |
| | | | Custom alignment: LV | |
| 15 | prac_set_other | If practice setting is other please note: | text<br>Custom alignment: LV | |
| 16 | clinical_practice_hours | How many hours per day do you spend in clinical practice providing direct patient care:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>1 0-3<br>2 4-6<br>3 7-8<br>4 9-10<br>5 >11<br><br>Custom alignment: LV | |
| 17 | admin_hrs | How many hours per day do you spend on administrative tasks using a computer:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>1 0-2<br>2 3-4<br>3 5-6<br>4 7-8<br>5 >8<br><br>Custom alignment: LV | |
| 18 | avg_pts_day | On average, how many patients do you see per day: | text<br>Custom alignment: LV | |

| | | *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | |
|---|---|---|---|
| 19 | avg_comorbid | Average number of comorbidities in your patient panel:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>| 1 | 0-2 |<br>| 2 | 3-5 |<br>| 3 | >5 |<br><br>Custom alignment: LV |
| 20 | avg_call_days | Average call responsibility on a monthly basis (list the average number of days):<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | text<br>Custom alignment: LV |
| 21 | call_responsibility | Call responsibility:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>| 1 | Pager call |<br>| 2 | Surgery call |<br><br>Custom alignment: LV |
| 22 | after_hours_days | Average days per month working after hours:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | text<br>Custom alignment: LV |
| 23 | weekend_coverage_days | Average weekend coverage responsibility on a monthly basis (days):<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | text<br>Custom alignment: LV |
| 24 | weekend_hours | Average hours per day on site during weekend:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>| 1 | 0-4 |<br>| 2 | 5-8 |<br>| 3 | 9-12 |<br>| 4 | >12 |<br><br>Custom alignment: LV |
| 25 | time_collab_onsite | On average, how much time per day is your collaborating or supervising physician on site:<br>*Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>| 1 | < 25% |<br>| 2 | 26%-50% |<br>| 3 | 51%-75% |<br>| 4 | >76% |<br><br>Custom alignment: LV |
| 26 | prac_team_mem | Practice location includes the following team members (check all that apply): | checkbox<br><br>| prac_team_mem___1 | Receptionist |<br>| prac_team_mem___2 | MA |<br>| prac_team_mem___3 | LPN |<br>| prac_team_mem___4 | RN | |

| | | | |
|---|---|---|---|
| | | *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | 5 | prac_team_mem___5 | Triage RN |

| | | | |
|---|---|---|---|
| | | | 6 | prac_team_mem___6 | Diabetes Educator |
| | | | 7 | prac_team_mem___7 | Nurse Navigator |
| | | | 8 | prac_team_mem___8 | Social Worker |
| | | | 9 | prac_team_mem___9 | Pharmacist |
| | | | 10 | prac_team_mem___10 | Scheduler |
| | | | 11 | prac_team_mem___11 | Not Applicable |

Custom alignment: LV

| # | Variable | Question | Response |
|---|---|---|---|
| 27 | support_staff | Support staff that are assigned to you (check all that apply): *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | checkbox<br><br>support_staff___1 MA<br>support_staff___2 RN<br>support_staff___3 Triage RN<br>support_staff___4 Nurse Navigato<br>support_staff___5 Not Applicable<br><br>Custom alignment: LV |
| 28 | presc_priv | Do you have prescriptive privileges: | yesno<br><br>1 Yes<br>0 No<br><br>Custom alignment: LV |
| 29 | presc_priv_schedule | Do you have prescriptive privileges for scheduled drugs: | yesno<br><br>1 Yes<br>0 No<br><br>Custom alignment: LV |
| 30 | assist_md_with_doc | What percentage of time do you assist a physician partner with their documentation: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>1 0%<br>2 1%-25%<br>3 51%-75%<br>4 76%-100%<br><br>Custom alignment: LV |
| 31 | work_enviro | Would you describe your working environment with other providers in your practice as: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | radio<br><br>1 A collaborative team environment<br>2 An individual environment<br><br>Custom alignment: LV |
| 32 | pre_rounding | Do you perform pre-rounding for a physician in your practice: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | yesno<br><br>1 Yes<br>0 No<br><br>Custom alignment: LV |

| 33 | split_incident | Do you participate with a physician in: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | checkbox<br><br>| split_incident___1 | Split shared visi |<br>| split_incident___2 | Incident to billir |<br><br>Custom alignment: LV |
|----|----------------|--------------------------------------------------|------------------------------------|
| 34 | num_of_phys | How many physicians do you directly work with on a daily basis: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | text<br>Custom alignment: LV |
| 35 | surgery | Do you assist in surgery: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | yesno<br><br>| 1 | Yes |<br>| 0 | No |<br><br>Custom alignment: LV |
| 36 | procedures | List any procedures you perform: (Do not include procedures performed in the operating room) *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | notes<br>Custom alignment: LV |
| 37 | committees | List any Norton Healthcare committees/meetings you regularly attend: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | notes<br>Custom alignment: LV |
| 38 | prac_meet | Are you included in the regular practice meetings with the physicians in your practice: *Please respond based upon your primary role in the previous 12 months at Norton Healthcare* | yesno<br><br>| 1 | Yes |<br>| 0 | No |<br><br>Custom alignment: LV |
| 39 | special_interest | Please add any areas of special interest or need regarding your practice that you would like to communicate: | notes<br>Custom alignment: LV |
| 40 | app_specialty_practice _survey_complete | Section Header: *Form Status*<br><br>Complete? | dropdown<br><br>| 0 | Incomplete |<br>| 1 | Unverified |<br>| 2 | Complete | |