EVIDENCE BASED PRACTICE AMONG
PRIMARY CARE NURSE PRACTITIONERS

by

Stephen Van Roper

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As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Stephen Van Roper entitled “Evidence Based Practice Among Primary Care Nurse Practitioners” and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy

Cathy L Michaels, PhD, RN, FAAN
Clinical Associate Professor
Date: November 14, 2011

Barbara Brewer, PhD, RN
Clinical Assistant Professor
Date: November 14, 2011

Deborah Vincent, PhD, APRN, BC, FAANP
Associate Professor
Date: November 14, 2011

Final approval and acceptance of this dissertation is contingent upon the candidate’s submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director: Cathy L Michaels, PhD, RN, FAAN
Clinical Associate Professor
Date: November 14, 2011
STATEMENT BY AUTHOR

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SIGNED: Stephen Van Roper
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DEDICATION

This dissertation is dedicated to my parents and family. Thank you for teaching me about all the different ways of stewardship to the world. You will always be a source of inspiration to me. There is no greater service than caring for our fellow beings.
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ABSTRACT

This study describes primary care nurse practitioner (PCNP) beliefs in, knowledge, implementation and utilization of evidence based practice (EBP). Research questions answered are:

1. What are the levels of belief, implementation, knowledge and utilization of EBP among PCNPs?
2. Is there a relationship with PCNP demographics (personal, professional, and practice), belief, knowledge, implementation and utilization of EBP?
3. Do PCNP demographics (personal, professional, and practice) and scores on belief, knowledge and implementation influence EBP utilization?

EBP is considered a standard of care and essential to nurse practitioner practice. The primary advantages of EBP include improved quality of care through the utilization of patient resources, provider resources and experiences, current research and scientific information. However, few studies describe nurse practitioner beliefs, knowledge in EBP and the extent to which this may affect primary care nurse practitioners’ (PCNP) utilization of EBP in their practice.

Four questionnaires incorporated into one survey were used to examine PCNP beliefs, knowledge, implementation and utilization of EBP. JNC7 guideline knowledge and self-reported use was used to measure EBP utilization. A convenience sample of 202 FNPs, ANPs and GNPs were obtained during the American Academy of Nurse Practitioners National Conference 2011 in Las Vegas, Nevada. PCNPs surveyed were found to have a high level of belief in EBP but did not report implementing EBP more than 3 times in the past 8 weeks. Belief was statistically higher in doctorally prepared PCNPs. Ninety-five percent of the participants were familiar with
the JNC7 guideline but the group scored a mean of 69% on knowledge of JNC7 guideline specifics. Only 25% of respondents indicated they utilized guidelines in hypertension management. Future studies should include quantitative and qualitative evaluation of EBP implementation facilitators and obstacles. Findings in this study have provided initial information to better understand PCNPs and EBP.
CHAPTER I: REVIEW OF THE LITERATURE

Introduction

One of the fastest growing movements in health care today is evidence-based practice (EBP). An example of the popularity of this topic is evidenced by the number of hits on two major internet search engines: over 64841 hits on PubMed (pubmed.gov) and 148,217 on the British Medical Journal (bmj.com) (as of 11/05/2011). Evidence-based practice is defined as a clinical practice of inquisitiveness and evaluation of the relevant data utilizing information for clinical practice (Journal of the American Medical Association, 1992; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). EBP involves four steps: initiate the clinical decision-making process by formulating a question, searching for relevant research, critically evaluating the evidence for validity and relevance, and developing a clinical intervention supported by the evidence (Journal of the American Medical Association, 1992; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Given that EBP is the professional standard today (Institutes of Medicine, 2003) it is important to assess if EBP is implemented and utilized systematically in clinical practice.

According to the Institutes of Medicine (2003), using EBP is important because there is a very strong probability of achieving specific patient outcomes when utilized in the clinical decision making process. EBP increases the knowledge of the clinician to better inform decisions during the clinical decision making process through referencing quality scientific research (Eddy, 2005; Titler, 2004 & 2007). Effective treatments utilized in EBP tend to increase patient adherence to treatment plans and therefore promote better patient outcomes (Martin, Williams, Haskard, & DiMatteo, 2005). An evidence based practice tends to be more cost effective by potentially saving time with clinical practices that are more likely to have favorable outcomes.
EBP as a clinical decision-making process involves melding contextual issues of dependable factual research data with available resources, patient values and individual concerns with the clinical experience and the expertise of the health care provider (Institutes of Medicine, 2003). Today evidence may be presented through research articles as well as in clinical guidelines and algorithms. Given the dynamic nature of clinical decision-making, implementing EBP based on algorithms alone can be limiting (Latov, 2005). Clinical guidelines are important but only a portion of these are based on evidence-based data (Institutes of Medicine, 2003). Eddy (2005) for example reported that many guidelines are based on expert opinion rather than strong data. Overall, contextual issues presented during a patient-provider encounter may prompt the provider to develop a plan beyond what the research evidence might suggest (National Cancer Institute, 2007).

Moreover, despite convincing research that supports good patient outcomes based on EBP, patient outcomes often do not significantly improve (National Cancer Institute, 2007 & 2011; NHLBI, 2010). For example, the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7) has noted that research from clinical trials has successfully standardized hypertension (HTN) management producing marked improvement in blood pressure management and improved quality patient outcomes (NHLBI, 2010). Yet, patient blood pressure control remains suboptimal according to the Institutes of Medicine (2010). Inquiry into why this is occurring is just beginning to come forth in the literature.
Patient adherence to treatment plans is hypothesized as a reason for suboptimal outcomes and is an area of active research (Martin, Williams, Haskard & DiMatteo, 2005). However, what about providers utilization of EBP as a potential reason for suboptimal outcomes? Little research has been reported in the literature regarding how effectively providers’ implement and use evidence in practice. A primary area of interest in EBP research utilization is analysis of predictors for consistent use of EBP in spite of convincing research supporting EBP guidelines (Titler, 2007). Several topics are noted in the literature including provider training in EBP, EBP support in the clinical setting and provider attitudes (Aaron, 2005; Nelson & Steels, 2007).

The healthcare provider must be able to utilize research evidence in an EBP. The process of translating evidence into practice is more than protocol and includes interpersonal communication skills, experience of patient, self, and collaborators, and incorporates multiple systems and resources that increase the likelihood of ethical healthcare integrated with current EBP producing optimal patient outcomes (Aaron, 2005). This knowledge acquisition and treatment plan development at the individual provider level is evidence-based practice, the focal point of this research.

Predictors of healthcare outcomes in EBP utilization are categorized as systemic, provider and patient factors (Lang, Wyer, & Haynes, 2007; Melnyk & Fineout-Overholt, 2005). Although systemic and patient factors are predictors contributing to patient outcomes, provider level research evaluating the knowledge and utilization of EBP has not been sufficiently conducted (Helfrich, et al., 2010; Lang, Wyer, & Haynes, 2007). Many factors are involved in provider uptake and utilization of EBP including belief in EBP, confidence or ability to implement EBP, knowledge acquisition and utilization of EBP (Eizenberg, 2010).
Results of this survey research of primary care nurse practitioners (PCNPs) describe provider factors of belief, implementation, knowledge, and utilization in the management of hypertension (HTN). The description of knowledge and utilization was based on the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC7) guidelines for the management of HTN (NIH Publication No. 04-5230, August 2004). Belief and implementation was assessed by self-report. Participants were English speaking nurse practitioners who self-reported as managing HTN in primary care settings.

Background

Clinical Decision Making

The individual provider decision-making process is changing in the clinical environment. Clinical knowledge development has shifted from the relatively static didactic training of the past to a dynamic collection of data and subsequent clinical plan development (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). This process considers unique elements of a particular clinical encounter including patient preferences and values shifting the focus of clinical decision making from the provider alone to the patient and provider (Sackett, Richardson, Rosenberg & Haynes, 1996).

The primary healthcare delivery paradigm of the past was the expert model that was based on academic preparation and clinical practice. Historically in medicine, academic training was considered sufficient for understanding basic mechanisms of disease and pathology (Sackett, Haynes, & Tugwell, 1985; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Unsystematic observations from clinical experience were used as a vehicle for clinical decision making in regards to patient prognosis incorporating diagnostic tests, and efficacious treatments
with academic training and common sense. From this perspective, one could sufficiently assess and incorporate new treatments and diagnostics. Expertise in content and experience in clinic were considered sufficient for generating suitable clinical guidelines (Barrows, Norman, Neufeld, & Feightner, 1982; Journal of the American Medical Association, 1992).

The current medical model in primary healthcare delivery attempts to balance a humanitarian focus and technology in a person-centered model (Newbold, 2004). This new model places a lower value on provider authority than in the past (Chalmers, 1983; Newbold, 2004). The clinical encounter incorporates the experience of the clinician, efficient unbiased recordkeeping (for reference creating a repository of knowledge), and encourages the clinician to proceed cautiously when records are not available. An understanding of EBP is necessary in the translation of research into clinical practice (Titler, 2004 & 2007). In spite of the value of academic training in pathology and basic disease process, this preparation is insufficient to provide appropriate care resulting in quality patient outcomes (Balas & Boren, 2000). Academic training is but a part of the knowledge foundation of the provider, not the panacea of authoritative comprehension of healthcare issues of the former paradigm (Haynes, McKibbon, Wilczynski, Walter, & Werre, 2005).

Significant change in knowledge development is provided by translation of research. Translational research includes discovery through research, interventions developed to respond to research findings, testing the research findings, and implementing the research findings in practice (Titler, 2004 & 2007). Many obstacles to translating these findings into practice are evident in the literature and in practice impeding much of research from influencing optimal patient outcomes (Farley, Dalal, Mostashari, & Frieden, 2010; Heidenreich, et al, 2011; Institutes
of Medicine, 2003; National Cancer Institute, 2007; Shojania & Grimshaw, 2005; United States Department of Health and Human Services, 2011).

**Clinical Decision Making Prior to Evidence Based Practice**

The term and concept of EBP was debatably developed sometime in the late 1980’s (Eddy, 2005). Primary care clinical practice in medicine was somewhat different prior to this period of time. According to Sackett, et al in the *Clinical Diagnostic Strategies* chapter of *Clinical Epidemiology* (1985), four strategies were classically incorporated in clinical decision making prior to the advent of EBP. These were: pattern recognition, multiple branching, a diagnostic strategy of exhaustion and hypothetico-deductive.

The first strategy is recognition of patterns. Pattern recognition is a gestalt phenomenon developed through the five senses of seeing, tasting, smelling, hearing, and touch. The clinician compiled sensory data during the patient-clinician encounter and investigated for any patterns. These patterns collectively recognized by the clinician were considered to be reflexive rather than thoughtful (Sackett, Haynes, & Tugwell, 1985).

A second strategy for clinical decision making is multiple branching. Multiple branching or “arborization” is the equivalent to algorithms (Sackett, Richardson, Rosenberg & Haynes, 1996). Information is gathered, applied to a “if yes > then (an action or decision) if no > then (an action or decision) with the diagnosis arriving at the end of the decision tree branch (Sackett, Haynes, & Tugwell, 1985).

The diagnostic strategy of exhaustion in arborization was a third strategy involved collecting all possible pertinent data and assuming all possibilities in the search for a diagnosis. Each of the assumed possibilities is eliminated one by one until the diagnosis is reached. This practice of collecting patient data by the clinician was a part of training and includes completing
a full history and physical on every patient. This strategy was carried over into professional clinical practice and holds value in foundational teaching but is inefficient in actual practice (Barrows, Norman, Neufeld, & Feightner, 1982) as it resulted in a wasteful use of time, unnecessary cost of healthcare and no improvement in patient outcomes (Sackett, 1985).

Development of Evidence Based Practice

Hypothetico-deductive is the fourth strategy. Early clinical clues were fit into a (pre-conceived) “short list” of potential diagnoses or actions. Additional data were collected such as history, physical exam, and diagnostics with the intention of reducing the “short list” to “explanatory ideas.” This process was attributed primarily to experienced clinicians that (presumably) gained knowledge through clinical experience (Sackett, 1985).

In the current medical literature, EBP and Evidence-Based Medicine (EBM) are often used interchangeably, usually depending on whether the discussion is in a medical sciences publication versus other health sciences literature. The interchange of these terms tends to be confusing when one is reading across sciences on EBP. EBM describes the process of basing medical clinical decisions on the latest science-based research in the field (Sackett, Richardson, Rosenberg & Haynes, 1996). David Sacket (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996) defines evidence-based medicine as, “The conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (p. 2). This definition is the most commonly quoted in the research literature. However, for the purposes of this discussion, the term EBP is used as a synonym in place of EBM.

For the purposes of this study, an EBP is defined as a practice of inquiry and evaluation of the relevant data utilizing that information for clinical practice. EBP involves four steps: formulating a question to initiate the decision process in clinical care, searching for relevant
research, critically evaluating the evidence for validity and relevance, and developing a clinical intervention supported by the evidence (Eddy, 2005; Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). In spite of the apparent lack of contextual information regarding utilization in the decision-making process in the descriptions of EBP indicated above, a detailed review of the descriptions indicates that current research utilization is only a portion of the equation for processing information in the clinical encounter into the desired summation of quality health care outcomes.

Research utilized to establish evidence based guidelines is based on the strength and quality of research. Levels of evidence are based on a hierarchy of strength of the evidence from strongest to weakest: randomized control trial (RCT) or meta-analysis of RCT (higher strength), quasi-experimental study, non-experimental study/qualitative study, nationally recognized expert or panel opinion, and individual non-research based evidence (lower strength) (Newhouse, Dearholt, Poe, Pugh & White, 2007). The quality of evidence is ranked from higher to lower quality: systemic reviews (higher quality), randomized controlled trials, cohort studies, case-controlled studies, case reports and mechanism-based reasoning or expert opinion (lower quality) (Newhouse, Dearholt, Poe, Pugh & White, 2007; Oxford Centre for Evidence-Based Medicine, 2011). It is essential to base the evidence used for a clinical decision on the highest level research available.

In the most recent literature, EBP is evolving into a well-defined concept. David Eddy (2005) stated that EBP has two separate approaches to knowledge acquisition: evidence-based guidelines and evidence-based individual decision-making. Clinical guidelines must have four criteria that need to be met for guidelines to be considered evidence-based. First, tests and procedures must be effective in reducing morbidity and mortality. Secondly, medical benefits
must outweigh any predictable risks. Third, costs of the tests and/or procedures must be reasonable compared to the expected benefits. Lastly, recommended actions must be practical and feasible (Eddy, 2005; Journal of the American Medical Association, 1992; Sackett, Richardson, Rosenberg & Haynes, 1996).

Evidence-based decision-making is characterized as a conscientious, explicit, and judicious application of current best evidence in individual patient care decision making. The decision-making continues with the clinician integrating individual clinical experience with the best available clinical evidence based on systematic review of the research (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The description of this process is also one of the earliest mentions of the importance of patient choice in the formation of a clinical plan in EBP literature. The integration of the patient choice in the EBP decision-making process is a sharp contrast to the traditional medical model of the clinician being the sole decision maker in the clinical encounter.

