Educating for Action: Understanding the Development of Pharmaceutical Care Practitioners

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"Knowing is not enough; we must apply.
Willing is not enough, we must do."
Goethe

Abstract

Pharmaceutical care, a professional health care practice in which a practitioners works with an individual to understand the patient's medication needs and works to identify, prevent, and resolve drug therapy problems, was recently adopted as the mission and professional practice of pharmacy. The skills, knowledge, and ethics required in order to provide pharmaceutical care have not been defined or integrated as the foundation for pharmacy curricula. This research aimed to define the educational experiences required to provide pharmaceutical care, develop a curricular conceptual framework grounded in pharmaceutical care, and identify learning strategies to support the development of the pharmaceutical care practitioner. A five component developmental research process was used to develop the conceptual framework. Observations and interviews were conducted with seven pharmaceutical care practitioners in Minnesota. From field notes, interviews, and existing literature a prototype for the curricular conceptual framework was developed and refined based on additional data analysis and feedback from a panel of pharmaceutical care experts. The resulting curricular conceptual framework consisted of two structures: the curricular content and the curricular foundation. The curricular content is comprised of the clinical knowledge, clinical skills, and patient knowledge. The curricular foundation consists of practice standards, patient care ethics, and teaching, application, and evaluation techniques. Each conceptual framework component is interrelated and interdependent on the other components. The research findings and resulting conceptual framework provide the initial, required components for the development of a pharmaceutical care based curriculum.

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Chapter 1 Introduction

Medication errors, drug misadventures, noncompliance, and sub-optimal use of medications have been repeatedly identified as a serious threat to the health of individuals and, ultimately, public health (Commission on Quality Health Care in America 2001; Committee on Identifying and Preventing Medication Errors 2006; Howard, Avery et al. 2007; Massachusetts Technology Collaborative and Institute 2008). Drug therapy problems encompass all of these and are defined as any medication related issue that prevents the achievement of the goal of the drug therapy (Cipolle, Strand et al. 2004; Fernandez-Limos, Faus et al. 2005). It has been estimated that unresolved drug therapy problems annually result in over $209 billion dollars in preventable expenses to the health care system (New England Healthcare Institute 2009) and harm over 1.5 million Americans (Committee on Identifying and Preventing Medication Errors 2006).

Medication use has become a ubiquitous treatment option for many aliments. In contrast, no member of the health care team has consistently taken responsibility for ensuring the effectiveness and safety of an individual's drug therapy across ambulatory and inpatient care settings. From 2000 to 2009, the cost of illness related to drug-related morbidity and mortality alone was estimated to have increased 161% (Ernst and Grizzle 2001; New England Healthcare Institute 2009). Without a health care professional whose primary objective is to achieve effective and safe medication use for the patient, the risk of

harmful drug therapy problems will continue to increase as the number of medications and the frequency of use increases.

The identification of drug therapy problems is a well-defined decision making process that involves integrating information about the individual, medical condition, and the drug product. This includes knowledge of why the medication is being used (indication), how the medication is working (effectiveness), any negative effects experienced by the patient (safety), and the patient's ability to access and administer the medication (compliance). The identification of drug therapy problems is a straightforward process; however, effective, rational and meaningful resolution of the underlying problem has eluded many health care providers. For example, a patient taking a medication for high blood pressure may see her care provider who determines that the patient's blood pressure remains still higher than desired. Although the medication the patient is currently taking can be given at a higher dose which would likely lower her blood pressure, a second medication is prescribed complicating the patient's medication regimen and increasing her risk of side effects.

Such examples are commonplace and result in less frequent achievement of treatment goals, increased risk of adverse events, and decreased patient compliance (Pearson, Laurora et al. 2000; Gandhi, Weingart et al. 2003). The application of an expert body of medication knowledge as part of a standardized patient care process would result in the

determination of the most appropriate, effective, safe, and convenient medication care plans for the resolution of such drug therapy problems.

Rationale and Need for the Study

Traditional pharmacist education has emphasized how medications work, how they are used, and how they interact with other medications and the human body to produce both positive and negative effects. However, even though pharmacists were educated to possess an "expert" body of medication knowledge, no standard process or practice for the application of this knowledge existed until 1990 when pharmaceutical care practice was defined. Pharmaceutical care is a health care practice with the purpose of applying the pharmacist's medication knowledge to identify, resolve, and prevent drug therapy problems in a caring, patient-centered manner (Hepler and Strand 1990). Its definition includes a practice philosophy which provides a framework for organizing and prioritizing decisions and actions and a care process based on the medical model of assessment, care planning, and follow-up (Cipolle, Strand et al. 2004). The philosophy of practice and the care process enable practitioners to systematically identify drug therapy problems and create patient-centered care plans that rationally and effectively ensure the resolution and prevention of drug therapy problems in a caring, patient-centered manner.

Pharmaceutical care has consistently demonstrated its value in addressing drug therapy problems. When practiced, pharmaceutical care increases achievement of health care goals, reduces the presence of drug therapy problems, increases patient compliance, and decreases overall health care costs (Lai and Sorkin 1998; Cranor and Christensen 2003;

Cranor, Christensen et al. 2003; Strand, Cipolle et al. 2004; Isetts, Schondelmeyer et al. 2008; Ramalho de Oliveira, Brummel et al. 2010).

Pharmaceutical care is the profession of pharmacy's unique contribution to patient care. Although, as previously described, other health professionals are capable of identifying drug therapy problems, the pharmacist and her expert medication knowledge uniquely positions her as the professional with the ability to meaningfully and effectively resolve drug therapy problems. Conversely, as pharmacists have had no consistent, unified practice through which they could apply their knowledge for the benefit of others, pharmaceutical care provides pharmacists the opportunity to fulfill the definition of a profession for the first time (Freidson 2001).

Pharmacy organizations and pharmacists quickly recognized this and adopted pharmaceutical care as the mission of pharmacy practice and pharmacy education (Accreditation Council for Pharmacy Education 2006). The quick adoption of a new professional practice by a profession that has existed for over a thousand years was a radical change that required dramatic reform, including a foundational paradigm shift from drug product to patient-centered care. However, widespread adoption of the concept of pharmaceutical care did not equate to widespread implementation of the practice.

The primary challenge for the widespread implementation of pharmaceutical care practice is the ability to educate for action and, in doing so, develop pharmacists who are able to integrate the practice skills and medication knowledge required to provide this level of patient care upon entry into practice. Pharmacists, pharmacist organizations, and colleges of pharmacy have been slow and resistant to address the gaps between the mandates of pharmaceutical care, pharmacy practice, and the classroom (Reid, Brazeau et al. 2002; Cohen, Nahata et al. 2004). This problem is not unique to pharmacy as John Dewey identified it in general education stating, "The weightiest problem in education is the isolation of curriculum from real life" (Dewey 1938). Similarly phrased, the greatest challenge in professional education remains, 'How do we teach for action?"

Some have challenged that pharmacists were too quick to adopt pharmaceutical care and therefore did so without fully understanding or appreciating the practice and what changes in both practice and education it would require (Shoemaker, Oliveira et al. 2001). Although this critique may be accurate, the requirements for pharmaceutical care and the characteristics of its practitioners remain only partially understood. Therefore, research must be conducted in order to understand the skills, knowledge, and ethics required in pharmaceutical care practice. This new knowledge must then be integrated back into the education and preparation of student pharmacists.

Research Aims

This research defines the educational requirements for pharmaceutical care practice. The purpose of this research is to answer the question: what educational experiences are required to prepare a pharmaceutical care practitioner?

This research aims to:

1) Build a conceptual framework of the educational experiences that explicitly links the theory of pharmaceutical care to its practice

2) Define the skills, knowledge, and ethics required to provide pharmaceutical care

3) Identify teaching and learning methods for preparing pharmaceutical care practitioners

Ultimately the conceptual framework developed, as stated in aim one, encompasses aims two and three. The skills, knowledge, and ethics as well as the teaching and learning strategies are defined as components of the curricular conceptual framework. The long-term goal of this research is to utilize the resulting conceptual framework to design a pharmaceutical care based pharmacy curriculum.

There are several challenges in determining the educational experiences required for pharmaceutical care. First, pharmaceutical care is still sparsely practiced. Those practitioners providing pharmaceutical care are still early adopters who may not represent the characteristics of the typical practitioner who may practice once a critical mass is established. Second, the practice of pharmaceutical care is so new that there is much about it that is unknown. Pharmacists and pharmacy educators have hidden behind these challenges and used them to justify a lack of progress in determining how to prepare

pharmaceutical care practitioners. However, to establish pharmaceutical care as pharmacy's mission in practice and not just in name, these two premises must be acknowledged and openly addressed.

In pharmacy education, pharmaceutical care has often been relegated to a topic or course within the pharmacy curriculum. While pharmacy curricula have typically emphasized the basic sciences, pharmacy educators and accreditation organizations have tried to implement educational standards regarding pharmaceutical care by adding course work without answering the underlying question, "What must all pharmacists know in order to provide pharmaceutical care?" A critical restructuring of pharmacy curricula must occur and a curriculum grounded in pharmaceutical care practice must be developed if the profession of pharmacy is to achieve its mission and maintain its status as a profession. An iterative investment for understanding pharmaceutical care practice and integrating that understanding into pharmacy education must be undertaken.

Traditional curriculum reform at colleges of pharmacy is completed and designed within the context of the current reality of pharmacy educators and administrators. This, therefore, limits the ability to determine what the required experiences to prepare pharmaceutical care practitioners are because such curriculum reform can only be viewed through the lens of the existing institution's practices and challenges. Accordingly, to be able to answer the research question in the context of pharmaceutical care practice rather than existing educational structures, the researcher must start with a clean slate and focus

on the realm of what is ideal for preparing future pharmacists. This is not to say that this research will be divorced from the realities and challenges facing pharmacy educators today. To create a vision for the future, however, we must learn from the past and not be restrained by it.

Definition of Terms

When undertaking research that must articulate the differences between the current and ideal implementation of new ideas, it is essential that the terminology that is used be clearly defined and consistently used.

Pharmaceutical care is used throughout this research as the name of the professional practice of pharmacy that includes an assessment of a patient's medication related needs, development of therapeutic care plans, and follow up for the purposes of identifying, preventing, and resolving drug therapy problems. Pharmaceutical care is intentionally used rather than the more recent terminology of *medication therapy management*, *medication management*, or *comprehensive medication management*. Pharmaceutical care is used as it encompasses a more descriptive definition of the professional practice and philosophy of a health care practice. The other terms represent names used to describe services for which a pharmacist may receive reimbursement and are not necessarily connected with a philosophy of practice or practice standards.

Practitioner is used throughout this research to imply the pharmaceutical care practitioner. A practitioner is defined as one who practices or enacts a learned profession

(2007) and could be applied to any number of professions. In order to make a distinction from other professions, **practitioner** is used in this research to only refer to a pharmaceutical care practitioner. Additionally, a primary premise of this research is not all pharmacists and colleges of pharmacy are respectively practicing and teaching pharmaceutical care. Therefore, it is important to make a distinction between the general term **pharmacist** and pharmaceutical care **practitioner**. Similar to practitioner, the term **practice** is used to specify the actions of the pharmaceutical care practitioner as informed by the practice standards and philosophy of the profession. In summary, throughout this research the practitioner and practice reflect pharmaceutical care philosophy and standards of practice *in action*.

The term curriculum can mean anything from a detailed compilation of lessons plans for an individual course to the number of credits that each course title across matriculation should be allotted. For the purposes of this research, **curriculum** is defined as a planned learning experience in which the content and purpose is organized in an intentional manner (Walker 2003). In conjunction, **education** is defined as "the deliberate, systematic, and sustained effort to transmit, evoke, or acquire knowledge, attitudes, skills, or sensibilities, as well as any outcomes of that effort" (Cremin 1977).

In summary, pharmaceutical care practice is the unique contribution of pharmacists to a patient's health care. It also addresses the public health issue of drug therapy problems by identifying, resolving, and preventing them using a caring, patient-centered approach.

The educational requirements for preparing a pharmaceutical care practitioner are still uncertain and have resulted in limited adoption and integration within pharmacy curricula. In order to increase the implementation of pharmaceutical care practice, education of student pharmacists must focus on the integration of the skills, knowledge, and ethics required in pharmaceutical care practice. Therefore, pharmacy curricula must explicitly develop a commitment to integrate the skills, knowledge, and ethics required for entry-level competence in pharmaceutical care practice and use such concepts as the foundation for all educational experiences.

Chapter 2 Background

This chapter outlines the history of pharmaceutical care practice and its current integration into pharmacy education standards and curricula. Knowledge gaps in pharmacy curricula are identified and further examined from the viewpoint of current practices within colleges of pharmacy. Educational practices in the professions of medicine, nursing, education, and dentistry are used to illustrate how other professions have integrated their respective professional practices into curricula. In conclusion, curriculum design principles across multiple disciplines are defined and critiqued for appropriateness in pharmaceutical care education.

What is Pharmaceutical Care?

"Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life" (Hepler and Strand 1990). Hepler and Strand first used this definition and complimentary philosophy of practice to conceptualize pharmaceutical care as the professional practice of pharmacy. In 2004, Strand, Cipolle, and Morley explicitly defined standards of practice for pharmaceutical care practice (Cipolle, Strand et al. 2004). These practice standards explicitly state the minimum activities required for pharmaceutical care practice. These standards also include measurement criteria that state methods for evaluating successful completion of each standard. The standards of practice and measurement criteria are

tools for evaluating pharmacists in practice and therefore must be included in determining the requirements for entry-level practitioners.

However, even prior to the establishment of pharmaceutical care practice standards, pharmacists had begun providing patient care services that can still be found in ambulatory, inpatient, and long term care settings. These "cognitive services" or "patient care activities" encompassed pharmaceutical care, disease state management, delivery of immunizations, medication regimen reviews, or other health related activities. Presently, such services are not commonly provided as the sole responsibility of the pharmacist, but added to medication dispensing or order verification responsibilities. It is unclear if all pharmacists providing such services are providing care consistent with the pharmaceutical care standards of practice (Somma McGivney, Meyer et al. 2007; Barnett, Frank et al. 2009). The number of pharmacists who are providing pharmaceutical care in accordance with the established practice standards is growing as payment opportunities expand and practitioner credentialing and certification standards are more broadly required (Schommer, Planas et al. 2009).

Although there are still a limited number pharmaceutical care practitioners and practices, the clinical, humanistic, and economic value of the service has been consistently demonstrated. Patients who participate in pharmaceutical care programs have higher success rates in achieving Healthcare Effectiveness Data and Information Set (HEDIS) goals for hypertension, hyperlipidemia, and diabetes (Bluml, McKenney et al. 2000;

Cranor and Christensen 2003; Cranor, Christensen et al. 2003; Isetts, Schondelmeyer et al. 2008; Isetts, Schondelmeyer et al. 2008)) and other health care quality measures (Strand, Cipolle et al. 2004; Isetts 2007; Ramalho de Oliveira, Brummel et al. 2010). The achievement of these goals of therapy is a result of the resolution and prevention of drug therapy problems that is the foundation of pharmaceutical care. It is presumed that most patients who are assessed for the presence of drug therapy problems, regardless of their host of medical conditions or medications, would have an improvement in the achievement of goals of therapy and thereby an improvement in overall health status (Cipolle, Strand et al. 2004; Isetts, Schondelmeyer et al. 2008).

When goals of therapy are not achieved, for example when blood sugars remain high in a patient with diabetes, the patient is at higher risk for negative clinical and economic consequences. Pharmaceutical care practice data demonstrate a consistent return on investment from $12 to $1 to $1.3 to $1 (Isetts 2007; Bunting, Smith et al. 2008; Isetts, Schondelmeyer et al. 2008; Ramalho de Oliveira, Brummel et al. 2010) with cost savings primarily realized through decreased rates of health care service utilization including physician office visits, urgent care and emergency room visits, and hospitalizations.

Recent health care policies and legislation have included medication therapy management as the reimbursable service for the provision of pharmaceutical care. The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 established Medicare Part D which offers medication insurance coverage to Medicare beneficiaries (Public

Law 108-173 2003). As part of this legislation, all health plans and pharmacy benefit managers providing medication insurance coverage to Medicare beneficiaries are required to provide medication therapy management services to "optimize therapeutic outcomes through improved medication use." Soon after this legislation was passed, Minnesota, North Carolina, Ohio, Florida, Iowa, and New York state governments included similar legislation for their respective Medicaid beneficiaries. Such state sponsored programs have continued to grow both in number of participating states and number of patients receiving pharmaceutical care services. Finally, employer demand for pharmaceutical care services as a covered benefit for employees has increased as the successes of established pharmaceutical care programs has become more visible (Schommer, Planas et al. 2009).

The growing demand for pharmaceutical care extends beyond insurance payers. Health care reform in the United States has resulted in the reexamination of current care delivery and payment models. The medical home is a patient-centered structure for primary care delivery that aims to create sustained relationships between the patient, primary care provider, and other health care practitioners with the focus on increasing coordination and longitudinal relationships between the patient and care providers (Patient-Centered Primary Care Collaborative Medication Management Task Force 2010). The medical home was adopted in the Patient Protection and Affordable Care Act as a desired primary care model (Senate of the United States 2009). Pharmaceutical care, although not yet a requirement in all medical homes is recognized as being a desired service for achieving

patients' medication related needs as part of the medical home. As medical homes become more widely established, the need for health care providers who are capable of providing pharmaceutical care will increase.

The establishment of accountable care organizations will also increase demand for pharmaceutical care practices. Accountable care organizations are organizations of health care providers responsible for coordinating the care of a defined patient population and, in turn, receive payment tied to the achievement of health related goals and outcomes of that population (United States Department of Health and Human Services 2011). As described earlier, data have consistently shown patients receiving pharmaceutical care have a higher achievement of goals of therapy and other quality measures than those not receiving pharmaceutical care services and, therefore, would be able to contribute to achieving the goals set forth for accountable care organizations.

Pharmaceutical care has consistently demonstrated clinical and economical viability in improving patient care. Although the number of practitioners is limited, the value of pharmaceutical care has resulted in an increased demand for it via health care policy and from health care team members and patients. Presently, there are no indications that the demand for pharmaceutical care will decrease. However, it is questionable if current pharmacy curricula will produce competent, entry-level pharmaceutical care practitioners to meet such a demand.

Current Policies in Pharmaceutical Care Education

Nearly 20 years have passed since the American Association of Colleges of Pharmacy accepted pharmaceutical care as the mission of pharmacy practice and therefore the mission of pharmacy education. By declaring pharmaceutical care practice as the mission of the profession, the AACP acknowledged that pharmaceutical care represented an opportunity for pharmacists to make an important contribution to health care by meeting patients' drug related needs. Prior to this change, pharmacy had been a product-focused profession; any sort of practice only existed in connection to the drug product, its preparation, and its distribution to the patient. When pharmaceutical care was accepted as the mission of pharmacy practice, the profession's focus needed to change from drug products to a patient's drug related needs and how a pharmacist could rationally apply his or her knowledge to meet such needs. This distinction requires a change not only in how pharmacy is practiced, but also in how it is taught.

This major paradigm shift in pharmacy education has yet to happen, although colleges and schools of pharmacy have made many changes and additions to curricula to try to address it. These changes have primarily been guided by two pharmacy organizations. The first is the American Association of Colleges of Pharmacy (AACP). The AACP has established multiple commissions and committees to explore the appropriate teaching standards for pharmacy include the Commission to Implement Change in Pharmacy and the Center for the Advancement of Pharmaceutical Education (CAPE). The second source of curricular guidance is the Accreditation Council for Pharmacy Education's

(ACPE) Accreditation Standards and Guidelines that state the criteria used in evaluating colleges and schools of pharmacy for accreditation (Accreditation Council for Pharmacy Education 2005). This document is revised on a regular basis to reflect changes in current educational and pharmacy practices and recently was revised in 2005 and adopted in 2006.

In 1990, the American Association of Colleges of Pharmacy formed the Commission to Implement Change in Pharmacy Education to evaluate the role of pharmacy practice in the future and make recommendations for changes in pharmacy education to meet this vision. The Commission's resulting "Background Paper 2, Entry Level, Curricular Outcomes, Curricular Content and Educational Process" declared a radical change in pharmacy practice stating:

> Section C. To Enter Practice is To Render Pharmaceutical Care. The mission of pharmaceutical education states that educators are responsible for preparing students to practice pharmacy at the entry level. The mission of pharmacy practice says that the purpose of pharmacy practice is to render pharmaceutical care. Consequently, entry-level pharmacy practice, for which pharmaceutical education prepares its students, is described within the concept of pharmaceutical care (American Assoication of Colleges of Pharmacy Commission to Implement Change in Pharmaceutical Education 1990).

Additionally, the Commission also stated that the purpose of pharmacy education is to develop entry-level practitioners (American Assoication of Colleges of Pharmacy Commission to Implement Change in Pharmaceutical Education 1990) as defined by consensus of multiple professional pharmacy organizations. Supporting the position of AACP are the college of pharmacy accreditation standards put forth by the ACPE. The

most current version of the ACPE Standards and Guidelines for accrediting colleges of pharmacy includes the following with regards to pharmaceutical care:

> **Standard 12**
>
> Professional Competencies and Outcome Expectations declares that graduates of accredited schools must be competent in providing pharmaceutical care, manage and use resources, and promote health improvement.
> **Guideline 12.1**
> Graduates must possess the basic knowledge, skills, and abilities to practice pharmacy, independently at the time of graduation (Accreditation Council for Pharmacy Education 2005).

In the AACP guidelines, specific skills, knowledge, and ethics are not defined in terms of how they will be applied or used in practice. However, accreditation standards in any profession neither dictate the required coursework in the curriculum nor the context of how knowledge is used in practice. The standards and guidelines are useful in explicitly stating what the goal of the curriculum is (e.g. to prepare pharmacists that are competent in providing pharmaceutical care and other services), but do not connect academic learning with its application in practice. These guidelines then result in the question of what skills, knowledge, and ethics are necessary for competency in pharmaceutical care practice.

AACP's Center for the Advancement of Pharmaceutical Education (CAPE) Guidelines try to address the gap left by the ACPE Standards. The CAPE Outcomes were compiled in 1992 to guide pharmacy education and curricular design. They were revised in 2004

and are used in the 2006 version of the ACPE Standards and Guidelines revision. One objective of the CAPE outcomes is:

> In addition to guiding curriculum development, the [CAPE outcomes] were anticipated to assist students in making a connection between what they are learning and the practice of pharmacy and, when taken in whole, the CAPE Educational Outcomes would "tell the story" to external audiences about the role of the pharmacists (Center for the Advancement of Pharmaceutical Education 2004).

However, the CAPE outcomes proceed to list only three educational outcomes: pharmaceutical care, systems management, and public health. Unfortunately, the explanation of these global outcomes only briefly describes what is required to put these outcomes into action and do not clearly define the skills, knowledge, and ethics necessary for doing so.

The goal of documents like the CAPE outcomes and ACPE's Standards are to create a national standard for pharmacy curricula. ACPE's purpose is for accreditation; making sure colleges are teaching what is necessary for the practice of pharmacy. Meeting accreditation measures, however, does not necessarily equate to professional competence. Competence is measured on an individual practitioner level while accreditation is on an institutional level. As a profession, colleges of pharmacy need accreditation standards, however, they should complement accepted standards of professional practice and competency statements that can assess individual performance in practice as is found ith other health professions.

Implementing Education Standards into Pharmacy Curricula

Although pharmaceutical care was quickly adopted, the requirements for competence in practice were not defined. Therefore, it is not surprising that colleges of pharmacy have responded to implementing the pharmaceutical care requirement with varying degrees of intensity. First, the practice is so new that the skills, knowledge, and ethics required to practice have yet to be defined. This information is essential to designing and assessing a comprehensive approach to teaching pharmaceutical care.

Secondly, when new requirements are added to accreditation standards they have traditionally addressed knowledge or content gaps in current content, such as public health. These content gaps can be addressed by adding the missing content to an existing course or possibly as an additional course in the curriculum. These are acceptable and appropriate options for defined, limited content areas. However, it is not an appropriate educational strategy for a foundational element such as the professional practice for a health profession. If colleges of pharmacy are to meet the professional mission and professional obligation, pharmacy educators must realign pharmacy curricula with the practice of pharmaceutical care. In order to accomplish this one must understand how pharmacy practice has historically influenced pharmacy education.

What Do Pharmacists Do?

Competency in pharmacy practice was described in multiple manuscripts in the 1970's as clinical pharmacy practice was developing (Krautheim 1975; Knapp and Supernaw 1977; Lowenthal 1977; Munson 1977). These manuscripts posed the question, "What do pharmacists do?" The list of practice activities that resulted was lengthy and covered a wide array of tasks, but did not include a definition of a standard or common practice (Knapp and Supernaw 1977; Lowenthal 1977). Pharmacists have attempted to change their focus from product to patient since the 1940's, but defining what tasks pharmacists do when this is accomplished is still ill-understood. Since 1990, pharmacy curricula have participated in a slow, incomplete transition to patient-centered pharmaceutical care practice. In recent manuscripts describing competency in pharmacy practice there continues to be the common approach of creating lists of practice activities (Krautheim 1975; Knapp and Supernaw 1977; Lowenthal 1977; Deselle and Rappaport 1997; Reierson Draugalis, Slack et al. 2002). These lists are not specific to pharmaceutical care and many of them were developed before the practice of pharmaceutical care was fully defined. One contemporary article by Deselle, et.al used practicing community based pharmacists to define what was necessary for pharmaceutical care practice (Deselle and Rappaport 1997). Unfortunately, this method utilized a very liberal definition of pharmaceutical care and does not specify skills, knowledge, and ethics needed for pharmaceutical care practice. Rather, focus groups of pharmacists described what was being done in their daily practice which included a mixture of dispensing, management, and patient care activities.

Pharmacists have historically defined what they do by where they work. Additionally, hospital pharmacists, community pharmacists, and so forth have an increasing variety of responsibilities in the settings in which they work. Compounding this problem is the variation between what pharmacists do under different state laws, companies, and management structures. The profession of pharmacy can no longer rely on compiling a lists of pharmacy practice activities to define competence for an entry-level pharmacist. Pharmacy must make the transition to relying on the definition of professional practice which include a common care process and philosophy of practice in order to do so.

A review of the American Journal of Pharmaceutical Education from 2000-2010 uncovered several common themes in pharmacy education. Manuscripts on pharmaceutical care often referenced Hepler and Strand's definition pharmaceutical care. However, few of these manuscripts described patient care practices that fulfilled the definition of pharmaceutical care. There were numerous manuscripts that discussed students' perceptions of providing pharmaceutical care. However, there was a lack of discussion on how pharmaceutical care was taught and if the current curricular standards reflect what was needed in practice. Multiple editorials discussed the need to re-evaluate pharmacy curricula and recommit to the mission of pharmacy (Penna 2003; Yanchick 2005). These editorials were rarely responded to in future issues of AJPE. No manuscripts, from 2000-2010, were found that described the competencies necessary for pharmaceutical care practice. Several manuscripts did explore the meaning of providing care to a patient (Galt 2000; Fjortoft and Zgarrick 2001; Rahmalho de Oliveira and

Shoemaker 2004). This is an important consideration in pharmacy education, but is only one piece of the many requirements for pharmaceutical care practice.

Pharmacy, as a profession, has accepted pharmaceutical care practice. In its execution, however, the practice often becomes inconsistent and the standards of pharmaceutical care practice are not connected in practice with this definition. More so, many activities that do not meet the definition of pharmaceutical care are often intermingled with proposed requirements for its practice. This in turn results in many pharmacists and student pharmacists doing many different patient care activities, but very few practicing pharmaceutical care and fulfilling the mission of pharmacy as articulated by the AACP.

Contemporary Issues in Pharmaceutical Care Education

The primary challenges facing pharmacy educators seems to be the variety of definitions and interpretations of pharmaceutical care practice and the required paradigm change required to teach and practice pharmaceutical care (Wynn 1994; Temple 1996; Nahata 2000; Cohen, Nahata et al. 2004). The educators' perspective in pharmacy research, in general, seems to be entirely absent. One potential explanation for this could be that the educators' identity is inextricably tied to the practice of pharmacy and therefore the educators' voice is only heard through the practitioner.

The major issues in teaching pharmaceutical care have changed over time. In the 1990's, major issues described in the literature were on the limited examples of pharmaceutical

care practice (Wynn 1994; Chalmers, Adler et al. 1995; Schommer and Cable 1996). This likely reflects the beginning stages of pharmaceutical care practice development and the transition from the product to patient paradigm. To support this, manuscripts during this time period most frequently attempted to contribute to the "how" to teach the practice of pharmaceutical care (Chalmers, Adler et al. ; Perrier, Winslade et al. 1995; Schommer and Cable 1996; Chewning 1997; Ruffin, Brophy et al. 1998; Scott, Miller et al. 1998; Sibbald 1998; Isetts 1999; Isetts and Sorensen 1999; Galt 2000; Raman-Wilms 2001; Chereson, Bilger et al. 2005; Kassam 2006). Each of these articles contributed different ideas on what content needs to be taught when preparing pharmaceutical care practitioners. This appears to reflect the recent definition of pharmaceutical care practice philosophy and its components.

None of these manuscripts, however, provides a comprehensive description of what skills, knowledge, and ethics are needed to practice pharmaceutical care. A small number do, however, provide a description, albeit limited, of how such information is used in practice (Winslade 1994; Isetts 1999; Isetts and Sorensen 1999).

Much of the pharmaceutical care literature describes coursework that has been designed to begin to develop pharmaceutical care practitioners. Additionally, much has been published utilizing survey data that describes student pharmacists, pharmacists, or pharmacy educators' feelings on pharmaceutical care and thoughts regarding the skills, knowledge, and ethics required to practice. In this vein, most of the research falls into

the teacher cognition paradigm, which explores the research question from the standpoint of the educators' understanding of what is being taught rather than the perspective of what the student is learning. A smaller amount of research was approached from the process-product paradigm, which focuses on describing the process of education and reports on the measurements of outcomes (Shulman 1986).

Additionally, only a small number of the manuscripts used pharmaceutical care practice as a theoretical framework for the research (Winslade 1994; Perrier, Winslade et al. 1995; Sibbald 1998). However, a much greater number attempted to answer pharmaceutical care based research questions. These research questions do, however, contribute a great deal to the profession of pharmacy's collective understanding of the description of pharmaceutical care practice. However, no comprehensive examination of what is required to practice, how best to teach it, and what is required from pharmacy educators, appears in the literature. Although this has not previously been accomplished within the profession of pharmacy, a closer examination of other professions and how practice and education are integrated within them can be used to frame the integration of pharmaceutical care practice into pharmacy curricula.

Professional Identity: Not Just a Technique

An understanding of what it means to be a nurse, physician, dentist, or teacher is something that is commonly accessible for the general public and curriculum designers. This is essential because it forms the basis for how such professionals are described "in

action." A professional curriculum must lead to the development of an individual with a very particular set of knowledge, skills, and ethics. Under this premise, all decisions in the curriculum design must be an intentional means to this end. It is from the description of the knowledge and skills, or *technical* aspects, and ethics, or *humanistic* aspects, of the professional practice that the examination of the professional practice can occur. In pharmacy, the understanding of the technical and humanistic aspects of the pharmacist providing pharmaceutical care has only recently been defined and therefore has not been used as the basis for pharmacy curricular design.