**EBP Obstacles and Facilitators**

The primary issues for an individual provider to consider when implementing EBP are barriers to implementation (Melnyk, 2002; Melnyk & Fineout-Overholt, 2005). These issues or barriers include time constraints, limited access to the literature, lack of training in information seeking and critical appraisal skills, a professional ideology that promotes practical rather than intellectual knowledge, a working environment that does not encourage information seeking, and intimidation from feeling uninformed in research methods and statistical analyses (Aarons, 2005; Melnyk & Fineout-Overholt, 2005; Nelson & Steele, 2007; Titler, 2004 & 2007). Other organizational issues include low management priority for EBP, dissemination problems, inadequate personal and professional development systems, difficulty with innovation

Rimer (2004) points out that research agencies do not consistently provide dissemination or translation guidelines. Researchers are noted to inconsistently consider translation of research during the initial development of the research guidelines or as research is being conducted. This could potentially allow for interventions that may not be easily translated in spite of desirable patient outcomes. Providers are also noted to not be sufficiently trained to understand and/or assimilate new research information into practice (Abraham, 2006). Other issues include a lack of effective reminders and incentives for implementation as well as an overall lack of motivation for utilization or for adopters within an organization.

One of the primary motivators in the diffusion of information is change agents. When an organization lacks change agents, mentors or internal opinion leaders, the translation process can be stalled or slowed considerably, as changes within an organizational culture are typically motivated by these brokers of knowledge (Rogers, 1995). Another organizational restriction is increased workloads for clinicians due to increased patient acuity and limited resources at both the provider and organizational level (Stetler, 2002). Although the listed characteristics can significantly hinder diffusion, collectively they can significantly compound the implementation of new research-developed interventions within an organization.
Many interventions have been conceived to decrease the barriers to disseminating research in the healthcare and business literature (Berwick, 2006; Gerrish & Clayton, 2004; Stetler, 2003; Stone, Curran, & Bakken, 2002; Titler, 2004 & 2007). Most, if not all of the interventions involve improved communications between the levels involved in the research translation process. Organizations are challenged in this process of improving patient care to find sound innovations to translating research into practice (Melnyk, 2002). The development of adoption within an organization includes finding and supporting innovators and early adopters. In order for the early adopters to be effective, high visibility among the staff is necessary to lead by example and build staff confidence (Titler, 2007). The ideal work environment should encourage trust and enable reinvention during the process of assimilating the new intervention(s) (Melnyk & Fineout-Overholt, 2005). Reinvention is often necessary to adapt to the contextual components of the given environment which may include organizational, clinician, and patient resources requiring modification of the initial intervention for the specific application. This reinvention essentially tailors the intervention to the specific organization (Berwick, 2006). Allowing time for change is another important element so that development and adaptation can occur in the work environment (Melnyk, 2002).

**Utilization of Evidence and EBP**

The quality of evidence must be considered in the utilization of evidence in EBP. Quality of research involves the following: research design and effectiveness which is directly related to external validity and sustainability (National Cancer Institute RE-AIM, 2011; Sheldon et al, 1998; Titler, 2004). Research design is the utilization of explicit guidelines for inclusion and exclusion of target population and methodologies (Sheldon, Guyatt, & Haine, 1998). This is also known as “Reach” or “representativeness” in RE-AIM developed by Glasgow, Boles and Vogt
Representativeness involves the similarities and differences between those who are willing to participate in a given intervention and those who are eligible but do not participate in a given intervention. If disparities exist, a given intervention could have a differential impact based on these variables. If the disparities do not exist, the generalization of the intervention into real-world setting will be achieved (National Cancer Institute RE-AIM, 2011).

Effectiveness is the impact of an intervention on important outcomes and also considered as external validity. Effectiveness has 3 components: 1) the median effect size of primary outcomes, 2) any adverse effects on quality of life and/or other outcomes, and 3) differential impact across subgroups (Green & Glasgow, 2006). Effectiveness can be determined by utilization of experimental or quasi-experimental methods (National Cancer Institute RE-AIM, 2011).

Implementation at the setting level refers to the consistency in the delivery of the research evidence. This is usually based on what percentage of process outcomes was achieved. Consistency in the application of the intervention is necessary to achieve the expected outcomes of a protocol (National Cancer Institute RE-AIM, 2011).

Because individual research studies vary in the degree of bias, randomized control trials could reduce bias (Sheldon, Guyatt, & Haines, 1998). It is necessary to consider sustainability of practice improvement (Titler, 2004). This is also congruent with the maintenance step identified in RE-AIM both on an individual and setting level (National Cancer Institute RE-AIM, 2011).

Predictors of outcome are categorized as systemic, provider and patient factors. Although systemic and patient factors contribute to this phenomenon, provider level research evaluating the uptake and utilization of EBP has not been sufficiently conducted (National Institutes of...
Health, 2011). Many factors are involved in provider knowledge uptake and utilization of EBP including belief in EBP, knowledge acquisition, confidence to implement and utilization of EBP (Melnyk, 2002; Melnyk, et al., 2004; Melnyk & Fineout-Overholt, 2005; Titler, 2007).

The healthcare organization and educational system should support and teach about evidence and EBP basics (Cooke, et al., 2004; Eisenberg, 2010). Educational sources include continuing education, workshops, journals, online databases, videos of conferences, and access to centers for EBP. Synthesized systematic reviews such as the Cochrane Reviews are excellent resources as is the Sigma Theta Tau nursing knowledge synthesis journal (www.nursingrounds.org). Encouraging constant inquiry by networking into other provider information sources and databases is also a method to facilitate EBP (Melnyk, 2002). Organizations should provide an environment that supports EBP instruction, provides access to journals with current libraries and supports access to EBP internet resources. Groups and organizations can also nurture EBP by allowing time and funds to encourage healthcare organization support of EBP (Hockenberry, Wilson, & Barrera, 2006; Institutes of Medicine, 2003; Krugman, 2003; Melnyk, 2002; Melnyk, et al, 2004; Melnyk & Fineout-Overholt, 2008).

**EBP Uptake**

The interdependence of circumstances and populations within a social system must occur before there can be consistency of EBP uptake across a program’s components. Translating research into practice can be evaluated from a broader systems perspective. Inherent in the implementation of translational research is the alignment of institutional, organizational, and individual factors.

Organizational factors, inherent in a social system, are crucial in implementing translational research as they have been linked to the long-term sustained success of EBP work
(Stetler, 2003). The organizational context involves characteristics such as organizational capacity for planned change along with an infrastructure complementary to implementation. Stone et al (Stone, Curran, & Bakken, 2002) identified the most effective types of interventions for improving performance as organizational factors of clinical procedure, facilities, and infrastructure. Clinical procedures should be evident in models of EBP, targeted best practice projects, and the expertise in implementation strategies. Health care facilities need operational systems that positively support and reinforce expected EBP behaviors (Gerrish & Clayton, 2004). Infrastructure created explicitly for this context must have the components for EBP that would enable, guide, summarize, and sustain projected behaviors (Sheldon, Guyatt & Haines, 1998). Stetler (2003) identified an information system capable of providing timely feedback in a user-friendly format as a necessary aspect of an infrastructure designed for successful implementation.

The environmental factors that must be considered in translation of research may be identified as sub-elements of context: culture, leadership and evaluation (Stetler, 2003). More specifically a values-oriented culture, effective teamwork, and receptivity to change are key organizational management goals that will assist in successful implementation of relevant research. These environmental features are incorporated across all relevant organizational levels, rather than any one in particular, as all levels are likely to have an impact on the utilization of EBP in clinical practice. Organizations benefit in disseminating EBP by utilizing a common EBP language and role modeling, all components that support a culture of EBP (Krugman, 2003).

Evaluation of the uptake of EBP involves assessment across individual, group, and organizational levels. Individual levels include patient, provider, and support staff. Group levels consist of aggregates of patients, providers, and support staff. Organizational levels include these
same aggregates and interactions with other organizations in local, state, regional, national, and international levels. Organization interaction allows for groups to compare their actions with other groups to share and learn from innovations in various circumstances (Allen & Carr, 2009; Committee on Quality of Healthcare in America, 2001; Cooke, et al, 2004).

One aspect of evaluation is how the organization accesses information. At an organizational level, the following questions should be asked: Are access points to information available? Is staff trained to utilize the accessed information? Is there sufficient time for training and access? These factors can be measured by provider survey, focus groups, and chart review of patient outcomes pre- and post- implementation as well as benchmarking the gathered data to other organizations (Gerish & Clayton, 2004; Institutes of Medicine, 2003; Melnyk, 2002). Implementation of a QI committee can review these information sources and facilitate changes in policy and procedure to promote EBP? (Gerrish & Clayton, 2004).

Patient uptake of provider recommendations can be measured in similar ways (Martin, Williams, Haskard & DiMatteo, 2005). Does the documentation reflect the patient is valued as evidence? Is there a correlation of multiple intake histories reflected in the medical record? Is the incorporation of subjective data and inclusion of the patient in the planning and re-evaluation of actions taken? Is the patient input and responses valued as evidence in the development of the treatment plan? Is there documentation that patients have accessed healthcare information resources in the medical record? This information may be measured by patient satisfaction survey, patient focus groups, and chart review for documentation indicating utilization of patient input (Farley, Dalal, Mostashari, & Frieden, 2010; Gerish & Clayton, 2004; Institute of Medicine, 1990; Martin, Williams, Haskard & DiMatteo, 2005; Melnyk, 2002).
Several strategies have been suggested for improving implementation. The National Cancer Institute (Jones, 2006) suggests creating within the organization knowledge transfer teams and partnership models between provider(s) and client(s) thus improving communication between the delivery and reception components of the new intervention. Downloadable materials and establishing knowledge-based search tools are also noted to improve efficiency of the translation. Other options in the communication category are targeting non-clinical populations with the research information including the medically underserved, healthcare providers, healthcare systems, and expanding knowledge distribution to larger populations (Rimer, 2004). In order to accommodate the expanded communication, organizational infrastructures will need to be improved to facilitate translation including improving evaluation strategies to be sensitive to dissemination (Colditz, et al., 2002).

Providers can be assessed for uptake through provider survey, focused discussion groups, and pre-/post- implementation chart review of documentation of utilization of EBP. Provider documentation should indicate incorporation of patient contextual issues (resources, beliefs, desires, history) in assessment and planning. This same information could be tracked using an electronic health record (EHR) as well as assessing which and when EBP resources are accessed by providers (Allen & Carr, 2009). Provider utilization of EBP resources could be done transparently in an EHR by tracking the number of hits to a respective website such as the Cochrane Reviews or National Guideline Clearinghouse during the provider interaction with the software program (Balas & Boren, 2000; Boulos & Wheeler, 2007). Close scrutiny of provider interaction with EBP resources is not however without potential pitfalls as providers could be penalized by management for not utilizing links embedded in the software to EBP resources (Boulos & Wheeler, 2007; Seigel, 2009). Issues would likely arise that would need resolution in
regards to how comfortable providers might be with having their clinical practice closely tracked and scrutinized. Chart review can also track adherence to EBP guidelines and indicate any adjustments made by inclusion of contextual issues (Shojania & Grimshaw, 2005).

**NPs and EBP**

Recently graduated NPs in primary care can encounter challenges in an environment that is dominated by the medical model (Melnyk & Fineout-Overholt, 2005). Preceptorships are scarce particularly in competitive urban environments with more than one NP program (American Association of Colleges of Nursing, 2007). Nurse practitioner students are often placed with physicians in their impressionable first hands-on contacts with clinical care (Brown & Dray, 2003). At this point, the student is influenced to some degree by the medical science paradigm. Without a strong foundation in nursing theory, this can potentially raise conflicting issues between nursing and medical professional worldviews. Brown and Draye (2003) explored the concept of the NP and came to the conclusion that the nurse practitioner advanced role was one of a “unique blending of nursing and medicine”. If, however, the interests served are those of physicians, organized medicine, hospitals, and other institutions, then nursing science and the interests of the public lose professional nursing’s contribution to society (Fawcett, Newman, & McAllister, 2004).

Nursing science is evolving into a post-modern science where the interpretation of the world is an individual rather than universal phenomena (Agency for Healthcare Research and Quality [AHRQ], 2008). Narrative knowledge, a hallmark of the nursing paradigm, is often valued over generalized scientific knowledge (AHRQ, 2008). Numerous nursing science researchers suggest that nurses supported by nursing science knowledge will add to the balance of the decision matrix for EBP (Krugman, 2003; Newbold, 2004; Melnyk & Fineout-Overholt,
Nurse contributions through qualitative research evidence will support the legitimate naturalistic interaction with patients in the EBP process of knowledge acquisition. This is the unique perspective that the nursing paradigm contributes to the EBP process (Fawcett, Newman & McAllister, 2004; Hockenberry, Wilson, & Barrera, 2006; Melnyk, et al., 2004). With the realization in evidence-based primary care practice of the benefit of patient input, nursing has the research and experience to provide unique care and inform the health sciences of the value of improving patient outcomes from interactions with the holistic care model practiced utilized by nurses in practice.

**Hypertension**

Currently in the United States, research findings are averaging 17 years into implementation from publication, an unacceptable length of time (Nieva, et al., 2005). Considering the wealth of pertinent health care information released yearly at upwards of 2 million articles annually (Nieva, et al., 2005), it is no wonder that practitioners have a difficult time accessing much less digesting the volume of information potentially available. Quality patient outcomes are not consistently found within the healthcare field, even within organizations that have successfully implemented new practices in certain segments as they often fail to have successful system wide implementation (Shojania & Grimshaw, 2005).

As an example, the Centers for Disease Control (Farley, Dalal, Mostashari, & Frieden, 2011) state that hypertension is a modifiable cardiovascular disease risk factor affecting 33% of the United States population. This disease is the cause of almost 50% of the cardiovascular disease deaths and one in seven deaths in the United States. The American Heart Association (Heidenreich, Trogdon & Khavjou, 2011) estimates $93.5 billion is spent annually in both direct and indirect costs accounting for 17% of the total health expenditures in the United States. In
2005-2008, 31% of the United States adults reported high blood pressure either measured at ≥ 140/90 mmHg or were using medication for HTN (Yoon, Ostchega & Louis, 2010). The Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (2004) reported no significant national decline in the reports of HTN in the past 10 years despite dissemination of evidence based guidelines, increased treatment and control. An understanding of why the lack of national decline in the prevalence of HTN is a primary focus of current medical research on HTN in the United States. Participation in and contribution to this research is the rationale behind the selection of this diagnosis for this study.

The primary source for guidelines for the management of HTN is through the National Institutes of Health, The Joint Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure Guidelines [JNC7], 2004). The current guidelines are in the 7th report published August of 2004. The guidelines are evidence based developed through a committee process representing 39 major professional, public, and voluntary organization with 7 Federal agencies (JNC7, 2004). The committee members performed a meta-analysis of evidence based research throughout the research literature on hypertension. The scheme used in the analysis was adapted from Last and Abramson (Last & Abramson, 1995).

The rationale for using this guideline as the standard for this study is the plentiful references to the JNC7 guidelines throughout the research literature. In further support of the rationale, hypertension diagnosis and management guidelines have little variance in the recommendations for diagnosis and treatment of HTN in the United States. The American Heart Association (Heidenreich, Trogdon, & Khavjou, 2011), the American Academy of Family
Physicians (American Academy of Family Physicians [AAFP], 2010), The Institute for Clinical Systems Improvement (Institute for Clinical Systems Improvement, 2010), National Kidney Foundation (National Kidney Foundation, 2010), the American Association of Clinical Endocrinologists (American Association of Clinical Endocrinologists, 2006) and the American College of Obstetricians and Gynecologists (American College of Obstetricians and Gynecologists, 2010) all reference the JNC7 as guidelines for HTN diagnosis and management.

**Problem Statement**

EBP is now considered a standard of care and essential to nurse practitioner practice. The primary advantages of EBP include improved quality of care through patient-centered care, the utilization of patient resources, provider resources and experiences, current research and scientific information (Institutes of Medicine, 2003). In spite of over 10 years of known effective standardized treatments for HTN, new knowledge generated from randomized controlled studies for practice, the application of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure guidelines is highly uneven (Balas & Bolen, 2000; Institutes of Medicine, 2003, National Institutes of Health-JNC7, 2004; Yoon, Ostchega & Louis, 2010). An example noted by the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure, patient blood pressures continue to be above recommended levels (JNC7, 2004) in spite of readily accessible known research based treatment guidelines for HTN. The EBP literature reports a number of limitations related to translating this information into practice including time constraints, abundance of data, conflicting research with guidelines and difficulty accessing and interpreting relevant information. As nurse practitioners assume larger roles in primary care in the United States, understanding the dynamics of EBP utilization is vital to evaluating the NP clinical decision-making process and implementing
changes improving patient quality outcomes. There are few studies describing nurse practitioner beliefs in EBP and the extent to which that affects NP knowledge, implementation and utilization of EBP in their practice.

**Purpose of Research**

The purpose of this research is to describe NPs beliefs in, knowledge, implementation and utilization of EBP.

**Research Questions**

Research questions to be answered are:

1. What are the levels of belief, implementation, knowledge and utilization of EBP among PCNPs?
2. Is there a relationship with PCNP demographics (personal, professional, and practice), belief, implementation, knowledge and utilization of EBP?
3. Do PCNP demographics (personal, professional, and practice) and scores on belief, implementation and knowledge influence EBP utilization?

**Research Definitions**

The following definitions were used for this research:

- **Belief in EBP**: confidence that EBP information is true: “Endorsement that EBP improves clinical outcomes and confidence in one’s EBP knowledge/skills.” (Prochaska & Velicer, 1997). Belief is measured by answers in the survey with higher scores equating to higher level of belief in EBP.

- **Implementation**: belief or confidence of an EBP application: “engaging in relevant behaviors, including seeks and appraises scientific evidence, shares evidence or data with colleagues or patients, collects and evaluates outcome data and uses evidence in practice”
(Melnyk & Fineout-Overholt, 2008). Implementation is measured by answers in the survey with higher scores equating to higher level of implementation in EBP.

- **Knowledge**: knowledge of the EBP guideline is measured by the consistency in the answers to survey questions with what the EBP guideline specified: higher correct scores equate to higher level of knowledge.

- **Utilization**: clinical application of an EBP resource i.e. information, fact, data, etc: utilization of the EBP guideline is measured by the consistency in the answers to survey questions with what the EBP guideline specified: higher correct scores equate to higher level of guideline utilization.

- **Primary Care Nurse Practitioner (PCNP)**: an advance practice nurse practitioner practicing primary care.

**Significance of Research**

Many factors contribute to provider uptake and utilization of EBP. This research will describe factors of belief, implementation, knowledge and utilization of PCNPs in the management of common chronic disease based on an EBP guideline. The JNC-7 guideline for the management of HTN is one of the few diagnoses that share a common and international acceptance as a standard of care for a given disease (World Health Organization, 2011). By utilizing these standards as the measure of knowledge regarding a specific common diagnosis such as hypertension, we can gain insight into what might be known regarding PCNP utilization of an EBP. Evaluation of guideline utilization includes self-report of blood pressure management. This research is intended to determine if the standards are commonly used and to what percentage. The information gathered will be used to determine if knowledge acquisition is effective based on PCNPs’ self-reported management of hypertension. The description of belief,
knowledge and implementation will be used to illustrate characteristics of PCNPs and their utilization of EBP. The data can be used in part to build the knowledgebase on nurse practitioner practice habits.

**Summary**

EBP is a shift in the culture of healthcare from one of provisional decision making based on the expert model, opinion, and precedent to one utilizing research, science, and evidence to guide clinical decision-making. This represents a shift in the paradigm of healthcare delivery. The utilization of research in decision making, the assessment of planning and goal achievement in quality improvement, and the use of best practices are all factors in the framework of EBP (Gibbs, 2003; Lang, Wyer, & Haynes, 2007; Melnyk & Fineout-Overholt, 2005). Translating this information into the best available plan of care in the patient-provider clinical encounter through data collection from multiple sources includes the contextual issues of patient beliefs and values, the provider and the health care environment. This is the essence of evidence-based care.

This study is significant in that the PCNP beliefs, implementation, knowledge and utilization of EBP will be described when little information and knowledge is available to understand the individual level of EBP integration in practice. The research questions guiding this research have elicited knowledge that may contribute in increasing quality patient outcomes. The future of health care is in the evolution of evidence-based practice in the quest of optimal patient health care outcomes.
CHAPTER II: CONCEPTUAL FRAMEWORK

Introduction

Key components in this framework that describe PCNP knowledge are general science and nursing science (the repository and primary generator for nursing knowledge), ways of knowing, and the social construction of reality, all of which culminate in a single encounter when best evidence is used to form a clinical decision. Social constructionism is included in the framework and utilized for building knowledge and structuring reality (Papert & Harel, 1991). Kuhn’s (1962 & 1970) concept of scientific paradigm has been chosen for the overarching knowledge repository concept. Carper’s (1978) work with ways of knowing with the addition of White’s (1995) political way of knowing is chosen to describe the ways of knowing for professional nursing. In this chapter, these elements of the conceptual framework will be discussed in relationship to EBP knowledge development.

Buber (1973/2002) once stated that “the world is not comprehensible, but it is embraceable: through the embracing of one of its beings” (p. 17). Buber often spoke of the most remarkable component of human existence as the moment of two people communicating. For the purposes of this study, health care in its purest form occurs at the point of delivery as a partnership between two beings: the patient and the PCNP. Each partner brings complex contextual components including knowledge that may be known or remain unknown between partners during the encounter. The meeting interactions are on multiple levels building knowledge and constructing reality in both partners. To evaluate and understand components of the knowledge exchanged and generated in an encounter, one needs a framework to structure evaluation and understanding of the PCNP practice. The focus of this study is a portion of this interaction, describing the knowledge a PCNP brings to the provider-patient encounter. This
chapter will provide the philosophical and theoretical framework that this researcher suggests as a foundation for PCNP knowledge development of EBP for this study.

**Philosophical Perspective: Social Constructionism**

This researcher suggests social constructionism is the essence of the patient-nurse practitioner clinical encounter. The patient divulges a mental model about their health that reveals values, beliefs, and preference as well as their understanding of health. The NP then compares the patient’s mental model with a mental model informed by general and nursing sciences and ways of knowing. A health care plan based on this knowledge is then created. This is the premise of an evolving science among social workers (Nevo & Slonim-Nevo, 2011). Social constructionism provides a philosophic context for learning or knowledge development as mental models.

**Social Constructionism**

Social constructionism is based on Piaget’s cognitive theory (Papert & Harel, 1991). Piaget’s idea was that the learner constructs knowledge. When Piaget developed his cognitive theory, common thought at the time was that knowledge was transmitted and that learners copied ideas they read or heard in lecture directly into their mind. Piaget theorized that this common thought was not true. Instead, learning is the compilation of complex knowledge structures. The learner must consciously think about trying to derive meaning which is the effort of constructing knowledge structures (Kitchener, 1986).

Social constructionist learning is based on the constructivist theory of knowledge of Piaget which posited that children learn to understand the world by creating mental models (Papert & Harel, 1991). This learning theory was created by Papert, one of Piaget’s students. He posited that learning occurs “most felicitously” when constructing a public artifact “whether a
sand castle on the beach or a theory of the universe.” (Papert & Harel, 1991, p. 2) Papert favored the constructivist learning philosophy in his writings discussing the difficulty of conveying a complex concept when readers are going to construct their own meanings. He argued that people will be more deeply involved in their learning if they are constructing something that others will see, critique, and perhaps utilize. While people are constructing meaning, people face complex issues that prompt problem-solving. In turn, solutions facilitate knowledge construction and learning.

**Clinical Knowledge Development**

Social constructionism posits that knowledge development or learning occurs as each individual constructs meaning from information presented. This researcher suggests that knowledge development related to EBP includes learning through practice. In a presentation on evidence-based care, Abraham (2006) theorized that health care clinicians often process new information like a researcher by initially micro-trialing new treatment previously reviewed from research on a few patients before becoming convinced of the therapeutic value of the treatment. In turn, newly acquired information adds knowledge not only to the clinician but to the patient. The patient knowledge acquisition occurs during the clinician’s application of newly acquired information as the clinician implements a health care plan for the patient. This information then becomes a part of the PCNPs’ nursing science repository or paradigm.

The history of knowledge supports the process of knowledge development for evidence-based care. The primacy of new knowledge in our cultural life is a modern phenomenon dating from the Scientific Revolution of the sixteenth century and the eighteenth century Period of Enlightenment (Lyotard, 1984). Most of the historical human knowledge needed for societies to survive and thrive was integrated into traditions passed down over many generations through
language and artistic expressions (Omery, 1995). According to Kuhn (1970), when most of the human knowledge was passed down from person to person and very little had to be discovered a static model of the nature of knowledge did quite well. However, creativity in knowledge development found in modern science, politics, and the media has been used to create cultural conditions in which much of the truth about social reality is continuously being reinvented and subsequently needs to be continuously rediscovered. This creative knowledge development can progress to a need to more deeply understand how the process of knowledge development actually works (Papert & Harel, 1991). While much of the knowledge and information we need to manage our daily lives can still be reliably obtained from such expert authorities as professional experts, academic experts, and reference materials, the complexity of the world increasingly calls into question the basis for establishing the competence of these expert authorities (Porchaska & Velicer, 1997).

This same premise, questioning the authority of information sources, could be applied to the breadth of health care research information available through credible sources on the Internet. The Internet has dramatically increased our flow and access to information (Boulos & Wheeler, 2007). Essentially, the greater the flow of information, the more likely we are to question the authority of the source of the information (Kuhn, 1970 & Lyotard, 1984). Skepticism is a healthy attribute in scrutinizing research information. Nonetheless, uncertainty in knowledge development can be resolved by learning techniques to review research that reasonably helps validate the information used to develop knowledge. These techniques are part of the clinician’s training in contemporary formal education regarding understanding and learning to evaluate research evidence for an evidence based practice (Hadley, Wall, & Khan, 2007; Institutes of Medicine, 2003; Nelson & Steele, 2007).
In general, health care providers considered the physical sciences to be the most reliable contemporary source of authoritative knowledge based in part on the strength and quality of evidence based research (Eddy, 2005). Accordingly, experimental design methodologies derived from the physical sciences have been placed in a privileged position in modern intellectual life (Trochim, 2006). In the twentieth century, however, even the most fundamental understanding of classical Newtonian physics had been undermined by quantum mechanics and Einstein’s Theory of Relativity (Pajares, 2004). Improved communications through electronic media have increased presentation of and access to information and research (Siegel, 2009). Understanding the level of strength and quality of research with the rapid output increases in scientific research is a challenge in the clinician’s clinical knowledge development (Titler, 2007). The research translation process of utilizing contemporary evidence based research is the foundation of an evidence based practice (Hughes, 2008).

Historically, knowledge development has changed from one of a static model to one of creativity which is currently evolving (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996; Sheldon, Guyatt, & Haines, 1998). This knowledge development has created a larger flow of information requiring learning techniques that validate information (Boulos & Wheeler, 2007, Titler, 2007). Consequently, carefully thought-out processes about experimentation and hypothesis testing add to the reserve of scientific knowledge. Knowledge development among health care clinicians can be compared to processes utilized by researchers (Abraham, 2006; Titler, 2004 & 2007). Patient knowledge development occurs during the clinician’s application of newly acquired information and the application of evidence based research during the implementation of a health care plan (Martin, Williams, Haskard, & DiMatteo, 2005). This is foundational for evidence based practice.
Theoretical Perspectives

Theories guide professional nursing and advanced nursing practice but theories are not static. Kuhn’s paradigm contributes a theory of scientific evolution. In attempting to understand how one widely held scientific worldview could be replaced by another, Thomas Kuhn (1962, 1970) explored in considerable depth the process by which scientific paradigms are both maintained and altered. Kuhn posited that the conventional view of scientific progress is that scientists add to the reserve of knowledge through careful thoughtful processes of experimentation and hypothesis testing.

The development of science through history has started from primitive beginnings. Each period of growth brings about refinement and articulation of our understanding of nature. With the advent of evidence based clinical decision-making, the shift in clinical practice has transitioned the nursing and general science paradigms from one based on the clinical expert model to one based on the evidence based practice model (Sackett, Richardson, Rosenberg & Haynes, 1996). According to Kuhn (1962, 1970), contemporary science generally progresses through research conducted by the same group of scientists within a given paradigm.

More specifically, Kuhn identified a paradigm as a framework containing all of the commonly accepted views about a subject. It is a structure within a science that is defined by the direction research should take and how research should be performed. Kuhn (1962, 1970) explains paradigms as practices that define a scientific discipline at a certain point in time. The paradigm influences scientific process within the scientific discipline. The paradigm directives provide a format for what is studied and researched, the type of questions asked, how the questions are structured and how the research results are interpreted. The paradigm can absorb
some elements of error but only to a point where the error is insurmountable. When this occurs, a paradigm will shift. The shift develops into a new paradigm (Kuhn 1962, 1970).

In the current state of the health care sciences, the paradigms have shifted from the expert model to evidence based research (Huberman, 1987; Sackett, Rosenberg, & Haynes, 1996; Stone, Curran, & Bakken, 2002). Studies continue within the general science and nursing paradigms on how this research is promoted, diffused and implemented in translating the research into practice (Titler, 2007). The current nursing paradigm contains the evidence based research that the nurse practitioner utilizes in clinical decision making.

**Nursing and Knowing**

The central concepts of the nursing paradigm are the individual, health, environment and nursing (Neuman, 1989). The individual is a person, family, community and/or aggregate. The environment includes the cultural influences on the individual: social, political, spiritual and economic. Health is a balance of the individual physical, social, psychological and spiritual influences. Nursing is described by the International Council of Nurses (2010) as autonomous and collaborative direct patient care, advocacy, promoting health, leading, managing, teaching and researching.

The clinical patient-provider encounter is a unique moment in time between two persons bringing together multiple ways of knowing in an interchange of knowledge development. It is a socially constructed interaction. Within the nursing paradigm, multiple accepted ways of knowing are typified by four patterns identified by Carper (1978) and a fifth identified later by White (1995). These five patterns of knowing are ethics, esthetics, personal knowledge, empirics, and sociopolitical knowing.
First, Ethics is moral knowledge: what is right or wrong. It is also the process of identifying the best option when no ideal option is evident (Carper, 1978).