Technical aspects

The critical examination of the technical aspect of professional practice draws upon Donald Schön's description of *technical rationality* which views professionals as

> …instrumental problem solvers who select technical means best suited to particular purposes. Rigorous professional practitioners solve well-formed instrumental problems by applying theory and technique derived from systematic, preferably scientific knowledge (Schön 1987).

A critical description and examination of the rational problem solving process that is used in the professional practice can be used to identify the skills, knowledge, ethics, and competencies statements for the professional practice from the viewpoint of the practice theory. In pharmaceutical care practice, the rational problem solving process is the pharmacotherapy workup. The pharmacotherapy workup includes a structure assessment of the patient's medication needs, identification and resolution of drug therapy problems, construction of care plans for each drug therapy indication, and ongoing evaluation of

drug related outcomes. All of these components interact to provide the data used by the practitioner to assess if all drug related needs are being met and that each drug therapy is the most appropriate, effective, safe, and that the patient can access and administer the drug. Even though the pharmacotherapy workup is a defined, structured process, the data that is collected during it and the manner in which the practitioner makes his or her clinical decisions has a high degree of complexity and variability. This is also described by Schön in his stating that the *technical rationality* model alone does not encompass the uncertainty in problem solving and knowledge application that is found in practice.

Humanistic aspects

The humanistic aspect of the professional practice originates in the paradigm and philosophy of practice. The philosophy of practice provides the foundational elements from which the paradigm and standards of practice can build. "Philosophy, in other words, provides a point of view; it is a belief construct, a speculation about the nature and value of things. Values are based in philosophy, since philosophy inquires into the ideal possibilities and the significance of things" (Bevis 1989). In pharmaceutical care practice the paradigm and philosophy of practice lay forth a caring, patient-centered approach to the delivery of care. The caring paradigm and patient-centered philosophy influences how the technical aspects of the practice are conducted. How the paradigm and philosophy specifically influence professional practice can be further explained by examining both components, respectively.

A professional practice paradigm

Guba describes paradigms in a very general way as, "…a basic set of beliefs that guides action, whether of the everyday garden variety or action taken in connection with a disciplined inquiry" . For a professional practice, perhaps Guba's description of a paradigm as an implicit connection to an understood conceptual framework is the most logical connection between the paradigm and conceptual framework. Whereby, Roberts' research on conceptual frameworks and philosophies and theories of practice extend this knowledge to establish practice philosophy and theory as the foundation for the conceptual framework (Roberts 1985).

When a description of the professional practice is undertaken it often goes beyond the technical aspects of the application of knowledge to describe the characteristics or experiences of the professional in action. *The courage to teach* by Parker Palmer provides an example in the profession of teaching and aims to describe that "…good teaching cannot be reduced to technique; good teaching comes from the identity and integrity of the teacher" (Palmer 1998). Palmer goes on to support the statement saying,

> If identity and integrity are more fundamental to good teaching than technique we must do something alien to academic culture: we must talk to each other about our inner lives—risky stuff in a profession that fears the personal and seeks safety in the technical, the distant, the abstract (Palmer 1998).

As Palmer states, professional education requires more than the development of technical skills. In pharmaceutical care, technique alone is not sufficient for patient care. The technical aspect of practice is important, but the humanistic and philosophical aspects

must be developed with equal weight. Professional education, and specifically the profession of medicine, have often erred on focusing too much attention on the technique of practice and only recently have begun to go back to integrate patient centeredness into the course of study. To address this in the pharmaceutical care based curriculum, the philosophy of practice can be used as a foundation for the curriculum. Doing so will inherently ensure that humanistic aspects of the caring paradigm, philosophical aspects of the patient-centered care process, and technical aspects of the pharmacotherapy workup are accounted for equally throughout the curriculum. In order to address philosophy within the curriculum, how philosophy impacts practice must first be understood.

Philosophy of and in Practice

In addition to the critical examination of the theory of the professional practice, critical examination of how the practice impacts key stakeholders must be included as well. From the practice perspective, the critical examination aims to understand how the philosophy and practice are acted out. Pellegrino and Thomasma refer to the acting out of the philosophy of medicine as *philosophy in medicine* (Pellegrino and Thomasma 1981). The distinction between the *philosophy of medicine* and *philosophy in medicine* is a false dichotomy, as the one cannot exist without the other. The distinction, however, does allow for the examination of issues surrounding the theoretical description of practice and its enactment within practice.

By definition, a professional practice does not occur in isolation, but is performed in and applied to a context. For pharmaceutical care this community includes patients, health care providers, health care systems, and health care policies. Such viewpoints assist in understanding the meaning and value of the professional practice from those who benefit from it. For the purpose of professional curriculum design the critical examination from the contextual perspective aims to refine the practice competencies that have been identified moving from theory to practice and finally context.

The profession of education provides perhaps the best source of guidance and critique on the inclusion of community input into the professional practice and education. School boards and educational policy are the *modus operandi* for educational guidance in teaching. However, such top-down guidance has its challenges. Cuban describes a critique of this structure in a historical context,

> Policymakers, foundation officials, and academics propose different ways of operating schools and teaching students; schools respond by embracing new reading programs, novel ways of organizing a school and curricular innovations. School boards triumphantly display the new programs they have adopted and the innovations that keep them abreast of brand-new ideas in education. Yet many of those very same policymakers, officials, and academics scold teachers for their stubbornness in maintaining conventional styles of teaching inconsistent with the newly adopted policies, programs, and materials (Cuban 1993).

Cuban's standpoint that community and policy directed change is more of a challenge than a benefit in education is echoed by many others (Kennedy 2005). Kennedy goes as far as to state that such top down reform in education suppresses important ideas, intellectual engagement, and access to knowledge.

Teaching professionals, by definition, becomes challenged when its primary source of direction comes from outside of the profession itself. In light of professional curricula design, it is imperative to ensure that the philosophy of practice and practice itself are the primary sources of guidance whereas the stakeholders and policy context are used to refine such guidance.

Pharmaceutical Care Philosophy

Professional practices utilize prescriptive philosophies of practice to delineate the underlying foundation of the practice itself.

> A philosophy defines rules, roles, relationships, and responsibilities. Any philosophy of practice that is to be taken seriously must reflect the functions and activities of the practitioner—esoteric and common, appropriate, and questionable—and also critically provide direction toward the formation of consistent practice. A philosophy of practice is specific to a practice, not to the practitioner (Cipolle, Strand et al. 1998).

Such philosophies give shape to the ethics that guide the decision-making or actions of the professional. Within a professional practice, the philosophy of practice provides the structure that guides all of the actions taken by the practitioner.

For the practice of pharmaceutical care, the philosophy of practice is

> …a patient-centered approach that allows us to meet the social need to manage drug-related morbidity and mortality, with an explicit objective to care for a patient's drug-related needs by making it the practitioner's responsibility to ensure that all of a patient's drug therapy is appropriate, the most effective available, the safest possible, and is used as indicated. This is accomplished by identifying, resolving, and preventing drug therapy problems that can or could interfere with successfully meeting a

> patient's drug therapy goals and producing positive patient outcomes (Cipolle, Strand et al. 1998).

This philosophy is characterized by meeting a social need, being patient-centered, using a caring paradigm, and taking responsibility for patients' drug related needs.

Integrating the Professional Practice into Curricula

When pondering how to design a new curricular framework for preparing pharmacy students, one cannot look too far without stumbling into influences from the profession of medicine. As the first patient-care profession, the profession of medicine provides an extensive and rich history of training patient care practitioners. The wealth of literature and research in medical education must be culled to establish structures for organizing and defining the components for a pharmaceutical care based curriculum. Perhaps the most valuable lesson that can be learned from medicine is how to position a patient-care practice at the center of both the curriculum and learning experiences.

> In what may be called the natural method of teaching, the student begins with the patient, continues with the patient, and ends his studies with the patient, using books and lectures as tools, as means to an end. The student starts, in fact as a practitioner, as an observer of disordered machines, with the structure and orderly functions of which he is perfectly familiar. Teach him how to observe, give him plenty of facts to observe and the lessons will come out of the facts themselves (Cushing 1925).

At the turn of the 20th century medicine was a growing profession and schools of medicine were opening at a rate far beyond any experienced before. With this growth, however, came criticism regarding the quality of the educational experience and increased scrutiny of the physician graduates' abilities to practice medicine.

Today, the profession of pharmacy appears to be in a similar position to where medicine was over 100 years ago. During the last 20 years the number of accredited colleges of pharmacy in the United States has increased from 74 to 123 (American Association of Colleges of Pharmacy ; Cooksey, Knapp et al. 2002). This is due, in part, to a reported shortage of pharmacists resulting from the additional patient care responsibilities pharmacists have assumed (Cooksey, Knapp et al. 2002). Additionally, pharmacists' preparation to provide direct patient care has been critically assessed and critiqued by both pharmacy and medical organizations (American College of Physicians-American Society of Internal Medicine 2002; Murphy, Nappi et al. 2006; Blair, Carmichael et al. 2007).

As a response to the critique of medical education at the beginning of the 20th century, Abraham Flexner, with the support of the Carnegie Institute, visited and examined practices at several medical programs throughout North America and provided a review of and recommendations for medical colleges, now known as the "Flexner Report". In his report, he called for several foundational changes in the preparation of physicians including framing education in the scientific method and placing the demonstration of knowledge as a cornerstone of professional development.

Medical schools in the post-Flexnerian era continue to focus efforts on the importance of the clinical teaching environment. The ability to see and apply the skills and knowledge in a real world setting was presumed to be the pinnacle in health professional education.

The common mantra of "See one, do one, teach one" can be used to illustrated the need for experiential clinical education in physician development.

However, the philosophical underpinnings of Flexner's "learning by doing" recommendations were long overlooked. Flexner was a former schoolmaster and greatly influenced by John Dewey's work. The key component of his recommendations is that "…learning by experience was not seen as an end in itself" (Ebert 1992). The Flexner Report is still being utilized as a guiding hand for 21st century medical curricula reform, but now with a renewed focus on the content of the learning experiences and what experiences are important to the practice of medicine.

After hundreds of years of medical education, physician educators are still examining how to improve medical education. The current challenge that medical educators are grappling with is that the objectives of clinical learning experiences have often been implied rather than defined. The Association of American Medical Colleges' Task Force on the Clinical Skills Education of Medical Students has written several summary reports on the impact of this problem and what these educational experiences should accomplish. "Furthermore, since the Flexner report, basic skill education has remained an *implicit* process in the undergraduate medical curriculum; it is presumed to happen and intended to be robust" [emphasis added] (Association of American Medical Colleges 2005). The extent of this problem has resulted in the AAMC's Task Force stating that, "The lack of curricular explicitness regarding what students should be learning to do as clinicians has

therefore become a major educational barrier to the achievement of clinical skill development" (Association of American Medical Colleges 2005).

The lack of a consistently defined learning process with explicit outcomes has become the focus of contemporary medical education reform. For this work, the Task Force has defined *clinical method* as,

> a set of generic practice competencies required to provide medical care. Within each of these competencies there exist a wide variety of cognitive and psychomotor skills. A clinical skill is defined as any discrete and observable act of medical care. Clinical skills are *the* foundation of the clinical method competencies through which clinical practice is realized (Association of American Medical Colleges 2005).

Based on this premise, the Task Force's recommendations organize the clinical skill education in three successive categories of clinical skills, clinical method competencies, and, finally, clinical practice. The clinical skills and clinical method competencies in this model are defined in relation to the pinnacle of clinical practice. "Thus, a single clinical skill is any discrete act within an overall process of patient care" (Association of American Medical Colleges 2005).

There are different approaches on how to link the clinical skills with the curricula. In medical education, educators have defined the curricula by working from to the individual skills that comprise it. In working to learn from the challenges set forth by the profession of medicine, these skills and competencies must be the explicit focus of the pharmaceutical care based curriculum. Additionally, as the quote from Cushing at the beginning of this section describes, the curriculum must be focused on providing students

ample opportunity to enact their learning and demonstrate their increasing competence at the patient and practice levels throughout the curriculum.

Integrating Competency Development

Dental education literature includes extensive descriptions of the importance of competency statements as a means for illustrating how education relates to practice. Numerous manuscripts describe the continuous process in dentistry of developing and maintaining competency (Glassman and Chambers 1998; Hendricson and Kleffner 1998; Yip and Smales 2000) and the importance of competency statements and their formatting in dental education (Chambers 1994; Chambers and Gerrow 1994; Chambers and Glassman 1997).

Determination of competency statements

Competency statements are used throughout the health professions to define the application of skills, knowledge, and values in a specific context at a specified level of performance. "…competencies are what individuals should be able to perform independently as a professional in the workplace" (Anderson, Moore et al. 2005). Health care professions use competency statements to define practice activities, competence of entry-level practitioners, and to evaluate individual practice. Every dental student must demonstrate a baseline level of competency in order to graduate from dental school and to take his or her board exams. Once in practice dentists need to continually demonstrate their competency by taking continuing education courses and completing re-licensure

processes. In addition, the dental profession, as a whole, uses competency statements to explicitly state their practice activities. Such activities are also defined in their standards of practice. Both the nursing and medical professions use similar processes in utilizing competency statements.

In order to be accepted as patient care providers, pharmacists must not only provide patient care, but also be prepared in a way that is similar to other health professionals. The profession of pharmacy must define what is required of an entry-level pharmacist in order to teach and evaluate student pharmacists' competence and preparation to join the health care team upon graduation.

Why competency statements matter

Professional education uses many terms in addition to competence to describe students' professional progress. Competency statements, however, are one of most commonly used methods to define professional performance because they allow for the definition of the skills, knowledge, and ethics required for practice in the context of how they will be applied (Anderson, Moore et al. 2005). Competency statements account for continuous practice improvement and evaluation and are especially important in health care because they state what a professional needs to do, while stating the context in which demonstration of this knowledge should occur. Additionally, they can be used to measure how effectively a professional can apply his or her skills, knowledge, and values while in practice.

Competency continuum

There is a continuum of competence in any professional practice and this is especially true in health care. The entry-level pharmacist should be able to demonstrate his or her competency in general pharmacy practice whereas the pharmacist who has been in practice for a number of years possesses a higher level of competence based on his or her experiences in pharmacy. Additionally, as one progresses from novice to expert, he or she is more capable of integrated decision making expands, patient needs can be better anticipated, knowledge becomes more tacit, and decisions making increases in speed (Benner 1982; Daley 1999; Burger, Parker et al. 2010).

Similar to Benner and Daly, Hendricson and Kleffner describe competency as a continuum using the 3 P's Model—Prepare, Practice, and Perfect. The 3 P's represent the different stages of the continuum and correspond with the phases of novice, competent, and expert. Furthermore, each phase is defined in terms of how aware the practitioner is of their competence. For example, the prepare stage is termed consciously incompetent, as he or she begins to practice in a manner in which they are very aware of all that they do not know and may be overwhelmed by they need to learn. The practice stage is marked by the consciously competent practitioner. And finally, the perfect stage in the stage in which the practitioner is termed unconsciously competent because the ability to articulate how he or she makes individual decisions diminishes.

In the Prepare stage, students begin not knowing what they do not know and develop an understanding of what skills, knowledge, and values are necessary in order to practice pharmaceutical care. These students will often be unsure of their ability to solve drug therapy problems, but in order to move beyond the Prepare state to the Practice stage they need to prepare for practice. They must know what is needed for practice. As the students learn the process of pharmaceutical care they internalize the philosophy and values of the practice that will stay with them throughout the continuum and guide day-to-day practice. They are using the same process that the expert pharmacist will use, but do not yet have the knowledge necessary to be competent practitioners.

As students progress to the final years of the curriculum they move into the practice stage of the continuum. At this stage students begin to practice applying their knowledge of common medical conditions and drug therapies. They understand the rational thought process of pharmaceutical care learned in the Prepare stage. Students at the Practice stage are moving closer to achieving competency in entry-level practice activities, but may continue to be unsure of their skills, knowledge, and values especially when taking care of complex patients. Once a student has demonstrated competence for entry-level practice they move to the Perfect stage. At this point the entry-level pharmacist is capable of providing care to any patient. These practitioners will spend the rest of their careers in the Perfect state perfecting their practice. With experience, these pharmacists become more efficient, develop more communication skills, and are able to easily care for patients with increasingly complex drug related needs.

It is important for educators and students to recognize that competence is developmental. Upon graduation from a program, the new graduate will not possess all of the knowledge and skills that are required in professional practice. However, he or she should have mastery over the requirements for "entry-level" practice and possess an awareness of what is left to learn in practice. It is also important for educators to understand this developmental process because students may benefit from different educational practices at different stages. For example, novices may benefit from observational experiences, problem-based cases in which standards and rules can be applied, and formative assessment from instructors, peers, and his or herself (Hendricson and Kleffner 1998). Whereas, more advanced student approaching the competent phase, may benefit from increased responsibility, decreased instructor assistance, and repetition of knowledge and skill demonstration in real world situations (Hendricson and Kleffner 1998; Daley 1999).

Writing competency statements

One method for writing competency statements uses the critical examination of the practice to compile lists of practice activities the specific skills, knowledge, and ethics necessary for the successful completion of each activity. Once a comprehensive list of skills, knowledge, and ethics is constructed, it can be evaluated and coded for themes. From these themes core competency areas can be created and can be written using any number of structures. Chambers et. al. uses a method that starts by describing for whom the statement is written and then uses active verbs to state the activity to be performed

(Chambers 1994; Chambers and Gerrow 1994). Finally, the specific context in which the competency will be performed is included in the statement.

Competency statement organization

Upon refinement of the competency statements, their organization and structure can be added to the conceptual framework. The philosophies and paradigms of practice and education will assist with the organization as well. Organization of the competency statements should reflect how the competencies will be applied in practice.

Stevens identified four basic methods for organizing content within health professional curricula: logistic, dialectic, operational, and problematic (Stevens 1971). The "logistic" method organizes content by body system or subject. Medical schools have traditionally used this method, but it appears to be in opposition to a holistic or patient-centered approach to practice. The "dialectic" method, in contrast to the "logistic" method, organizes content along a health-illness or age continuum or problem focus. The "operational" method, perhaps the most student-centered, is driven by the students needs in the application of knowledge. This method has strong parallels to problem-based learning. Finally, the "problematic" method focuses on patient problems as defined in the context of an individual and is a variation of the dialectic method.

Within the practice of pharmaceutical care, an organizational structure for using patient, disease, and drug knowledge to provide pharmaceutical care has been defined as the

pharmacotherapy workup (Cipolle, Strand et al. 1998). The patient knowledge component is organized into three levels: personal, environmental, and physiological, each extending along a timeframe. The disease knowledge is categorized from characteristics of the disease to intent of treatment, and finally therapeutic goals. The drug knowledge places the knowledge about the drug, the knowledge about the drug in the patient, and the outcome of the drug in the patient in the context of the patient and disease knowledge. Although this structure provides a logical framework for how to structure the knowledge required for providing pharmaceutical care it does not integrate competencies nor the specific skills and values that are required as well.

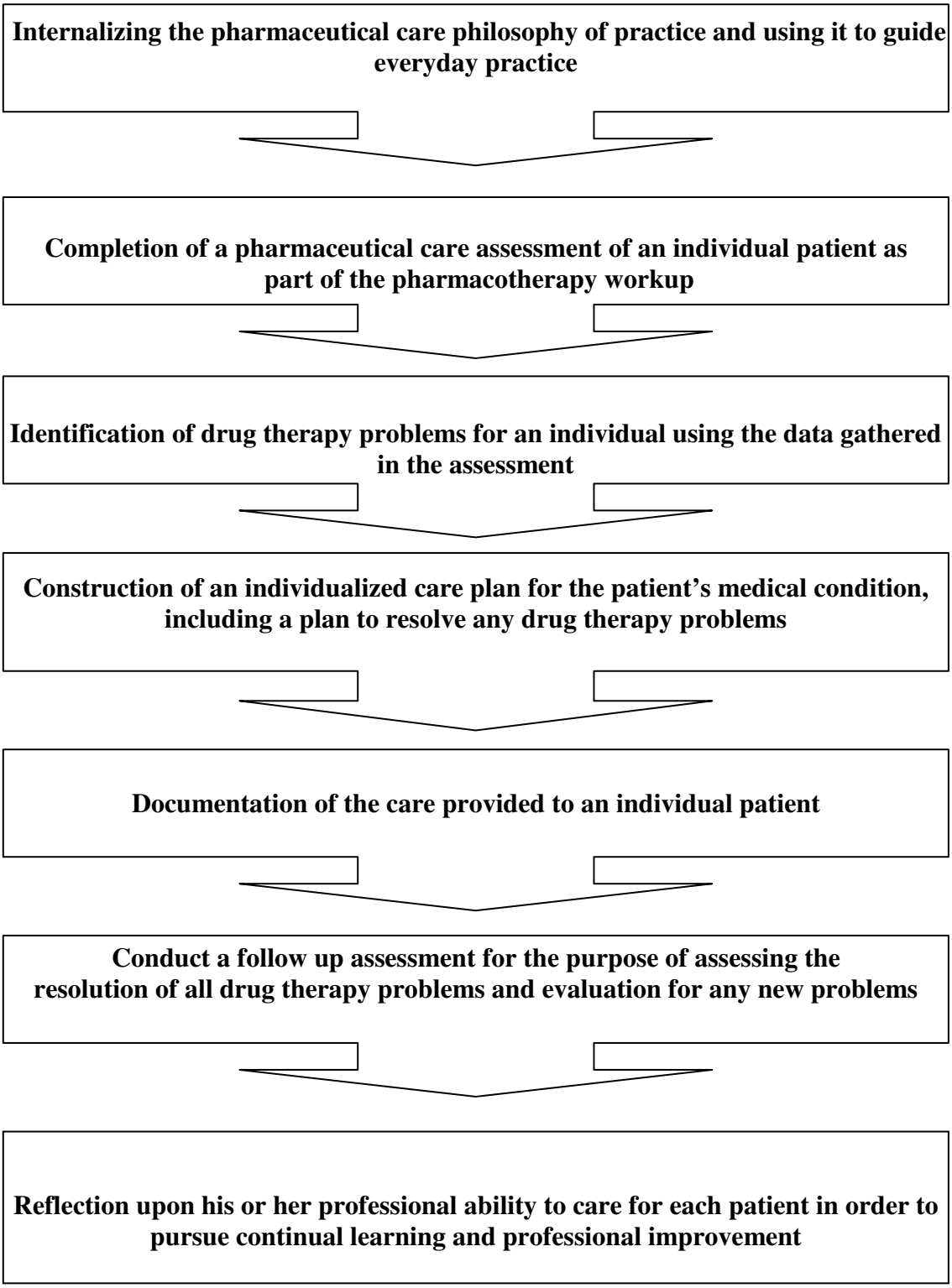
Pharmaceutical care competency statements

Initial competency statements for the practice of pharmaceutical care have previously been defined after a critical examination from the theoretical standpoint of pharmaceutical care practice. The standards of practice, measurement criteria, and the practice of pharmaceutical care were examined and resulted in the definition of seven core competency areas: Internalizing the Philosophy of Practice, Completion of the Assessment, Identification of Drug Therapy Problems, Construction of the Care Plan, Completion of the Follow Up, Documentation of Care Provided, and Reflection (Losinski 2005). These core competencies represent key components of the practice and are essential to the competent practice of pharmaceutical care and are shown in Figure 1: Core Competency Statements. These competency statements can be used to help inform

the specific skills, knowledge, and ethics required within the curriculum and to be integrated within the conceptual framework.

Although the development of competence is a core objective of any professional curriculum, it is also important to recognize that the context in which the curriculum is enacted has an essential role in shaping the educational experiences of the participants. The context for learning is an integral part of the *planned* learning experiences that make up the curriculum. The curricular context includes the learning philosophy and paradigm that inform the educational experiences, specifically how content is presented, how knowledge is applied, and how learning is assessed. This is especially important in health professional education because how the knowledge and skills are demonstrated and assessed in the curriculum will influence how the professional thinks about his or her actions and continued development once in practice (Epstein and Hundert 2002).

Figure 1: Core Competency Statements



Integrating the Philosophy of Education

As stated in Aim 3 of this research, part of the conceptual framework for any professional curriculum is the identification of appropriate teaching and learning strategies. Similar to the philosophy of practice, a philosophy of education is used to guide how content is delivered and assessed in the curriculum. Specifically, a philosophy of education can be utilized in "…setting forth beliefs that will provide the foundation for developing the objectives and conceptual framework of the curriculum" (Lawrence and Lawrence 1983). Additionally, "Philosophy, as applied to education, allows practitioners and prospective practitioners to apply systematic approaches to problem solving in schools and illuminates larger issues of the complex relationship of schools to the social order" (Sadovnik, Cookson Jr et al. 2001). In this vein, if professional education is to "illuminate the complex relationship" between professional education and professional practice, the philosophies and paradigms of education and practice must be aligned.

The philosophy of education is rooted within its practice. Although there is no overarching, single philosophy of education, there are numerous philosophical traditions that have long been established, each with different priorities and goals that determine ideal content, teaching practices, and evaluation mechanisms. These philosophical traditions are not mutually exclusive and can be used to complement each other in educational settings. Although numerous philosophical traditions exist, there are a smaller number that may provide guidance for a pharmaceutical care based, or any professional, curriculum, which has a defined body of knowledge and skills that must be

learned. The philosophies which best align with the existing patient-centered, caring philosophy of pharmaceutical care practice include realism, pragmatism, Neo-Marxism, and Post-Modern/Critical theory.

Realism is characterized by the belief that there is a body of knowledge to be mastered and that mastery can be achieved by the use of logic. Empirical research is used in realism to understand and apply scientific principles to help solve problems. In a health professional curriculum, the use of this philosophy may be reflected in teaching approaches that focus on understanding the "if, then" relationship between a disease state and its treatment. A curriculum using realism may result in a culture in which the evaluation of knowledge is focused on deductive determination of the "right" answer rather than an inductive explanation of why there may be many "right" answers to a given problem.

Pragmatism "…encourages people to find processes that work in order to achieve their desired ends" (Sadovnik, Cookson Jr et al. 2001). Francis Bacon drew upon the pragmatic tradition to utilize inductive reasoning where the teacher is the facilitator who uses problem solving and inquiry methods to solve identified problem. An example of the use of pragmatism in the curriculum may be the use of problem-based learning in which the teacher assists students in inductively determining the problem and identifying potential courses of action.

Neo-Marxism is a philosophical tradition that is a response to capitalism. It sets forth the belief that the purpose of education should be to transform the dominant culture. It aims to give insight to and to question the prevailing dominant ideology in the hopes of giving learners the ability to become agents of change. Similarly, Post-Modern or Critical Theory seeks to connect theory and practice. Teachers and learners become agents of change while the classroom is a site of discursive action.

Critical theory, in particular, aims to address discourse related to power and domination inequalities. Paulo Friere's pedagogy, in the tradition of Critical Theory, aims to develop a critical consciousness of the world in which the learner lives. Critical consciousness development requires a dialogue, shared meaning making, and reflection between the teacher and learner (Friere 1998). In a health professional curriculum, this philosophy may be used to help students identify their larger role in creating a just society or as agents for social justice.

Any of these educational philosophies could be appropriate for a health professional curriculum because each addresses a belief about knowledge and education that is directly connected to the larger philosophy of health care practice. There needs to be an explicit connection between the philosophy of the professional practice and the philosophy that underpins the educational experiences in the curriculum. This must be done in order to develop a coherent curricular framework that mirrors the conceptual framework for the practice.

Bridging Learning with Application in Practice

Although the philosophy of the curriculum can help to inform the methods of teaching, the specific learning strategies and practices utilized in the curriculum must also be selected with care in order to provide the learner with the opportunity to connect the content that is being taught with how he or she will need to be able to use such content in practice. Pedagogy is the method or practice for teaching as an academic concept or theoretical concept (2007). Building on this definition, for a professional practice curriculum the methods and concepts of teaching the material and the practice must be closely linked to the application of knowledge as prescribed by the practice. The connection, or disconnection as it may be, between the theory and the practice in a profession is termed *praxis*.

Deborah Britzman's ethnographic work with praxis in teaching and student teachers presents an example of the shortcomings that can develop when the educational methods are not tied close enough to the practice. Although Britzman's work is in the context of teacher education, the educational process mirrors that of traditional health professions. In both instances, didactic coursework provides a foundation for practice knowledge and skills prior to entry into the experiential setting. "The 'methods as ends' model of teaching reduces the complexity of pedagogical activity to a technical solution and 'forgets' that methods are a means for larger educational purposes" (Britzman 1991). For the health professions, the "pedagogical activity" is the act of the assessment and creation of care plans.

Britzman concludes that enacting a professional practice places the theory of that practice in a uniquely personal context (for health care, the context of an individual patient) and then, inserts the practitioner into this context. Complicating this are the numerous external factors that interact and influence both the context and the practitioner. In Britzman's model, the students' visions and understanding of the act of practice are constantly being reworked and reinvented as the students gain practice experiences. In essence, each experience in practice shapes how the student understands what practice is and what it means. This model of learning results in what Britzman refers to as "an instability of understanding."

In professional curricula the "instability of understanding" must be taken into account as an integral part of the student practitioner's professional development and internalization of practice. To assist the student in making sense of what his or her role will be as a professional and the responsibilities that this role will entail, the curriculum must offer opportunities to be in practice from early in matriculation. Practice experiences can also aid students by developing a connection between the clinical knowledge and its application in "real world" practice.

Schön provides additional explanation for how practice can assist in the development of didactic learning in his identification of a dual curriculum, influenced by the experience of practice and the curricular participants.

> When interns and residents under the guidance of senior clinicians work with real patients on the wards, they learn more than application of

> medical science taught in the classroom. There is at least an implicit recognition that research-based models of diagnosis and treatment cannot be made to work until the students acquire an art that falls outside the models; and on this view, widely held by practicing physicians, the medical practicum is as much concerned with acquiring a quasi-autonomous art of clinical practice as with learning to apply research-based theory (Schön 1987).

Schön is referring to, what he terms, professional artistry and technical rationality. The professional artistry is learned through reflection-in-action. He challenges educators of professionals that,

> If we see professional knowing in terms of 'thinking like a' manager, lawyer or teacher, students will still learn relevant facts and operations but will also learn the forms of inquiry by which competent practitioners reason their way to clear connections between general knowledge and particular cases.

Building upon Schön's case for teaching professional artistry and technical rationality, Loewenberg, Ball, and Cohen present a framework for developing a practice-based theory for professionals. They propose to reform teacher education to better connect the practice with the education of teachers. Their *pedagogy for professional development* engages teachers in the discourse and materials of practice and "engage [teachers] in tasks grounded in the activities of practice" (Loewenberg Ball and Cohen 1999).

Each of these researchers identified the need to have student practitioners in practice in order to develop their personal understanding and integration of practice skills, knowledge, and ethics. Additionally, this supports the need to engage in praxis and pedagogy that provides connection between the classroom and actions to be taken in practice. The ability to link how pharmaceutical care is enacted in practice and how it is

taught must be addressed within the conceptual framework's teaching and learning strategies.

Connecting the Curriculum with Practice

The importance of connecting the curriculum with how the knowledge will be applied has long plagued all forms of education. It is of the utmost importance for a professional curriculum to prepare the student to be able to perform successfully in practice and to be able to continue to develop knowledge and skills in practice. It may seem like a logical teaching strategy to have the student act as an apprentice to an experienced practitioner and rely solely *on* practice to *teach* practice. However, there are several drawbacks to the apprentice model: the need for the teaching practitioner to practice with the highest practice standards, the length of time required as an apprentice, the lack of exposure to practice theory and practice contexts, and the potential risk to patients being used at teaching tools. In order to mitigate these risks and provide consistent training, educators have tried to bring practice into the classroom while exposing student practitioners to practice with the perceived appropriate level of responsibility through the curriculum. Problem-based learning has been used as a teaching tool to bring problem-solving, clinical decision making, and practice into the classroom.

Problem-based learning

Within the health professions, and specifically pharmacy, problem based learning has often been proposed as the bridge between education and practice as it pairs the skills, knowledge, and values required in practice with the problems as they are found in practice. In 1987, Strand, Morley, and Cipolle proposed a problem-based, student-centered model to span the entire pharmacy curriculum (Strand, Morley et al. 1987). Since then problem based learning has been researched as an educational strategy for an individual course (Winslade 1994; Sibbald 1998; Catney and Currie 1999; Raman-Wilms 2001).

Problem based learning is an instructional approach that was formalized at McMaster University in the medical curriculum when it was observed that didactic content presented in the curriculum was not sufficient in preparing students for the hypothetical-deductive reasoning required in clinical practice (Barrows 1994). In this student centered approach, ill-defined problems are presented and small groups of students work together to define and address the problem and in doing so "to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" (Savery 2006).

In programs that use problem-based learning as the pedagogical basis for teaching the faculty, especially early in the curriculum, have a more extensive, involved role in assisting in the problem setting and problem solving process. "The reality is that learners who are new to [problem based learning] requires significant instructional scaffolding to

support the development of problem-solving skills, self-directed learning skills, and teamwork/collaboration skills to a level of self-sufficiency where the scaffolds can be removed" (Savery 2006).

Although problem-based learning has been widely discussed, researched, and attempted to be broadly integrated into curricula, the positive outcomes of this approach have been debated. Problem-based learning research has shown a high level of student satisfaction, an increase in self-directed learning, and increased self-ratings of competence (Cohen-Schotanus, Muijtjens et al. 2008).

It is essential to examine how the philosophy of practice, practice standards, and teaching philosophy and paradigm influence what is taught in professional curricula. As Argyris and Schön describe, the relationship between practice and theory is two-directional and must be considered as such in the curriculum.

> Learning a theory of action so as to become competent in professional practice does not consist of learning to recite the theory; the theory of action has not been learned in the most important sense unless it can be put into practice (Argyris and Schon 1974).

However, no matter how practice and theory are viewed in curriculum design, examining the essential components of curricula does not provide sufficient enough explanation of the process of designing curricula as a whole. Both practice and practice theory should be used to inform the curricular design process, but need to be used in complement to each other and the specific competencies each requires.

Curriculum Design

Curriculum is a rather ambiguous term and can describe the organization of educational experiences resulting in course syllabi, learning goals and objectives to philosophies of learning. For the purpose of this research, curriculum is defined as a "planned learning experience" (Walker 2003). The key component of this definition is the word *planned.* The educational experiences must be organized and planned in a manner that puts them in relation to each other and builds towards a defined goal. For example, in medical education the discrete educational experiences about diseases, patients, and procedures build upon each other to prepare graduates to be able to practice medicine as physicians. The discrete educational experiences must be organized in an intentional manner that is grounded on an explicit goal or philosophy, provide increasingly complex expectations for performance, and be representative of the situations in which they will be used once the formal education is completed.

The following section describes three prototypical curriculum design models: basic principles for general education, curricular development for medical education, and practice philosophy and conceptual framework curricular design. Each model is presented in detail and critiqued for its applicability in designing a pharmaceutical care based curriculum. A side-by-side comparison of each of the models can be found in Figure 2: Curricular Design Methods. Figure 2 also includes a proposed new curricular design method called the Professional Practice Based Curriculum Design Method. This

method lays forth the perceived steps for designing a professional curriculum grounded in the practice's philosophy.

Basic principles of curriculum and instruction

The work of Ralph Tyler provides a historical foundation for contemporary general education curriculum design. Ralph Tyler was one of the first educational researchers to bring attention to curriculum design as an independent discipline. His book, *Basic Principles of Curriculum and Instruction*, is still cited as the foundational description of curriculum design in general education models today. In it, Tyler defines four questions that provide a foundation for defining the overarching purpose and premise of curricula (Tyler 1949):

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained?

These questions provide the framework for the later development of curricular design, which focuses on defining the educational goal, determination of objectives, identification of educational strategies, and evaluation of the curriculum and are presented in Figure 2: Curricular Design Methods in comparison with other curricular design methods described later in this chapter.

Although Tyler's work is the historical reference for much of the current curricular design literature it does not imply methods for how best to answer the four questions and is written from a general education perspective and is not designed to meet the unique

needs of a professional practice. There is no description of how to integrate a philosophy of a professional practice into the curriculum planning process nor is it focused on the purpose for, or application of, knowledge attained in the curriculum and therefore has limited practical utility in the design of a professional curriculum.

Curriculum development for medical education

Building off of Tyler's foundational work, there have been several curriculum design processes that have been outlined specifically within the health professions. *Curriculum Development for Medical Education: A Six Step Approach* provides a method for "…developing, implementing, evaluating, and continually improving educational experiences in medicine" and provides a typical professional curricular design model (Kern, Thomas et al. 1998). In contrast to Tyler, Kern, et al includes strategies for curricula design and implementation. This approach provides more guidance in constructing curricula than Tyler's and provides specific guidance on the integration of a professional practice into curriculum design. The case studies provided, however, are targeted towards specific course or content design rather than a comprehensive curriculum for a professional practice. This is demonstrated by an absence of discussion on the underlying philosophy of practice and professional practice description. Additionally, teaching and learning philosophies and methods are not discussed in the context of any of the steps.

Practice philosophy and conceptual frameworks

The importance of practice philosophy has been described throughout the health professional literature to a great extent. Edmund Pellegrino and David Thomasma have described philosophy's integral role in medical practice and the philosophy of medicine. "When philosophy turns…to the meaning of medicine as clinical practice and examines its conceptual foundations, its ideologies, its ethos, and the philosophical basis of medical ethics, thus it becomes the philosophy of medicine" (Pellegrino and Thomasma 1981). Using this work as a foundation, the profession of nursing has extended the knowledge of a philosophy of practice to integrate it as a defining element within a conceptual framework for a comprehensive nursing curriculum.

Conceptual frameworks are used to guide the structure of a curriculum and are composed of theories (Peterson 1978). Roberts identified nine advantages to using conceptual frameworks in curriculum design: basis for coherent focus and direction, basic structure of the curriculum, framework for deriving relevant content, ordering facts from a micro- to a macro level, demonstrate relationships between content, identifies goals of the profession, place behavioral objectives and content in context of philosophy, guides the development of instructional materials, and generates a schema for evaluation of graduates (Roberts 1985). The process that Roberts describes builds a conceptual framework from the philosophy and general educational goals of the curriculum. This conceptual framework then becomes the basis for defining curriculum and how it should be presented. The conceptual framework development process is similar to the processes

presented by Tyler and Kern, et al. The significance of Robert's process is that it begins with the philosophies of practice and education as the foundational element from which the conceptual framework is created. However, although conceptual frameworks create a frame from which to build a curriculum it describes the conceptual framework as the end instead of the means in building a curriculum in its entirety.

Figure 2: Curricular Design Methods

<table>
<tr><th>General Education Curriculum</th><th>Health Professional Curriculum</th><th>Curriculum Design using Conceptual Frameworks</th><th>Professional Practice Based Curriculum Design Method</th></tr>
<tr><td>Basic Principles of Curriculum and Instruction (Tyler 1949)</td><td>Curriculum Development for Medical Education (Kern, Thomas et al. 1998 & Bass, 1998)</td><td>"Conceptual frameworks and the nursing curriculum" (Roberts 1985)</td><td>Proposed Research Plan</td></tr>
<tr><td rowspan="2">What educational purposes should the school seek to attain?</td><td rowspan="2">Problem Identification and General Needs Assessment</td><td>Description of philosophy of practice and educational environment</td><td>Description of the theoretical basis of the professional practice</td></tr>
<tr><td>Determination of general educational goals</td><td>Determination of Competency Statements</td></tr>
<tr><td rowspan="2">Which educational experiences can be provided that are likely to attain these purpose?</td><td>Needs Assessment of Targeted Learners</td><td rowspan="2">Development of curriculum components e.g. objectives, concepts</td><td>Critical Examination of Professional Practice in Practice and Context</td></tr>
<tr><td>Goals and Objectives</td><td>Revision and Organization of Competency Statements</td></tr>
<tr><td rowspan="2">How can these educational experiences be effectively organized?</td><td rowspan="2">Educational Strategies</td><td rowspan="2"></td><td>Determination of Educational Philosophy and Paradigms</td></tr>
<tr><td>Determination of Educational Strategies</td></tr>
<tr><td rowspan="2">How can we determine whether these purposes are being attained?</td><td>Implementation</td><td>Implementation</td><td rowspan="2"></td></tr>
<tr><td>Evaluation and Feedback</td><td>Evaluation</td></tr>
</table>

Professional Practice Based Curriculum Design Method

Analyzing the previously described processes for curriculum design as a representative sample, it was identified that each process assumed or implicitly defined the professional practice and corresponding philosophy of practice. For the professions of education, nursing, and medicine this may be acceptable as the professional practice has been engrained as the mission of the profession and the endpoint of professional education since the inception of each profession. However, for pharmacy, the professional practice and the philosophy of practice cannot be implied or assumed to be understood by all curricular stakeholders. Therefore it is imperative that when designing a practice based curriculum that one must begin with an understanding the philosophy of practice and the requirements for the professional practice. By understanding the practice philosophy and competencies required for entry-level practice the curriculum can then be designed. The Professional Practice Based Curriculum Design Model aims to provide a starting point from which to design a pharmaceutical care-based, or any other professional practice, curriculum. The Professional Practice Based Curriculum Design Model was designed in order to ground a professional curriculum in its philosophy of practice, answer the question set forth by this research, and to create a methodological framework for this research.

In order to achieve this, a hybrid process was defined by the researcher that grounded the curriculum in the philosophy of practice and practice competencies (see Figure 2 Curricular Design Methods). By critically analyzing the work of Tyler, Kern, et al. and

Roberts, areas of congruence and incongruence were identified and then defined. Additional features that were considered foundational were then included in the framework.

The Professional Practice Based Curriculum Design Model consists of six components that are completed in a curricular, interactive, and iterative process. The first component is a critical examination of the professional practice theory. This is similar to the Tyler's educational purposes and Kern, et al.'s problem identification. The goal of this component is to describe the professional practitioner and define the skills, knowledge, and values required to perform the professional practice from the viewpoint of the theory of the practice. From the defined skills, knowledge, and values a set of competency statements the second component can be developed. The third component, a critical examination of the professional practice, is assessed from the viewpoints of practice and the social context of the practice. These three components can then be used to create the conceptual framework for the curriculum. The three perspectives (theory, practice, and context) are required in order to construct a comprehensive description of the professional practice from which to determine and construct comprehensive competency statements that most accurately reflect what is required in the professional practice. This is used to determine and construct comprehensive competency statements that most accurately reflect what is required in the professional practice. Within the conceptual framework, the competencies, objectives, and goals of the curriculum can be defined and organized.

Upon development of the conceptual framework, the educational context is defined. This context includes a determination of the educational philosophy and educational paradigm that is necessary to foster the development of the pharmaceutical care practitioner. Finally, educational strategies are identified that assist in the development of the skills, knowledge, and values defined in the competency statements.

Conclusion

Although each of the steps in the Professional Practice Based Curriculum Design Model is grounded in the professional education literature, examining such literature leads to many unanswered questions. To what extent do the philosophy of practice and philosophy of education need to bridge practice and theory? In critically examining the practice from theory, practice, and context, how should potential conflicts of priorities be resolved? At what level of competence does an entry-level practitioner need to practice?

Specific to pharmaceutical care, many of these important questions have few answers. How do we define competence in a pharmaceutical care practitioner? What role does the patient play in the learning experience? What is the role of curricula in establishing a new health care professional? What content is required to provide pharmaceutical care? These questions must be addressed and the answers used to develop a new curricular framework for pharmacy education.

Although the list of unanswered questions is long and crucial for development of a professional curriculum, they are not insurmountable. The purpose of this research is to address the question: what educational experiences are required to prepare a pharmaceutical care practitioner?

Chapter 3 Methodology and Methods

This chapter lays forth the research methods that were used to answer the question: what educational experiences are required to provide pharmaceutical care? Additionally, the rationale for the selected method and methodological context is described.

Research Methodology

Developmental research methods were selected because of the preliminary nature of the research question. Both descriptive and interpretive research methodologies (such as ethnography and grounded theory) can be used to understand an existing structure, experience, culture, or event. However, this research aims to develop a new curricular structure for the preparation of a pharmaceutical care practitioner. In order to address the research question and aims, a new structure must be conceptualized and defined. Therefore, descriptive and interpretive methods would not be suited to answer this research question.

Development research is a qualitative methodology that is used for the purposes of "…(i) supporting the development of prototypical products (including providing empirical evidence for their effectiveness), and (ii) generating methodological directions for the design and evaluation of such products" (Van den Akker 2000) and aims "to inform the decision making process during the development of a product/program in order to improve the product/program being developed" (van den Akker, Gustafson et al. 1999). Developmental research has also been referred to as design or formative research (Walker

1971). Developmental research is not used to design whole programs or to complete and test interventions. Rather, it aims to build prototypes that are evaluated and refined until they satisfactorily answer the research question and aims using an iterative process commonly referred to as 'successive approximation' or 'evolutionary prototyping' (Van den Akker 2000). The hallmark of developmental research is a cyclical, interactive process of analysis, design, evaluation, and revision that is continued until the prototype is internally consistent and determined to not require subsequent iterations of revision based on the available data.

Development research was selected because this research is a preliminary investigation rather than a theoretical or empirical research project. Preliminary developmental research studies aim to take the most foundational knowledge and make connections with the practical application of that knowledge using data gathered from stakeholder focus groups, participant observation, or case studies. Additionally, developmental research is commonly used in curriculum design and research to guide the development of new programs (McDermott and Shaffer 1992). It is utilized to improve the research product and to build a new theoretical framework supported by empirical evidence (Asiala, Brown et al. 1996). Finally, development research is frequently utilized in learning and instruction research because of its natural tendency to link theory and its practical application (Lijnse 1995). "[Development research is] the kind of research that includes developmental work in designing learning environments, formulating curricula, and

assessing achievements of cognition and learning and, simultaneously, on effort to contribute to fundamental scientific understanding" (Greeno, Collins et al. 1996).

Area of Inquiry and Research Assumptions

This research aims to understand the educational experiences required to prepare a pharmaceutical care practitioner. By definition, pharmaceutical care is a professional practice in which expert knowledge of medications is actively applied for the benefit of an individual in accordance with explicitly defined and accepted practice standards (Cipolle, Strand et al. 2004). Pharmaceutical care has been described as a theory, a philosophy, and as an idea (Shoemaker, Oliveira et al. 2001; Somma McGivney, Meyer et al. 2007; Ramalho de Oliveira 2009). In contrast, when examining pharmaceutical care as the foundation for a professional practice and professional curriculum, pharmaceutical care is a verb, an action, and an experience to be lived holistically with unique effects upon those who practice it, learn it, and receive its benefits (Ramalho de Oliveira 2009).

Pharmaceutical care practice is also a new professional practice. As a result of this, it is enmeshed in a practice world that is ill-understood. To understand the pharmaceutical care practice world requires one to be *in* practice. As practice is something that must be enacted and is experiential, a constructivist paradigm was used throughout this research. Constructivism is an epistemology that is grounded in the belief that knowledge is constructed and given meaning through experience (Schwandt 2001). Using this research

paradigm results in the underlying assumption that the researcher, research process, and participants are inexorably linked and interact to produce the research findings (Denzin and Lincoln 2003).

Similar to the idea that the research participants are linked and influenced by each other, it is believed that multiple truths make up each participants perception. Each participant's perceptions are how he or she constructs what is true and real. The research findings represent an approximation of that reality. A commonly used metaphor to illustrate this point is the action of piecing together a quilt (Denzin and Lincoln 2005). It is presupposed that all human experience is bound by context and that attempting to separate experience from context causes the meaning of the experience to be lost to some extent. Therefore, the context for which the interactions between the researcher, participants, and in which the research occurred will be described holistically. When the researcher is able to understand the reality of the research participants, then she is given the opportunity to construct a closer semblance to the human reality that is lived during pharmaceutical care practice (Denzin and Lincoln 2003). This construction can then be developed even further to create a theory or framework on how such behaviors and experiences may develop for a population of student practitioners (Van den Akker 2000; Creswell 2003).

Researcher Biography

The researcher brings an essential ingredient to the research process and therefore it is important to understand not only the research paradigm in which he or she completed the

research, but also who they are as researcher in relation to the area of inquiry. The Researcher Biography presents who the researcher is and her experiences with the area of inquiry. The researcher's voice is represented by the italicized font.

My experience as a researcher is abbreviated, especially in relation to my experience as an educator and pharmaceutical care practitioner. I have practiced pharmaceutical care for almost a decade, first as a student and then as a pharmacist. During this time, I was challenged by how to construct my understanding of pharmaceutical care practice (e.g. the communication skills, thought process, philosophy) and to position it in relation to the knowledge required to improve an individual's medication experience. During the four years in which I provided care for patients and now as I manage practitioners, I continue to reflect upon how the practitioners know what to do next, what to ask, how to relate to the patient, and how they make decisions and present options to the patient. As I had the opportunity to teach pharmaceutical care, both didactically and experientially, I realized that pharmacy educators will remain ill-prepared to develop pharmaceutical care practitioners unless a better understanding of practice requirements was developed.

As I explored the pharmaceutical care literature, talked to practitioners, and continued to train student pharmacists and pharmacists to provide pharmaceutical care I was still left with insufficient answers to my questions. I approached this research with a history of understanding the practice of pharmaceutical care from multiple perspectives: the student, the practitioner, the educator, and the researcher. Presently, I work daily with

pharmaceutical care practitioners to assist them in the development and management of their practices. During my interactions with the practitioners I'm presented with questions, challenges, and ideas about practitioner development and competence. These interactions, although not formally included in this research, have informed my interpretation of the data collected while at the research sites.

Research Process

When utilizing development research methods, there is a need to create a very flexible, fluid research plan as at the outset of the research the form of the prototype and its refinement are unknown. The research plan utilized the 5 of the 6 components outlined in the Professional Practice Based Curriculum Design Model process as a starting point for the research project (see Figure 2: Curricular Design Methods). Implementation and evaluation of the curricular conceptual framework was excluded from the scope of this research. This meant that 5 of the 6components of the Professional Practice Based Curriculum Design Model were used to provide guidance and a potential structure for the research process. However, the 5 components were neither followed verbatim nor in order. For example, a theoretical and practice based analysis of pharmaceutical care practice was performed, but competency statements were written.

This flexibility allowed for the data to drive the development of the curricular prototype. This design process was selected to fulfill the aims of the research while grounding the

development of the prototype in the data collected. Data from the literature, field notes from the pharmaceutical care practice observations, and practitioner interviews were used to develop the conceptual framework and answer the research question and aims. The following sections will lay forth the process that was used for data collection, analysis, and development of the curricular conceptual framework.

Conduct of ethical research

In accordance with the University of Minnesota's Investigational Review Board approval (University of Minnesota Investigational Review Board Study Number: 1002E78052), all practitioners and patients were provided a written consent form and gave verbal consent to the researcher (see Appendix 2: Pharmacist Informed Consent Form (Observation, Appendix 3: Pharmacist Informed Consent Form (Interview), and Appendix 4: Patient Informed Consent Form (Observation)).

Human subjects in this research were asked to participate by allowing for observation of their work and participating in semi-structured interviews. The invited participants were over the age of consent. Although the researcher was aware of the research subjects' identities, practice sites, and patient identifying information (e.g. PHI), all identifying information was changed to provide anonymity and to protect the research participants from being identified in analysis and publications. Aliases were used consistently throughout the transcribed files, observation notes, research journal, and paired with the

demographics that were collected. Figure 3: Practitioner and Practice Site Descriptions presents the aliases and a brief description of each practice site.

Figure 3: Practitioner and Practice Site Descriptions

Practitioner Alias	***Practice Site*** ***(* Denotes Yellowstone Health System Site)***	***Practitioner / Site Characteristics***
Alice	**Voyageurs Clinic**	Pharmacy resident at a community health clinic
Betty	**Grand Canyon Clinic**	Shared Practice Faculty at an independent practice site
Esme	**Mammoth Clinic***	In practice for over 10 years at multiple family practice/internal medicine clinics
Joan	**Glacier Clinic**	Practitioner for over 5 years at an urban health system clinic
Lane	**Old Faithful Clinic***	In practice for over 10 years at multiple family practice/internal medicine clinics
Peggy	**Yosemite Clinic***	Shared Practice Faculty in a specialty clinic
Rosalie	**Geyser Clinic***	In practice for over 4 years at multiple family practice/internal medicine clinics

There was a possible risk of unpleasant memories that may have been brought up during the interviews. During the observation of patients the research participants may have felt uncomfortable or watched. To address both of these possible risks, the participants were informed of such risks prior to agreeing to participate in the research and gave such consent to the researcher. Research subjects were also informed of the measures that

were taken to protect their identity prior to consenting to participate in the research. There were no direct benefits for the research participants to participate. However, indirectly, the results of this research may benefit others in the future.

Pharmaceutical care practice observations and interviews

> The challenge is to get inside the heads of practitioners, to see the world as they see it, then to understand the manner in which experts construct their problem spaces, their definitions of the situation, thus permitting them to act as they do (Shulman).

Pharmaceutical care practices and practitioners were a primary source of data for this research. Participating practitioners were used to illustrate pharmaceutical care practice in action and illuminate the experiences and requirements for pharmaceutical care practitioners. Their stories and experiences of practitioner development and current practice provided a catalyst for the creation of the curricular conceptual framework and definition of the educational experiences required to prepare a pharmaceutical care practitioner.

Sampling

An estimated 5-10 pharmaceutical care practice sites were desired to participate in this research. It was estimated that approximately 1 practitioner at each site would be observed in order to reach a point of saturation in which common themes could be identified from the data. At each practice site, the practitioner would be observed providing care to at least 2 patients and would participate in a semi-structured interview

with the researcher. This sample size was an estimate based on number of participants required to reach the point of saturation in similar qualitative research.

Theoretical sampling was used to invite practitioners who had established practices and were practicing to the pharmaceutical care practice standards as described by Cipolle, et.al. and included in the Minnesota Medicaid Medication Therapy Management program (Cipolle, Strand et al. 2004; Minnesota Department of Human Services 2006). Theoretical or purposive sampling is used when participants are invited based on the participant's capability and relevance to answer the research question rather than the participant's representativeness of a larger population (Schwandt 2001). This was accomplished by emailing an invitation to all members of the Minnesota Pharmacists Association Medication Therapy Management (MTM) Academy (see Appendix 1: Invitation to Participate Letter). The MTM Academy is a subgroup of the Minnesota Pharmacist Association in which members can elect to participate if they have an interest in providing pharmaceutical care.

Nine practitioners at five different organizations responded to participate in this research. One site was excluded because the organization's internal investigational review board requirements conflicted with the approval provided by the University of Minnesota Investigational Review Board. Another site was excluded due to lack of patient appointments. All practitioners met the provider educational requirements for the Minnesota Medicaid Medication Therapy Management program (Minnesota Department

of Human Services 2006). Observations were completed from May to July 2010 with the 7 practitioners who worked for four different clinic groups.

Four practitioners were employed by one clinic group, Yellowstone Clinics. Yellowstone Clinics is a large, non-profit corporation with clinic and hospital sites throughout Minnesota. Yellowstone Clinics have had pharmaceutical care practices established since 1997 and currently have more than 20 practice sites. Of the Yellowstone Clinic practitioners that participated in this research, Esme, Lane, and Rosalie practiced in family and internal medicine clinics (Mammoth, Old Faithful, and Geyser Clinics, respectively) and Peggy practiced in a specialty clinic, Yosemite Clinic.

Glacier Clinic is part of a national non-profit health maintenance organization with multiple clinics throughout Minnesota. Glacier Clinic is an urban family practice clinic and one of 15 clinics in this organization offering pharmaceutical care. At the time this research was conducted, Joan had practiced at Glacier Clinic for over 5 years.

Grand Canyon Clinic is an independent pharmaceutical care practice located in a university setting. The pharmaceutical care practice has existed for less than 5 years and has had 2-3 practitioners caring for patients at any point in time. Betty has been practicing at Grand Canyon Clinic for less than 2 years, but has practiced at family and internal medicine clinics for 5 years.

Voyageurs Clinic is an urban, Federally Qualified Health Center. Voyageurs Clinic is a teaching clinic in which medical and pharmacy residents practice alongside preceptors. During this research, Alice was completing her pharmacy residency at Voyageurs Clinic. She had previous completed a pharmaceutical care practice rotation during her final year of pharmacy school and had practiced pharmaceutical care at a student-run clinic for 4 years.

Participant observation

The researcher entered each practice site as a participant observer of pharmaceutical care practice. All practice site staff, patients, and practitioners were made aware of the researcher's non-clinical role in the patient appointments and research purpose. Participant observation has been defined as both, "a procedure for generating understanding or the ways of life of others" and "a means whereby the researcher becomes at least partially socialized into the group under study to understand the nature, purpose, and meaning of some social action" (Schwandt 2001). During the researcher's time as a participant observer of pharmaceutical care, the researcher accompanied the practitioner during his or her work. This included discussing patient cases with physicians, working with colleagues, caring for patients, and documenting the care provided. During this time the researcher's role as an observer was clearly identified, and the researcher did not participate as a care provider, even when asked by the patient or practitioner. Efforts were made to be unobtrusive to the practitioners' daily work, specifically during patient appointments, by having the practitioner introduce the

researcher and the researcher's role and then having the researcher remain physically to the side of the practitioner's conversation. In doing so, the researcher attempted to observe and describe in her field notes what pharmaceutical care practice was and required in action while minimizing, but not eliminating, her impact on the interaction.

Prior to the observations, the researcher spoke or emailed with each practitioner to discuss the goal of the research and how the observations and interviews would be used to answer the research question. In all instances, the researcher and practitioner had met prior to the initiation of the research through various educational and professional functions. On the day of the first observation of each practitioner, the researcher arrived early to meet briefly with the practitioner, be introduced to staff and have a tour of the practice site, and complete the informed consent process with the practitioner. During the time prior to the patient appointments, the researcher and practitioner often discussed the pharmaceutical care practice logistics including how long the practitioner had practiced at this site, how he or she came to practice there, how patient's were referred and the practitioner's relationship with the other care providers. These informal discussions were included in the researcher's field notes and helped to develop the researcher-practitioner relationship and trust.

At the beginning of the patient appointments, the practitioner would introduce the researcher to the patient and the researcher would obtain consent from the patient. The researcher took audio recordings of each patient appointment and took field notes using

thick description (Geertz 1973; Wolcott 1999). Depending on the number of appointments the practitioner had scheduled, the researcher's observations and subsequent interview often occurred over multiple days. In two instances the observations and interviews occurred on the same day.

Practitioner interviews

After observing the patient appointments, the practitioner and researcher would schedule a mutually agreeable time to conduct a 45 to 75 minute audio recorded, semi-structure interview. A semi-structure interview is one in which there are a predefined number of topics and suggested questions, but no formal structure or order (Kvale 1996). The flow of the participant's responses directs the interview. Prior to the beginning of the interview the practitioner was told the purpose of the interview was to:

- understand his or her development as a practitioner,
- what pharmaceutical care practice requires from the practitioner,
- and how the practitioner felt student pharmacists should be taught.

The semi-structured interview guide included:

- Practice description
- How did you come to practice here?
- What is it like to do your job? What do you need to know?
- How did you learn how to provide pharmaceutical care?
- What person or event has had the biggest influence on you as a practitioner?
- What was your best learning experience?

- Do you have any suggestions for student pharmacists/colleges of pharmacy/preceptors who want to learn/teach pharmaceutical care?

Although the above questions were commonly used as starting point for conversation, the researcher's questions during the interview primarily consisted of follow-up, probing, and specifying questions from which the researcher sought greater explanation, clarification, and description from the practitioner's responses (Kvale 1996; Denzin and Lincoln 2003). The researcher would often make attempts to bring in observations from the patient appointments to clarify or connect the practice observations with the practitioner's responses during the interview. If the researcher had noted any specific questions in her field notes, she would ask the question during the practitioner interview. For example, during Esme's interview the researcher asked Esme to recall a specific patient case.

> Researcher: That brings up something that I observed while I was with you last time, that elderly couple. She was in the scooter and he was standing for the whole appointment. It seemed to me, from observing, that a lot of what you were trying to understand was what was actually going on with her insulin and her blood sugars and her timing so that you could — it looked like so you could adjust things properly to respond to them, and I was confused half the time, and it seemed like — there were a few times where I was like, okay, I think I understand what they're describing now, and then you'd press on further, and, no, I was completely wrong. How do you get to the point where you feel like you understand, or what do you need to know to be able to make those adjustments with a patient, especially with the insulin?
>
> Esme: Yeah, that's experience. I mean, that's just adjusting insulin or getting used to adjusting meds over and over and over and working with patients. I mean, this lady's been admitted to the hospital several times, so she's not an open book. I mean, there's a lot going on there that we're still trying to pull out, and knowing that we need to pull it out to see what she actually does at home, and you know that there's confusion there with her history. So just having multiple visits with her, I knew she was just a complex lady. So I guess the relationships you build with patients are

> important, so you have to learn how — and that's something — I don't know how you teach that in school, building relationships with patients.

Using specific examples from the researcher's observations helped the practitioner to recall specific instances and focus their responses. At the end of each interview the practitioner was given the opportunity to comment on anything he or she felt may have been missed during the discussion. Often the practitioner would state that he or she did not have anything else to add, but once the audio recording was turned off additional ideas or comments would be discussed. These conversations were added to the researcher's field notes.

Research interviews are often used to gather "qualitative descriptions of the life world of the subject with respect to interpretation of their meaning" (Kvale 1996). The interview responses were used as the primary source of data and were supplemented by the researcher's field notes. This was done because the nature of the research question was to understand what educational experiences were required to provide pharmaceutical care and the skills, knowledge, and ethics that practice requires can only be indirectly observed during the provision of care, but the practitioner can attempt to describe them directly.