Secondly, Esthetics is the “art” of knowledge. It is the perception of meaning reflected in actions (Carper, 1978). This pattern has been characterized by White (1995) as difficult if not impossible to quantify. However, from the perspective of naturalist scientists, experiential knowledge such as intuition can be measured empirically through qualitative research as measure of natural inquiry. This qualitative measurement allows for the possibility of experiential knowledge within a framework of scientific inquiry (Cloutier et al, 2007).

Thirdly, Personal knowing in nursing is gained by experience. This knowledge evolves and is not always expressible (Carper, 1978). Knowledge development is comprised of engagement versus detachment. Knowing has been described as expression through art, literature, and storytelling as a processing of context reflected in the response of others to the work of art, literature or story (White, 1995).

Fourth, Empirics can be defined as the reality of the science that can be realized and verified by others. Practical experience is the premise of empirical knowing. Empirics are an integral part of nursing science within the systemic organization of the laws or knowledge of the nursing paradigm (Carper, 1978).

Finally, Socio-political knowing is awareness of the social and political context of the patient, NP, and healthcare setting. It includes not only the context of the patient and NP but the sociopolitical context of nursing as a profession including the reciprocal understanding of society of nursing and nursing of society (White, 1995).

The integration of ethical, empiric, personal knowing, esthetics, and socio-political knowing creates choices in the rationale for patterns in knowledge development for the NP. The
NP’s subsequent actions based on this knowledge can then be conducted in agreement with the nursing paradigm as a humanistic action.

Patient care involves knowledge development by gathering evidence and in this sense, evidence is used more broadly than evidence related to determining cause and effect. The evidence gathered comes from the clinician’s or NP’s understanding of who the patient is as a human being, their knowledge, resources, and environment (Nevo & Slonim-Nevo, 2011). The NP must use the resources available to the NP and the patient including elements of their knowledge, resources and environmental factors. These elements are complex and may be known or unknown to the other. Nevo and Slonim-Nevo (2011) have proposed that the evidence based research should be utilized by the clinician "but also (leave) ample room for clinical experience as well as the constructive and imaginative judgments of practitioners and clients who are in constant interaction and dialogue with one another" (p. 1176). In order to address the needs of the patient, the NP will need to gather additional evidence from reliable resources to integrate into a plan of care for the patient that will fit who the patient is, what their resources are and their willingness and ability to adhere to the plan of care. This researcher proposes this concept is central to the patient-provider encounter in an evidence based practice.

**Clinical Decision Making**

NPs should base decisions they make on the best evidence available at that moment whether the information is from scientific research, the environment, from the NP’s personal experiences, and/or from the patient. EBP should be the foundation for a NP’s clinical decision-making-citation. A NP may alter a best practice recommendation based on patient circumstances and resources because at that moment of knowledge acquisition, the NPs best practice choice may reflect the patient’s needs rather than the evidence based guideline for the current diagnosis.
A NP should resolve in the moment with the best information available, considering whether the patient would best served by the guideline for a medication recommended by EBP or by the NP’s utilizing another alternative that the patient realistically can afford and access. Resolutions of this sort are central for tailoring nursing science to patient-centered care.

This conceptual framework is based on a broader view of evidence than what is defined traditionally. This perspective is based on the philosophical foundation that reality and knowledge is socially constructed. Science as a way of knowing evolves and includes shifts in paradigm. Empirics are essential nursing knowledge as is the traditional view of evidence based on quantitative methodologies designed to demonstrate cause and effect. This knowledge is the starting point for the NP.

The NP incorporates social construction in clinical decision making based on the mental models of both the clinician and patient. The clinician is informed by research analyzed in a manner developed during training on the quality and levels of research, how to interpret it, and how to apply it in practice. The clinical decision is then based on information that may potentially suggest to the clinician to individualize the care plan based on the knowledge constructed socially between the clinician and patient.

This study is about specifically how the PCNP believes in the value of evidence and EBP, implements EBP, is knowledgeable about evidence and EBP, and utilizes EBP. Understanding the dynamics of science from a philosophical and conceptual perspective is as important to understanding evidence and EBP as is understanding how to evaluate evidence and how to incorporate empiric evidence into practice.
Summary

Chapter Two presents a detailed description of the conceptual framework utilized by the PI to guide this research. The chapter included a discussion of the nursing paradigm as the repository for nursing knowledge, descriptions of different ways of knowing, knowledge development and knowledge acquisition in the delivery of healthcare. NP clinical decisions require multiple sources of evidence in order to formulate a patient care plan. The conclusion was that to understand the clinical decision making process, a better understanding of the components of this process is needed, specific to this research the NP’s process of utilizing EBP.
CHAPTER III: METHODOLOGY

Introduction

This chapter describes the research design, sampling and setting, data collection and analysis procedures used to address the research questions for this study. The purpose of this research is to describe primary care nurse practitioners (PCNPs) beliefs, implementation, knowledge, and utilization (BIKU) of evidence based practice (EBP). This research describes these provider factors through the survey of PCNPs in the management of hypertension (HTN). Belief and implementation are described through survey. The description of knowledge and utilization is through survey and based on the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure, National Heart Lung and Blood Institute, National Institutes of Health (JNC7) guidelines for the management of HTN, 2004.

Research Design

This study utilized a descriptive design to explore PCNPs’ values for and use of evidence based practice utilizing three established questionnaires. The EBP Belief questionnaire (Melnyk, et al., 2004; Melnyk & Fineout-Overholt, 2008), EBP Implementation questionnaire (Melnyk, et al., 2004; Melnyk & Fineout-Overholt, 2008) & PREVIEW Study Provider questionnaire (Van der Niepen, et al., 2009) were used to elicit participants’ perspectives on beliefs, knowledge, implementation and utilization of EBP. The PREVIEW Study Provider questionnaire was designed to query providers’ understanding of HTN management. Personal and professional demographic characteristics of PCNPs as well as scores for BIKU of evidence in a primary care setting were examined for relationships. In addition, practice pattern demographics were correlated with scores on the EBP questionnaires. HTN was chosen as the
diagnosis with knowledge of the JNC7 guidelines as the EBP guideline measured. Data were analyzed using descriptive and inferential statistical tests including one-way ANOVA and correlation of practice patterns with scores on the EBP BIKU questions in the survey.

**Sample and Setting**

A convenience sample was drawn from PCNPs managing chronic hypertension who were attending the American Academy of Nurse Practitioners (AANP) 2011 National Conference June 22-26 at the Sands Conference Center in Las Vegas, Nevada. Participants were recruited from the researcher’s booth with inclusion criteria of PCNPs and practicing adult hypertensive treatment. Once participation eligibility had been verified, two options were made available for those choosing to participate: 1) by paper survey provided at the booth or 2) by personal computer at a time and a setting of the participants’ choosing until midnight July 8, 2011. Participants returned completed paper surveys to the booth before the end of the conference. A business card with the survey link and a password was supplied to those who chose to participate on their personal computer.

Strategies for recruitment included an appeal to potential recruits that participation would further nursing science rather than an offer of a material incentive. In survey participant studies conducted by Messer and Dillman (2010), adult participants with advanced degrees were not significantly motivated by monetary incentives to complete a survey. Based on this finding, no financial or material incentive was offered in this study.

The practice setting for participants was primary care. The setting of survey participation was the choice of the participants in the study. Participation requirements were to either complete the survey on computers supplied at the researcher’s booth or the participant’s personal
computer through internet access. Recipients’ choice to participate indicated voluntary consent by each person invited.

**Instruments**

The survey incorporated four measures: the EBP Beliefs Scale (Melnyk & Fineout-Overholt, 2008), the Implementation Scale (Melnyk & Fineout-Overholt, 2008), PREVIEW Provider Survey (Van der Niepen, et al., 2009) and a demographics questionnaire (see Appendix C). An open-ended question was included at the conclusion of the survey for additional comments. A total of 63 questions comprised the survey. Descriptions of the measures are as follows:

**Demographics**

The demographic questions consisted of 12 items developed by the investigator to capture the personal and professional characteristics of the PCNPs and their practice environment which included both general practice and disease specific HTN practice patterns. Personal demographics included age and gender. Professional demographics included year of RN degree, year of Advance Practice degree, type of advance practice degree, type of advanced practice certification, state of primary practice and years as a primary care provider. Practice demographics included owner versus employee versus contractor, solo versus group practice, number of providers practicing regularly onsite and number of hours of primary practice a week. HTN practice specific questions included number of HTN patients seen per week and length of office visit for patients with HTN both newly diagnosed and in follow-up. All responses were formatted as multiple-choice. This information was intended to provide a better understanding of the practice environment for the PCNP.
Belief and Implementation

Belief in and implementation of EBP were measured by the EBP Belief scale and EBP Implementation scale (Melnyk & Fineout-Overholt, 2008) with higher scores indicating greater belief in and higher implementation of EBP. During development of the scales by the authors, the EBP Belief/Implementation Scales demonstrated good reliability with Cronbach’s alpha of >.90 for each scale on a study with n=394 participants (Melnyk & Fineout-Overholt, 2008).

The Belief Scale (Melnyk & Fineout-Overholt, 2008) consisted of 16 questions querying levels of belief in EBP. Participants were asked to indicate their level of agreement with each statement. Responses were based on a 5-point Likert-scale from strongly disagree to strongly agree. Higher scores indicated greater belief in EBP.

The Implementation Scale (Melnyk & Fineout-Overholt, 2008) consisted of 18 questions regarding frequency of EBP implementation by the participant in the eight weeks prior to the survey. Participants were asked to indicate their best description of how often each item had applied to them in the past 8 weeks prior to the survey. Responses were based on a 5-point Likert-scale ranging from 0 times, 1-3 times, 4-5 times, 6-7 times and >8 times. Higher scores indicated greater implementation of EBP.

During development of the scales by Melnyk and Fineout-Overholt (2008), both were found to be single-factor scales. Eigenvalue for a single factor with the Belief Scale (n=330) was 6.44 accounting for 40% of the scale variance. Interpretation of the other factor variances in the scale was not greater than the 6.3% of the variance of any single item and deemed parsimonious for a single-factor solution. Eigenvalue for a single factor for the Implementation Scale (n=319) was 10.53 accounting for 58% of the scale variance. All factors loaded at >.6. Cronbach alphas for both instruments were >.80 (Melnyk & Finehout-Overholt, 2008).
Knowledge and Utilization

Knowledge of EBP guidelines and utilization were measured by adapting the provider questionnaire from the PREVIEW Survey (Van der Niepen- et al., 2009) evaluating knowledge and utilization of commonly accepted practice guidelines for HTN management. A higher number of correct responses indicated greater knowledge and utilization of the EBP guidelines. Face validity of the PREVIEW Survey was noted by the authors. The survey questions have been used in eight total international studies consistently demonstrating an association in the results between provider variables measured and patient hypertension outcomes (see Appendix D, personal communication MacDonald, 03/25/2010).

The initial PREVIEW survey reflected EBP guideline information from both the JNC7 and the European Society of Hypertension-European Society of Cardiology (ESH-ESC). Participants in this study were not expected to have knowledge of the ESH-ESC guidelines. In order to address guideline variations between the JNC7 and ESH-ESC, inclusion criteria for item selection were for those items specifically outlined in the JNC7 Guidelines Reference Card (NIH Publication No. 03-5231, May 2003). The remaining questions in the survey are HTN specific practice demographics including number of hypertensive patients seen in a week, time spent with patients on initial and follow-up office visits and number of follow-up visits in the three months following initiation of HTN therapy. The PREVIEW study had a component of chart review not utilized in this study. All practice-related questions were therefore based on recall. Questions regarding details of practice specifically from chart reviews rather than memory recall were removed.
Human Subjects Protection

Institutional Review Board (IRB) permissions are required to protect human subjects involved in research at the University of Arizona. IRB approval for human subjects’ protection was obtained through the University of Arizona Social Science Human Subjects Committee (see Appendix A). Permission to collect data was also received from the American Academy of Nurse Practitioners (see Appendix E).

Anonymous research with minimal risk to subjects with no procedures does not normally require written consent. However, participant assent assuring security of data and anonymity was secured through an electronic disclosure form utilized in the online survey. The first page of the survey acknowledged the participant’s rights to choose freely whether to participate in the survey and the option to withdraw from participation in the study at any time without recourse. Contact information for the principle investigator (PI) and committee chair was provided for any questions or concerns regarding the survey.

An option was offered for participants to receive information regarding the results of the survey. Anonymity within the survey was maintained as name and mailing addresses were separate from survey submissions. Further security and anonymity was assured as Internet Protocol (IP) addresses were not collected by the website hosting the survey. IP address collection is configured by the user (researcher) administering the survey and was switched off. A link was provided in the introductory frame of the survey for the participant to review website host’s security policies. The raw data were entered into a SPSS database on a password protected, secure and encrypted computer. All hard copies are in a secure locked file with access restricted to the PI.
Data Collection

Potential subjects were identified at the conference as they presented to the researcher’s booth requesting information about the study. The PI read a brief recruitment script and screened recruits for study participation. In addition, recruitment posters were placed at strategic bulletin boards in the conference commons area directing interested persons to the researcher’s booth. Three secure computers at the researcher’s booth monitored by the PI were to be available for onsite participation. A business card with survey website address and password was given to recruits who choose to complete the survey on their personal computers. See Appendix B for recruitment materials.

The Arizona State University – Center for the Advancement of Evidence-Based Practice (CAEP) was contracted to program the survey into SurveyMonkey.com with the PI’s survey tool. Participants were provided a web address and password to utilize the online survey which provided disclaimer followed by the survey questions. Once the survey was completed, the de-identified raw data were sent by encrypted email to the PI for descriptive analysis. As a condition for using the CAEP copyrighted EBP Belief & Implementation scales, the CAEP only had access to the de-identified data from the Belief & Implementation questionnaires to perform psychometric analysis for their internal purposes of monitoring integrity and reliability. However, the CAEP was not involved in any of the data analysis for this research (see Appendix E for agreement). Data were held secure on the SurveyMonkey.com website by the latest intrusion and firewall protection available with daily third party security audits.

Data Collection Revision

Initially, the survey was planned to be completed entirely online at the American Academy of Nurse Practitioners Conference. Within two weeks of the conference, notification
was made to the PI from the conference sponsor that electrical power and internet access would not be available for the PI’s assigned booth. This disallowed for synchronous use of computers to administer the online survey during the conference at the researcher’s booth. Options were evaluated resulting in the decision to offer recruits a choice of either a paper copy of the survey to be completed and returned to the researcher’s booth by the end of the conference or to complete the survey online with participants’ own computer. A Modification to the IRB Approval was submitted to the University of Arizona IRB and approved (Appendix G). The deadline for completing the survey online remained open until midnight July 8, 2011.

The paper survey was duplicated from the online survey in the same format (Appendix C). A copy of the Consent to Participate in Research was attached to the front of the survey (Appendix A). Participants circled “I agree” or “I do not agree” on the form indicating consent to participate in the research. The survey form was a total of 4 pages printed front and back. Printed surveys were distributed to qualified participants after screening utilizing the recruitment dialog (see Appendix B) and receiving verbal confirmation of meeting the inclusion. Participants were instructed to return the printed surveys to the researcher’s booth at any point during the conference. Collection ended on the last day of the conference June 26, 2011 at 2:00 pm.