Data Analysis

The process of data analysis began as the data were collected. Analyzed data include field notes, observations audio recordings, and transcripts of the practitioner interviews.

Transcripts were analyzed using an approach that aligned with the "whole-part-whole" movement presented by Dahlberg, Drew, and Nyström and Giorgi's four principles of analysis:

- reading of the data,
- dividing of the data into parts,
- organization and expression of raw data,
- and structuring the expression of the data

(Giorgi 1997; Dahlberg, Drew et al. 2001). Each transcript was read as a whole document multiple times in order to understand the relationship between the questions, responses, and context. Additionally, as other transcripts were created all of the transcripts and field notes would be read in sequence. This was important as "interviews are considered collaboratively produced narratives, a mutual product of researcher and informant" (Dahlberg, Drew et al. 2001) and to retain "the sense of the whole" rather than immediate division into parts (Giorgi 1997). This process also helped with identifying common ideas, phrases, and concepts between the documents.

Coding

All transcripts were descriptively coded using NVivo 8 software (QSR International 2009). Open codes were created while reading each transcript individually. Open codes are descriptive labels applied to practitioner comments, portions of sentences, and statements. Open codes were used to identify ideas that stood out to the researcher as significant to understanding what skills, knowledge, and ethics may be required when

providing pharmaceutical care. A single passage could be coded under multiple codes. Codes were added as more transcripts were reviewed and often changed during the coding process based on what was being observed in the practices and in the transcripts. Tree, or axial codes were later developed that grouped multiple codes under a common code heading. Researcher memoing was used to reflect and facilitate the development of the codes, if codes should be combined, and to capture the context and relationship between the codes. Memoing is a technique in which the researcher writes down additional insights or context about the data (Creswell 1998).

After all transcripts were coded and analyzed, the existing codes and tree codes were reviewed, put into the context of the research question, and organized into emerging patterns. For example, codes that directly addressed the role of the preceptor were grouped together and then re-examined and restructured as "things that are alike or unlike each other" (Miles and Huberman 1994). From this, the researcher was able to more clearly see overarching themes from the transcript data. The relevance of such themes was then confirmed or disconfirmed through the use of the field notes and audio recordings from the patient appointments. From these themes, the conceptual framework was developed.

The process of data analysis was not linear, but involved a dynamic process of reading and coding of the whole, the parts, and the whole again (Dahlberg, Drew et al. 2001) in order to ensure that the themes and conceptual framework best represented the reality of

the research participants. The interview data analysis continued as the conceptual framework for the curriculum emerged, gaps in consistency and logic were addressed, and feedback obtained from the expert panel until the resulting framework was internally consistent with the data.

Expert Panel

The purpose of the expert panel was to bring together key stakeholders who have a familiarity with health care education, health care practice and policy, or pharmaceutical care practice to provide opinions and feedback on the emerging conceptual framework for a pharmaceutical care based curriculum. Theoretical sampling was used to invite potential members of the expert panel. Physicians, pharmacy educators, pharmaceutical care practitioners, and student pharmacists were identified and invited to participate. An "Invitation to Participate letter" was emailed to 13 potential members (see Appendix 5: Expert Panel Invitation Letter). Twelve responded that they would be willing to participate (see Figure 4: Expert Panel Participants).

Figure 4: Expert Panel Participants (Names and employer used with permission)

Participant Name	*Professional Role*	*Location/Employer*
Brooke Kraft	Student Pharmacist	University of Minnesota
Lacy Ternes	Student Pharmacist	University of Minnesota
Rana Balsheh	Student Pharmacist	University of Minnesota
Francisco Jimenez	Pharmacist	University of Puerto Rico
Kade Birkland	Pharmacist	Florida/Peru
Keri Naglosky	Pharmacist	University of Minnesota
Wanda Maldonado Davila	Dean, College of Pharmacy	University of Puerto Rico
Wendy Duncan	Dean, College of Pharmacy; Vice President Academic Affairs	St. Louis College of Pharmacy
Diego Marro	Director of Masters Program in Pharmaceutical Care and Pharmacotherapy	University San Jose (Zaragoza, Spain)
Terry McInnis	President	Blue Thorn, Inc
Brian Sick	Assistant Professor, Internal Medicine and Pediatrics; Medical Director, Phillips Neighborhood Clinic	University of Minnesota Physicians
John Song	Assistant Professor, Center for Bioethics; Founder and past Medical Director, Phillips Neighborhood Clinic	University of Minnesota

The expert panel meetings were held during of July 2010 and May 2011. Invitations with three different meeting times were sent to all members of the expert panel. They were asked to select one meeting to attend and were given the option of attending live or via GoToWebinar™ technology. During the expert panel meetings, the purpose of the expert panel was discussed. It was emphasized that role of the expert panel was to critique, question, and challenge the presented themes from each member's perspective and experience. Next, the aims and objectives of the research were described and the initial codes and themes from the observations and interviews were presented. The expert panel was asked to provide feedback on the initial codes and themes through the following questions:

- What are your initial impressions of the curricular framework?
- What components make sense to you?
- What components are missing?
- What are your thoughts on how the skills, knowledge, and culture were described?
- How should the patient care culture be integrated into pharmacy education? How would you assess "competency" in it?
- How did you learn to practice?

The expert panel responses were then used to help confirm or expel emerging themes from the data and to identify gaps in the researcher's logic and conclusions. The expert panel responses became a third party form of member checking as each member of the expert panel had some connection to health care provider education and practice.

Pursuit of validity, credibility, and transferability

Validity, credibility, and transferability are forms of ensuring that the conclusions drawn from the data are representative of the data collected and can be used to help inform knowledge in similar contexts. Validity is defined as the property of being "sound, cogent, well grounded, justifiable, or logically correct" (Schwandt 2001).

Validity in this research was addressed by triangulation of data from multiple sources (e.g. interviews, field notes, other research) and member checking (e.g. expert panel and practitioner interviews) of the data and emerging themes. These techniques were used to support and check the inductively developing themes that develop while analyzing the data. As part of the data collection process, the researcher utilized reflective journaling and peer debriefing in order to identify and address researcher bias. Additionally, as part of the emergent themes, convergent data was included to add richness to the resulting conceptual framework (Creswell 1998; Creswell and Miller 2000; Creswell 2003).

Credibility has been compared to the epistemic idea of internal validity. Credibility can be defined as the "assurances of the fit between respondents' views of their life ways and the inquirer's reconstruction and representation of the same" (Schwandt 2001). During this research, ideas that emerged during the observations or interviews were clarified and confirmed with the practitioners during the interviews and between practitioners as well. Additionally, the manner of data analysis required the researcher to assess the data as a whole before examining its parts and then assessing the analysis as part of a great context

assists in the process of ensuring the credibility of how the data are represented and interpreted.

Transferability, or generalization, has had parallels drawn to external validity in that it refers to the research conclusions "wider relevance or resonance of one's inquiry beyond the specific context in which it was conducted" (Schwandt 2001). Qualitative studies often seek to richly understand the goings-on of a contextualized concept, experience, or culture. Several have thereby determined that true generalization is not a possibility (1990). However, analysis of a particular context or concept may be applied by the reader to a different context when a significant amount of detail and description for the particular research context and the conclusions that were drawn from it are presented. Denzin provides support for this concept by describing, "that contextual, multivoiced, interactional, and interpretive texts contribute to theoretical understanding by illumination interpretive theories already at work in the connections that frame the stores that are told" (Schwandt 2001). This research has several limitations for its transferability. To account for this, the context of the results is presented with the conclusions themselves. Additionally, whenever possible, the application of the results to other curricular settings is directly described.

Chapter 4: Results-Educating for Action

In order to prepare entry-level practitioners who can provide appropriate, effective, and safe patient care health professional education must reflect the knowledge, skills, and ethics of the professional practice (The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005). This chapter describes the conceptual framework for a pharmacy curriculum grounded in pharmaceutical care practice including the skills, knowledge, and ethics it requires. The components of the conceptual framework are drawn from the practice observations and practitioner interviews and reflect the realities of the research participants.

The conceptual framework that is presented in this chapter represents the curriculum design prototype developed as part of this research. As this research was an iterative process, there were several versions of the prototype for the conceptual framework over the course of the research. The first prototype was constructed during the initial literature review of pharmaceutical care and health professional education. As more data were collected from the practitioner interviews and practice observations, the prototype was refined to reflect emerging themes. An early version of the prototype was presented to the expert panel during the first expert panel meetings for reaction and feedback. After the expert panel meetings and analysis of the practitioner interview transcripts, the final prototype was constructed and refined in accordance with expert panel feedback and identification of additional themes from the interviews and observations.

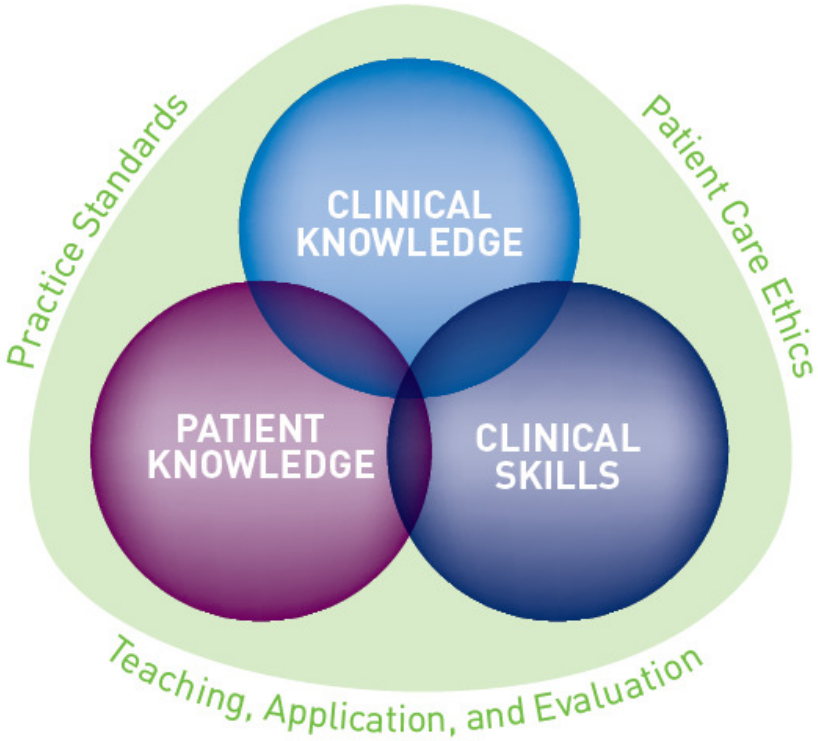
Conceptual Framework Overview

> Professionals are obligated to do whatever is best for the client, not what is easiest, most expedient, or even what the client might want. They are also obligated to base a decision about what is best for the client on available knowledge-not just that knowledge acquired from personal experience, but also that clinical and research knowledge acquired by the occupation as a whole and represented in professional journals, certification standards, and specialty training. Finally, professionals are required to take into account the unique needs of individual clients in fashioning their judgments about what strategies or treatments are appropriate (Darling-Hammond 1989).

As described by Darling-Hammond, the demands placed upon a professional require being able to analyze, integrate, and synthesize complex data elements to determine the most appropriate course of action. These data elements and how they are used in practice become the basis for the education experiences required to prepare the practitioner.

The essential educational experiences required for the development of pharmaceutical care practitioners reflects the requirements of pharmaceutical care in practice and are divided into two structures (see Figure 5: Curricular Conceptual Framework).

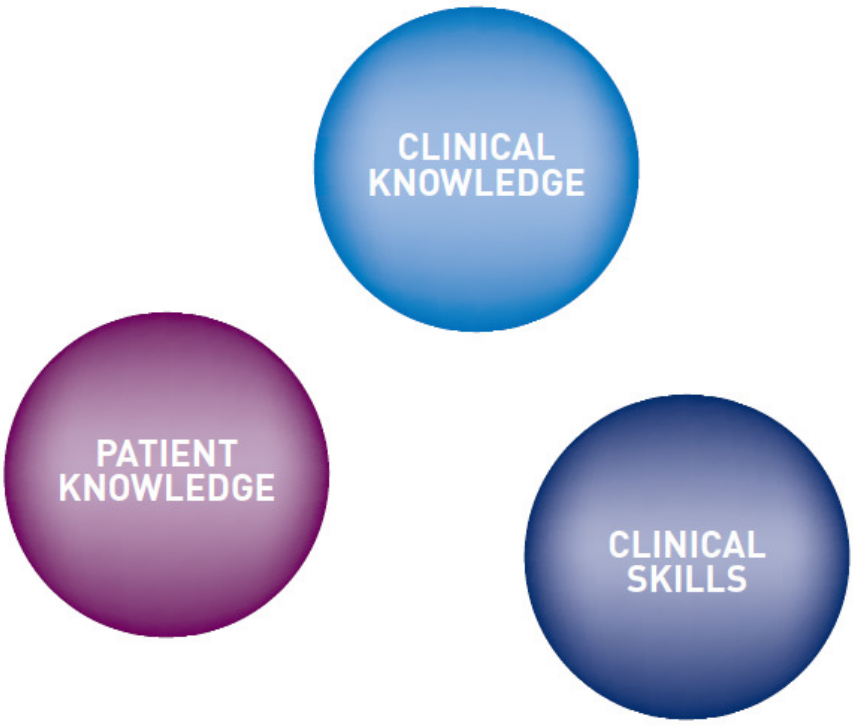
Figure 5: Curricular Conceptual Framework



The internal structure represents the curricular content and is comprised of three components: clinical knowledge, clinical skills, and patient knowledge represented by the three intersecting circles in the center of the figure.

Figure 6: **Curricular Content** shows these specific components. It should be noted that without the second structure of the curricular conceptual framework, the curricular foundation, the curricular content components are not held in contact with each other.

Figure 6: Curricular Content



The clinical knowledge represents the medical condition and drug knowledge that is required to identify, prevent, and resolve drug therapy problems in a consistent, effective manner. The clinical skills component represents the capabilities to provide, or enact,

pharmaceutical care. The inclusion of the patient knowledge acknowledges that the practice of pharmaceutical care is patient-centered and requires an understanding of the patient as an autonomous individual with whom the practitioner will determine the most effective treatment plan for the individual. This knowledge includes information about the patient's wants, needs, and preferences as well as social, living, economic, and insurance information. When all three components are organized appropriately in practice, they each contribute to the expert decision making used by the practitioner when creating care plans to identify, prevent, and resolve drug therapy problems. Traditionally, the patient knowledge component has not been included in the didactic curriculum and has not been taught in conjunction with its relationship to clinical knowledge and skills.

The ability to make decisions using all three of the components is essential to successful practice. When all three components are consistently utilized by the practitioner, the practitioner can adjust his or her wealth of clinical knowledge to drawn upon those components that are appropriate for an individual patient based on the personal knowledge of the patient. This zone of knowledge is represented by the overlapping of the patient knowledge and clinical knowledge circles. Likewise, the overlap between the clinical skills and clinical knowledge is representative of the zone of knowledge that includes the assessment questions and skills which would be appropriate for different medications and disease states. When all three of these components are applied in pharmaceutical care practice, they intersect to form the zone of expert decision making

that allows for the practitioner to make the most appropriate treatment decisions and care plans for this individual patient.

The use of all three components to make expert decisions is one of the many ways that pharmaceutical care practice is distinguished from prescription education at the point of dispensing and other health care provider services. For example, when providing prescription education to a patient picking up a new medication, the pharmacist may draw upon medication knowledge and basic communication skills, but the integration of the patient as an equally important component is not used.

Additionally, although nurses, case managers, and physicians have provided pharmaceutical care, the degree to which they are able to integrate the medication knowledge into the decision making process is not as complete as the ability of the pharmacist with his or her expert level of medication training. Although the pharmacist may traditionally have the expert clinical knowledge regarding medication therapy, they are at a disadvantage compared to other health care providers in the ability to include the patient in decision making.

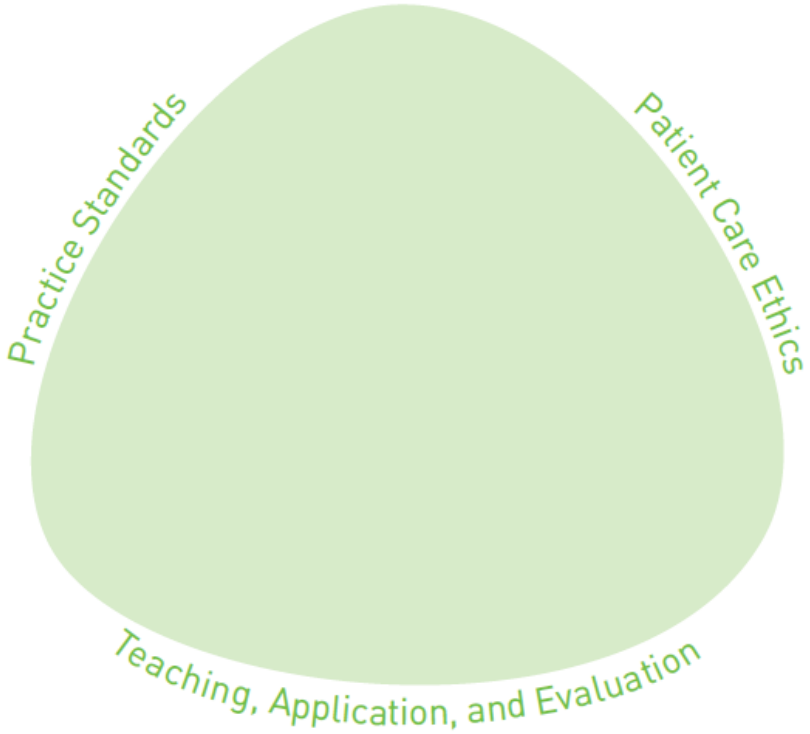
Finally, the coordination of the clinical knowledge, clinical skills, and patient knowledge requires restructuring of how the practitioner "knows" each component. An explanation

of how these three components are used in pharmaceutical care practice is presently missing from pharmacy curricula resulting in the restructuring of knowledge occurring once the practitioner is in practice. Many new practitioners and residents refer to this as "relearning" and often express feeling that when they begin to apply their medication knowledge in the context of an individual patient that they need to learn how to organize the medication knowledge around the new patient knowledge. This is similar to how traditional medication and disease state references organize the respective medication or disease state information. This is done in a manner that is entirely separate from how the medication or disease would interact and impact a complex individual. The pharmaceutical care plan guideline format was developed to address this in pharmaceutical care practice. This format organizes disease state and medication information upon the assessment process used within pharmaceutical care practice (Cipolle 2007). The pharmaceutical care plan guidelines were developed, in part, as a response to the challenges in translating population based guidelines to the care of an individual patient. Population based guidelines need to be reconsidered and organized by the practitioner in the context of the patient in front of them rather than taken at face value as apply to anyone who has a particular disease state. When integrating the complex and discrete variables the practitioner takes into account the patient's medication use, disease state pathology, and patient experiences in making decisions. This process of integrating the variables involved for assessing medication appropriateness, effectiveness, safety, and compliance for an individual is informed by population based guidelines and drug references, but ultimately the determination of the

best course of action for the individual relies with the practitioner's decision making, rather than a prescriptive guideline or care plan.

The integration of the clinical knowledge, clinical skills, and patient knowledge is assisted by the ethics of the professional practice, the practice standards, and the evaluation process used to assess competence in practice. This structure can be translated into the curriculum by adding teaching and knowledge application to the evaluation process. These components comprise the second structure of the curricular framework. The second structure of the framework represents the curricular foundation and is shown as a triangle surrounding the intersecting circles. As shown in Figure 7: Curricular Foundation, the curricular foundation components maintain the social norms and ethics and are similar to those found in pharmaceutical care and other patient care practices.

Figure 7: Curricular Foundation



This structure represents core components of a patient care culture; however, it is not a full description of the practice culture or practitioner development at patient care practice sites. To begin to prepare student practitioners for practice, the curricular foundation reflected in this framework needs to be integrated early and consistently throughout the curriculum. This will assist in maintaining the connection between the practice skills, clinical knowledge, and patient knowledge. The curricular foundation components include patient care ethics, pharmaceutical care standards of practice, and learning, application, and evaluation strategies within the classroom. The patient care ethics that are utilized in pharmaceutical care are included in the educational framework because the educational experience lays the groundwork for the practitioner's future behaviors,

relationships, and ethics in practice (2000). In summary, the ethics of the practice must begin to be fostered upon entry to into the profession in the curriculum.

The three curricular foundation components comprise a triangle that envelopes the curricular content. In the curriculum, the curricular foundation components together create a context for the effective and efficient delivery of the required knowledge and skills for pharmaceutical care practice. This context serves two purposes: to provide an organizing framework for the practice skills, and clinical and patient knowledge for application and to mirror factors that contribute to the culture of pharmaceutical care and patient care practitioners.

This conceptual framework serves the dual purpose of both representing essential elements of pharmaceutical care education as well as those of pharmaceutical care practice. The purpose of this research is to develop the curricular framework required to develop entry level pharmacists who can competently provide pharmaceutical care. This is not to say that this conceptual framework is all encompassing of what the practitioner may need to know and be able to do in practice. There are several practice contextual factors that were deliberately not evaluated in this research. Contextual factors include knowledge and skills related to: practice setting and organization; government, industry, and professional policies; regulations; educational systems; and payment. In order to practice, the practitioner must be aware of and possess the knowledge and skills as to how these factors relate to and inform practice. However, these factors do not change the

core practice skills or knowledge required to provide care for an individual nor do they change the core cultural components of practice. Only upon defining the framework for educating to a professional practice has been defined can the educational requirements for the contexts in which this practice occurs be determined. Integrating these practice context factors into this curricular framework would be akin to teaching dental students how to market their services prior to teaching them how to identify a cavity.

The following sections will present each component of the conceptual framework, how it was supported by the observation and interview data, and how the component can be integrated throughout a pharmaceutical care based curriculum. The internal components that represent the curricular content will be presented first. Then, the curricular foundation which holds the curricular content in context will be discussed.

Curricular Content

> We begin teaching with a fundamental question: "What does the student need to know about the patient?" Program content, then, should be organized around the patient. The second question is: "What knowledge does the student need to meet the patient needs?" (Cipolle, Strand et al. 1998).

As defined by Friedson, a professional must have a unique set of knowledge and skills that can be applied to a societal problem (Freidson 2001). For pharmaceutical care practitioners this unique contribution is the ability to identify, resolve, and prevent drug therapy problems using their expert knowledge regarding medications for the benefit of

an individual's health. In order to understand how the clinical knowledge can benefit the patient, the practitioner must have knowledge regarding the patient and his or her medication experience. In order to gather this information from the patient and to assess his or her medication related needs the practitioner must be competent in the pharmaceutical care practice skills. More importantly, the practitioner must assume responsibility for possessing the appropriate clinical knowledge, patient knowledge, and practice skills and utilizing each in conjunction at the appropriate point in the care process in order to meet the pharmaceutical care practice standards and philosophy of practice. Therefore, the curricular content in the pharmaceutical care based curriculum must include: understanding the patient, clinical knowledge of medications and medical conditions, and pharmaceutical care practice skills.

Challenges in describing tacit knowledge

During the practitioner observations, the researcher freely observed the types of questions the practitioner would ask the patient and the information the practitioner provided to the patient regarding drug therapy problem identification and the care plans. During the observations, it was often challenging to understand the data elements that the practitioner was identifying or using when talking to patients. For example, it was very hard to observe if the practitioner was using any knowledge regarding a medication's pharmacology. However, it was often observed that the practitioners would use knowledge pertaining to medication names, strengths, dosage forms, onset of action, dosing and dose adjustments, medication administration, and side effects. It was the

more theoretical or basic science knowledge that was not directly observed. During the practitioner interviews several practitioners tried to describe the need for the basic science knowledge, such as pharmacotherapy, pharmacology, and pharmacokinetics, as well to compliment the more practical or directly applicable knowledge. For example, Esme was challenged in responding to the researcher's question on what is required for practice by saying:

> I don't know. You definitely need your foundational classes, and I know it's challenging to infuse patient care in, and I wouldn't want to cut back any of those basic science classes, the pharmacology, just because you really need to know that. I mean, that's where nurse practitioners and PAs, some of that gets cut out, and then they come to practice and they're like, "Uh." So that's — I don't know. Yeah, I don't know.

Similar to Esme's response, when the researcher directly asked the practitioners to describe the knowledge that they needed to do their work the responses were often vague and commonly described common college of pharmacy courses rather than specific content. When Lane was asked what he needed to know to work successfully with patients, he made the link to the basic science knowledge thatwould relate to his ability to provide therapeutic alternatives for his patients.

> And then how they work — like there are different mechanisms of action, like how the drug works, so just knowing the drug name and saying, you know, "You could try X, Y, and Z," to me, doesn't do it. I want my practitioner, be it my MTM pharmacist or my doctor, to say, "You know, if I'm going to prescribe you Byetta for diabetes, why would I take that one over an oral pill?" You know, what's the difference? What can I expect as side effects? What is it supposed to be doing in me when I take it?

In Lane's example he describes how the knowledge of the mechanism of action and pharmacology should be used to explain treatment recommendations. Several

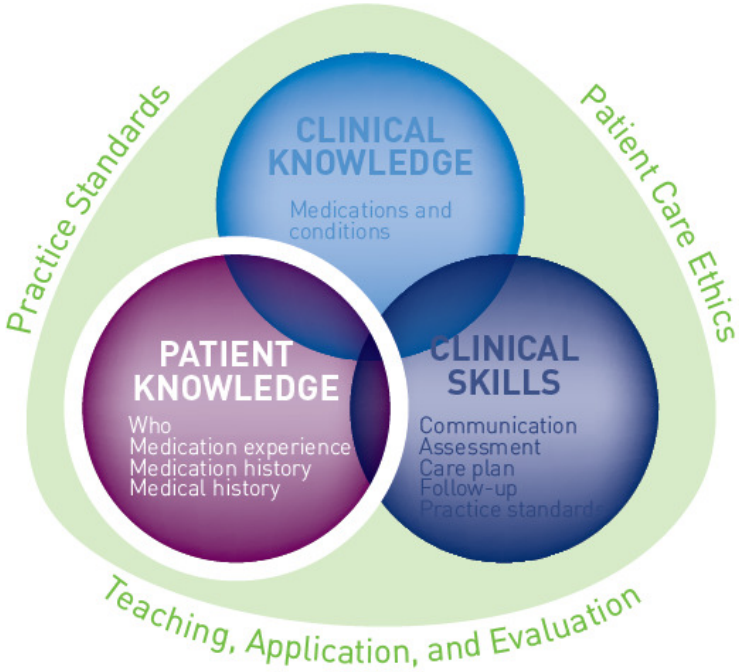
practitioners also described the expectation that student practitioners should be able to use pharmacotherapy knowledge in their decision making. They explained how patient cases can help to develop that integration of the "foundational knowledge" (i.e. pharmacotherapy, pharmacology, pharmacokinetics) with its practical application at the patient level.

The paradox of being able to describe the thought process, but not the knowledge components that were used in the decision making may be related to the development of the practitioner and his or her tacit knowledge (Polanyi 1958). In order to address this gap, the researcher relied heavily upon the components of the pharmaceutical care standards of practice, measurement criteria, and previous research on determining the skills, knowledge, and ethics of pharmaceutical care practice (Cipolle, Strand et al. 1998; Losinski 2005). The practice observations and field notes were used to identify areas of congruence and incongruence between this and previous research. Any information that could be gathered from the practitioner interviews was also used for this process.

Patient knowledge: "So I can make better decisions"

> I know that there's other places that people work that you don't really get that, because you don't see the same patients over and over, but that's something I really liked about this place, just getting to know somebody better, and I feel like I can make better decisions to help them once I get to know them better. **Alice at Voyageurs Clinic**

Figure 8: Patient Knowledge in the Curricular Framework



In patient-centered professions, the professional must not only possess expert knowledge and skills in a particular domain, but also be responsible and competent in integrating the patient into their decision making as shown in as shown in Figure 8: Patient Knowledge in the Curricular Framework. In order to begin to understand how to integrate another human being with free will, wants, needs, beliefs, preferences, and biases that may be factually incorrect and radically different than those of the professional, the professional must be open to, and desire to, understand how the patient makes decisions about his or her health and medications in the context of the patient's life. In pharmaceutical care practice it is impossible to make patient-centered drug therapy decisions and care plans without understanding the patient and his or her medication experience.

Figure 9: Patient Specific Knowledge and Figure 10: Observed Patient Specific Knowledge represents the data points identified in this research that comprise knowledge of the patient that is used by pharmaceutical care practitioners when making drug therapy decisions. Figure 9 presents patient specific knowledge points that were previously identified by other research and confirmed as part of this research. Figure 10, however, presents patient specific knowledge points that were collected by the researcher that were not previously described in other research. Collectively, these data points are the foundation from which the practitioner makes patient-centered decisions and are the conduit for the practitioner to apply his or her expert clinical knowledge for the benefit of the patient. Within the curriculum, the patient specific knowledge should be taught as an essential component of the decision making process and the context in which clinical knowledge is utilized.

Figure 9: Patient Specific Knowledge

- Medication Experience
  - Wants
  - Needs
  - Preferences
  - Expectations
  - Concerns
- Past Medical History
  - Allergies and Adverse Drug Reactions
  - Immunizations
  - Past Treatments
  - Effectiveness
  - Safety
- Current Medication List
  - Indication
    - Onset
    - Signs
    - Symptoms
    - Lab Values
  - Medication
    - Dose
    - Dosage form
    - Frequency
    - Dose history
- Personalized Goals of Therapy
  - Effectiveness Parameters
    - Baseline
    - Previous evaluation
    - Current
  - Safety Parameters
    - Baseline
    - Previous evaluation
    - Current
- Comorbidities

Figure 10: Observed Patient Specific Knowledge

- Chief Concern
  - Signs
  - Symptoms
- Understanding of medications and administration
- Insurance/Cost
  - Cost to patient
  - Ease of access
- Patient factors that may impact ability to take or access medications

The first category included under patient knowledge is the patient's medication experience. Primarily, the medication experience is used by the practitioner to create a context for prioritizing and identifying drug therapy problems and developing an understanding of which drug therapy problem resolutions may be the most desirable for this patient as an individual. During the observations, all practitioners actively asked questions that addressed components of the medication experience and many practitioners used this information as part of the explanation of their care plan. In the first quotation of this section by Alice and the quote below by Esme, the practitioners also stressed the importance of understanding the patient and patient's medication experience.

> But I think you do need to have knowledge of that patient and their behavioral part and are they not motivated or they're not taking this because they're afraid of taking meds or whatever.