**Data Analysis**

Paper survey data were entered manually by the PI into a SPSS database. Online survey results were initially entered into an Excel database by the website sponsor, CAEP, and then imported into a SPSS database. Raw data from both surveys were cleaned and verified by the PI for data preparation. Codebook and Descriptive statistics with histograms were utilized on all data to assess for skewness, outliers and distribution.
Missing data patterns were evaluated for type and frequency. A threshold of 10 percent or greater total missing responses per respondent was utilized for exclusion from the study. 3 participants exceeded this threshold and were dropped from the research because of the missing data. Missing data for those respondents below the threshold was replaced with the mean of the participant’s scores.

Questionnaire data were evaluated for reliability with Cronbach’s alpha. Scores were computed using the median scale score for each respondent. Knowledge and Utilization were sums of the scores for each scale. These scores were used to perform the final data analysis.

**Demographic Analysis**

Personal, practice and professional pattern demographics were used to describe the sample. Descriptive analysis was by frequency counts, ranges, means and standard deviations in univariate analysis. A table and narrative describes and summarizes the sample in the results chapter (see Tables 1-4). Group means and standard deviations were calculated for each dependent variable. Alpha (α) for all the analyses is 0.05 a priori.

Each of the research questions were analyzed as follows:

**Question 1 Analysis**

Research question 1 asks: What are the levels of BIKU of EBP among PCNPs? Data analyses of the 4 variables are descriptive with ranges, means, standard deviations and frequency counts. A narrative and table report the results in the results chapter (see Table 8).

**Question 2 Analysis**

Research question 2 asks: Is there a relationship with PCNP demographics (personal, professional and practice) and BIKU of EBP? Bivariate correlations using Pearson Product Moment correlation were used to determine the presence and strength of relationships between
the variables. One-way Analysis of Variance (ANOVA) was used to assess significant variable relationships between PCNP education and certification with BIKU.

Question 3 Analysis

Research question 3 asks: Do PCNP demographics (personal, professional, and practice) and BIKU influence EBP utilization? The combination(s) of variables that best explains the variance in utilization were determined by correlation analysis. Data analysis was by multiple regression using stepwise method to identify predictor variables for EBP utilization.

Summary

This chapter described a detailed description of the research design, sample, setting, data instruments, human subject protection, data collection and data analysis. Discussion was presented regarding validity and reliability of the tool used to describe BIKU of PCNPs in the study.
CHAPTER IV: RESULTS

This chapter describes the results of the research. This includes data describing the sample of NPs with personal, professional and practice demographics. Scores for belief, implementation, knowledge and utilization (BIKU) among nurse practitioners in primary care are described with statistical analysis pertinent to each of the research questions. Tables and Appendices have been created to illustrate key points in the data.

Analysis Revision

Two issues were encountered during the administration of the survey. The first issue regarded the method of survey administration. The second issue regarded missing items in the responses and is addressed in the Measures section. The details of actions to address these two issues follow.

During the initial comparison of the two databases, a discrepancy was found between the online and paper surveys in the scoring categories of the implementation scale. The online survey database had a 5 point Likert Agree-Disagree scale as opposed to the intended multiple choice categories indicating the number of times EBP was used in the past 8 weeks. In the interest of maintaining the integrity of the study and due to the comparatively lower number of online respondents, the online survey was omitted in this analysis. The online responses will be analyzed separately at a later date.

Sample

Of the 350 individual recruits from the 26th AANP National Conference 2011 given paper surveys, 205 returned the surveys to the researchers’ booth with 202 (58%) completing the survey. Description of the sample group was gathered from the surveys completed by the NPs participating in the survey. The following narratives and tables describe the sample.
Personal Demographics Description

The age range was 27-77 years with median of 52 years. Female respondents (n=192, 95.0%) significantly outnumbered male respondents (n=8, 4.0%).

Professional Demographics Description

Professional demographic responses revealed that NPs with Masters degrees (n = 174, 86.1%) significantly outnumbered NPs with Certificates (n = 13, 6.4%) and NPs with doctorates (n = 14, 6.9%). FNPs (n=145, 76.2%) outnumbered ANPs (n = 15, 17.3%), GNPs (n = 4, 2.0%) and other (n = 8, 4.5%). Year of RN degree ranged from 1963-2007 with a median of 1985 (n=201). Year of advance practice degree ranged from 1977-2011 with a median of 2002. Years of primary care practice had a range of 1-33 years with a mean of 9.4 years (n=200). See Table 1.

Respondents were queried on their state of primary practice. Respondents indicated 43 states with highest percentages listed as: FL (n = 16, 7.9%), TX (n = 14, 6.9%), AZ (n = 11, 5.4%) and CA (n = 11, 5.4%). Alberta Canada, Military and one entry for the state of “Family” represent all others for a total of 46 different categories of responses. Five respondents gave no response. See TABLE 2.

### TABLE 1. Professional Demographics

<table>
<thead>
<tr>
<th>Professional Demographics Item</th>
<th>Paper survey respondents (n=201)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of RN degree</td>
<td>Range 1963-2007 (n=197)  Median 1985</td>
</tr>
<tr>
<td>Year of Advance Practice degree</td>
<td>Range 1977-2011 (n=201)  Median 2002</td>
</tr>
<tr>
<td>Advanced Practice degree</td>
<td>Certificate 13 (6.4%)</td>
</tr>
<tr>
<td></td>
<td>Masters 174 (86.1%)</td>
</tr>
<tr>
<td></td>
<td>DNP 13 (6.4%)</td>
</tr>
<tr>
<td></td>
<td>PhD 1 (0.5%)</td>
</tr>
<tr>
<td>Primary Advanced Practice certification</td>
<td>ANP 15 (17.3%)</td>
</tr>
<tr>
<td></td>
<td>FNP 154 (76.2%)</td>
</tr>
<tr>
<td></td>
<td>GNP 4 (2.0%)</td>
</tr>
<tr>
<td></td>
<td>Other 8 (4.5%)</td>
</tr>
<tr>
<td>Years of Primary Care practice</td>
<td>Range 1-33 years (n=200) Median 8 years</td>
</tr>
</tbody>
</table>
### TABLE 2: Respondent Primary State of Practice

<table>
<thead>
<tr>
<th>State</th>
<th>Responses</th>
<th>State</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK</td>
<td>2 (1.0%)</td>
<td>MS</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>AL</td>
<td>3 (1.5%)</td>
<td>MT</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>ALBERTA</td>
<td>1 (0.5%)</td>
<td>NC</td>
<td>3 (1.5%)</td>
</tr>
<tr>
<td>AR</td>
<td>1 (0.5%)</td>
<td>ND</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>AZ</td>
<td>11 (5.4%)</td>
<td>NE</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>CA</td>
<td>11 (5.4%)</td>
<td>NJ</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>CO</td>
<td>4 (2.0%)</td>
<td>NM</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>FAMILY</td>
<td>1 (0.5%)</td>
<td>NV</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>FL</td>
<td>16 (7.9%)</td>
<td>NY</td>
<td>7 (3.5%)</td>
</tr>
<tr>
<td>GA</td>
<td>1 (0.5%)</td>
<td>OH</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>HI</td>
<td>2 (1.0%)</td>
<td>OK</td>
<td>3 (1.5%)</td>
</tr>
<tr>
<td>ID</td>
<td>2 (1.0%)</td>
<td>OR</td>
<td>3 (1.5%)</td>
</tr>
<tr>
<td>IL</td>
<td>8 (4.0%)</td>
<td>PA</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>IN</td>
<td>8 (4.0%)</td>
<td>SC</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>KS</td>
<td>4 (2.0%)</td>
<td>TN</td>
<td>8 (4.0%)</td>
</tr>
<tr>
<td>KY</td>
<td>3 (1.5%)</td>
<td>TX</td>
<td>14 (6.9%)</td>
</tr>
<tr>
<td>LA</td>
<td>6 (3.0%)</td>
<td>UT</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>MA</td>
<td>1 (0.5%)</td>
<td>VA</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>MD</td>
<td>4 (2.0%)</td>
<td>WA</td>
<td>6 (3.0%)</td>
</tr>
<tr>
<td>ME</td>
<td>1 (0.5%)</td>
<td>WI</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>MI</td>
<td>7 (3.5%)</td>
<td>WV</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>MILITARY</td>
<td>3 (1.5%)</td>
<td>WY</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>MN</td>
<td>1 (0.5%)</td>
<td>No Response</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>MO</td>
<td>8 (4.0%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General Practice Demographics Description**

General practice pattern responses revealed 49% (n=99) of the respondents worked more than 40 hours a week. Thirty-five percent of NPs (n=71) worked 20-40 hours per week while 15.3% (n=31) worked 0-19 hours per week. Years in primary care practice ranged from 1-33
years with a mean of 9.41 years (n=200). PCPs working in the respondent’s practice location ranged from 0-40 providers with a mean of 7 providers (n=193). See Table 3.

TABLE 3. General Practice Demographics

<table>
<thead>
<tr>
<th>General Practice Demographics Item</th>
<th>Respondents (n=201)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner, employee &amp;/or contracted (practice)</td>
<td>Owner 16 (7.9%)</td>
</tr>
<tr>
<td></td>
<td>Employee 172 (85.1%)</td>
</tr>
<tr>
<td></td>
<td>Contracted 26 (12.9%)</td>
</tr>
<tr>
<td>Solo, group or both practice (practice)</td>
<td>Solo 20 (9.9%)</td>
</tr>
<tr>
<td></td>
<td>Group 161 (79.7%)</td>
</tr>
<tr>
<td></td>
<td>Both 19 (9.4%)</td>
</tr>
<tr>
<td>PCPs in primary practice location (practice)</td>
<td>Range 0-40 (n=193)</td>
</tr>
<tr>
<td></td>
<td>Mean 7</td>
</tr>
<tr>
<td>Hours worked per week (practice)</td>
<td>0-19hrs 31 (15.3%)</td>
</tr>
<tr>
<td></td>
<td>20-40hrs 71 (35.1%)</td>
</tr>
<tr>
<td></td>
<td>&gt;40hrs 99 (49.0%)</td>
</tr>
</tbody>
</table>

HTN Specific Practice Demographics Description

HTN specific practice patterns revealed that 57.4% of respondents saw >15 patients with HTN a week. The average duration of the first visit of a newly diagnosed hypertensive patient was at least 21 or more minutes in 69.4% of respondents (n=138). Average duration of follow-up visits to adjust HTN medications was 11-20 minutes in 55% of respondents (n=111). Fifty-nine percent of respondents (n=167) spent 6-20 minutes with patients with stable HTN. The average number of patient follow-up visits in the first three months after HTN diagnosis was between 2-3 visits in 76% of respondents (n=154). HTN specific practice patterns are presented in Table 4.
TABLE 4. *HTN Practice Demographics*

<table>
<thead>
<tr>
<th>HTN Practice Demographics Item</th>
<th>Responses (n=201)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Number of HTN Patients per Week</td>
<td></td>
</tr>
<tr>
<td>&lt;5 patients</td>
<td>15 (7.4%)</td>
</tr>
<tr>
<td>6-10 patients</td>
<td>38 (18.8%)</td>
</tr>
<tr>
<td>11-15 patients</td>
<td>30 (14.9%)</td>
</tr>
<tr>
<td>&gt;15 patients</td>
<td>116 (57.4%)</td>
</tr>
<tr>
<td>Average Duration of First Visit of Newly Diagnosed HTN</td>
<td></td>
</tr>
<tr>
<td>&lt;5 minutes</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>6-10 minutes</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>11-20 minutes</td>
<td>54 (26.7%)</td>
</tr>
<tr>
<td>21-30 minutes</td>
<td>69 (34.2%)</td>
</tr>
<tr>
<td>&gt;30 minutes</td>
<td>69 (35.2%)</td>
</tr>
<tr>
<td>Average Duration of Patient Follow-up Visits to Adjust HTN Medications</td>
<td></td>
</tr>
<tr>
<td>&lt;5 minutes</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>6-10 minutes</td>
<td>25 (12.4%)</td>
</tr>
<tr>
<td>11-20 minutes</td>
<td>111 (55.0%)</td>
</tr>
<tr>
<td>21-30 minutes</td>
<td>56 (27.7%)</td>
</tr>
<tr>
<td>&gt;30 minutes</td>
<td>3 (1.5%)</td>
</tr>
<tr>
<td>Average Duration of Patient Follow-up Visits for Stable HTN Management</td>
<td></td>
</tr>
<tr>
<td>&lt;5 minutes</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>6-10 minutes</td>
<td>69 (34.2%)</td>
</tr>
<tr>
<td>11-20 minutes</td>
<td>98 (48.4%)</td>
</tr>
<tr>
<td>21-30 minutes</td>
<td>23 (11.4%)</td>
</tr>
<tr>
<td>&gt;30 minutes</td>
<td>2 (1.0%)</td>
</tr>
<tr>
<td>Average number of Patient Follow-up Visits in the First 3 Months After HTN Diagnosis</td>
<td></td>
</tr>
<tr>
<td>1 visit</td>
<td>10 (5.0%)</td>
</tr>
<tr>
<td>2 visits</td>
<td>71 (35.1%)</td>
</tr>
<tr>
<td>3 visits</td>
<td>83 (41.1%)</td>
</tr>
<tr>
<td>4 visits</td>
<td>22 (10.9%)</td>
</tr>
<tr>
<td>≥5 visits</td>
<td>11 (5.4%)</td>
</tr>
</tbody>
</table>

**Measures**

This section will present the data collected to answer the research questions. Research questions are presented followed by corresponding detail of the survey responses intended to answer the questions. Measures used to address accuracy and integrity of the data entry are reported. Cronbach’s alpha is provided on the Belief and Implementation scales as a measure of reliability.

Statistical analysis was performed using IBM SPSS Statistics, Version 19 for Windows software. Data were entered by the PI into a SPSS database manually for the paper survey. To
maintain the integrity of survey data entry, every 10\textsuperscript{th} survey was rechecked for accuracy. Initial analysis of the database was with SPSS Codebook and Frequency commands with histograms. Any errors in tabulation were identified and addressed by either reviewing the individual respondent’s survey or correction of data entry into the SPSS database. Recheck of the database through Codebook and Frequency commands permitted verification of corrections and evaluation for outliers.

The PI noted during data entry some participants chose to omit responses to various items resulting in different \( n \) reported in the descriptions. As part of the missing items plan developed by the PI, a threshold of 10\% or greater total missing responses per respondent for a scale was assigned as exclusion criteria. Responses from 3 participants were excluded from this study that met the exclusion criteria.

Each participant’s score for the Belief and Implementation scales were computed by calculating the mean score for all of the items on the scale. Knowledge and Utilization were scored assigning points for correct answers. Incorrect and missing answers were assigned a zero. A single score was summed for each of the two scales per respondent.

NPs with DNP and PhD degrees were grouped together for analysis as NPs with doctoral degree because only one PhD responded to the survey. Analysis was run on the data for both combined and separate responses to this question regarding doctoral level of education. No variance was found in the results. Year of RN degree and year of advance practice degree were not utilized for this analysis as the number of years of advance practice was felt to represent length of experience sufficiently for the purposes of this study. Respondents’ states of practice for the paper survey were quite diverse. However, due to the small sample size, regional analysis
was not felt to be significantly contributory to the research questions for this study (see Table 2). Further analysis of these variables will be completed at a later date.

**Research Question 1: What are the levels of BIKU of EBP among NPs?**

BIKU scores were to measure each respondent’s level of belief, implementation, knowledge and utilization of EBP. The following is a description of the scoring for each BIKU level. Tables and narratives describe the results.

**Belief level.**

Belief was measured by a 16-item, 5-point Likert scale. The scale exhibited internal consistency reliability with a Cronbach’s $a = .90$. Belief in EBP among respondents had a possible score of 1-5. Higher scores indicated higher belief in EBP. Responses to Beliefs in EBP among the respondents were found to be consistently in the Strongly Agree or Agree response range (mean=4.07, SD=.47). All 16 of the item means were above the mid-point of the item’s response options. This indicated a strong belief in EBP by majority of respondents.

**Implementation level.**

Implementation was measured by an 18-item, 5-point multiple choice scale. The scale exhibited internal consistency reliability with a Cronbach’s $a = .92$. Implementation of EBP in the past 8 weeks had a possible score of 0-4. Higher scores indicated greater implementation of EBP. Responses to how often EBP was implemented in the past 8 weeks were predominately in the 0 to 1-3 times ranges (mean=1.42, SD=.76). This indicated that EBP was not implemented in practice by most respondents more than 3 times in the 8 weeks prior to responding to the survey.
Knowledge level.

Knowledge of EBP was measured by the sum score of the responses to the knowledge of JNC7 guidelines responses. Higher scores indicated greater knowledge of a JNC7 guideline with a possible score of 0-14. Knowledge level of the JNC7 guidelines among respondents ranged from 4-13. A mean response of 9 represents a group average of 69% knowledge score for the respondents. Eighty-six percent of respondents indicated 140/90 mmHg as the correct reading for the diagnosis of HTN. Forty-eight percent indicated 130/80 mmHg as the correct reading for the target blood pressure in hypertensive diabetics whereas 50% indicated 120/80 mmHg which was inconsistent with the JNC7 guidelines. Seventy-seven percent of respondents indicated 2-3 times per week to measure blood pressure after the initiation of HTN treatment which is the standard in the JNC7 guideline. Eighteen percent of respondents indicated a lower rate of every 1-2 weeks to measure blood pressure after the initiation of HTN treatment. Respondents in general were knowledgeable of HTN management consistent with the JNC7 guidelines. See TABLE 5 for responses to blood pressure measurements.
TABLE 5. *Measurement of HTN* (*correct response per JNC7 guidelines*)

Diagnosis of HTN in patients >19yo with repeat readings

<table>
<thead>
<tr>
<th>Blood pressure reading</th>
<th>Responses (n=195)</th>
</tr>
</thead>
<tbody>
<tr>
<td>140/90 mmHg*</td>
<td>174 (86.1%)</td>
</tr>
<tr>
<td>150/95 mmHg</td>
<td>10 (5.0%)</td>
</tr>
<tr>
<td>160/100 mmHg</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>Other value</td>
<td>7 (3.5%)</td>
</tr>
</tbody>
</table>

Target B/P reading for diabetic patients >19yo

<table>
<thead>
<tr>
<th>Blood pressure reading</th>
<th>Responses (n=198)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120/80 mmHg</td>
<td>101 (50.0%)</td>
</tr>
<tr>
<td>130/80 mmHg*</td>
<td>96 (47.5%)</td>
</tr>
<tr>
<td>140/90 mmHg</td>
<td>1 (0.5%)</td>
</tr>
<tr>
<td>150/95 mmHg</td>
<td>0</td>
</tr>
<tr>
<td>160/100 mmHg</td>
<td>0</td>
</tr>
</tbody>
</table>

How often do you measure B/P after initiation of treatment?

<table>
<thead>
<tr>
<th>Time</th>
<th>Responses (n=197)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every 2-3 days*</td>
<td>155 (76.7%)</td>
</tr>
<tr>
<td>Every 1-2 weeks</td>
<td>36 (17.8%)</td>
</tr>
<tr>
<td>Once a month</td>
<td>5 (2.5%)</td>
</tr>
<tr>
<td>Every 2-3 months</td>
<td>1 (0.5%)</td>
</tr>
</tbody>
</table>

In addition, the EBP Knowledge level included scores on responses to a matrix of patient characteristics that would lead a provider to more aggressively treat a patient with uncomplicated hypertension. Of the 10 characteristics listed, eight were from the JNC7 guidelines that apply to more aggressive treatment recommendation. Two of the 10 options were not part of the JNC7 recommendations: middle age (40-60 years old) and osteoarthritis. Of the 202 respondents, 81 (40.0%) selected middle age (40-60 years old) and 12 (0.1%) selected osteoarthritis. See TABLE 6 for responses to this question.

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>Frequency (N=202)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Mellitus</td>
<td>183</td>
<td>90.6</td>
</tr>
<tr>
<td>Age &gt;70 years old</td>
<td>52</td>
<td>25.7</td>
</tr>
<tr>
<td>CAD</td>
<td>186</td>
<td>92.0</td>
</tr>
<tr>
<td>COPD</td>
<td>49</td>
<td>24.3</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>157</td>
<td>77.7</td>
</tr>
<tr>
<td>Age 40-60 years old*</td>
<td>81</td>
<td>40.0</td>
</tr>
<tr>
<td>CVD</td>
<td>165</td>
<td>81.6</td>
</tr>
<tr>
<td>Renal Insufficiency</td>
<td>163</td>
<td>80.7</td>
</tr>
<tr>
<td>Osteoarthritis*</td>
<td>12</td>
<td>0.1</td>
</tr>
<tr>
<td>FMHx of HTN or CVD</td>
<td>134</td>
<td>66.3</td>
</tr>
</tbody>
</table>

Note: CAD=Coronary Arterial Disease, COPD=Chronic Obstructive Pulmonary Disease, CVD=Cerebrovascular Disease, FMHx=Family Medical History, HTN=Hypertension

**Utilization level.**

Utilization scores were measured from two questions regarding use of clinical guidelines and whether respondents had either read the JNC7 guidelines or heard about the JNC7 guidelines. One point was assigned for acknowledgement of use and familiarity with the guidelines. Sum scoring of Utilization of EBP was indicated by respondents (mean=1.22, SD=.49) with a possible scoring range of 0-2. Ninety-five percent of respondents indicated they had either read or heard about the JNC7 guidelines in journals or continuing medical education (TABLE 7). Twenty-six percent of respondents indicated they utilized guidelines in HTN management (n=53).
TABLE 7. Knowledge of JNC7 Guidelines

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not heard of JNC7</td>
<td>3</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Heard of JNC7 but not familiar</td>
<td>6</td>
<td>3.0</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Actually read JNC7 report</td>
<td>99</td>
<td>49.0</td>
<td>49.5</td>
<td>54.0</td>
</tr>
<tr>
<td>Read or heard about JNC7 in journals, articles, CME</td>
<td>92</td>
<td>45.5</td>
<td>46.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>99.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

BIKU levels.

Table 8 below presents a summary of the BIKU scale scores in the survey. Analysis of the scores was completed with descriptive statistical analysis. These scores were used in the analyses of Research Questions 2 and 3.

TABLE 8. BIKU Scores

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Possible Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belief</td>
<td>201</td>
<td>1-5</td>
<td>2.88</td>
<td>5.00</td>
<td>4.07</td>
<td>0.47</td>
</tr>
<tr>
<td>Implementation</td>
<td>201</td>
<td>0-4</td>
<td>0.11</td>
<td>3.94</td>
<td>1.42</td>
<td>0.76</td>
</tr>
<tr>
<td>Knowledge</td>
<td>202</td>
<td>0-14</td>
<td>4.00</td>
<td>13.00</td>
<td>9.03</td>
<td>1.67</td>
</tr>
<tr>
<td>Utilization</td>
<td>200</td>
<td>0-2</td>
<td>0.00</td>
<td>2.00</td>
<td>1.22</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Research Question 2: Is there a relationship with the NP demographics and BIKU of EBP?

Pearson inter-item correlations were estimated to evaluate relationships between PCNP demographic variable and BIKU. No significant correlations \( (r < 0.20) \) were found between the personal, professional and practice demographics and EBP BIKU scores in the Correlational analysis.
A one-way analysis of variance (ANOVA) was performed to evaluate differences among Advance Practice degree and BIKU. The ANOVA analysis revealed two significant differences between Advance Practice Degree with Belief scores $F(2,200) = 3.35, p = .037$ and Implementation scores $F(2,200) = 4.06, p = .019$. Post Hoc Test revealed that Doctorally prepared NPs reported higher scores of Belief and Implementation than NPs with Masters degrees or NPs with Certificates. Belief was indicated by Certificate respondents (mean=4.00, SD=.54), Masters degree (mean=4.05, SD=.45) and Doctorally prepared NPs (mean=4.37, SD=.51). Implementation was indicated by Certificate respondents (mean=1.45, SD=.85), Masters degree (mean=1.37, SD=.74) and Doctorally prepared NPs (mean=1.95, SD=.80). A second ANOVA was performed to evaluate differences in NP specialty and BIKU. This second analysis resulted in no significant differences.

**Research Question 3: Do PCNP demographics (personal, professional, and practice) and scores on Belief, Implementation and Knowledge influence EBP utilization?**

The plan of analysis for this research question was to utilize regression analysis to evaluate whether demographic characteristics or belief, implementation and knowledge predicted utilization. The omnibus ANOVA testing the regression model was non-significant. Therefore, NP demographics, EBP Belief, EBP Implementation or EBP Knowledge did not predict EBP Utilization.

**Summary**

This chapter presented the results of the Evidence Based Practice Among Nurse Practitioners Survey. The resulting sample size was 201 respondents. No significant correlations were found among the NP demographics and BIKU scores in Correlational analysis. However, a one-way ANOVA did find two significant relationships with doctoral prepared NPs responding
with higher scores in Belief and Implementation than Certificate or Masters prepared NPs.

Utilization was not found to be influenced by any of the measures in this survey.
CHAPTER V: DISCUSSION

This chapter discusses the findings of research describing primary care nurse practitioners’ beliefs in, ability to implement, knowledge of and utilization of evidence based practice. The findings are discussed related to the research questions, strength and limitations of the research and recommendations for future research.

Findings

EBP Belief Among PCNPs

Among PCNPs survey, belief in EBP consistently aligned with the strongly agree or agree response range suggesting a high rate of belief in EBP. There may be several explanations for this. First, EBP is a common topic of discussion both in print and dialogue. Second, the current literature, clinical guidelines and continuing medical education presentations frequently highlight EBP in support of treatments, medications and procedures in health care practice. Third, participants may have responded idealistically considering that belief in EBP as a socially desirable characteristic of PCNPs. A final point of consideration is that participants were attending an educational conference where EBP was a common topic. Overall, perhaps participants who are more interested in education and up-to-date healthcare information are more likely to respond favorably to EBP belief questions.

Comparable rates of belief in EBP were identified in a study by Jette, et al. in 2003. Among physical therapist respondents, 90% (n=488) strongly agreed or agreed to belief in EBP. Eighty-five percent of respondents (n=317) in a survey of junior doctors of various specialties in the United Kingdom indicated strong agreement or agreement to belief in EBP (Hadley, Wall & Khan, 2007). These rates of belief in EBP are comparable to the results of this study.
EBP Implementation Among PCNPs

In the survey, participants were asked to consider the last eight weeks in response to items focused on implementation of EBP. Implementation scores ranged from 0-3 times in the eight weeks (mean=1.42, SD=.76) indicating a relatively low level of EBP implementation. These results are similar to a study by Sredl, et al. (2011) who found relatively low levels of EBP implementation in a survey of chief nurse executives (n=154, mean=2.00, SD=.93) using the same Implementation scale this study used. Several issues may have influenced their responses according to National Association of State Mental Health Directors (NASMHD) Research Institute (2011). A practitioner has to spend more time staying current with new information and implementing current evidence into EBP as compared to practitioners who do not make the effort to stay current. Relatively low levels of EBP implementation should not be surprising. In today’s clinical environment, providers are typically pressed to maintain short clinical visits and a high number of patient encounters daily to support the economic viability of the practices. Moreover, third party payers do not reimburse for non-patient contact time when providers are likely able to read current EBP literature and guidelines. Hence, participants may not have the clinical time necessary to implement EBP as evidenced by 49% of respondents indicating a greater than 40 hours work week. In addition, providers may be implementing EBP but not reporting that they are. A chart review could be used to evaluate implementation of EBP as could an observational study of PCNPs in the clinical practice setting.

EBP Knowledge Among PCNPs

In spite of a majority of respondents indicating a belief in EBP, the mean score for knowledge was 69%. This score was based on a single EBP guideline that was familiar to 95% of the respondents. The EBP knowledge scores divided into four sub-groups: blood pressure
reading for the diagnosis of HTN, diabetic blood pressure target, frequency of blood pressure readings after initiation of treatment and patient characteristics triggering more aggressive HTN management.

**Blood pressure for diagnosis of HTN.**

Responses for blood pressure reading for the diagnosis of HTN (140/90mmHg) were correct in nearly 90% of respondents. These responses were congruent with the JNC7 guidelines for the diagnosis of HTN.

**Diabetic blood pressure target.**

Diabetic blood pressure target responses were correct (130/80mmHg) in 50% of respondents. On closer analysis, 50% of respondents incorrectly indicated a lower blood pressure goal of 120/80mmHg for diabetics, suggesting a more aggressive approach to the question regarding the target blood pressure for diabetics. This more aggressive response drove the summed knowledge score lower in 50% of respondents. A possible explanation may be the general intent to more aggressively treat HTN in diabetes or chronic disease. This finding points to the need for further research.

**Frequency of blood pressure reading post-treatment initiation.**

Additional knowledge measured included how often blood pressure was measured after the initiation of treatment. Seventy-seven percent of respondents indicated every 2-3 days. This is congruent with the JNC7 guidelines for hypertension management. Eighteen percent of respondents indicated every 1-2 weeks. A possible explanation for this variance may be a lack of familiarity with this particular guideline. Alternatively, the survey question may have been interpreted as to what was actually accomplished with the newly treated hypertensive patient versus what the guideline actually recommends. This finding also requires further research.
Patient characteristics triggering more aggressive HTN management.

The responses to the matrix of patient characteristics that would prompt more aggressive treatment of HTN yielded a number of interesting observations. Seven chronic diseases were given as possible responses to the question of patient characteristics requiring more aggressive HTN treatment. The responses were cardiovascular disease (92%), diabetes (91%), cerebrovascular disease (82%), renal insufficiency (81%), hyperlipidemia (78%), chronic obstructive pulmonary disease (24%), and osteoarthritis (6%). Age related characteristics indicated as reasons to more aggressively treat HTN were age 40-60 years old (40%) and age greater than 70 years old (26%). Family medical history of HTN or cardiovascular disease was indicated by (66%) of the respondents.