Beyond the patient's medication experience, there are several other patient knowledge data points that the practitioners used in making decisions about drug therapy. In Pharmaceutical Care Practice, three dimensions of patient information necessary for making drug therapy decisions were defined: personal, environmental, and physiological along three time frame dimensions: present, history of present condition, and background (Cipolle, Strand et al. 1998). Figure 9: Patient Specific Knowledge includes the components that were confirmed in multiple practice observations. Components from the practice standards include the Past Medical History, Current Medication List, and Personalized Goals of Therapy bullet points. Figure 10: Observed Patient Specific Knowledge includes the additional data points that were observed during the course of

the research at multiple sites and were clearly demonstrated to impact practitioner decision making, but not found in previous research.

For example, many practitioners, especially when recommending medications that were new to the market and may not be covered by the patient's insurance, would discuss the cost of the medication and present different, lower cost medications from which they often let the patient select. In patients who were starting insulin or inhaled medications, the practitioners would demonstrate correct administration and help the patient with medication administration techniques. In both of these situations the education that was provided to the patient would be presented in the context of the practitioner's knowledge about the patient. This would be expressed by the practitioner by saying, "I know that we want to get the most medication effective with the lowest cost." Or, "I understand that it's hard for you to keep your inhalers with you because of your job."

When assessing the patient's understanding of his or her medications, the practitioner uses the information to assess the patient's ability to successfully manage and administer his or her medications, determine how the medications are actually being used by the patient, and reconcile these data to determine if the desired goals of therapy have been achieved. The quotation below is from the interview the researcher completed with Esme at Mammoth Clinic. They are discussing a particular patient encounter where Esme was working to use the information she was receiving from the patient to achieve a

more complete understanding of the patient, her medication taking behavior, and how the medications were working.

> **Researcher:** It seemed to me, from observing, that a lot of what you were trying to understand was what was actually going on with her insulin and her blood sugars and her timing so that you could — it looked like so you could adjust things properly to respond to them, and I was confused half the time. There were a few times where I was like, okay, I think I understand what they're describing now, and then you'd press on further, and, no, I was completely wrong. How do you get to the point where you feel like you understand, or what do you need to know to be able to make those adjustments with a patient, especially with the insulin?
>
> **Esme:** Yeah, that's experience. I mean, that's just adjusting insulin or getting used to adjusting meds over and over and over and working with patients. Sometimes it's a little bit — you always hear this is more of an art than a science, working with patients and kind of figuring them out, and this particular couple — I mean, this lady's been admitted to the hospital several times, so she's not an open book. I mean, there's a lot going on there that we're still trying to pull out, and knowing that we need to pull it out to see what she actually does at home, and you know that there's confusion there with her history. So just having multiple visits with her, I knew she was just a complex lady. So I guess the relationships you build with patients are important, so you have to learn how.

Additionally, through the development of this relationship the practitioner and patient can communicate openly regarding the patient's desires about his or her health and medications and the practitioner's need for particular information in order to help the patient achieve such desires.

At the beginning of the patient appointments, especially during the first appointment with a patient, the practitioner would ask if he or she had any questions or concerns to address. In some cases the patient would describe a particular question or medication related issue and the practitioner would either start by addressing this issue or make it a primary focus

during the appointment. When the patient did present a specific concern, the practitioners often asked follow up questions pertaining to what the patient was experiencing, what they understood about the question or issue, and temporal questions related to timing specifically with regards to medication ineffectiveness or side effects.

The appointment and the information that was gathered from the patient would vary depending on the patient's responses to the practitioner's initial questions and if it was the first time that the practitioner had cared for the patient. In all the appointments, however, the practitioner would assess the patient's understanding of the medications. This assessment included fundamental questions like, "Do you know why you're taking this medication?" or "How many times a day do you take this pill?" If a patient was taking a medication that is administered via an inhaler or injection, the practitioner would ask questions to assess the patient's ability and knowledge about how to administer the medication. Such questions sometimes included demonstrations, either by the practitioner or the patient or both, to ensure that the patient was getting the medication as necessary.

After a drug therapy problem was identified the practitioner would create a care plan to resolve or prevent any additional problems. When presenting or deciding upon a preferred medication option for resolving the patient's drug therapy problem, the practitioner would present options that took into account the patient's understanding and capacity for administering the medication as well as insurance coverage and cost. Often

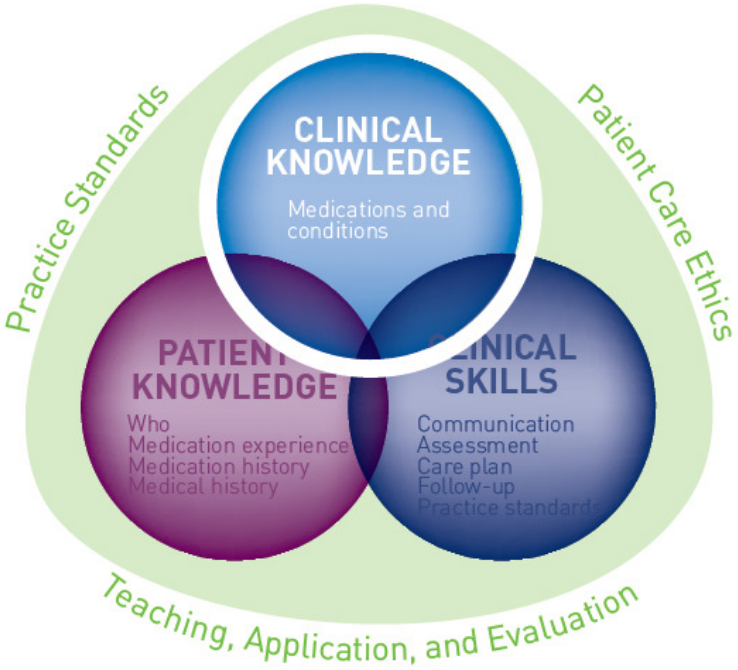
in situations where the practitioner was considering a medication that was newer to the market, the practitioner would let the patient know of potential cost issues and that the patient's insurance may not pay for the medication.

For example, the researcher observed Lane at Old Faithful Clinic presenting an additional plan to a patient in case the medication he was recommending was not covered by the patient's insurance or was too expensive. The practitioner's consideration for the impact that the medication would have on the patient's life beyond its therapeutics effect was often used when narrowing down therapeutic options and deciding upon a preferred medication option for the resolution of the drug therapy problem. For a different patient observed during this research, Lane was narrowing down options for an additional therapy for diabetes. He offered a new therapy that had demonstrated efficacy, fewer reported side effects, and once daily dosing but cautioned that it may not be covered by the patient's insurance since it was newly approved therapy. Lane then offered another option with a similar mechanism of action, slightly higher rate of side effects, and twice daily dosing that would be paid by her insurance. Although Lane had to utilize his extensive medication knowledge in order to do this, he described during his interview that he also was integrating the patient's lifestyle into his medication knowledge. However, without this knowledge about the patient, the recommendations that the practitioner would make would not be as patient centered and may not be appropriate and accessible for the patient.

Clinical knowledge: "They have to understand why we make decisions"

[Students need to know] core common things. They need to have a good working knowledge so that they should be at the point where they've got the drug knowledge, the pharmaceutical dosing, the pharmacology, pathophysiology. They should have all that background so what they're able to work on in rotation is applying that to patients, applying that to real people on a day to day basis and interacting with those patients. **Peggy at Yosemite Clinic**

Figure 9: Clinical Knowledge in the Curricular Framework



As described previously, the pharmaceutical care practitioner's clinical knowledge is the unique expert knowledge that is used in pharmaceutical care practice. For the purposes of this research and pharmaceutical care practice, clinical knowledge refers to medication knowledge and basic knowledge that pertains to the indications for drug therapy as shown in Figure 11: Clinical Knowledge in the Curricular Framework. The clinical knowledge becomes the cornerstone of what makes the pharmaceutical care practitioner

beneficial to the health care team and the patient. This knowledge, however, must be used in conjunction with the practitioner's knowledge of the patient in order to be applied to the standards of pharmaceutical care practice.

Clinical knowledge of medications and conditions has existed much longer than the practice of pharmaceutical care. To this end, the determination of the essential knowledge about medications was done outside of the context of the patient and meeting the drug related needs of individuals. This has resulted in pharmacy curricula and accreditation standards having a multitude of unrelated topics that are deemed valuable to entry-level practice, but are not requirements for practice. The extent to which this has resulted in pharmacists who do not possess the medication knowledge that is required to provide pharmaceutical care to patients is unknown.

Although practitioners will continue to expand their knowledge base throughout their careers, within the pharmaceutical care based curriculum the required level of knowledge for entry-level expertise on medications and conditions must be clearly defined. Furthermore, a structure for what information should be known and sought out about any medication when making decisions about the identification, prevention, or resolution of drug therapy problems must be defined and modeled throughout the student practitioners' educational experiences. Figure 10: Condition Specific Knowledge and Figure 11: Medication Specific Knowledge outline the clinical knowledge components that were identified or confirmed as part of this research.

The knowledge components presented in Figures 12 and 13 come from both the existing literature and the observations and interviews that were conducted as part of this research. Both figures reflect the medication and medical condition data elements that need to be known to identify, prevent, and resolve drug therapy problems. The drug therapy problems were used as the framework for identifying these data elements because they are the unique contribution of the pharmaceutical care practitioner and represent the professional problems in the domain of pharmaceutical care. Therefore, the knowledge to manage drug therapy problems would be an extension of how such problems are defined. Similarly, the drug therapy problem categorization used in this research is defined in such a manner that is represents a logical thought process that can be used for any patient, any medical condition, any medication, or any combination of the three (Cipolle, Strand et al. 2004). The universality of this problem categorization lends itself nicely to the creation of a comprehensive set of data elements that represent categories of data that relate to all medications or medical conditions.

Figure 10: Condition Specific Knowledge

- Epidemiology
  - Incidence
  - Prevalence
- Diagnosis
  - Signs
  - Symptoms
- Pathophysiology
  - Etiology
  - Disease mechanism
  - Causes
  - Normal function of body in relation to disease changes
  - Co-morbid condition complications
- Goals of Treatment
  - Maintenance
  - Curative
  - Prevention
  - Palliative
- Stages of Disease
  - Severity
- Treatment Options
  - Non-drug
  - Lifestyle
  - Procedural
  - Medication

Figure 11: Medication Specific Knowledge

- Name
  - Brand
  - Generic
  - Drug Class
- Indications
- Goals of Therapy
  - Prevention
  - Curative
  - Maintenance
  - Monitoring
    - Frequency
    - Lab
    - Non-lab
    - Effectiveness
    - Safety
- Dose Regimens
  - Doses
    - Starting dose
    - Minimum dose
    - Maximum dose
    - Frequency and dose intervals for changes
    - Procedure for discontinuing therapy
  - Dosage forms
  - Frequency
  - Administration
- Side effects
  - Allergic reactions
  - Incidence
  - Relationship to dosage
  - Onset
  - Resolution options
- Contraindications and precautions
- Absorption, Distribution, Metabolism, and Excretion
- Pharmacology/ Mechanism of Action
  - Molecular
  - Cellular
  - Site of action
  - Duration of action
- Drug Interactions
  - Mechanism
  - Reaction
  - Severity
  - Incidence
- Cost and Insurance Coverage

After the practitioner observations and interviews, the data elements were reorganized to mirror the integration of the foundation and practical knowledge of medications and medical conditions. This included combining elements of pharmacokinetics like bioavailability and physiochemical properties under the headings of absorption and distribution.

Finally, during the observations additional data elements were identified pertaining to medication cost and insurance coverage. Similar data were added to the patient knowledge elements as well as shown in Figure 10: Observed Patient Specific Knowledge. It was commonly observed that the practitioners would provide multiple therapeutic options based on the patient's insurance coverage and cost of the medication.

The data elements in Figures 12 and 13 are a starting point for understanding the clinical knowledge required in practice. Additional data elements may be necessary and upon further research some data elements may not be required. However, Figures 12 and 13 represent a compilation of information that student practitioners will need to be able to have a command of in the literature or other resources.

Colleges of pharmacy must also determine which medications and medical conditions are important to include in the curriculum in order to prepare students for entry level practice. Medications used to treat the most common medical conditions across various age groups (i.e pediatric, adults, geriatric) or locations of care (i.e. ambulatory, hospital,

long term care, hospice) may provide the student practitioner with the breadth and depth of knowledge that is required for entry level practice. Schools of nursing and medicine have many structures for determining which manner is the most effective (Kern, Thomas et al. 1998; Colleges 2005; The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005; Stern and Papdakis 2006). However, it appears as if all of these structures continue to focus on what is most commonly encountered in practice. For example, Esme identified several common therapeutic areas and medical conditions that are foundational in her practice.

> just a general good knowledge of pharmacology and therapeutics is very helpful, probably more in depth — I mean, I think there are certain areas, if you're going to work ambulatory, that you need to know a little bit more in and out, like coagulation and asthma and diabetes and just general cardiology, depression.

Without the identification of a preferred organizational method for clinical knowledge in the health professions, it will be up to colleges of pharmacy to identify which method may best prepare student pharmacists for practice. However, the most common disease states treated with drug therapy, the medications used to manage those conditions, and most common drug therapy problems identified and resolved in pharmaceutical care practice for those conditions should be used to inform the curriculum and keep it grounded in practice.

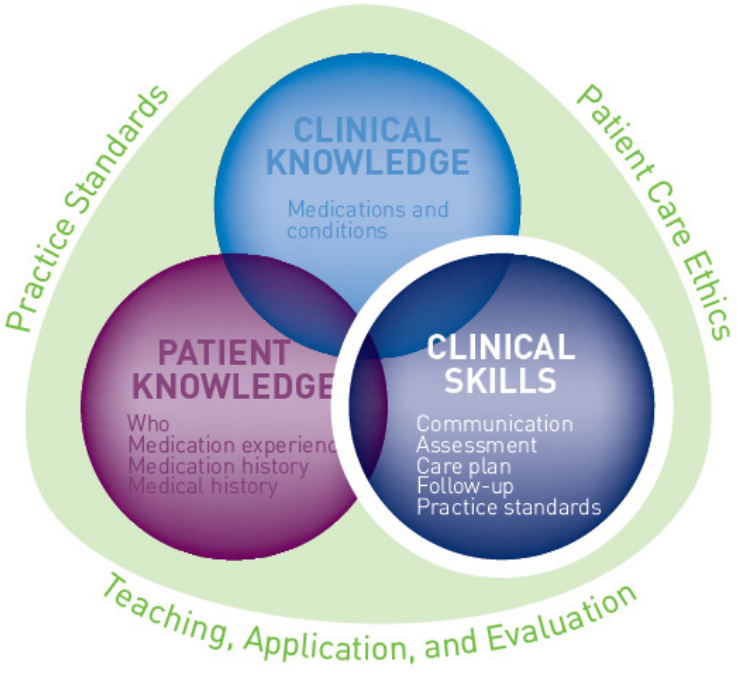
Mastery of clinical knowledge and the gathering and integration of patient knowledge is essential for the provision of pharmaceutical care. However, pharmaceutical care is a professional practice and this knowledge must be applied for the benefit of the patient. In

order to apply this knowledge, the practitioner must possess the skills required for practice.

Clinical skills: "The tools for practice"

> On the pedagogic side, modern medicine, like all scientific teaching, is characterized by activity. The student no longer merely watches, listens, memorizes; he does. His own activities in the laboratory and in the clinic are the main factors in his instruction and discipline. An education in medicine nowadays involves both learning and learning how; the student cannot effectively know, unless he knows how (Flexner 1910).

Figure 12: Clinical Skills in the Curricular Framework



As implied by the term *health care practice* and emphasized by Flexner, health care providers must be able to act out and apply their knowledge. As shown in Figure 14: Clinical Skills in the Conceptual Framework, the clinical skills that are required to provide pharmaceutical care are explicitly defined in the pharmaceutical care practice standards and are what allows the practitioner to interface his or her clinical knowledge

with the needs of the patient. Clinical skills may be most intuitively associated with common medical procedures or diagnostic tests. However, clinical skills are more broadly defined as "any discrete and observable act of medical care. Clinical skills are *the* foundation of the clinical method competencies through which clinical practice is realized" (The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005). However, in addition to the required observable, explicit skills for the practice of pharmaceutical care there are also underlying skills which are common to all health care practitioners: communication and reflection.

Assessment, care planning, and follow-up

The pharmaceutical care practice standards outline the specific observable activities in the pharmaceutical care process. These observable activities describe the minimum level of performance that must be completed at each pharmaceutical care visit. During the practice observations, the researcher was able to observe the practitioners performing the standards and corresponding measurement criteria described in Appendix 7: Standards for Pharmaceutical Care Practice. However, the researcher did not observe all measure criteria being performed for every patient at the observed visits. The measurement criteria represent a continuum of care that could not be observed during the limited practice observations completed with each practitioner. Additionally, the determination of value-laden components of the measurement criteria such as *pertinent, complete, or*

accurate could not be factually determined by the researcher although there was no indication for the research to assume that these were not true.

In addition to the measurement criteria defined in Appendix 7, the researcher observed the practitioners commonly performing basic physical assessments on the patients in order to gather information to assess medication effectiveness and safety. Most commonly this was in the form of taking the patient's blood pressure which every practitioner in this research was observed performing. The ability to perform basic patient physical assessment is implicitly included in the measurement criteria; however, these skills must be explicitly included in the curriculum. Specifically, physical assessment skills that allow for assessment of medication effectiveness and safety for common conditions and medications must be included in the curriculum. Similarly, some practitioners demonstrated proper medication administration techniques for their patients, specifically in the form of administration of insulin and inhalers. Although knowledge of *how* to administer such medications is included in the clinical knowledge heading the practitioner must also be able to *perform* and *educate* the patient using his or her patient education and medication administration skills.

No matter where the patient and student practitioner meet in the continuum of care, the student practitioner must be able to demonstrate consistent achievement of the standards of practice and the corresponding measurement criteria. The measurement criteria and

standards of practice should be used as the foundation for the clinical skills, but must be support by communication, critical thinking, and reflection skills.

Communication skills: "Information you need at the appropriate level"

> It is important that communication skills be guided by the principles that govern professional skill development in general. Achieving effective professional communication skill is a *continuous* process developed over a lifetime of practice. Because individual communication skill learning requires awareness of one's personal communication style, the educational process in this respect must be *learner centered*. Because communication involved at least two interacting individuals, the learning experience must also be *relationship centered*, with appropriate attention to learning to observe, understand, and facilitate relationship-building (The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005).

In addition to being able to perform an assessment, develop a care plan and follow up with a patient, health care practices require the interaction of the practitioner and the patient. This interaction requires the practitioner to possess essential communication skills which are recognized as a core skill set across many health professions as shown in Figure 14: Clinical Skills in the Curricular Framework (O'Connor 2001; The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005; Accreditation Council for Pharmacy Education 2006). The pharmaceutical care practitioners in this research demonstrated and repeatedly expressed a need to communicate competently with patients and colleagues and to be able to do so using written, verbal, and non-verbal communication. Peggy at Yosemite Clinic articulated the communication skills she expected the student practitioners she precepted to have as well as what it meant to her to be competent in communication.

> I think they need to have basic communication skills so that you can put them in a room with a patient and not offend anybody, but I also recognize that some of the questioning that you need to do and those interviewing skills has to come with those real interactions. They should have good interviewing skills, I think, at that point too, and good communication skills, especially with other healthcare professionals and recognizing that that's only going to get better with more and more experience, but they should be pretty competent to communicate with patients, make decisions, make recommendations, and communicate those appropriately with the other healthcare team members. And in terms of patient communication, competent communication means that you're able to get the information you need from the patient and you're able to educate them at the appropriate level in a way that the patient can understand, and if that's difficult, because I think it is difficult for — to educate appropriately in lay language sometimes, then at a minimum, they need to be able to know that and know the questions to ask the patient to know if they got the message.

During the practitioner observations, the verbal and nonverbal communication skills with the patients were most apparent as the practitioners were working to gather the necessary information from the patient and provide recommendations and education. For Joan at Glacier Clinic, appropriate communication with her patients often varied according to the patient's culture, language or education level. Her ability to communicate effectively and in a culturally appropriate manner was also a way of enacting the pharmaceutical care practice values.

> So you have to establish the trust, and with the cultures that can be difficult. You know you have to maintain your physical space, and you know the eye contact can be very disruptive in some cultures, so, too much eye contact, no personal contact then taking vitals, and, you know once that trust is established, then you know it's not that I'm not comfortable with them, but I think they become more comfortable with me. It's not like I have evidence that I would say something inappropriate, but something I might say might be taken inappropriately, so I try to be cautious about how I word my questions and what I might say. The thing to remember is that not everything interprets and not

> everything translates, so what would seem simple to us in English in transferred a whole different way in another language, and, so, it's the understanding. Not everything can be 100% interpreted.

Awareness of how factors such as culture, education level, and language may influence how to effectively communicate with the patient, is similar in importance to understanding the patient's medication experience in order to create an effective care plan. These variables were perhaps the most apparent to the researcher, but identifying and responding to the patient's response was described by Betty at Grand Canyon Clinic as being very important to success in practice and developing a therapeutic relationship.

> So I think learning to — and that's the thing for my students, learning to deal with people that are really emotional, if it's anger or if it's extreme sadness or whatever it is, how to react to that, and if you clam up and you act all strange, it's not helping the situation. So those kind of things where you, you know, just grab a Kleenex, you know, take your time, it's not a problem, you know, and just being calm and like kind of not reacting, at least not overtly, to things that they're doing. I think I've learned over time you just need to do that so that they're comfortable. If they're comfortable, you're going to get a lot more done than if they're not.

Lane described not knowing how to respond to the patient's can be a significant barrier to providing pharmaceutical care no matter how clinically competent the practitioner may be.

> So being — improvising, understanding non-verbal and verbal cues and knowing where to go with that, because if they learn all this clinical knowledge in school, and then you can't apply — because you'll — the first patient that they'll see at the clinic, they'll go, "Oh, my God, I didn't run into this scenario at school, so how am I — how can I think out of the box, so to speak? How am I going to communicate with this patient?"

In each instance, Joan, Betty, and Lane were describing the need for patient-centered, responsive verbal and non-verbal communication. Peggy also stressed the importance of

helping students to understand not only how to ask questions, but also which questions to ask, and how to pose the questions to the patient in a way that facilitates the practitioner's decision making:

> I've been teaching students, helping them to realize that how you ask a question is as important as the answer, because if you don't dig deep enough, you're missing key information that affects your decision making, and I think those skills are just really, really critical, and — because once you have all the information, you can make good clinical decisions, and then you fall back on your drug knowledge and all that other stuff.

The practitioner must also be able to communicate with colleagues, including those from other health professions. At Yosemite and Mammoth Clinics the researcher observed the practitioners engaging in with direct verbal communication with the patient's other health care providers about the most appropriate care plan for the patient. In both cases the practitioner used different language, phrasing, and body language with the health care provider colleagues than with the patient.

In addition to verbal and non-verbal communication, pharmaceutical care practitioners, along with all health care providers, must be able to document their activities efficiently and appropriately. The ability to communicate the care provided in written format is essential for continuity of care, ethical practice, and legal reasons. During the practice observations, if the practitioner was observed between patient appointments, they would take the time to either complete documentation for patients that they had cared for earlier that day or review a future patient's documentation in order to prepare for the next appointment. The researcher had the opportunity to discuss with Peggy at Yosemite Clinic how reviewing other clinicians' documentation could be helpful. She described it

as useful for beginning to piece together the patient's health history prior to the patient appointment. Particularly, Peggy focused on understanding when medications were stopped or started, why they may have been prescribed for the patient, and previous symptoms or laboratory measures that may help her in completing her assessment.

Communication skills that facilitate effective communication with patients and health provider colleagues are an essential key to unlocking all other aspects of pharmaceutical care practice. Verbal and non-verbal communication skills must be developed by the student practitioner. These skills must include the ability to communicate competently and also to be able to observe and react to the patient's verbal and nonverbal communication in order to facilitate the therapeutic relationship. Documentation standards must be included as an integral part of practitioner communication throughout the curriculum. Student practitioners must learn to not only document the care they provide, but how to learn to use documentation to help facilitate care.

Reflection: "I think it helps everything"

> Finally, because improving communication skill is a lifelong process that relies upon the substrate of personal experience for identifying areas for further skill development, opportunities for *reflective practice* need to occur continuously and *explicitly* in one's professional education, beginning and throughout the four years of undergraduate medical education (The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005).

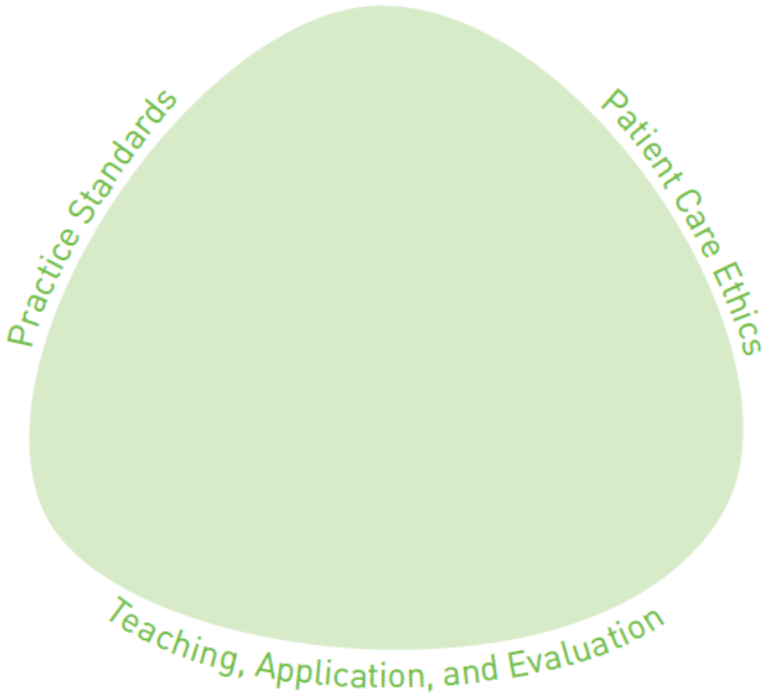
The skills required for critical reflection on one's own practice must not be overlooked or devalued. As described in the Teaching, Application, and Evaluation section of this

research, reflection is important for evaluation and personal growth in practice and can be used to assess the appropriateness and competence of one's practice. Reflective practice skills include ability to a) recognize and accept one's own assumptions and beliefs, b) the capacity to view one's behaviors and actions through the lens of others' point of view, and c) the ability to critique and integrate gaps between current and desired actions in practice (Schön 1987; Brookfield 1995; Hancock 1998; Driessen, van Tartwijk et al. 2008). Reflective practice is a habit that must be reinforced and modeled consistently throughout the curriculum in order to establish the practice and to learn how to integrate the feedback from it into the student practitioner's deliberate practice. The importance of reflection as an evaluation strategy will be discussed further in the curricular foundation section.

Curricular Foundation

As described at the beginning of this section and shown in Figure 7 Curricular Foundation, the curricular content alone is not enough to successfully prepare a pharmaceutical care practitioner. The foundation of the curriculum must provide a structure that lends itself to the necessary organization of the curricular content. All three components of the curricular foundation mirror those that exist in pharmaceutical care practice and provide authenticity to practice throughout the curriculum.

Figure 7: Curricular Foundation



The curricular foundation is comprised of patient care ethics, practice standards, and teaching, knowledge application, and evaluation strategies. The patient care ethics provide a component of the culture of the curriculum by setting forth guidance for how to prioritize decisions and actions in practice. The practice standards define the standard of care that must be provided during every patient encounter and provide guidance in the decision making process for identifying and resolving drug therapy problems. The teaching, knowledge application, and evaluation strategies define the role that each curriculum participant should have and how each role should assist in the evaluation of the students' performance.

Practitioner ethics: "Doing what's right or good"

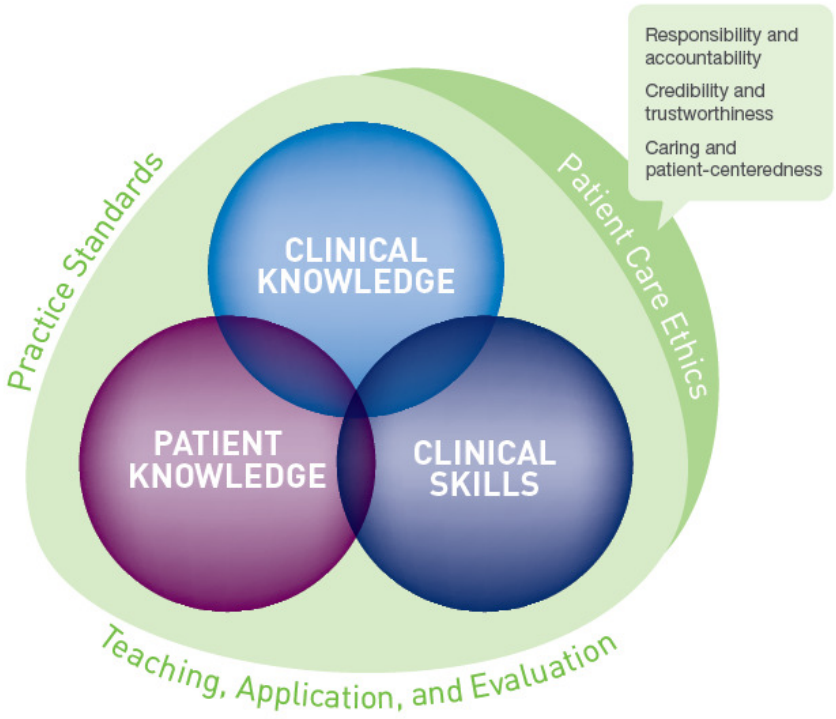
> I think you do need to care. I know everything is about money, but I think you do really need to care about people if you want to do patient care, because you need to — it's a lot of work, I think. So I would like them to care, I would like them to feel accountable, I would like them to feel responsible, and I would like them to go home and not sleep sometimes because they're worried about their patients. **Betty at Grand Canyon Clinic**

It is imperative to recognize that the provision of health care is a moral enterprise that relies upon values to translate its philosophy of practice into "right" or "good" actions. Ethics are defined as "a set of moral principles that help to establish right from wrong encompassed in the standards of professional behavior for a practitioner (Cipolle, Strand et al. 2004). Thomasma and Pellegrino described a distinct ethical component in medical practice which "moves beyond medicine into a philosophy of medicine which attends, in part, to examining judgments about which right decisions were good" (Pellegrino and Thomasma 1981). In any sense, the ethical component of practice is invaluable in the determination of "right" action by the professional.

Patient care ethics were identified as being a primary component of the development of the health care professional and are highlighted in Figure 15: Patient Care Ethics in the Curricular Framework. These ethics include responsibility, accountability, credibility, trust, caring, and patient-centeredness. During the practitioner interviews, responsibility and accountability were repeatedly described as a significant factor that directly shaped actions and decisions. At the beginning of this section, Betty echoes this as she describes

what she would like to see student practitioners demonstrate during their time at her practice site.

Figure 13: Patient Care Ethics in the Curricular Framework



Trust was described as being essential to the development of both the therapeutic relationship between the practitioner and patient and the practitioner's relationship with other health care providers. Often paired with trust by the practitioners was the importance of being able to provide useful, honest information to patients and other health care providers. The two components, trust and expert knowledge, formed the basis for the practitioner's credibility in pharmaceutical care practice. Finally, patient-centeredness and caring were expressed as being essential for the practitioner to be able

to make the most appropriate and effective recommendations that would benefit the patient.

Responsibility and accountability: "There's not a halfway"

In pharmaceutical care, the practitioner makes decisions that have the possibility to positively or negatively impact the patient's health. The ramifications of these decisions require the practitioner to be responsible for all outcomes of drug therapy and to be accountable for positive and negative, intended and unintended outcomes. Instilling the seriousness of assuming this kind of responsibility is an intentional part of many health professional curricula.

In this research, responsibility in pharmaceutical care practice is defined as the practitioner recognizing and accepting that he or she is the sole provider who will be accountable for all outcomes of a patient's drug therapy. The accountability for this commitment seems to be best illustrated by several practitioners' descriptions of waking up in the middle of the night concerned that they had not provided the best recommendation or worrying about their patients' health on the weekends. Oftentimes this was described as a sign that the practitioner had "joined the club" of practitioners. Betty at Grand Canyon clinic expressed this by saying:

> And I think it's actually [another MTM practitioner] that said something like that's when you know you're a practitioner, something to that effect, about, you know, when you go home and you lose sleep because of it, and that has happened. That's when you really know that you care and that you're doing everything you can to help somebody and that that trumps anything else and that this isn't just like filling out a piece of paper or

> trying to get a three out of three on this or get the S plus on this rubric. Like you need to follow through, you need to — if this person has issues and you don't know the answer, you don't just like ignore that part and tell them the three things you do know. Like you need to figure it out, or if you can't figure it out, you need to tell them that and give them some other options or refer them to somebody who can, you know, that type of thing, just kind of take — I think it all goes back to like taking responsibility for the whole deal, and you have to do it and you have to commit to it. You can't do it halfway. There's not a halfway. It's all the way or no way.

This is perhaps the most important factor for the success of a practitioner in practice. The practitioners would demonstrate their responsibility to the well-being of the patient in many very subtle ways often using patient care stories. These stories would be presented as patient cases, but provide an illustration of not only clinical decisions, but also the practitioner's internalization of the ethics of practice. In many of these stories, the practitioners express uncovering a piece of a patient's medication experience that was previously unknown or consequences of making a decision that they were uncertain about. These patient stories are always told in the context of an ongoing relationship with the patient, part of the continuum of that patient's life, and never as an individual event. For example, one practitioner shared a story in the context of something she had learned about managing a patient's warfarin, a blood thinning medication. It began as an example of a complex drug interaction that occurred because the patient was receiving medications from the emergency room and physicians at the clinic where the practitioner worked. However, as the practitioner was telling the story the extent of the practitioner's sense of responsibility to this patient was apparent. In this particular instance, the practitioner had identified a drug interaction and ordered an INR to assess how thin the patient's blood was. Since it was a Friday afternoon and the lab value came back within

the desired range the pharmacist recommended the patient to go home, not take any more of the warfarin, and then come back to clinic on Monday. On Saturday night, the practitioner shared that she woke up in a panic and proceeded to make herself sick worrying about if the patient was alright and if she had made the right decision to wait until Monday to reassess the patient.

These stories become how practitioners share their successes and setbacks in practice, but offer much more than that as they also illustrate how practitioners enact their commitment to their patients. They also offer an example of the extent to which the ethics of practice must be internalized by all practitioners, student practitioners, and faculty. Additionally, Betty's comment that the acceptance of responsibility and accountability cannot be done ***halfway*** is important when considering how these ethics must be fostered within the curriculum. Students need to be able to understand what this responsibility is, how they must demonstrate and embrace it and the critical appraisal of the ethics in practice by themselves and their colleagues.

However, many practitioners spoke of the responsibility and accountability they have in practice and described feeling underprepared for its weight. Additionally, two practitioners commented that they thought they understood responsibility, but did not know what it really meant until an event made them aware of it. Lane at Old Faithful Clinic had worked as a pharmacist in a community pharmacy for several years before he became a pharmaceutical care practitioner. His experiences and level of responsibility as

a pharmacist did not prepare him for pharmaceutical care practice. In the following passage, Lane describes the event that helped him to understand the level of responsibility that was now being asked of him in pharmaceutical care practice.

> But I think it changed dramatically for me when we went to electronic medical records and we could have collaborative practice agreements, and I thought, okay, now I can make my own clinical decisions and actually change things myself, and I didn't have to run [to the physician] — then I felt, okay, now the responsibility — I felt a more heightened sense of responsibility. Now it was more so than just recommending, where I go, ooh, the buck's going to stop with me on this one. So you feel that you have to be more responsible.

Ultimately, the responsibility and accountability experienced in practice came with the realization that the practitioner was the sole provider who would be managing the outcomes of his or her drug therapy recommendations for better or for worse. At Old Faithful Clinic, Lane shared a story about how a colleague helped him to understand what true responsibility meant.

> When I ran the pharmacy next to the clinic here, I would make suggestions for several years, but I never you know. When I first came over here and I said to Dr. Pound, "Hey, I think we should put this guy on metformin added to glyburide for his diabetes," and he said, "Well, go ahead and do that." And then I said, "Well, no, you have to write a prescription," so he threw me his prescription blank. I remember this. The first day — and I was like, "What?" You know, it was like ten years ago, and he goes, "Hey, if you want the responsibility or you're telling me he needs another drug," he goes, "take some responsibility." He goes, "Here" He signed his blank, just signed a blank prescription pad. He goes, "You put him on it, monitor him, see how he's doing." And I thought, wow, you know, I mean, I freaked out the first time doing that. I go, "I don't have that kind of authority." He goes, "You're asking for that, though," so I thought that was interesting, and I thought, yeah, I'm asking him to add another drug to it, but he goes, "When you take responsibility for it, like you own it," he goes, "then you'll understand what that means, you know, how much pressure you have, and you'll understand that," he goes, "you'll want to follow up on that rather than passing the buck onto the next doctor." So when you — when they give you a responsibility and that, like, "Hey, it's

> my decision, but I have to sign my name to it" and stuff like that, you do feel a sense like, okay, I've got to think twice about this.

This story is a cause for concern as Lane was in practice for months before he began to realize the commitment that had been expected of him from his first day in practice. More so, the bestowing of this level of responsibility and accountability for another's well being and life needs to be *actively* acknowledged due to the enormity and gravity of any negative impact resulting from not accepting it.

Additionally, the practitioners often described uncertainty as to their level of responsibility in relationship to their patient's physicians. For several, epitomized with Lane's story, they described a sense of waiting for the physician to grant them the responsibility to be accountable for the medication outcomes. Lane even went so far as to say, "…when they ***give*** you a responsibility like that…"

This may stem from the lack of prescriptive authority that the pharmacist have in practice. With Lane, he described a dichotomy between before and after his collaborative practice agreements, which allowed him the authority to initiate and modify certain therapies directly. Historically, the prescription had been the initiation of action by the pharmacist in the dispensing role. In pharmaceutical care practice, it appears as an indicator for initial responsibility for the pharmacists in this research. However, in pharmaceutical care practice the practitioner is responsible for making proactive decisions regarding patient care. The initiation of pharmaceutical care cannot be delayed until a physician requests the practitioner to take action.

The paradox of *assuming* and *being granted* responsibility for medication outcomes was clearly expressed by Betty when she was describing her frustrations in waiting for physicians to take action when trying to make changes to her patient's medications.

> I go between like being very concerned about being part of the team and everybody getting along and everybody coming to the same plan, and I think that's hugely important, but sometimes if like the physician is just a complete curmudgeon, screw you, I'm not working for you, I'm working for the patient, so if — you know, I'm going to work for the patient, not for you. So sometimes the ego stuff and the turf stuff, like just you get fed up with it, and I think you need to do what's best for the patient.

Previously, Betty had practice within a primary care clinic and had since moved to practice outside of a health system. Other practitioners who do not practice in a primary care setting also expressed the challenges of being physically removed from the patient's care providers. However, this physical separation did not change the level of care provided or the responsibility that the practitioner felt for the patient's well being.

The responsibility and accountability, to the patient and other care providers, shaped how the practitioner would make decisions and prioritize drug therapy problems in practice. While observing Joan at Glacier Clinic there was several times during which she would be interrupted by a question about a patient by other health care providers. These questions automatically became her priority and, in her words, caused her to have some "late days" at the clinic. For Esme at Mammoth Clinic, she links her inability to separate her patients from the rest of her life with her desire to constantly be improving as a practitioner.

> I mean, what I do, I'm invested in it, invested in my patients, so I do want to continually grow and improve it, and if you don't have that type of

> attitude where you believe in it and you constantly want to improve what you're doing, you may not be the best fit as a student, I mean, if you just really want to have a job that you go to and get your work done and go home, you know. I mean, oftentimes, work — I'm always thinking about work or how to do something different or — patients come up on my off time. I just can't always separate it.

Esme expresses her responsibility for patient outcomes and how that responsibility becomes her priority in practice. As she states that she "just can't always separate it," she is implying that patient outcomes happen continually in the patient's life world. The patient is constantly experiencing the positive and negative effects of their medications. The patient cannot separate the lived experience of their health and health care experiences from what happens with Esme in the exam room and Esme in turn acknowledges this as a part of her practice and as part of her role on the patient's care team.

Credibility and trustworthiness: "They're a team member"

At several points during the observations and interviews the practitioners would describe how they built or were building relationships with the other care providers in their practice settings. Each of these relationships needed to be developed one on one rather than having a general level of acceptance of a pharmacist's professional role in the practice setting. Joan describes this challenge and what helped her to make connections with her colleagues:

> I, you know, physically moved back to where the providers were so they could see me, use me as a resource and then you know they got to know me from that respect. Just doing a presentation about medication management just didn't do it, so, you know, we all kind of struggled

> getting appointments, and then after we started seeing patents and they could kind of see what we could do, then it just kind of took off.

Both Alice and Rosalie expressed similar stories from their residency programs in which they had to demonstrate credibility and trustworthiness as an individual practitioner with the providers in order to be integrated within the residency site. This was important to the success of each practice as it allowed the practitioner to become part of the care team and to be given greater autonomy and responsibility for patient care. The practitioners who were practicing at sites that had previously had a pharmacist providing pharmaceutical care were able to build from the reputation of the previous pharmacist, but still had to be able to demonstrate their own credibility in practice. This was especially true for Alice and Rosalie. Alice, who was a resident during this research, described it as follows:

> There's been a pharmacist here quite a long time, and [the residency preceptor] said when she started, it was like, "Oh, my God, when are you going to see patients? We haven't had a pharmacist for a week," and they were all freaking out. So, I mean, they really like having us there, and they appreciate us, which has been really nice, to be in a residency with such a supportive environment. Maybe after three or four months I started getting specific questions to me, instead of them asking [residency preceptor] and then [the residency preceptor] asking me. So that was a really nice thing to see, especially with patients that I'm taking care of. They're not asking [residency preceptor] about my patients, they're asking me about my patients, which was nice, just to be able to work with them more closely to help take care of my patients.

For most of the practitioners in this study, demonstrating credibility was accomplished by taking care of patients and answering medication and patient care questions posed by other care providers. They relied heavily on demonstrating the trustworthiness of their expert drug knowledge regardless of whether it was applied during the provision of

pharmaceutical care. For her role as part of the patient care team, Esme describes how she demonstrates her trustworthiness as a practitioner:

> Well, I mean, they're a team member, so if they have questions about someone, then I'm going to answer it. So I have that, and then just seeing patients to help the physician get them to goal or to move them along. That's basically my role, and to help educate. Like if new things come along, I'll try to help educate on what's going on. I mean, I'm their pharmacy resource, so they'll call me for questions too. They'll pull me in. Like if I'm here, they'll say, "Oh, what's this new medication?" or, "Can you educate on this inhaler or tell me about this?" or, "What do you think about that?" So they'll bounce a lot of things off of me in that sense, but then I also see a lot of their patients.

Demonstrating credibility in practice meant being able to communicate and provide useful information regarding the patient, medications, and the provision of pharmaceutical care for the patient. Providing medication information alone was not a significant enough contribution to be viewed as part of the patient care team. Medication knowledge needed to be demonstrated in conjunction with patient care. Time at the practice site was also mentioned repeatedly. Some practitioners commented that when they began to practice at a new site that they felt they needed to do everything any other care provider asked of them, even if it did not relate to pharmaceutical care. For example, some practitioners were asked to manage the clinic's sample medication program or to monitor refrigerator temperatures where vaccines were stored. Although these tasks were related to medications, it was expressed that ultimately these items did not help to build the practitioner's credibility as a patient care provider and in some cases took away time from patient care. It was not enough for Lane to be able to answer drug related questions for his colleagues, but he also needed to be consistently present and

available in order to develop relationships with his colleagues that led to their trust in his capabilities. Lane felt that:

> It isn't like I could just come to Old Faithful Clinic here and within a month I can just have tons of referrals or people trusting my judgment. They have to see that you're around the clinic for — usually for me it's — when I went to my other clinic, it's like two years. If they see you — it's almost — I almost feel like there's like this magic line in the sand. Once you've been there longer than two years, they're like, "Oh, you're like a regular here. You know, you're like one of us."

In demonstrating credibility to other care providers, Lane felt that he was able to increase their willingness to grant him greater autonomy in practice. Autonomy, for many of the practitioners, was often described as being able to make changes to a patient's drug therapy using a collaborative practice agreement or via recommendation to the prescriber based on the practitioner-prescriber relationship. As an alternative to being able to make autonomous decisions in practice, the practitioners expressed the importance of having the physician directly express his or her trust for the practitioner's work in order to build the patient's trust in the practitioner. After seeing a patient referred to her by a physician, Esme commented:

> I'm able to instill the trust of the patient into me a lot quicker, because that physician, they [the patients] trust them, and the physician is putting their trust in me, which the patients then can trust. So it speeds up the trust process nice and it just — yeah, it seems to speed up getting to goals a little bit quicker sometimes, or their [the patients'] ability to maybe respond to me.

Just as demonstrating professional credibility and trustworthiness is important for collegial relationships, the practitioners also expressed how these ethical constructs were essential for developing the therapeutic relationship. The therapeutic relationship is

defined as “a partnership between the practitioner and the patient formed for the purpose of optimizing the patient’s medication experience” (Cipolle, Strand et al. 2004). A significant portion of every patient visit was spent on developing this relationship.

Similar to the physician relationship, the patient’s trust was important to having the patient accept the pharmacist’s recommendations. Trust is a common ethic in many covenantal relationships (Cooper 1988; Crawshaw, Pellegrino et al. 1995). In this research, the development of the therapeutic relationship was essential for the practitioner’s understanding of the patient and appropriateness of their recommendations. In the example below, Joan describes how trust in very important to her practice in which she cares for a culturally diverse patient population. For the patients in Joan’s practice, she is usually the first pharmacist providing direct patient care and not in a pharmacy that the patient has seen. Although pharmacists are often cited as one of the most trusted professions, when the pharmacist is acting as a care provider this reputation may not follow them. Joan believed that she needed to establish trust during each patient encounter. She also stated that if the patient trusted her, then the patient would be more likely to act upon the care plan. Joan presented the establishment of trust as a key tool to creating the most appropriate care plans that the patient would enact.

> I want them to feel comfortable with me, so you know, if I am making 4 or 5 changes, that may make them think “Oh my gosh, what’s she doing? Why did the doctor do that?”, and then they may not trust me and come back. So, you know, the biggest thing with my patients here is to develop trust, and once that has established, once they see me and they realize that I am really here to try to help them with their medicines and not to throw more medicines at them, then they kind of understand what I do. You know, because a lot of patients when they come in here, number 1, they

> don't know what a pharmacist is, they don't know why they are here to see me, and they tell me that: "I don't know you, I don't know why I'm here." So you have to establish the trust, and with the cultures that can be difficult. You know you have to maintain your physical space, and you know the eye contact can be very disruptive in some cultures, so, too much eye contact, no personal contact then taking vitals, and, you know once that trust is established, then you know it's not that I'm not comfortable with them, but I think they become more comfortable with me.

Beyond the importance of achieving positive clinical outcomes with the patient, the therapeutic relationship creates an opportunity to encourage the patient to share his or her wants, needs, preferences, and expectations. This allows for the creation of patient-centered treatment plans numerous treatment options. The practitioners felt that as a result of the trusting therapeutic relationships they were better able to accommodate the patient as an individual into the recommendation. The specific patient factors which the practitioners used in their decision making were presented earlier in this chapter in the Knowledge of the Patient.

Caring and patient-centeredness: "You gave me hope"

In addition to trust and credibility, two of the central ethical constructs in pharmaceutical care philosophy are caring and patient-centeredness as shown in Figure 15: Patient Care Ethics in the Curricular Framework. For the purposes of this research, caring is defined as "a state of responsiveness to others which entails the willingness to become personally involved and committed to alleviate another person's vulnerability and suffering (Cipolle, Strand et al. 2004). This definition describes the ethic of caring as it relates to the philosophy of pharmaceutical care practice. Caring is enacted, via the practitioner, who

is oriented to the philosophy of pharmaceutical care practice and to patients in a caring, patient-centered paradigm. When the philosophy of practice is internalized by the practitioner, it reorients his or her priorities and actions in practice while reorganizing the practitioner's clinical knowledge for application to an individual.

Additionally, the commitment to caring extends beyond the application of medication knowledge to include the patient's primary concern and medication experience. The practitioners work to create a relationship that allows the patient to share his or her needs at that time, whatever they may be. The practitioner, in turn, recognizes the boundaries of his or her own skills and knowledge, but still remains committed to helping to meet the patient's needs. For example, Betty at Grand Canyon Clinic describes one instance during which she coordinated a referral to a mental health practitioner and went with the patient to the appointment as a way to enact her concern for the patient's health.

> I think, actually, one of the best [learning experiences] was sitting in on a patient that had requested an appointment because she was having severe depression and she was just at her wit's end. Her primary care didn't know what to do with her, and she came to see me because she wanted to talk about her drugs, and she was just so down. And so I gave her education but knew she needed to see somebody who had more expertise and so got her in to see our clinical nurse specialist in psych at our clinic, and she wanted me to go with her. And so sitting in — watching the clinical nurse specialist's process with the patient and how she explained certain things and the depth at which she got to that patient's psychological issues was just, oh — you know, it's amazing what you can ask people and how you can ask it. And, again, I felt like I had done nothing for the patient except to listen to her and coordinate care, but when I had to get up to leave to go see a patient of my own during her appointment, to excuse myself, she like reached up and grabbed my hand and said to me, I swear to God — I'll probably get like verklempt saying it, but she was like, "You gave me hope."

The commitment to caring is a direct reflection of the patient-centered orientation of the practitioner. During the observations, it was often apparent that aspects of the patient's life would be integrated into the decision making process for patients with whom the practitioner had an established relationship. This included family life, social history, diet, travel, religion, and other factors.

While observing at Joan's clinic, all of the patients had previously been cared for by Joan. Prior to going into the exam room, Joan would speak about the importance of understanding each patient's home life in order to make appropriate recommendations. She would talk how early in her practice, she would make recommendations and not understand why the patients would come back having not done anything that she recommended. As she describes, the recommendations were textbook decisions that followed the guidelines exactly. However, as she began to work repeatedly with her patients, she began to learn that even though her recommendations made sense and the patients often agreed to wanting to do them it was not feasible based on the patient's income or lifestyle. Joan illustrates how the context of the practitioner's decision making must be a patient-centered orientation.

> You know just being in the culture and the languages, and the inner city, it's a whole different viewpoint of why, of how people survive, and, you know, if you don't live it, you don't understand it. And I don't necessary live it, but I am exposed to it. So like it'll provide you with a glimpse of what their life is like, you know where as you may, on the outside, you may look at if you read a patient profile and just look at it and you say and you think, well, you know, why didn't they do this or this or this, and you know, what may seem very clear and simple, if you don't know what the patient's situation is, then you know, knowing the situation could make you realize, "Oh, that's why." Such as, you know a patient that is, you

> know chronically hypertensive and on a boatload of meds, and you, you know you ask them about their diet, and their diet is just sodium-laden. And you tell them, "You should do this and this and this and this." Well, like you said, you should never bark orders at somebody, but, number 2, what you have to realize is there's a financial consideration, and the patient isn't able to go to the grocery store, that the majority of their food comes from the food shelf, and that's why they have the diet that they have. It's not the fact that they are lazy, and they don't want to cook. It's the fact that they can't afford the fresh vegetables. They have to use the food shelf where there are little fresh vegetables. And most of the food that is donated is what? Canned soups and box mixes. So you have to know the situation. I never pass judgment; I'm always trying to find out what's maybe going on with the patient.

It is essential to understand how the ethics of responsibility, accountability, trustworthiness, credibility, and caring impact practitioner decision making. However, it is also imperative to understand how ethics can be integrated into the curriculum. It has long been debated if ethics and values can be taught. Although this debate is important, for the purposes of the pharmaceutical care based curriculum these ethics need to be fostered and modeled by all participants in the curriculum as the ethics are essential to the delivery of pharmaceutical care.

Ethics in the curriculum: A new way of thinking

> [The goal] is not to indoctrinate or train teachers to behave in prescribed ways, but to educate teachers to reason soundly about their teaching as well as to perform skillfully (Shulman 1987).

Shulman's observations regarding the goal of teacher education remains true across all professions and is especially important to consider when reforming pharmacy education. The professional ethics that help to form the basis for the professional culture are an essential component for understanding the type of reasoning and decision making that the pharmaceutical care practitioner must be able to master. During the researcher's

observations and interviews, ethics in practice were repeatedly shown to shape the practitioners' priorities and actions on a daily basis. In order to prepare students for entry-level practice, these ethics must be included and fostered throughout the curriculum. The curriculum, faculty, administration, and preceptors must reflect these ethics and provide explicit opportunities to demonstrate, foster, and critique the patient care ethics (Pellegrino and Thomasma 1981; Pellegrino and Thomasma 1993).

All professional education stakeholders must accept responsibility for the development of the professional practitioner. Schools of medicine have acknowledged the essential need to develop student practitioners including the "…internalization of a new value system, including new ways of thinking, viewing, and talking about things" (2000). For pharmaceutical care, the new value system must begin within the curriculum.

The lack of a common pharmacy practice has resulted in pharmacy faculty often being physically and philosophically removed from the realities of what occurs in patient care practices. Pharmacy educators must make greater efforts to align ethics and content in didactic coursework with pharmaceutical care practice in order to bring the realities of pharmaceutical care practice to the classroom and prepare practitioners who possess the required knowledge, skills, and ethics required for practice. "All lessons faculty give students affect multiple aspects of their lives from their immediate development to their future relationships with colleagues and patients" (2000). Additionally, as opposed to primary and secondary school educators who must receive pedagogical and content

training, faculty at colleges of pharmacy must be even more intentional in ensuring the accuracy and effectiveness of their content and teaching methods. More so, with respect to the ethics of pharmaceutical care practice and education, faculty must recognize and accept their individual responsibility for developing practitioners who are capable of demonstrating these ethics when in practice.

One manner in which these ethics can be integrated within the curriculum is for all coursework and student evaluation to be approached from the radical position that the student practitioner must be held responsible for all outcomes of his or her decisions and must be held accountable for this responsibility. As shown in Figure 15: Patient Care Ethics in the Curricular Framework, the ethics of responsibility and accountability are key ethics within practice and need to be a cornerstone of the curriculum. The responsibility and accountability for the students' work, recommendations, and actions must be held to a consistent level throughout the curriculum. These ethics are not optional in practice and cannot be enacted halfway. Therefore, the expectation of the curriculum must be to integrate them fully into all actions and decisions. In practice, colleagues and patients may assume that a practitioner is incorporating ethics into his or her practice. In the curriculum, such assumptions should not be made. The assumption of ethical practice is not enough to ensure that the practitioner or student practitioner is behaving ethically.

The ethics of credibility and trust must be included as curricular cornerstones. Similar to patient care, these ethics must be mutually expressed by the student practitioners and faculty, as they are between the patient and practitioner. Both groups must use these ethics to foster the collegial relationships as such relationships are essential to functional care teams (Mickan and Rodger 2005; Apker, Propp et al. 2006). As "the student-teacher relationship prefigures the student-patient relationship", the curriculum must be caring and student-centered if it is to develop caring, patient-centered practitioners (2000).

Critical reflection and dialogue on these ethics must also be integrated into the student practitioners' educational experiences. The ability to critique how ethics are acted or not acted upon is an essential skill. This is especially critical in environments where faculty, mentors, and preceptors may not be consistently demonstrating these ethics. Without the ability for critical reflection, mindless mimicry of behaviors and prioritization in practice can occur and result in sub-optimal practice.

During the practice observations, there was one practice site where the practitioner often discussed with the researcher the importance of being patient-centered, of understanding the patient's perspective, and not overwhelming the patient. However, during patient encounters, the behaviors exhibited by the practitioner were inconsistent with patient-centeredness. During patient encounters, the practitioner would repeatedly interrupt the patient. The encounters appeared to be driven by her agenda with her goals driving the questions and actions rather than having the patient speak his or her needs. She would

start the appointments with a series of questions to assess the patient's medication use, frequently review the patient's information in the electronic medical record as the patient was talking, and only appeared to listen to the first part of the patient's responses before jumping in with the next question. This was consistently observed during each patient appointment. Student practitioners and practitioner colleagues without the skills to critique and reflect upon this paradox may not be able to distinguish such actions from the espoused patient care ethics.

In addition to being able to foster and critique patient care ethics, the curriculum must consistently demonstrate the importance of providing care in accordance with the practice standards. Standards of practice set the expected level of performance across all patient care experiences. Having a curriculum that is grounded in the practice standards is essential to the preparation for entry level practice.

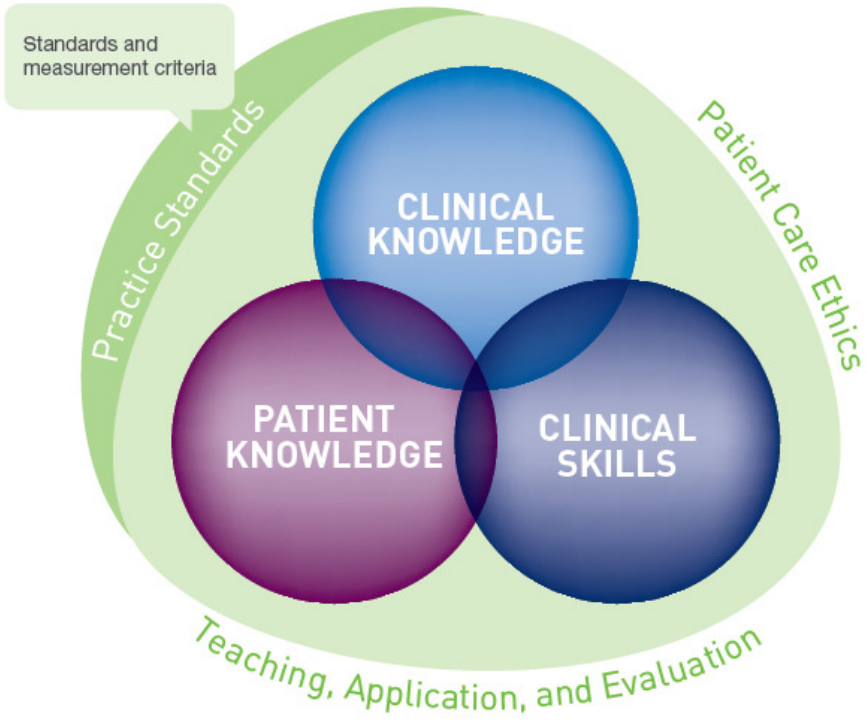
Pharmaceutical care practice standards: A consistent approach

> I think being comfortable in a thought process is important. You know, having a consistent approach. I find that if I've missed something, it's because something happened kind of in the routine or I didn't do something I usually do. **Peggy at Yosemite Clinic**

Standards of practice are the culmination of the philosophical framework and the foundation created by the definition of the professional practice. Standards of practice describe, within the profession, what actions are required for practice and the parameters for the interface between the practitioner, society, and practice. Standards of practice

allow professionals to critique and assess colleagues' work as well as reflect on their own. One must be able to perform these standards in order enter into practice. The standards of practice provide essential guidance for a professional curriculum (Darling-Hammond 1989; Cipolle, Strand et al. 2004). Additionally, having practice standards grants the profession the right of self-governance and responsibility in determining what constitutes competent practice of such standards (Ingvarson 1998). Darling Hammond emphasizes this point saying, "The profession assumes collective responsibility for the definition, transmittal, and enforcement of professional standards of practice and ethics" (Darling-Hammond 1989). These standards are often explicit in describing the observable skills that must be demonstrated in practice and implicit in the knowledge and ethics required for completion and, as shown in Figure 16: Practice Standards in the Curricular Framework, are an essential component within the curriculum.

Figure 14: Practice Standards in the Curricular Framework



During the practice observations and interviews the practitioners commonly turned to terminology used in the standards of practice to describe what was required in pharmaceutical care practice. They often referred to the assessment, care plans, or follow-up as core components of their practices. Both standards of care and professional behavior standards need to be used in considering the skills, knowledge, and ethics required for pharmaceutical care practice. In order to be a competent practitioner one must be able to perform at a consistent level as an individual and also participate and perform as a representative of the professional community. For pharmaceutical care practice, there are seven standards of care (see Appendix 7: Standards for Pharmaceutical Care Practice). Each of these standards is part of one of three components of practice: assessment, care plan development, and evaluation or follow-up. Each standard is

defined and comprised of explicit measurement criteria. Evaluation of these definitions and measurement criteria for the skills, knowledge, and ethics that are demonstrated in their achievement is an essential critique of the practice for core curriculum components.

Practice standards vignettes

In order to illustrate the standards of practice in action, a prototypical patient encounter narrative was created based on the practice observations. The following vignette represents an amalgamation of each of the practitioners' patient encounters that occurred as part of this research and is used to richly represent the standards of practice in action. The vignette is shown in italics.

Scene 1:

The practitioner and the patient, Mary, are seated in the exam room at a busy clinic. The practitioner is wearing a white coat and sits at a desk with a computer. There is a blood pressure cuff on the wall next to the computer. Mary sits quietly in a chair next to the computer. She places a plastic bag full of medication bottles on the chair next to her. This is Mary's first visit with the practitioner. The practitioner begins by introducing herself to Mary and asking her how she is doing today. After Mary responds, the practitioner tells Mary that she is here to make sure all of Mary's medications are appropriate, working like they should, not causing any negative effects, and that Mary is able to take them without excessive interference in her life. If any problems are found the practitioner states that she will work with Mary and her health care providers to create a

plan to resolve them. Using the computer, the practitioner brings up Mary's medical record and quickly scans her lab values, medication list, and the referral note from Mary's doctor. The practitioner then goes on to ask Mary if she has any questions about her medications that she would like to discuss. When Mary comments that she thinks she is having side effects from her blood pressure medication and that she would like to stop it, the practitioner asks Mary to tell her more about her side effects and any reactions she may have had in the past to medications.