Of these responses, osteoarthritis and middle age (40-60 years old) are not part of the JNC7 recommendations for more aggressive treatment of HTN. The response of 40% of respondents for 40-60 year olds needing more aggressive HTN treatment suggests a practice without a significant evidence-based guideline to support this approach. A treatment plan to achieve this level of blood pressure in HTN management may not produce better patient outcomes but could potentially increase unnecessary medical costs and expose patients to greater risk from over-treatment. The wording of the question may also have affected the answer by study respondents. This finding, also, requires additional research.

Only 25% of respondents indicated COPD and age greater than 70 years old as patient characteristics that require more aggressive HTN treatment. Possible reasons for this disconnect between the disease of HTN and COPD may be insufficient knowledge of the guideline. The rationale is not clear why the conservative response for 70 year old or older patients; perhaps the rationale is related to more recently published research indicating concern for overly aggressive
blood pressure management in this population age bracket (Rastas, et al., 2006; Ungar, et al, 2009; Weiss, Johnson, Petrik, Smith, Yang, & Thorp, 2010). Further research should be conducted on these survey findings for better understanding.

A comparison between these findings about PCNP EBP knowledge about HTN management and other findings in the literature would be useful. However, there are no published reports about other clinical providers’ knowledge of JNC7 guidelines and HTN. One study of general EBP knowledge was conducted by Chiu, et al. in 2010. In that study, Taiwanese physicians self-reported knowledge of EBP at 54% (n=599) in 2007 and 66% (n=544) in 2009. These results are similar to the results of this study which found EBP knowledge of PCNPs to be self-reported at 69%. However, the demographic profiles of participants in these studies are significantly different in both age and training. Participants were Asian trained physicians who an average of seven years younger than the participants of this study. Also, the results of the Taiwanese study were general EBP knowledge measurements whereas the results of this study were based on one EBP guideline.

**EBP Utilization Among PCNPs**

Utilization was measured by scoring three answers to two questions about the utilization of clinical guidelines for managing HTN. The vast majority of respondents (95%) indicated they were familiar with the JNC7 guidelines either through reading the guidelines or hearing about them through journals and/or continuing education. However, only 25% respondents indicated they utilized guidelines in HTN management. This low response rate further supports the low Implementation score of most survey respondents but confounds the potential implications of high Belief scores. This low response rate for utilization of EBP is comparable to a 2008 study of allied healthcare providers and certified alternative medicine practitioners (n=193) in the United
Kingdom with a reported EBP utilization rate of 29% (Hadley, Hassan, & Khan, 2008).

Additional research and survey tool development will be needed to investigate whether the EBP Utilization level of response is significant. The results from this survey tool cannot be inferred to the general PCNP population regarding EBP utilization. Further research will also be needed to determine facilitators and barriers to EBP utilization.

**PCNP Demographics and BIKU of EBP**

Two relationships were found among respondent demographics and their BIKU scores. Both relationships demonstrated higher scores for belief and implementation of EBP among PCNPs with doctorates when compared to PCNPs with Certificate and PCNPs with Masters who had statistically lower scores. An explanation for this variance may be greater exposure to EBP in the PCNPs with doctorates. EBP is a common element of current nursing curricula. Of the 14 doctorally-prepared respondents, 13 were DNPs and 1 was a PhD. DNP PCNPs would be expected to have been recently exposed to EBP as DNP programs began in 2004 (American Academy of Nurse Practitioners, 2010a). The single PhD prepared PCNP respondent in this study does not allow for inference to PhD PCNPs.

**Influences on EBP Utilization**

No significant influence of PCNP demographics was found in correlating respondent scores on utilization of EBP and EBP belief, implementation and knowledge. It is not possible to make any inference to the PCNP population from this result. Further data collection and analysis in follow-up study will be necessary to determine if there are any relationships between EBP utilization, belief, implementation and knowledge among PCNPs. The primary motivators or detractors of PCNPs to believe in, implement, demonstrate knowledge of and utilize EBP are not demonstrated by this study.
Study Strengths and Limitations

Strengths of this study included a moderate sample size, use of established survey scales, a diverse participant pool and the advantage of utilizing a national conference for nurse practitioners for data collection. The survey scales for EBP Belief and Knowledge (Melnyk and Fineout-Overholt, 2008) and the PREVIEW study (Van der Niepen P., et al., 2009) have been used repeatedly in research and are well established. The responses to the scales in this study were similar to the data from the psychometric study by Melnyk and Fineout-Overholt (2008) and the PREVIEW study provider questionnaire (2009). The primary difference between this study and Melnyk and Fineout-Overholt’s (2008) study is that the 2008 study was completed with registered nurses whereas this study was completed with nurse practitioners.

Respondents from the 26th AANP National Conference 2011 represented a broad range of specialties. The attendance for the conference was 5,764 nurse practitioners. Study recruitment was located in a high traffic area as all the plenary sessions were held in conference rooms in front of the researcher’s booth. This allowed access to a broad sampling of the American nurse practitioner population. However, only 3% of conference participants participated in this study. Only 58% of respondents who elected to complete a paper survey returned a completed printed survey. Despite evidence about altruistic reward cited by Messer and Dillman (2010), reward for participation may have improved response for recruitment as well as encouraged completion of the online or paper survey. Other methods for attracting attention and recruits to the researcher’s booth should be considered as well.

This study was intended to be conducted completely online. The logic was to simplify the data collection, promote efficiency and minimize error in data entry. Although the conference sponsor committed sufficient resources for data collection, sponsor budget constraints apparently
eliminated wireless internet access in the main conference area where the researcher booths were located. Other options for Internet connection were considered at the commencement of data collection. Wireless signal in the area was very poor and would not allow for a reliable connection through a personal 3G cellular network hub. With a better cellular signal or with wired/wireless Internet capability, computerized survey administration initially planned could have been initiated. The advantage of online survey administration needs further study as the benefits would likely improve data collection, efficiency, and data integrity. Paper consumption would also be dramatically reduced. Onsite use of computer-administrated surveys may also have positively impacted the number of participants in the study.

One of the more significant study limitations involved unequal groups. Since this research was based on a convenience sample, survey results may not represent nurse practitioners today. The demographic profile is similar to the American Academy of Nurse Practitioners 2011 national NP data sheet who sponsored the conference where data was collected (Table 9). Unequal groups from the demographic profile may weigh the responses in a way that is not representative of all NPs today.

Other limitations to the study follow. The use of a study assistant would likely have made the data collection more efficient allowing for more contacts with potential participants at one time at the recruitment booth. In the PREVIEW provider questionnaire, there were items within the survey that were not used for this particular set of research questions. The PREVIEW provider questionnaire was used completely other than the removal of specific questions regarding European HTN management guidelines in the interest of maintaining the integrity of the questionnaire. If the not items used had been removed, this would have shortened the length of the survey which may have subsequently increased the number of participants who completed
the survey. This is under the pretense that fewer survey items would require less time for survey completion. Further testing and development of the tool will be required to evaluate this proposition. With only two scores possible for Utilization, evaluation of this dimension was limited.

**TABLE 9. Survey versus National NP Demographics**

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Survey respondents</th>
<th>AANP US national statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age</td>
<td>52 years old</td>
<td>49 years old</td>
</tr>
<tr>
<td>Gender</td>
<td>Female 95%</td>
<td>Female 96%</td>
</tr>
<tr>
<td></td>
<td>Male 4%</td>
<td>Male 4%</td>
</tr>
<tr>
<td>Advanced Practice degree</td>
<td>Certificate 6%</td>
<td>Certificate 7%</td>
</tr>
<tr>
<td></td>
<td>Graduate degrees 93%</td>
<td>Graduate degrees 93%</td>
</tr>
<tr>
<td>Primary Advanced Practice</td>
<td>ANP 17.3%</td>
<td>ANP 19.3%</td>
</tr>
<tr>
<td>certification</td>
<td>FNP 76.2%</td>
<td>FNP 48.3%</td>
</tr>
<tr>
<td></td>
<td>GNP 2.0%</td>
<td>GNP 3.2%</td>
</tr>
<tr>
<td>Median Years of Practice</td>
<td>8 years</td>
<td>12.8 years</td>
</tr>
</tbody>
</table>

(AANP statistics as of 07/28/2011)

**Implications and Further Research**

The goal of this research was to describe PCNP beliefs, implementation, knowledge and utilization of evidence based practice. In general, respondents had a high level of belief in EBP. Embracing EBP does not appear to be lacking in the PCNP respondents to this study. Implementation was limited by reasons not identified in this study. PCNP time limitations, clinical support for EBP, and access to EBP guidelines at the point of patient service may have influenced lower implementation scores. This will need further research.

Knowledge of HTN management measures based on the JNC7 clinical guidelines did not score as high as would be expected, given the high level of belief in EBP. Statistically, the variance can be attributed to an overly aggressive approach to treatment of diabetics with HTN
in 50% of PCNP respondents. Whether this constitutes inappropriate treatment for diabetic hypertensive patients is beyond the scope of this study and needs further investigation.

PCNPs with high scores indicating familiarity with the JNC7 guideline did not have corresponding high knowledge scores for managing HTN according to the JNC7 guidelines. The results of this study do not explain this. Moreover, results from this study cannot be translated into actual clinical outcomes or give any significant insight into differentiating PCNPs characteristics and PCNP uptake of EBP knowledge. A clinical performance study that measures patient outcomes could help understand the translation of EBP into PCNP practice. PCNP demographics collected in this study did not describe any significant variances beyond doctoral-prepared PCNPs. Advanced education may be the primary impetus for higher belief but will need further research from additional cohorts to establish significance to PCNPs as a group.

This research does have implications for the development of a tool to measure translation of EBP into practice. As this tool evolves under further development, the information collected may provide a better understanding of the PCNP process of EBP utilization. This information could provide a better understanding of PCNPs’ access to EBP information and the influences and characteristics of PCNPs’ use of EBP. Once this information is gathered, analyzed and disseminated to educators and clinicians, the end result should aid in the understanding the translation of EBP belief and knowledge into practice through implementation and utilization. The use of evidence in practice is considered essential for optimal patient outcomes (IOM, 2003).

Summary

The purpose of this study was to describe PCNP beliefs, implementation, knowledge and utilization of EBP. EBP is a standard of care used to improve patient outcomes with the latest
information available to efficiently and effectively deliver health care. Current health care research indicates that in spite of the advancements in health care research and the development of EBP guidelines, patient outcomes have not responded accordingly (National Cancer Institute, 2007 & 2011; NHLBI, 2010). Ongoing research is being conducted on patient adherence to health care treatment plans. However, two parties are involved in patient care: the patient and the provider. EBP translation among health care providers and the influence on provider actions in patient care is not well understood. The basic understanding of how EBP is utilized by PCNPs in practice has been emerging but has been understudied in the literature. This research is a step toward understanding how PCNPs utilize EBP and the PCNPs’ ability to influence optimal patient outcomes. This study has provided initial information to better understand PCNPs and EBP. As PCNPs assume a leadership role in primary health care, methods to increase PCNP utilization of EBP will need to be understood and implemented to improve and optimize patient outcomes.
APPENDIX A:

HUMAN SUBJECTS PROTECTION PROGRAM
The University of Arizona Consent to Participate in Research

Study Title: Evidence Based Practice Among Nurse Practitioners

Principal Investigator: S. Van Roper, MS, RN, FNP-C

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate. Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate.

You may or may not benefit as a result of participating in this study. Also, as explained below, your participation may result in unintended or harmful effects for you that may be minor or may be serious, depending on the nature of the research.

You are being invited to voluntarily participate in the above-titled research study conducted by the University of Arizona. The purpose of the study is to gain insight into nurse practitioners' beliefs, implementation and utilization of evidence based practice (EBP). The survey is intended for nurse practitioners managing hypertension. You are eligible to participate because you are a nurse practitioner, actively practicing, your practice includes the ongoing management of hypertension in patients 19 years or older and you have Internet access.

If you agree to participate, your participation will involve:
- Checking the “I Agree” box at the bottom of the screen.
- Completing the survey that should take approximately 20 minutes.

The survey information will help the researcher add to our knowledge about nurse practitioner use of EBP. Additional questions asked are about:
- Your beliefs in and ability to implement EBP
- Your knowledge of hypertension management
- Information related to your occupation, age, gender, and professional background

You may voluntarily withdraw from the study at any time by logging off the website or closing your browser. No matter what decision you make, there will be no penalty to you and you will not lose any of your usual benefits. Your decision will not affect your future relationship with The University of Arizona. If you are a student or employee at the University of Arizona, your decision will not affect your grades or employment status. There is no cost to you except for your time. There are no known risks from your participation.

Although the benefits for participating may not be readily apparent, your participation will contribute to a greater awareness of nurse practitioner beliefs and utilization of EBP. More importantly, this information may support the continued assertion of nurse practitioners' competency in healthcare. You may decide when to begin or to stop the study. Your decision not to participate or your decision to discontinue your participation will have no effect on you.

Only the Principal Investigator (PI) will have access to the information that you provide in the tests or in questions. Your confidentiality is protected since your name and your IP address will not be

Version 5/3/11
collected. Any other identifying information, such as demographic information, will be too general to be able to identify you. All information collected will be password protected and secured within an encrypted environment within the website.

Any questions you have regarding the survey will be answered by the PI. You can also call the researcher to tell him about a concern or complaint about this research study. The PI, Van Roper, PhD candidate, MS, RN, FNP-C can be emailed at sroper@nursing.arizona.edu or called at 503-741-9026.

If you have questions, complaints, or concerns about your rights or the research and cannot reach the PI or want to talk to someone other than the PI, you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721 or if out of state use toll-free 1-866-278-1455. If you would like to contact the Human Subjects Protection Program via the web (this can be anonymous), please visit http://www.irb.arizona.edu/contact/.

The survey is not timed although you will need to complete the survey at one sitting as you will not able to save your answers to complete later. You will be directed to the introductory web page where you will log-on to the site with the username and password provided to you for your participation only.

By beginning the survey you are giving permission for the investigator to use your information for research purposes. If you agree to these terms, click on the “I agree” button below and you will proceed to the next page. If you do not agree to these terms, click the “I do not agree” button and you will be redirected to your home page.

Thank you.

S. Van Roper

“I agree”

“I do not agree”

Version 5/3/11
HSPP Correspondence Form

Date: 05/06/11

Investigator: Stephen Van Roper, Ph.D. Candidate
Advisor: Cathy Michaels, Ph.D., R.N.

Project No./Title: 11-0360-00 Evidence-Based Practice Among Nurse Practitioners
Current Period of Approval: 05/06/11 – no expiration

IRB Committee Information
Administrative Review – New Project

Documents Reviewed Concurrently Status
F200: Application for Human Research (received 5/3/11) Approved
Consenting Instruments:
  Subject Disclaimer Form (version 5/3/11) Approved
VOTF (version 5/3/11) Approved
Site Authorizations:
  ASU-CAEP Permissions to use questionnaires Approved
  Matrix45 Preview Permission to use questionnaire
  Tentative approval – American Academy of Nurse Practitioners
Recruitment Materials:
  Bulletin Board Posting Approved
  Card handout
  Booth Recruitment Spoken Script
  Booth Recruitment Written Script
Data Collection Instruments:
  Survey Approved
Other: PI CV, C416 Waiver of Written Documentation of the Consent Process Acknowledged

Determination
Approved as submitted effective 05/06/11

Regulatory Determination(s)
Exempt Approval 45 CFR 46.101(b)(2): Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior.

\[\text{Sheryl Wulf, PhD}\]

Director, Human Subjects Protection Program
UA Institutional Review Board

SW:mm/bm
cc: Departmental/College Review Committee

Reminders: Continuing Review materials should be submitted 30–45 days prior to the expiration date to obtain project re-approval
- Projects may be concluded or withdrawn at any time using the forms available at http://irb.vpr.arizona.edu/
- No changes to a project may be made prior to IRB approval except to eliminate apparent immediate hazard to subjects.
- Original signed consent forms must be stored in the designated departmental location determined by the Department Head.

Firm version: 06/18/19
HSPP Correspondence Form

Date: 07/05/11
Investigator: Stephen Van Roper, Ph.D. Candidate
Advisor: Cathy Michaels, Ph.D., R.N.
Project No./Title: 11-0360-00 Evidence-Based Practice Among Nurse Practitioners
Current Period of Approval: 05/06/11 – n/a

IRB Committee Information

Administrative Action
FWA Number: FWA00004218

Documents Reviewed Concurrently  Status
F213: Modification of Approved Human Research (signed 06/29/11)  Approved

Description of Submission
protocol change [survey is to be administered in paper form in addition to being administered online].

Determination
Approved as submitted effective 07/05/11

Mariette Marsh, CIP  7/5/11  Date
Chair Designee, IRB2 Committee
UA Institutional Review Board

MM:br

Reminders: No changes to a project may be made prior to IRB approval except to eliminate apparent immediate hazard to subjects.
APPENDIX B:

RECRUITMENT DOCUMENTS
Help advance Nurse Practitioner research!

If you manage hypertension take my survey.

Information available at the Researchers Booth area.
Recruitment Card Handout

(front of card)

Help advance Nurse Practitioner research!
Manage Hypertension? Take my survey!
Log on to www.XXX
Password XXXX

(back of card)

Contact information:
S. Van Roper MS, RN, FNP-C
sroper@nursing.arizona.edu
503-741-9026
Hi,

Please volunteer to provide feedback on what you think about evidence based practice (EBP) and how you manage hypertension. I am looking for nurse practitioners (NPs) who manage chronic hypertension for this survey study.

This survey includes a 20 minute online survey of 61 questions. All responses are private and confidential. You may complete the survey online here or on your own computer at your convenience. If you chose to do this on your computer, please take this card with login information.

I value your feedback and appreciate your time to complete this survey.
Booth Recruitment Written Script
(To be laminated and kept at the recruitment table for further information)

I am conducting a research study through the University of Arizona, College of Nursing. This survey is for nurse practitioners currently managing chronic hypertension in their practice. No personal identifying information will be collected.

Evidence based practice (EBP) is now considered a standard of care and essential to nurse practitioner practice. The primary advantages of EBP include improved quality of care through the utilization of patient resources, provider resources and experiences, current research and scientific information. There are few studies describing nurse practitioner beliefs, knowledge in EBP and the extent to which this may affect nurse practitioners’ (NP) utilization of EBP in their practice. This study is an analysis of the predictors of provider implementation or utilization of EBP in one disease, hypertension in an effort to better understand the provider side of the patient-provider equation. The information collected will be disseminated into healthcare literature, nursing education and science.

Keep in mind your participation is voluntary. You may either take the survey here at the booth or at your convenience by visiting the survey website. Please take one of the business cards with the website address and password if you chose to complete this on your personal computer. Average time to completion is 20 minutes.

Once you have completed the survey, please destroy this information. This study is only for nurse practitioners who are involved in managing chronic hypertension. Please do not share this with anyone else to maintain the integrity of the study.

Thank you in advance for your time and consideration!
APPENDIX C:

SURVEY
Below are questions regarding your practice and demographics.

| Question: | | | | |
| --- | --- | --- | --- | |
| What is your age? | | | | |
| Circle the response appropriate for your gender. | Female | Male | | |
| What is the year of your RN degree? | | | | |
| What is the year of your advance practice degree? | | | | |
| Circle the response appropriate for your advance practice degree. | Certificate | Masters | DNP | PhD | |
| Circle the response appropriate for your primary area of certification. | ANP | FNP | GNP | Other: | |
| How many years have you practiced as an advanced practice provider? | | | | |
| In what state is your primary practice? | | | | |
| Circle the response appropriate to your practice. (You may select more than one) | Own your practice | Work as an employee | Contracted | |
| Circle the response appropriate to the type of practice you have. | Solo | Group (>you) | Both | |
| How many primary care providers (NPs, MDs, DOs, PAs) do you practice with at your primary location? | | | | |
| Circle the response appropriate for the number of hours a week you practice primary care? | 0-19 hours | 20-40 hours | >40 hours | |
Below are 16 statements about evidence-based practice (EBP) beliefs. Please check the answer that best describes your agreement or disagreement with each statement. There is no right or wrong answer. (Melnyk & Fineout-Overholt, 2003)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe that EBP results in the best clinical care for patients.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am clear about the steps of EBP.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am sure that I can implement EBP.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe that critically appraising evidence is an important step in the EBP process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am sure that evidence-based guidelines can improve clinical care.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe that I can search for the best evidence to answer clinical questions in a time efficient way.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe that I can overcome barriers in implementing EBP.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am sure that I can implement EBP in a time efficient way.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am sure that implementing EBP will improve the care that I deliver to my patients.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am sure about how to measure the outcomes of clinical care.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe that EBP takes too much time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am sure that I can access the best resources in order to implement EBP.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe EBP is difficult.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know how to implement EBP sufficiently enough to make practice changes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident about my ability to implement EBP where I work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe the care that I deliver is evidence-based.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Below are 18 questions about evidence-based practice (EBP) **implementation**. Some healthcare providers do some of these things more often than other healthcare providers. This is no certain frequency in which you should be performing these tasks. Please answer each question by selecting the answer that best describes **how often each item has applied to you in the past 8 weeks.** (Melnyk & Fineout-Overholt, 2003)

<table>
<thead>
<tr>
<th>In the past 8 weeks, I have:</th>
<th>0 times</th>
<th>1-3 times</th>
<th>4-5 times</th>
<th>6-7 times</th>
<th>&gt;8 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used evidence to change my clinical practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critically appraised evidence from a research study.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generated a PICO question about my clinical practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informally discussed evidence from a research study with a colleague.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collected data on a patient problem.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared evidence from a study/-ies in the form of a report or presentation to &gt;2 colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluated the outcomes of a practice change.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared an EBP guideline with a colleague.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared evidence from a research study with a patient/family member.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared evidence from a research study with a multidisciplinary team member.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read and critically appraised a clinical research study.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessed the Cochrane database of systematic reviews.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessed the National Guidelines Clearinghouse.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used an EBP guideline or systematic review to change clinical practice where I work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluated a care initiative by collecting patient outcome data.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared the outcome data collected with colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed practice based on patient outcome data.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promoted the use of EBP to my colleagues.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Below are 16 questions regarding your knowledge of guidelines and management of hypertension (HTN). Please answer each question based on your personal experience and understanding. (Van der Niepen P., et al. 2009)

<table>
<thead>
<tr>
<th>Question (circle the appropriate answer)</th>
<th>&lt;5 patients</th>
<th>6-10 patients</th>
<th>11-15 patients</th>
<th>&gt;15 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many hypertensive patients on average do you see a <strong>week</strong> in your practice?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the average duration of first medical visit for your <strong>newly</strong> diagnosed HTN patient?</td>
<td>&lt;5 minutes</td>
<td>6-10 minutes</td>
<td>11-20 minutes</td>
<td>21-30 minutes</td>
</tr>
<tr>
<td>What is the average duration of your follow-up visits to <strong>adjust</strong> HTN treatment?</td>
<td>&lt;5 minutes</td>
<td>6-10 minutes</td>
<td>11-20 minutes</td>
<td>21-30 minutes</td>
</tr>
<tr>
<td>What is the average duration of your follow-up visits for <strong>stabilized</strong> HTN patients?</td>
<td>&lt;5 minutes</td>
<td>6-10 minutes</td>
<td>11-20 minutes</td>
<td>21-30 minutes</td>
</tr>
<tr>
<td>How many follow-up visits do you <strong>average</strong> during the <strong>first 3 months</strong> after initiation of HTN treatment in order to achieve goal blood pressure?</td>
<td>1 visit</td>
<td>2 visits</td>
<td>3 visits</td>
<td>4 visits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rank the top five items</strong> that you believe are most important to managing HTN in the primary care setting by indicating 1, 2, 3, 4 and 5 in order of importance.</th>
<th><strong>(most important)</strong></th>
<th></th>
<th><strong>(least important)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific literature</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Clinical updates I receive in professional publications</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Following my feeling</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Clinical rounds and other peer learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Conferences and CME presentations</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Education from pharmaceutical industry</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Guidelines published in journals</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Public media (TV, radio, internet, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My clinical experience</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Consulting with senior colleagues</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

| **Check** which of the following generally pertains to your management of hypertension:                                      |                      |                  |                      |
| Focus on patient's blood pressure readings                                                                                       |                      |                  |                      |
| Consider presence/absence of diabetes                                                                                             |                      |                  |                      |
| Follow my clinical experience                                                                                                    |                      |                  |                      |
| Consider risk factors for hypertension                                                                                           |                      |                  |                      |
| Rely on my clinical intuition                                                                                                     |                      |                  |                      |
| Follow specific clinical guidelines                                                                                              |                      |                  |                      |
| Consider risk factors for cardiovascular disease                                                                                 |                      |                  |                      |
**Rank the top five items** that you believe are most important to managing hypertension in the primary care setting by indicating 1, 2, 3, 4 and 5 in order of importance: *(most important) (least important)*

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation with patient regarding disease process</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Conversation with patient regarding medication dosing and side effects</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Explain to patient the importance of taking the medicine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Encourage patient to phone when questions arise</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hand out materials I developed myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hand out materials I received from my employer</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hand out materials I received from pharmaceutical industry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hand out materials I received at continuing medical education events</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Circle the correct answer for the following questions**

<table>
<thead>
<tr>
<th>Question</th>
<th>140/90 mmHg</th>
<th>150/95 mmHg</th>
<th>160/100 mmHg</th>
<th>Other value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The diagnosis of arterial hypertension in patients &gt;19 years old is made if the following value is measured on several occasions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the target BP to be reached in diabetic patients &gt;19 years old?</td>
<td>120/80 mmHg</td>
<td>130/80 mmHg</td>
<td>140/90 mmHg</td>
<td>150/95 mmHg</td>
</tr>
<tr>
<td>How often do you have a patient measure their blood pressure after initiation of an antihypertensive treatment?</td>
<td>Every 2-3 days</td>
<td>Every 1-2 weeks</td>
<td>Once a month</td>
<td>Every 2-3 months</td>
</tr>
</tbody>
</table>

Which patient characteristic would lead you to more aggressively treat HTN as compared to a patient with uncomplicated HTN? **Circle all that apply.**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Diabetes</th>
<th>Older age (70+ years)</th>
<th>Cardiovascular disease</th>
<th>COPD</th>
<th>Hyperlipidemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebrovascular disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal insufficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family history of HTN or CVD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle age (40-60 years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rate your **familiarity** with the following types of evidence-based methodologies using the scale below ranging from 1 (not at all familiar) to 5 (very familiar)

<table>
<thead>
<tr>
<th>Methodology</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meta-analyses</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Controlled clinical trials</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cohort studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Case-control studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cross-sectional studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Clinical cases</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Rate the **usefulness** of the following types of evidence-based methodologies using the scale below ranging from 1 (not at all useful) to 5 (very useful):

<table>
<thead>
<tr>
<th>Methodology</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meta-analyses</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Controlled clinical trials</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cohort studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Case-control studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cross-sectional studies</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Clinical cases</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Indicate what is applicable to you concerning your knowledge of the JNC7 guidelines for the treatment of HTN? *(check only one)*

- Not heard of the JNC7 HTN guidelines
- Heard but not familiar with content
- Actually read the report
- Read or heard about guidelines in journals, articles, CME conferences
- Not interested in JNC7 guidelines

Did you attend any presentation or educational event that included hypertension management or guidelines in the past year? *(check only one)*

- Yes
- No

Please provide any Additional Comments you may have regarding EBP, HTN or this study:
APPENDIX D:

PERMISSION TO USE QUESTIONNAIRES
Hi Van...here is the invoice...you certainly have permission to use the scales; however, I think we were trying to work out conducting the survey electronically, right? Attached please find the invoice for the CAEP online services with the EBPI & EBPB scales along with your scale, which will maintain the integrity of our scales as well as incorporate the extra questions you want to ask and your demographics as well. We can start your survey whenever you want it to start and stop it on the date you indicate. As well, you can have access to the data as they are coming in. Certainly, if you have any questions, don't hesitate to contact me 480-516-5348. I am on the east coast today and will be in meetings until this afternoon and flying back to Phx tonight...but we could talk early next week. Let me know what works for you.

Take good care,
Ellen

Anything is possible, when you believe!
Ellen Fineout-Overholt PhD, RN, FNAP, FAAN
Clinical Professor & Director, Center for the Advancement of Evidence-Based Practice
Arizona State University
College of Nursing & Health Innovation
500 N. 3rd Street
Phoenix, Arizona 85004
Ph: 602-496-0927
ellen.fineout-overholt@asu.edu

WE DREAM, DISCOVER & DELIVER

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From: Karen MacDonald [kmacdonald@matrix45.com]
Sent: Wednesday, August 11, 2010 5:54 PM
To: Roper, Stephen Van
Subject: RE: Question on PREVIEW questionnaire

Hi Van,

The PREVIEW physician questionnaire is not copyrighted and thus permission is unnecessary. Best wishes as you conduct your dissertation research!

The PREVIEW study can be referenced as follows:


Best regards,
Karen

Matrix45, LLC
620 Frays Ridge Road
Earlysville, Virginia 22936 USA
Office: +1.434.978.1045
US Mobile: +1.202.487.3721
Swiss Mobile: +41.79.814.4527
Belgian Mobile: +32.497.52.9115
eFAX: +1.708.575.8504
kmacdonald@matrix45.com
Confidentiality notice: This message may contain confidential and/or privileged information. If you are not an intended recipient, please contact the sender and delete this message and any attachments. Any unauthorized use of the information contained in this message is prohibited.
APPENDIX E:

AMERICAN ACADEMY OF NURSE PRACTITIONERS – PERMISSION TO CONDUCT RESEARCH
Dear Stephen:

I am writing to confirm that the American Academy of Nurse Practitioners is supportive of your research project and anticipates that you will be given permission to access a sample of AANP members for your survey. Having reviewed the initial proposal, we understand your survey plans and look forward to learning about your findings.

Our tentative approval is contingent on your final IRB approval. Once you submit your IRB approval letter, we will be able to provide further instructions on the process for accessing AANP members for your project.

Sincerely,

Mary Jo Goolsby, EdD, MSN, NP-C, FAANP
Director of Research and Education.
REFERENCES


National Association of State Mental Health Directors (NASMHD) Research Institute, U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services