The first standard of practice is the collection of patient information. This standard specifies that the practitioner gather information that is pertinent and required for making decisions about drug therapies. This standard requires the practitioner to understand, "*what* information is necessary to help each patient and *how* to effectively gather the necessary patient-specific information" (Cipolle, Strand et al. 2004 page 125). In pharmaceutical care, this is an ongoing process that encompasses the totality of the patient encounter. Collection of information from the patient may appear to an observer as simply a conversation. Questions are often posed to the patient in an open-ended manner, and the conversation is driven by the patient rather than the practitioner.

In the vignette described above, the practitioner begins by starting to develop a therapeutic relationship with the patient. This relationship is characterized by the underlying values of the trust, empathy, respect, authenticity and responsiveness to the patient and their medication related needs, and confidentiality (Cipolle, Strand et al. 2004

2004). To understand the patient at the level required to provide pharmaceutical care requires a therapeutic relationship in order to make decisions in accordance with the patient's wants, needs, preferences, and concerns. This, in turn, allows the practitioner to determine what information is essential to gather during the assessment in order to create an effective care plan.

The understanding of both *what* is necessary and *how* to gather it is the essence of the first standard. This requires that the practitioner in our vignette maintain the ethics inherent, and previously described, in the therapeutic relationship. This occurs while gathering information regarding the patient's medication experience and pertinent clinical information such as the reason for the encounter, review of systems, and condition or symptom history. Alice at Voyageurs Clinic describes her interpretation of the value of developing a therapeutic relationship as follows,

> I know that there're other places that people work that you don't really get that, because you don't see the same patients over and over, but that's something I really liked about this place, just getting to know somebody better, and I feel like I can make better decisions to help them once I get to know them better.

In addition to the therapeutic relationship, the medication experience is the crux of understanding the patient's drug related needs. It is perhaps the most important component that must be gathered and understood by the practitioner (Shoemaker and Ramalho de Oliveira 2007). The medication experience is the individual's personal experiences and history regarding medication use and encompasses attitudes, beliefs, preferences, concerns, expectations, and medication taking behavior (Cipolle, Strand et

al. 2004 2004). Without understanding the patient's medication experience, the practitioner cannot begin to understand the patient's medication taking behavior, drug related needs, or develop patient specific plans for resolving them. The practitioner must have assessment skills that allow her to elicit this information from the patient.

The knowledge, the *what*, and skills, the *how*, that are required for this standard therefore include: developing a therapeutic relationship, patient assessment techniques, asking open ended questions, understand how to elicit the components of the medication experience, the medication history and medication record, and use the patient's information to determine what is pertinent information for this assessment; elicit the reason for the encounter, patient demographics, medication experience, medication history, immunization record, social drug use, allergies and adverse drug reactions. This requires an understanding of the components of the medication experience, the components of the medication history and medication record, and how each of the factors that are elicited from the patient relates to medication decision making. How all of these factors relate to normal expectations of drug therapy or medical condition progression, documentation, and patient centered communication must also be included in the practitioner's decision making and practice

Scene 2:

Mary is explaining to the practitioner that 4 months ago her doctor told her that she had high blood pressure and needed to start a medication. Ever since then she's been taking

a "water pill." It's the only prescription medication that she takes, but she says it's one too many. The practitioner asks her if she remembers what her blood pressure was when her doctor gave her the prescription. Mary says that she doesn't remember, but that the doctor said it "wasn't too bad-just a little high." The practitioner asks Mary if she was told what her blood pressure should be. When Mary responds that she's not sure, the practitioner takes Mary's blood pressure. The practitioner explains to her that her blood pressure is 125/78 and comments that this is good. "For you, we want your blood pressure to be less than 140/90. This lowers the risk that you'll have a heart attack or stroke, which is important because of your family history. It also lets us know that the medication you're taking is working. Now, tell me more about any problems that you're having." Mary begins to explain that she has to go the bathroom all the time and that when she knows she needs to be out running errands all day that she won't take it because she never knows when she'll be able to find a bathroom. She says she's tried taking it at night, but then she has to get up and she has trouble falling back asleep. "I don't really like taking medications to begin with and now with all this I'm wondering if it's really worth it. Is there anything else I can do?" The practitioner empathizes with Mary regarding her frustrations. "Yes, there are other medications that would lower your blood pressure that don't work like your water pill. Let's talk to your doctor about one of these other medications that would lower your blood pressure without causing you to go to the bathroom so frequently.

On the surface of this encounter, this again appears like a general conversation between a patient and a practitioner. However, the practitioner internally is gathering the information that the patient is providing and categorizing and analyzing it. The practitioner will continue to assess Mary's preference for non-prescription therapies. She also gathers information to determine if there is a clinical need for the blood pressure medication by evaluating Mary's past and current blood pressures. Even if information may not be present, such as Mary's initial blood pressure when the medication was started, the practitioner categorizes this lack of information in the context of assessing the reason why the medication was started. She also goes on to assess if the medication is effective for Mary by establishing a goal of therapy for Mary based on her history and population based guidelines for the management of blood pressure. From the goal of therapy, the practitioner can now assess if the medication is working as it should to achieve this goal. If Mary's blood pressure was still above this goal, the series of questions that the practitioner asks to gather information would change to gather pertinent information to help determine if a different dose or if a different medication would be warranted.

Each piece of information that Mary offers is analyzed by the practitioner to determine: a) if it is pertinent to the patient's health and medication goals and needs, b) if it is an indication of appropriate, effective, safe, and convenient medication use, c) if there is an unmet need that could be addressed by medications, or d) if there is an undesired outcome, can it be attributed to a medication. All information gathered by the

practitioner is organized into four areas: appropriate indication, medication effectiveness, medication safety, and patient convenience. This manner of thinking allows the practitioner to take in the pertinent patient-specific information provided by an individual and translate it based upon experience to the population-level knowledge and clinical knowledge that she has about medications and medical conditions in order to assess if any drug therapy problems are present and, if so, create a patient-specific plan for resolving them.

The previous scene illustrates the assessment of drug-related needs and identification of drug therapy problems. In practice, practitioners need to be able to not only elicit and organize the pertinent information provided by the patient, but to assess the patient's drug-related needs by ensuring that each medication is appropriately indicated, that there are no needs for additional medication, that each medication is the most effective and achieving the goals of therapy, that each is not causing adverse effects or toxicities, and that the patient is willing and able to take the medication. In assessing for each of these, the practitioner will identify drug therapy problems any time the patient's drug-related needs are not being met. In doing so, the practitioner must possess skills for analyzing the information presented in context and in identifying drug therapy problems. The required skills, as they pertain to the identification of drug therapy problems are not only the identification of the problem, but also the ability to clearly communicate the relationship between the patient, medication, condition, and drug therapy problem to the patient, colleagues, and other care providers. This is essential as it lays the foundation for

how the drug therapy problem can best be resolved and how the practitioner made the determination of the problem.

This scene and representative standards are part of the pharmaceutical care assessment. The assessment is the first stage of the care process and is followed by the care plan and follow-up stages, respectively. In the care plan stage, the standards focus on the application of the information gathered in the assessment stage to create care plans that are individualized to meet the patient's needs. These care plans are created to resolve drug therapy problems as well as establish goals of therapy and prevent future drug therapy problems.

Scene 3:

Mary agrees that she would like the practitioner to discuss other medication options with her doctor. The practitioner tells Mary that she's going to recommend a medication called lisinopril 10 mg, which is a starting dose that they can change depending on how Mary responds. She also tells Mary that the goal of this medication will be to keep her blood pressure at less than 140/90 and to not cause her to go to the bathroom as frequently. Mary states that this sounds like a good plan, but asks what she should do if it doesn't work. The practitioner reassures Mary that she can go to the fire station or her local pharmacy to check her blood pressure before their next visit. She also tells Mary that she can watch for any lightheadedness when she stands up which can happen if the medication works too well at lowering her blood pressure. She also tells Mary that some

people may develop a dry cough when they take this medication, but if that happens that she has other medications that they can try. "I'll keep working with you to find something that works for you! To see how everything is going, let's schedule another appointment in 3 weeks. I'd like you to check your blood pressure at least once a week between now and then and bring the results to the visit. We'll find out how the medication is working and if you are having any negative effects from it." Mary quickly replies that she'd appreciate that, but asks when the practitioner will talk to her doctor. "I'll try to contact her right away and will have one of us call you by the end of the day."

This scene describes the care planning steps that are a result of the information gathered during the assessment. A care plan is established for each condition and consists of goals of therapy, interventions to resolve and prevent drug therapy problems, and a follow up evaluation plan. The care plan represents the practitioner's and patient's plan to resolve and prevent any drug therapy problems. In the care plan stage, the practitioner works to apply all of her medication and medical condition knowledge to benefit the patient in the context of the patient's wants and needs. The application of knowledge requires that the practitioner be able to assess what is an appropriate goal of therapy for each indication for drug therapy in this individual, how effectiveness and safety of the medication can be assessed, and what is an appropriate timeframe for achieving each goal of therapy for this patient.

Additionally, interventions are defined in order to achieve or maintain the goal of therapy as well as resolve and prevent any drug therapy problems. The interventions are actions that are to be taken by the practitioner, patient, or health care team. In identifying which interventions are appropriate for this patient and condition, the practitioner also identifies therapeutic alternatives which could be used to resolve or prevent future drug therapy problems, work with the patient and his or her medication experience to determine which interventions align most closely with the patient's wants and needs, and clearly communicate these interventions to the patient and the health care team. These interventions require the same application of medication and medical condition related knowledge as was used in establishing the goals of therapy.

The goals of therapy and the interventions are used together to help optimize the patient's medication experience. The goals establish what can and should be achieved by the medication while the interventions provide how the patient and practitioner will work to achieve those goals. Both the goals and the interventions also provide the basis for the continuity of care which occurs with the follow-up step. As part of the care planning process, the parameters and follow-up plan are created as demonstrated with Mary and the practitioner. This requires that the practitioner apply the parameters for assessing the achievement of the goals of therapy and their timeframe to the parameters required to be assessed at a future follow up visit. Application of this skill and its required knowledge completes the care plan and prepares for the follow-up step.

Scene 4:

Three weeks later, Mary is back in the exam room with the practitioner. They greet each other warmly and the practitioner asks Mary how she's been feeling. "Well, I stopped that water pill and started the medication that you and the doctor agreed on and since then I haven't had to go to the bathroom as much, which is great. I think my blood pressure's been pretty good too, but here are my numbers for you to look at." Mary hands the practitioner a piece of paper with four blood pressure readings written on it. They are all at the goal that Mary and the practitioner established at her last visit. "Mary, these look great and I'm glad to hear that you do not have to use the bathroom as much! Have you had any lightheadedness or cough like we discussed last time?" "No, I thought for a little while that I may be getting that cough, but I kept with the medication every day and it turned out I was just getting a cold." The practitioner quickly asks Mary how her cold is doing now and is glad to hear that it is resolved. The practitioner completes a review of systems with Mary explaining that this will help make sure that they aren't missing any new issues. "It sounds like you're medications are working wonderfully for you. Do you have any questions for me?" Mary responds that she doesn't and thanks the practitioner again for her help.

The follow-up evaluation is similar to the initial assessment in terms of the type of information that is shared and how the practitioner makes decisions regarding information that is gathered. The goal, however, of the follow-up evaluation is to evaluate the patient's progress towards the now established goals of therapy. The

therapeutic relationship and medication experience remains the conduit for gathering this information and are strengthened and refined during each subsequent follow-up evaluation. During the follow up encounters, the practitioner needs to be able to assess the actual outcomes for assessing effectiveness and safety versus the expected outcomes. Any discrepancies that are uncovered need to result in adjustments to the established interventions and care plan. These revisions, like all components of care, must be documented and communicated to the appropriate members of the health care team and the patient. The practitioner must be able to determine if additional follow up is required based on the information she gathers during the follow-up evaluation. This stage often feeds back to the assessment and care plan stages in order to adjust and document the patient's changing drug-related needs.

The continuous care process results in repetition of these practice standards during multiple patient encounters. For the practitioner and patient, each subsequent encounter adds new data and variables to what is already known. These variables can both complicate care and make it easier to make more refined decisions regarding the most appropriate care plans. The standards of practice, however, remain consistent throughout the longitudinal patient-practitioner relationship. Within the curriculum, the standards of practice will remain the bridge between the curricular content and delivery of patient care.

Practice standards in the curriculum: Avoiding fads

> All professions maintain an internal set of goals, duties, values, and ideals that are essential for professional identity and integrity. If these internal standards are abandoned, one might wear the trappings of that profession, but would no longer be a representative of the profession (2000).

> Without such standards, a curriculum runs the risk of becoming a series of workshops on the latest fads and "hottest" topics. To avoid this, (it) must be firmly secured in an underlying deep structure that validly represents the broader education community's standards for the profession (Ingvarson 1998).

As described by Ingvarson, the standards of practice are an essential benchmark for ensuring that what is taught and assessed in the classroom setting is relevant to daily practice. In addition to the hazards that Ingvarson describes, colleges of pharmacy must be certain that the curriculum does not become a training ground for the collection of activities that pharmacists state that they do. The standards of practice are used to help prevent against both of these occurrences by maintaining the description of the foundational components that comprise the deliberate or daily practice that is intentionally performed for each patient that is cared for (Anders Ericsson 2004). The daily practice of the practitioners included in this research was consistent with the standards of practice by Cipolle, Strand, and Morley, that were based on the those found in other health care practices such as nursing, medicine, dentistry, and veterinary care in both observation in practice and in the practitioners' description.

For the purposes of the pharmacy curriculum, it is important to understand how the practitioners in this study were taught pharmaceutical care and the standards of

pharmaceutical care practice in order to examine how these standards have application throughout the curriculum. Betty, a recent graduate, describes how she learned to provide pharmaceutical care:

> I learned the principles of pharmaceutical care and practiced a bit during my first year of Pharm.D. school at the U of MN. I was able to practice a bit more during my 2nd and 3rd years of didactic work at the U via cases and simulated patients. During my 4th year of "rotations" I was able to apply what I had learned while caring for patients, particularly during all of my ambulatory care rotations where I saw scheduled patients with my preceptors. This also allowed for real time feedback from the patients and my preceptors. I would say I learned the most once I got into residency and had sole and unsupervised responsibility for patient care--but I don't think it was because I was in a residency.

The practitioners in this study were either taught the philosophy and standards of practice of pharmaceutical care during selected coursework, often elective courses and opportunities, during their pharmacy curriculum or as part of additional training after they had obtained their pharmacy licensure. Several commented that they truly learned how to, and what it meant to, practice during their residencies. Three of the practitioners did describe receiving formal training on the philosophy and standards of practice during coursework in their first year of pharmacy school. In all instances, the majority of the formal education on the standards of pharmaceutical care practice was as result of extracurricular or elective decisions (i.e. elective courses, volunteer experiences, selected rotation sites, elective residency program). In spite of these standards of practice not being consistently embedded in the educational experiences of the practitioners, they still consistently practiced to the practice standards.

The standards of pharmaceutical care practice as well as criteria for assessing their achievement are defined in the pharmaceutical care literature. These standards have been used to define medication therapy management practice and influence health care policy. When taught, the practitioners in this study practiced to these standards regardless of the consistency of the presentation of the standards throughout the curriculum. This could be attributed to the influence of other practitioners or the practice settings in which these practitioners provide care; however, there was variation in both parameters throughout the sample of practitioners in this study.

When considering the pharmacy curriculum, the standards of pharmaceutical care practice should be used to structure all curricular content as they are a reflection of how pharmaceutical care skills and knowledge will be used in pharmaceutical care practice. Additionally, the measurement criteria that describe the specific actions that must be taken to perform the standard of practice should be used as the basis for evaluation of competency in the standards of practice in the curriculum. If these standards of practice are used as a foundational component of the curricular framework then, following the abilities of the practitioners in this study, the ability to deliberately and competently enact them in practice will be achieved.

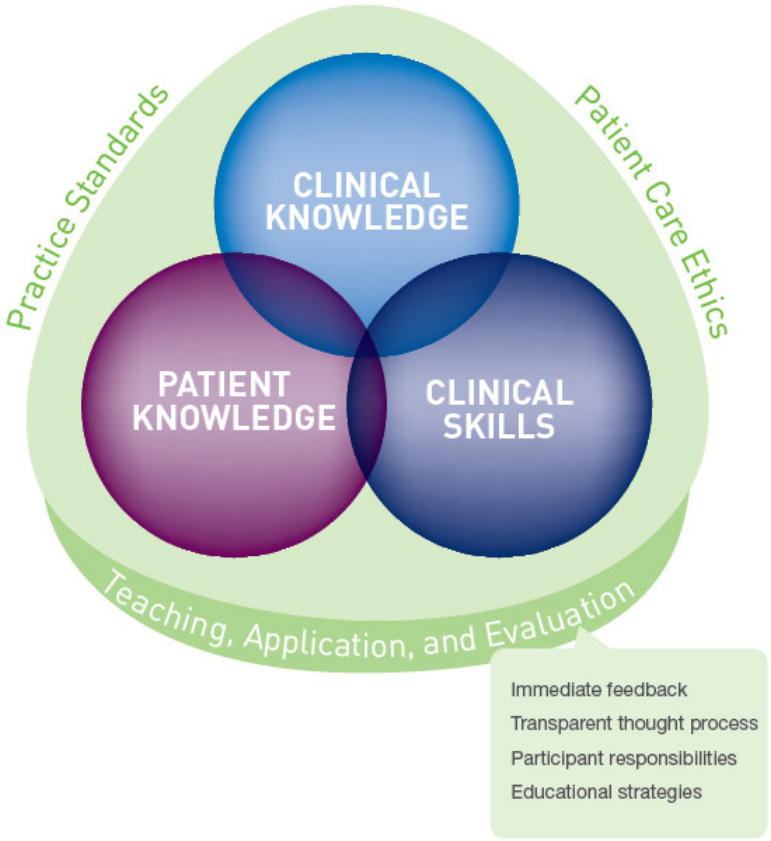
Teaching, application, and evaluation: "You hardly realize the path you're taking"

> [The curriculum] it's just pieced together so strangely, you hardly realize what path you're taking through it at the time. And you come out and you

> do know stuff, so it worked. But while you're doing it, it's so difficult to kind of manage all this material that doesn't really seem related and just kind of memorizing and forgetting stuff, and then it shows up again and you relearn it. **Alice at Voyageurs Clinic**

In order to practice pharmaceutical care, one must not only possess the ethics, skills, and knowledge required for entry level practice, but must also be able to determine how to organize information from the patient and connect this to the practitioner's personal construction of his or her body of knowledge. In both practice and education, there are several factors that influence how the student practitioner learns to integrate these components. For the practitioners in this research, these factors included teaching and precepting methods, knowledge organization and application, and practitioner evaluation as shown in Figure 17: Knowledge, Application, and Evaluation in the Curricular Framework.

Figure 15: Knowledge, Application, and Evaluation in the Curricular Framework



During this research, teaching and precepting methods employed during the learning process were identified as being highly influential in the development of practitioner's self-assessment of competence. Specifically, preceptor methods and modeling, the ability to articulate the decision making process, and feedback were highly valued by the practitioners while they were students. These characteristics were described by the practitioners as assisting them in developing their personal organization of how to gather information during an assessment and utilize it to make decisions in practice. Knowledge and application of it are important components for practitioners because it is how they

organized and access their knowledge and rationalize how drug therapy decisions are made. Evaluation of competence was important to the practitioners as a means of ensuring the quality of the care they provide as well as assess areas for improvement. The means for evaluation, both self and peer evaluation, were based in the care process and rationale for the decisions that were made in practice.

Precepting: Immediate feedback and transparency

In health professional education, the preceptor is a mentor or educator who works with the student practitioner via "role modeling, information sharing, coaching, and direction and teaches the preceptee the art of professional practice (2007; Bradshaw and Lowenstein 2007). For the pharmaceutical care practitioners in this research, the preceptor was often the first practitioner with whom they had practiced and sometimes provided the student practitioners' first experience in providing pharmaceutical care. Additionally, for many student practitioners their pharmaceutical care preceptor is the first educator that requires them to integrate the patient into their decision making. All of the participants in this research have precepted student practitioners. Presently, practitioners comprise a small group of all pharmacists and practitioner networking and mentoring remains an essential part of practitioner development after graduation. Thus the preceptor and mentor relationship remains very important in pharmaceutical care as there are limited number of colleagues with whom to learn and share ideas. Peggy illustrates this as she describes what made her residency preceptor so important to her education and how her preceptor continues to influence her practice.

> She's very good at talking through her thought process, so I really understood, and she's very good at helping a learner, asking questions to force you to think in sort of that same way, and then realizing that I like — I can think in this way, and I can get to the same conclusion, but just that form of questioning to just really walk you through what was going on was really helpful and then just, you know, seeing her model her knowledge and how she communicated with physicians and knowing when to push and when not to push.

Pharmaceutical care is a new practice and is not fully integrated into the collective practitioner identity. Therefore, the preceptor-student practitioner relationship can be theorized to be very similar to an apprenticeship model in which the student progressively learns to practice independently via close guidance by an expert practitioner in the practice setting. There are several drawbacks to the apprenticeship manner of professional education, specifically the lack of standards across the experiences and "adoption of ill-founded practices and knowledge reflected by poor role models" (Delany and Molloy 2009). Although this remains to be resolved, the practitioners in this study identified two primary qualities of preceptors that they felt helped them learn how to provide pharmaceutical care: timely feedback and decision making modeling.

Immediate feedback

Many of the practitioners in this research expressed the importance of providing student practitioners with immediate feedback on their actions while caring for patients. This helps the student to understand how information is used to make decisions in practice and what information must be gathered for particular disease states, medication, or patient

factor. Peggy has precepted 4th year pharmacy students for several years and describes the importance of preceptor feedback for the students by saying:

> I think the timing's important too, because watching it and then doing it isn't enough. It's getting that immediate feedback, even if I'm not saying, "You should have asked this," because I might jump in and ask a question to that patient, but then afterwards, "You see how we needed that more information and how that —" "Oh, yeah, yeah, yeah, you're right. I wasn't thinking that or wasn't going there." So I think it's that immediate results, so, "I wouldn't have asked that, so I wouldn't have learned that if she hadn't jumped in, and that changed our decision."

The timeliness of the feedback maintains the contextual link between the unique patient, medication, and disease state in which the action or lack of action was taken. For practitioners and student practitioners who may not be working with a preceptor, the only feedback they may receive occurs at the follow up appointment with an individual patient. In this case, several weeks or months may have passed since the clinical decision was made. It may be problematic for new or student practitioners to look back at how or why they made a particular decision due to poor recall of this situation. Additionally, this poses an even greater problem if the patient is lost to follow up. Other health care professionals may be able to provide feedback; however, such feedback would not be from the same perspective as the practitioner making the decision.

When a preceptor provides timely or even immediate feedback to the student practitioner he or she assists in engraining the expected level of detail or standard of care that needs to be achieved in practice. Peggy describes her experiences in helping her students to understand not only what information they may have missed during their patient encounters, but also how it would impact their decision making and patient outcomes.

> I've been teaching students, helping them to realize that how you ask a question is as important as the answer, because if you don't dig deep enough, you're missing key information that affects your decision making. I think those skills are just really, really critical, and — because once you have all the information, you can make good clinical decisions, and then you fall back on your drug knowledge and all that other stuff.

The information that Peggy alludes to is the patient specific data regarding patient preferences and lifestyle. As Peggy describes, the timely feedback can help illuminate the decision making by the practitioner. The process of how the preceptor integrates the data, knowledge, and skill into the decisions that are made in practice is essential for student practitioners to understand in order to develop their skill set. Presently, the primary framework of how decisions are made in pharmaceutical care practice is defined in the standards of practice and was used by all the practitioners in this research. In the previous quotations Peggy described the importance of reinforcing the data points needed in order to assess these items. The ability to describe the thought process that is used in gathering and assessing the data required to make the assessment of appropriate indication, effectiveness, safety, and patient compliance was described as being an important quality in preceptors and essential to the practice of pharmaceutical care.

Transparent decision making: "I have this framework in my brain"

The preceptor can act as an exemplary model for the student as the student practitioner begins to construct his or her understanding of how to bridge knowledge of the patient, medications, and disease states, as well as the skills required to gather this information during the assessment. The exemplary model, however, does not and cannot refer only to

the actions taken in practice, as the external actions alone do not comprise nor reflect the thought process and rational decision making that the practitioner undertakes. Rather, as Betty describes below, the preceptor should foster and guide the student practitioner as he or she prepares and learns from each patient care experience. Although Betty has only precepted students for the last year, she has diligently worked to develop her precepting skills. Betty summarizes her current approach as a preceptor for assisting students with this process.

> I'm at a point where I don't need to have an agenda written out because just by looking at their meds I have this framework in my brain about how I kind of go through each condition and ask about things, but then it's in the background and I focus on what they need, and then if we have time, then we get back to kind of tooling through those things. But I think for a student that's something I actually do deliberately work on with students, is how are you going to introduce yourself to the patient? You might need to write it down the first time so that you're not like — you know, clam up if you're not comfortable doing that, which, for God's sake, they wouldn't be by this point, but, you know, just in case, and then, "Okay, so you see that they have diabetes, and what are you going to ask related to diabetes that should be being monitored?" and those things. And they'll actually write them all out, and I see them — usually, depending on the student, we'll kind of go through it. They'll see me do it, and they'll write down all the things that they think of, and then I find that the next time that we have a patient with diabetes, they have it all written down and ready before we see the patient, you know, so they start thinking in that way, and then as they start to ask those questions, then over time it just begins to flow a little bit better and it seems, you know — it's like they're engraining it, and there's certain things you see over and over again, so if you have an organized way of dealing with it, it helps.

Lane spoke of a similar process he uses with his students. He has precepted students for almost a decade and describes his hopes for what his students would say about their experiences when they are finished at his practice site.

> ‘You know, I could be semi-comfortable if I had to see diabetics on my own now, because I — now I see what drugs are used, what Lane — how he interviews these patients and talks to them.’

Five of the seven practitioners in this research completed residency programs. Each of these practitioners expressed his or her decision to pursue a residency as a desire to have more experiences that would help solidify clinical knowledge and gain greater confidence in decision making. Several of the practitioners described the positive impact that their residency preceptor had on the development of their practice skills. Below Peggy articulates why she chose her residency and how working with her residency preceptor helped her practice.

> I just didn't feel like I had everything really well jelled in my head, I think, and plus I knew I had an interest in teaching and knew the residency would help prepare me for that as well, which is why I chose the residency I did. And it did. Like I gained a lot more confidence in my skills as a practitioner as a resident than I’d ever had before, and I don't know how long it would have taken me to have that same level of confidence if I hadn’t had, you know, that year of close mentorship from an excellent practitioner. It’s really kind of just putting it all together. Like the drug knowledge was up there in my head, but, you know being able to consistently apply it, and just getting more patient exposure, I think, was really critical, more opportunity to apply it and learn from and see the impact it makes.

From Esme’s perspective, residency programs give new practitioners the ability to not only solidify their own knowledge, but to learn from the experiences of the preceptor.

> More patient interaction, more disease state knowledge, more knowledge from their preceptors. I mean, just instead of starting from scratch and inventing the wheel, they're able to gain the experience and learnings from someone else, and then they're able to learn that quicker, in a year, versus taking five, ten years to do it.

The ability to give timely, constructive feedback and describe the thought process used in making decisions can be used by the preceptor to assist in the modeling of the desired practice characteristics.

As Peggy describes what she believes was valuable about her relationship with her residency preceptor, it becomes apparent that the timely feedback often reinforces the preceptor's rational thought process for identifying, resolving, and preventing drug therapy problems.

> She's [the residency preceptor] extremely intelligent, and just seeing the way she thinks, and she's very good at talking through her thought process, so I really understood.

Regardless of whether the precepted learning occurs as part of a residency program or within the Doctor of Pharmacy curriculum, the modeling that is done by preceptors should reflect the philosophy and standards of pharmaceutical care practice. The ability to create an environment in which the student practitioner can visualize how the preceptor is gathering and utilizing information to make decisions was described by several of the practitioners in this research as being an important component for their learning.

Participant responsibilities: "Pair drug knowledge with the practice"

In addition to being able to understand how collected data are used to make decisions in pharmaceutical care practice, the student practitioners must be able to bridge the

knowledge gathered during the assessment with the knowledge they possess about medications and medical conditions and then use this to make the best determination of how to apply the knowledge to the benefit of the patient. It is in applying the knowledge to the specific patient and problem that the practitioner acts as a professional and fulfills his or her professional purpose (Freidson 2001). The practitioners in this research were able to identify multiple sources for the knowledge they needed in order to make clinical decisions and apply their expert knowledge: clinical knowledge comprised of medication and medical condition knowledge and patient knowledge. The practitioners in this research were not able to clearly articulate how they integrated the clinical and patient knowledge, however, they often commented the manner in which they believed students should learn both components. In one example Peggy describes how student practitioners need to learn the "basic science" or clinical knowledge, and the "social stuff" or patient knowledge, in order to make solid clinical decisions.

> The students still have to learn the basic science, you know, they have to understand the science behind why we make decisions, whether it's based on the pharmaceutical formulation or the disease or the pharmacology, but in order to really apply that, you've got to get the social stuff in, so I think there's still some value in getting a strong basis in the science stuff early, but then the more — throughout education, the more we can throw in how these other factors might impact your decision, the better.

Similarly, Alice describes the application of the pharmacotherapeutic knowledge as being an important component of solidifying the clinical knowledge and learning how to integrate the patient knowledge into those decisions.

> Using pharmacotherapy in decision making, and not just like a multiple choice, pick one of these, but — I don't even know if they're case-based things, but like trying to address a person's needs. I mean, [written] cases are helpful but even like fake patients or real patients and being able to say

> like, oh, I just did this big cardiology section, and I know a lot about cardiology. Let me practice using that knowledge and making decisions based off of that, just getting to know that information better.

Both Peggy and Alice describe the need for student practitioners to not only gain experience in gathering information, developing their clinical knowledge, and understanding the patient, but they must also work to learn how to integrate these three components and make decisions using this information. Or as Rosalie at Geyser Clinic stated, "Pair drug knowledge with the practice." Rosalie also articulated that presently she believes that student practitioners should come to her practice site with the ability to apply guidelines and population-based recommendations to the medications and disease states that a patient may have, but residents should be able to integrate the patient's social factors into the decision making. This implies the belief that student practitioners do not learn how to include the patient in decision making until after they graduate. The application of this knowledge in identifying, preventing, and resolving drug therapy problems is the unique contribution of the pharmaceutical care practitioner and is the foundation for how practitioners will be evaluated in practice.

Evaluation strategies: "What the heck are you doing?"

Once in practice, practitioners are evaluated by their patients, peers, and by health insurance organizations that provide payment for their services. Each of these groups has an interest in determining the effectiveness and safety of the practitioners' work and ensuring that the practitioner is able to practice at the required level of professional

competence. There is significant debate on how to define and evaluate competence in the health professions (Van der Vleuten 1996; Wass, Van der Vleuten et al. 2001; Epstein and Hundert 2002; McGaughey 2004; Van der Vleuten and Schumirth 2005). In the literature describing pharmaceutical care practice, however, evaluation of competence in practice is lacking beyond the discussion of practice standards (Deselle and Rappaport 1997; Isetts and Sorensen 1999; Cipolle, Strand et al. 2004; Bluml 2005). However, during the interviews and observations with the pharmaceutical care practitioners, it was apparent that even without defined evaluation process or standards, the practitioners were evaluating their competence and that of their colleagues in practice.

For the practitioners in this research, the evaluation of his or her work was assessed by: a) the soundness of his or her clinical decisions and care plans created to resolve and prevent drug therapy problems, b) feedback from his or her patients and c) the patients' willingness to come back for a follow up visit. In addition, the practitioners often described reflection on their patient encounters as an important source for self-evaluation. The practitioners referred to both their documentation and practice outcomes data as sources for their practice evaluation by peers. Practice outcomes data may include number and types of drug therapy problems identified, achievement of goals of therapy, and change in lab values. Lane accounts for his outcomes by saying:

> I think I get pretty good results or outcome data, and if you look at some of my outcome data — and I think partly that's because I'm spending time with people, motivating them to say, "Hey, this is why we want you on this," or, "We'll change this," and, you know, "Don't give up on me," and then sending them follow-up letters.

For Betty, evaluation of her practice includes the review of her documentation for its clinical soundness and an assessment of her practice outcomes by her peers, both of which provide a complementary viewpoint to her own reflective practice. Betty views the evaluation of her work as part of how she ensures her competency to practice.

> Part of it you can figure out yourself like, oh, what are the goals of diabetes, and as you're writing up your documentation, are they meeting their goal, are they meeting these other — maybe you go and discover, oh, I should have asked about this because they really should be having their, whatever, albumin checked and I just didn't know that when I saw them, so then I'm making myself a note for next time to check on that. So maybe you learn it that way. Maybe you learn it because your colleague reviews your documentation and says, "Well, what about A, B and C, or have you ever thought of this?" So I sometimes think it's like checking in with other people periodically and just sort of seeing if they would approach anything differently or if you're on track with things. I mean, part of it is, I think, just trying to stay up on, you know, current literature and seeing if what you're doing is in line with that. I'm trying to decide if I would say that reflection would help that. I think it helps everything. I guess if you've had bad outcomes or you've had a healthcare provider colleague say, "What the heck are you doing?" that might get you back in check. I don't know. I don't know how you learn it, but I think you need to have some guidance and someone, you know, kind of looking and giving you feedback on it. And once you get out of school, you can look at [your] patient outcomes.

As Betty referred to, reflection, or reflective practice, is an active undertaking of "thinking about and evaluating experiences in order to reach new understandings and perspectives" (Delany and Molloy 2009). Reflection has been used amongst the health professions to help assess performance and to help the practitioner to be aware of how he or she is assessing the context of clinical problems (i.e. problem setting) as well as the knowledge used to resolve the clinical problem (Schön 1983). Several practitioners commented on their reflective practice habits and how they were used to assess

performance, identify technical areas of improvement, and define a clinical learning agenda.

All of these components must be introduced in the curriculum to help prepare practitioners that can function upon graduation. Rosalie's assessment that only residents are able to integrate the patient into decision making is simply not acceptable. All graduates must be able to do this. In order to bring the preceptor characteristics that help with student practitioner learning and other teaching and evaluation strategies into the curriculum, the roles of each curriculum participant must be defined and connected to their responsibility in teaching, knowledge application, and evaluation.

Teaching, application, and evaluation in the curriculum: Creating the connections

> Learning how things are interconnected is often more useful than learning about the pieces. Traditional curriculums, based on a discrete and simplistic taxonomy of disciplines that focus on the acquisition of facts, usually highlight content without helping learners understand the interrelationships of the parts. Without this understanding of the interactions and relations between the pieces it is difficult to apply the learning in a unique context (Fraser and Greenhalgh 2001).

To create continuity between the curriculum and practice, it is essential that the teaching, knowledge application, and evaluation reflect the realities of pharmaceutical care practice as shown in Figure 17: Knowledge, Application, and Evaluation in the Curricular Framework (Hirsh, Ogur et al. 2007). The relationships between the required skills, knowledge, and ethics must be explicit and intentional in a pharmaceutical care based

curriculum. Perhaps the truest demonstration of the relationships can be found in practice which places each discrete component into a complex context as an interrelated web of the patient and clinical knowledge and practice skills and ethics. In order to bridge the curriculum and practice in these areas, the roles of the curriculum participants must be defined in the context of pharmaceutical care practice and each participant must be able to teach and evaluate student practitioners based on the criteria illustrated in Figure 17. As described by the practitioners in this research, the patient, preceptor, faculty, college administrators, and student practitioners all have roles in the development of the pharmaceutical care practitioner and therefore have responsibilities in teaching, application of knowledge, and evaluation. Each curricular participant's role and responsibilities will be described in the following sections.

The patient's role: "There're only so many examples in the classroom"

> Throughout the history of the profession, the most powerful motivator for learning has been the sense of deep commitment to patients. In order to anchor clinical learning in care-giving, students must have relevant involvement with patients at the site and time of initial medical decision making, ideally before the diagnosis is made, and be able to follow patients for the duration of an illness episode (and beyond), ideally across care venues (Hirsh, Ogur et al. 2007).

The patient is ultimately the benefactor of the curriculum and should have a central role in the teaching, knowledge application, and evaluation of the student practitioners. Although, the purpose of the curriculum is to prepare the pharmaceutical care practitioner to be able to apply his or her drug knowledge for the identification, resolution, and

prevention of drug therapy problems, drug therapy problems only exist within the context of the individual patient. As in the practice of pharmaceutical care, the pharmaceutical care based curriculum must be centered on understanding and meeting the patient's needs and must intentionally include content, skills, and ethics that will assist the practitioner in preventing, resolving, and identifying drug therapy problems in the patient.

Faculty, administrators, preceptors, and student practitioners must all possess a clear understanding of the purpose for curricular content and how it will be integrated and used once in practice. To assist in this, the patient and his or her medication experience must be integrated across the didactic and experiential portions of the curriculum as Peggy at Yosemite Clinic described when asked how she helps teach students to integrate the patient into decision making.

> I think there's only so many examples you can give in a classroom of that and there's infinite — you know, I mean, there's only so many examples of a certain textbook hypertension that you can give, but when you add in the personalities and the personal care, it's infinite.

When patients are integrated into the curriculum as teachers, all content is organically connected with how it is presented and used in practice. When actual patients cannot be utilized to accomplish this, high fidelity patient cases should be used. High fidelity is defined as having a high degree of similarity to true life. Often the term 'high fidelity' is used to describe patient simulated mannequins; however, that is not what is intended in this recommendation. The use of high fidelity patient cases in the pharmaceutical care based curriculum involves patient actors and written cases which are based on actual patient cases. These cases should be used as a core component of teaching, as well as,

knowledge application by the student practitioner. The cases must retain the original features and complexities of the actual patient encounter. Removing complicating factors and removing the context of the patient from the case will not assist the student practitioner in integrating the patient into decision making.

The patient should also have responsibility in the evaluation of student performance. The evaluation parameters which patients participate in when evaluating practitioners should also be used to evaluate student practitioners. These specifically include evaluating the student practitioner's demonstration of ethics, patient centered behavior, communication and assessment skills, and the appropriateness of the care plan. The patient's evaluation of the student practitioner's performance should be elicited after every patient encounter and integrated into the student practitioner's performance evaluations throughout the curriculum.

Continuity of an individual patient's role in the teaching, knowledge application, and evaluation is important for the student practitioner's development, especially as it pertains to witnessing the impact of his or her decisions on a patient's health (Hirsh, Ogur et al. 2007). Continuity of the patient's role involves having a student work with an individual patient for an extended period of time in order to develop a deeper relationship with the patient, to witness the progression of the patient's drug related needs, and to experience the impact, both positive and negative, that the student practitioner's recommendations have on the patient's health. Within the curriculum, long term

relationships with defined responsibilities for the student practitioner and patient must be created.

Patients and high fidelity patient cases should be utilized as the means for knowledge application and evaluation throughout the curriculum. The patient needs to be recognized as an essential member of the educational team. The ongoing wants and needs of patients in practice must be assessed and actively integrated into the curriculum to mitigate the perception that the patient is being "used" as a teaching tool rather than respected as a member of the curriculum's learning community as well as the benefactor of its output. Additionally, the student practitioner and patient need to have longitudinal relationships that allow for continuity of both the patient care and the student learning.

The preceptor's role: "The best part of practice"

> …to be a good teacher, I think, is the best part of the practice. You know, if I were to pinpoint what drives me, it's teaching, and I think a good pharmacy teacher has a wide practice experience because bringing those practice experiences into the classroom or into discussions, I think, is really valuable, and teaching students in that practice environment is really fun. **Peggy at Yosemite Clinic**

As described previously, the preceptor's role is very influential and essential to the pharmaceutical care learning community. In Britzman's ethnographic study of student teacher development, it was identified that the student teacher often took on characteristics and attitudes of the cooperative teacher, equivalent to the preceptor in health professional education, even if it was contradictory to what was learned during the

didactic portion of the student teacher's curriculum (Britzman 1991). Although it is unknown if this is true for pharmaceutical care practitioners, the practitioners in this research consistently referred to their preceptors' characteristics and experiences when they were asked to describe how they learned to provide pharmaceutical care. Some of the practitioners observed had been precepted by other practitioners in the research. It was apparent that the preceptor's habits were influential to the student practitioner.

The preceptor's role in the curriculum must be highly valued and supported by faculty, administration, and the student practitioners. The preceptors' value to the curriculum is that they are "in" practice and because of this colleges and schools of pharmacy must support both preceptor and practice development in order to strengthen the curriculum. The educational institution must develop programs to develop not only exemplary practices in which student practitioners can complete their experiential studies, but also preceptors with the necessary skills for precepting the next generation of practitioners. This relationship must be a partnership in which ongoing understanding of the requirements for practice are continuously sought and integrated into the curriculum just as the requirements for the precepted experiences are continuously sought and integrated into experiential education. The preceptor's role and experiential education must be greatly increased beyond the requirements of the Accreditation Council for Pharmacy Education. As experiential education increases, the role of the preceptor must become more expansive.

Due to the influence that preceptors have on the development of the student practitioner, care should be taken to ensure that all preceptors are practicing to the standards of practice (see Appendix 7 Standards for Pharmaceutical Care Practice). This is not to say that all practice must be uniform, but that the core patient care ethics and standards must be embedded in all preceptors' deliberate practice. In addition to having preceptors practice consistently to the standards of pharmaceutical care practice, they must have additional teaching knowledge and skills that will help to facilitate student learning in both the exam room and the classroom.

As described in the previous section, preceptors must consistently model desired practice, be able to describe their decision making process, and provide the student practitioner with timely feedback regarding his or her performance. As John Dewey described for general education, the conditions in which the student practitioners are learning the knowledge, skills, and ethics for practice, even in the most ideal of circumstances, are not always the same as those that the student practitioner and preceptor will encounter.

> …it is a mistake to suppose that acquisition of skills in reading and figuring will automatically constitute preparation for their right and effective use under conditions very unlike those in which they were acquired (Dewey 1938).

With this in mind, the preceptor's role must be connected to the faculty's role in the classroom to assist in bridging the student's classroom experiences into practice.

Due to the nature of the ongoing knowledge and skill acquisition that occurs in practice and the continuity of the student practitioner-patient relationship, the preceptor's role and

responsibilities for the student practitioner's development requires a longitudinal commitment (Hirsh, Ogur et al. 2007). This does not mean that a student practitioner should only have one preceptor during the course of his or her matriculation. Rather, that the student practitioner and his or her preceptors should have longitudinal contact throughout matriculation in order to deepen the mentee-mentor relationship, provide continuity for practice modeling and decision making, to assist in the evaluation of ongoing development, and, perhaps most importantly, to strengthen the partnership in the longitudinal care provide to the patient.

The student practitioner has significant responsibility for ensuring that he or she is prepared to learn in practice from the preceptors. The next section will present the specific responsibilities and role of the student practitioner within the pharmaceutical care based curriculum.

The student practitioner's role: "All of a sudden it seems to come naturally"

> Some of that, I think, does just have to come from that experiential part of it, but the more you can throw that flavor in early on, I think, is helpful too. **Peggy at Yosemite Clinic**

As the patient is the benefactor of the curriculum, the student practitioner is the means to delivering the benefit. The student practitioner must understand the responsibilities of all the other participants within the curriculum and his or her relationship to them. The student practitioner also has the responsibility for his or her competence in practice. The student must be an active, vocal participant in the curriculum from participating in the

patient care culture; creating and making meaning of the curriculum content; critically assessing how the knowledge, skills, and ethics of the curriculum are connected to practice; and reflecting on his or her development as a practitioner.

Because the student practitioner's role is directly related to all of the other participants in the curriculum, they must take responsibility for identifying ways in which the curriculum and practice are inconsistent and where roles within the curriculum are not being optimized. The student practitioner must learn to continually question his or her development and capacity for practice and not solely focus on attainment of the presented knowledge, skills, and ethics. The habit of always questioning what is known and not known is imperative to the problem setting and problem solving that is the foundation of all science-based practices. As stated in *Educating for Professionalism*, the "more sophisticated reasoning will not help someone who has no questions" (2000). Additionally, student practitioners must work with their faculty, preceptors, patients, and colleagues to assess their development as practitioners. This requires the ability to be critically reflective on competence as well as comfort level with the requirements of practice. For example, Peggy at Yosemite Clinic shared her thought process on why she decided to do a residency after graduation because of her lack of confidence in her drug knowledge and skills.

> I just didn't feel like I had everything really well jelled in my head, I think, and plus I knew I had an interest in teaching and knew the residency would help prepare me for that as well, which is why I chose the residency I did.

Similar to Peggy's description, Betty at Grand Canyon Clinic provided a metaphor for how uncomfortable student practitioners may feel early in their practice experiences and how that may change with more experience based on her own development and observations of students during her rotation.

> It goes back to my driving the car example. Really, it's like in the beginning there are just so many things going on, and there's so many inputs flying at you, so you kind of want to go slow because you don't want to run over anybody. You don't really know what you're doing, and you don't want to hit other cars and whatever. It's just like too much information, but then some of it just becomes kind of background and engrained at some point, and all of a sudden it seems to just sort of come naturally because you've done it so many times and you have a structured system in your brain from practice.

Faculty and preceptors must help student practitioners to understand this natural progression and the student practitioner must be willing to reflect on their own abilities and comfort level throughout the curriculum and in practice. The role of the faculty must also include creating an environment in which students can feel safe to go beyond what they may feel prepared or comfortable doing and challenge themselves accept an increasing amount of responsibility for patient care.

The faculty/administration's role: Setting the tone

> With Aristotle we declare that the ultimate test of understanding rests on one's ability to transform one's knowledge into teaching. Those who can, do. Those who understand, teach (Shulman 1986).

Pharmacy faculty and the administration at colleges and schools of pharmacy have, with student pharmacists, historically been the core participants in the curriculum. This

remains true in the pharmaceutical care based curriculum; however, the guiding principles for decision making must be realigned with the philosophy and standards of pharmaceutical care practice and must strive to foster a culture consistent with that of practice. Upon entering the profession of pharmacy the student practitioner's first formal interaction with their professional identity is with faculty and administrators at colleges of pharmacy. All faculty and administration must accept and internalize the practice and reflect the ethics required for practice. Both groups must remain student-centered in their actions and embody the ethics and behaviors that will be required of the practitioner-patient relationship.

Educational Strategies

> Examining how the curriculum is constructed as teachers and students interact over material is vital to an increasingly developed practice. Teachers also need to learn to discern the constituents of the culture of a classroom, to have ideas about the kind of classroom culture that supports learning goals and about how to construct such a culture (Loewenberg Ball and Cohen 1999).

The didactic portion of the curriculum must be student-centered and problem-based. Both of these terms have been used to define such varying degrees of behavior they must be further clarified in order to appreciate how they will be applied in the pharmaceutical care based curriculum. *Student-centered* is a near synonym of *patient-centered*. All decisions must be made for the benefit of the student with respect to the requirements of pharmaceutical care practice. The individual student's needs must be respected and taken into account in the learning environment. Perhaps the greatest difference between *student-centered* and *patient-centered* is that the student-centered relationship has a

common expectation of what is to be achieved across all students (e.g. the development of a pharmaceutical care practitioner) whereas the patient-centered relationship acknowledges that the individual goals of the patient must be considered first and foremost. Pharmaceutical care practice is centered on defining and resolving problems. Educational strategies need to be aligned with problem identification and resolution. Problem-based learning is a commonly used approach for developing problem solving skills.

Problem-based learning

As Peggy at Yosemite Clinic articulated, in her learning experiences she felt she did not have enough opportunity to learn how to integrate her knowledge across multiple domains like what would occur in problem based learning.

> I think the thing that in our curriculum we don't do a very good job of is starting to put everything together and just, you know, the classic example of you go through cardiology, and you have cases of hypertension and you have cases of dyslipidemia, and maybe you have a case where they actually have both, but I still think we could do more of it so that they start to see cases where, you know, the patient's got more than one condition. And, you know, I think it's probably rare that they get given a patient that's on more than five to ten meds, whereas I barely ever see a patient who's on less than ten meds.

For professional practices in which problems may present themselves in numerous ill-defined ways, problem-based learning offers the ability for student practitioners to develop skills for problem setting and problem solving as well as critical thinking. Problem setting is defined by Schön as "the process by which we define the decision to be made" and "a process in which, interactively, we *name* the things to which we will attend and *frame* the context in which we will attend to them" (Schön 1983).

Additionally, once the problem is "set", the practitioner must be able to connect the features of the problem to the knowledge and skills that the practitioner possesses.

In addition to being able to set and solve problems, the practitioner must also be able to reflect and think in the practice setting, to construct new knowledge and ways of creating the connection between the situation and the practitioner's knowledge base. Reflective practice can assist in competence development as well. As Epstein describes in his work on the development of practice competence, "Habits of mind and behavior and practice wisdom are gained through deliberate practice and reflection on experience" (Epstein 2007).

Reflection in practice

In the context of the curriculum and problem-based learning, faculty must, like preceptors, provide ample opportunity and guidance for problem based learning and reflective practice, including reflection-*on* and reflection-*in*-action. Reflective practice can be used both as a pedagogical and evaluation technique by the student practitioner and faculty. Reflection-on-action provides a retrospective opportunity to reflect on what has occurred and the appropriateness and effectiveness of how the problem was defined, the problem solving reasoning, and the actions that were taken to resolve it. Reflection-in-action, as described by Schön, is the perception and reflection of the defining and resolution of the problem as the events are occuring, "thinking what they are doing and, in the process, evolving their way of doing it" based on the responses they are receiving

(Schön 1983). Reflection has been demonstrated to assist in student practitioner comprehension, understanding, and learning from experience (Driessen, van Tartwijk et al. 2008; Delany and Molloy 2009).

Reflection of this sort requires that the student and faculty must be open to looking beyond their natural attitude defined as:

> Taken-for-granted approach to the world, meaning individuals do not reflect on their actions; rather they act according to their common sense pre-understandings, assumptions, or biases. The natural attitude allows people to carry out their daily activities with little forethought, because they cannot reflect on every action and response they have throughout a day and still function (Ramalho de Oliveira and Shoemaker 2006).

In order to "see" beyond the natural attitude, Ramalho de Oliveira and Shoemaker identified six strategies for pharmacists providing patient centered care to maintain openness. With patients, the practitioner can listen attentively and openly, acknowledge the patient's unique complexity and situation, and wonder, rather than react, about the information they are gathering. With themselves and with colleagues, the practitioner can recognize bias and prejudice, question how his or her biases and prejudices may influence decision making, and reflect on behaviors and patterns of action (Ramalho de Oliveira and Shoemaker 2006). These strategies need to be translated into the classroom as well as they can help to facilitate critical reflection. Faculty can both assist in guiding students and model the reflective process. The patient and colleague strategies can be modeled and practiced within the classroom and can help to foster the culture and learning approach necessary for problem based learning allowing for greater openness in understanding the

complexity of the presented situation and acknowledging knowledge limitations and biases in decision making.

Betty at Grand Canyon Clinic describes how she has integrated reflective practice and openness into her teaching in the classroom and precepting in practice:

> I have found like the best reflection has been not in the clinic but also in the classroom, like when there's something that involves conflict or controversy we can probe at some deep level that really gets people emotionally, and then they have to reflect on. I try to encourage them to reflect on where is that coming from, like what is making you think that or feel that and why and let's talk through it and figure it out, because I think if they're able to do that, that process can help in anything they're doing. And I love it, I love to discuss these things, but I think sometimes people don't know how to do it constructively or to do it in a way where they don't take it personally.

Finally, reflection must be used as an iterative learning strategy that can help to solidify and internalize the ethics, knowledge, and skills learned in the curriculum in partnership with the faculty and preceptors. An iterative learning strategy is one in which new knowledge and realizations provide data that can then be applied to generate additional new knowledge and connections between all curricular content. The iterative strategy can also assist in the development of intellectual curiosity that will benefit the practitioner's continue competence in practice.

All faculty and administration must possess an understanding of the philosophy and practice standards that underpin pharmaceutical care practice in order to be able to foster reflection. This concept is foundational, yet radical. Without this understanding the ability to create a student-centered environment or successfully implement problem-

based learning will be much more challenging. Faculty and administrators at colleges of pharmacy need to be able to critically analyze how the current philosophy, teaching, knowledge application, and evaluation strategies used in the current curricula relate to the requirements of pharmaceutical care practice.

Understanding the roles of the participants in the pharmaceutical care based curriculum is one component of understanding what the curriculum requires of the participants. Each participant has a responsibility in the teaching, knowledge application, and evaluation of the student practitioner in the curriculum. These responsibilities are defined within the context of the philosophy and standards of pharmaceutical care practice. All components of patient care ethics; practice standards; and teaching, knowledge application, and evaluation provide the primary structure of the curriculum which creates the organizing framework for the curricular content.

Conclusion

> Thus an essential purpose of medical education is to ensure that each student develops and continues to refine the basic clinical skills that are required to provide competent care throughout a lifetime of professional work (The Association of American Medical Colleges Task Force on the Clinical Skills Education of Medical Students 2005).

The development of competence in pharmaceutical care practice is a goal that will be pursued throughout the practitioner's entire career. The purpose of the pharmacy curriculum is to begin, guide, and support the practitioner's journey on this endeavor. The conceptual framework in Figure 5 represents a structure that can be applied in a

curriculum to achieve this, but does not provide the information or context required for a comprehensive pharmacy curriculum. However, this conceptual framework does reflect the core required components and orientations that will be required when such a curriculum is implemented at a college of pharmacy.

The pharmaceutical care based curriculum must include the required curricular foundation and content in order to ensure development of student practitioners ready to enter into practice. This includes the clinical knowledge, clinical skills, and patient knowledge that will be used in every drug therapy decision that will made in practice. However, the curricular content alone will not result in the development of the practitioner. The practice standards, patient care ethics, and teaching, application, and evaluation strategies must reflect the realities of pharmaceutical care practice.

The curriculum is the first part of the practitioner's journey and development. Although it represents only the first years in practice, it sets the tone and expectations for the rest of the practitioner's career. The importance of setting the expectations of practice for the student practitioner cannot be underestimated. If this is not taken seriously and addressed within colleges of pharmacy, pharmaceutical care practitioners will never be a consistent part of the patient care team. Most importantly, drug therapy problems will continue to result in negative patient outcomes.

The conceptual framework is only the starting point for the curriculum. The following chapter will lay forth specific recommendations for how the conceptual framework can be applied to curricula. However, the conceptual framework does not answer all of the questions that must be evaluated when designing a pharmaceutical care based curriculum. Future research questions that will address these gaps will also be defined.

Chapter 5: Conclusion - Creating the Curriculum

Drug therapy problems have a significant and negative effect on public health and health care costs. Pharmaceutical care practice was defined in 1990 as a health care practice in which the pharmacist applies his or her expert medication knowledge for the purpose of identifying, resolving, and preventing drug therapy problems (Hepler & Strand, 1990). Since that time, the provision of pharmaceutical care has consistently demonstrated improvement in patient care, treatment outcomes, and reductions in overall health expenditures (Isetts, Schondelmeyer et al. 2008; Ramalho de Oliveira, Brummel et al. 2010; Smith, Giuliano et al. 2011). It was quickly adopted as the mission of pharmacy education and practice (Accreditation Council for Pharmacy Education, 2006). Pharmaceutical care is the profession of pharmacy's unique contribution to patient care and the practice of profession of pharmacy.

Pharmacy education, however, has not made the changes required to ensure the preparation of entry-level pharmacists with the skills, knowledge, and ethics required for pharmaceutical care practice. Additionally, the accreditation requirements for colleges of pharmacy have provided minimal guidance on what is required for competent practice. In order to address these gaps in knowledge, this research defined the educational requirements for pharmaceutical care practice by constructing a conceptual

framework of the educational experiences, the skills, knowledge, and ethics required, as well as the educational strategies that would best be suited to assist in the development of competence.

Developmental research methods were used to construct a prototype for the conceptual framework of a pharmaceutical care based curriculum. The components that comprise the conceptual framework consist of the skills, knowledge, and ethics required for pharmaceutical care practice. Within the conceptual framework, the roles and responsibilities for curriculum participants are defined. Finally, the standards of practice and patient care ethics are explicitly organized as foundational components that, when paired with educational strategies, hold the required clinical content in proper alignment. Even though the curricular conceptual framework is discussed, this research does not provide guidance on how to translate these concepts into practice within a college of pharmacy.

This chapter will suggest how the conceptual framework can be applied within a curriculum. Recommendations and examples for each of the components will be presented. However, the conceptual framework is a prototype and its development had several limitations. These specific limitations as well as recommendations for future research to address them will be outlined here.

Putting the Curricular Conceptual Framework into Action

> If the artist does not perfect a new vision in his process of doing, he acts mechanically and repeats some old model fixed like a blueprint in his mind (Dewey 1934).

The curricular conceptual framework provides an initial blueprint for a pharmaceutical care based curriculum. However, it is essential that the blueprint be analyzed and assessed for how it could be translated as a "new vision," as Dewey states, for pharmacy education. While the researcher was conducting the research, analyzing the data, and developing the curricular conceptual framework prototype she defined 10 recommendations for translating the concepts in the conceptual framework into action. These recommendations can be found in Figure 18: Recommendations for the Pharmaceutical Care Based Curriculum. Specific examples of how each recommendation could be enacted in the curriculum are also presented in this section.

Figure 16: Recommendations for a Pharmaceutical Care Based Curriculum

1	Teach the pharmaceutical care philosophy and standards of practice from the beginning of the curriculum.
2	Use the standards of pharmaceutical care practice as a foundational, organizing component of the competencies to be developed by the curriculum and the measurement criteria as the basis for assessing competence in pharmaceutical care practice.
3	Ground the philosophy of the curriculum in the ethics of responsibility, accountability, credibility, trust, caring, and patient-centeredness that are found in pharmaceutical care practice.
4	These ethics must be explicitly modeled, fostered, and critically reflected upon by student practitioners, faculty, preceptors, and administrators.
5	College of pharmacy faculty and administrators must assume responsibility for ongoing preceptor development to prepare preceptors as both exemplary practitioners and educators. In addition, the college of pharmacy faculty and administrators must actively work to develop experiential pharmaceutical care practice sites with pharmaceutical care stakeholders.
6	All aspects of the curriculum should begin with the radical idea that the student practitioner is responsible for all outcomes of his or her drug therapy decisions and that he or she must be held accountable for this commitment.
7	Clinical knowledge, clinical skills, and patient knowledge should be learned simultaneously.
8	The patient specific knowledge should be taught as an essential component of the decision making process and the context in which clinical knowledge is utilized.
9	Students must participate in experiential learning early in the curriculum. Experiences in practice must have defined learning objectives and responsibilities for direct patient care.
10	The educators must utilize problem based learning, critical reflection, and team-based learning to develop problem solving capacities similar to those found in pharmaceutical care practice.

Recommendation 1: Teach the philosophy and standards of practice from entry into the curriculum

The philosophy and practice standards must be used as the guiding premise for the curriculum. The standards inform the curricular content and the philosophy sets for the patient care ethics that inform practitioner behaviors. The pharmaceutical care practice standards provide the framework for the minimum requirements of practice. For all professions, the respective standards of practice are used to describe and evaluate practice both internally and externally to the profession. The pharmaceutical care practice standards are used by other professionals to understand what pharmaceutical care is, to help determine when it may be beneficial for a patient, and to assess if a practitioner is providing it (see Appendix 7: Standards of Pharmaceutical Care Practice) .

To develop competence in demonstrating the pharmaceutical care practice standards, students must be provided with ample opportunity to develop the skills and knowledge that the standards require. To achieve this, the curriculum and all courses within it need to be aligned to reinforce practice concepts. The standards of practice define what practice is, what is required for practice, and outline how student practitioners will be evaluated throughout the curriculum once in practice. It is imperative that they be explained upon entry into the curriculum. One manner of accomplishing this would be providing an introduction to pharmaceutical care practice within the student practitioner's first semester in the pharmacy curriculum and provide guidance on how each standard is enacted in practice, what is needed to successfully complete the standard, and provide the

student practitioner the opportunity to begin to develop the skills required for each standard.

Recommendation 2: Use the standards as a foundation for the all coursework

All coursework should draw upon the standards of practice for guidance on what practice is, how it should be enacted, and, using the measurement criteria for each practice standard, how it should be evaluated. The practice standards must be looked at as a whole, rather than optional pieces. Individual courses cannot exclude particular practice standards as not being "required for this course." The only rational exception to this statement would be for courses in which course objectives are building towards the development of competence in all practice standards which may begin by focusing on initial standards of practice and add additional practice standards as appropriate. Such development of capacity to perform pharmaceutical care at the level described in the standards of practice must be achieved within the first year of the curriculum in order to provide the student a sufficient framework for understanding how the knowledge and skills learned in other courses can be applied in practice.

Recommendation 3: Ground curriculum in the ethics of practice and Recommendation 4: All stakeholders model ethics of practice

The desired traits of the patient care culture to be fostered and addressed as part of the curriculum. The culture of the curriculum is rarely addressed explicitly and is often referred to as the "hidden curriculum." The hidden curriculum is "all those behaviors and

events that students observe and experience that may be a significant variance with what they've been taught" (Treadway and Chatterjee 2011). The hidden curriculum will always be a part of student learning, however, colleges of pharmacy must openly address discrepancies in behaviors, actions, and ethics between the curriculum and practice. As part of this, the patient care ethics must inform behaviors and actions of the curriculum participants.

Faculty members and administrators at colleges of pharmacy have rarely experienced what it means to be a pharmaceutical care practitioner and often have dramatically variety of understandings of pharmaceutical care practice. Some faculty members may even reject the idea that it should be the focus of pharmacy education. In light of this, the ethics that are the basis for the philosophy of practice and part of the patient care culture must be fostered in an intentional manner at all levels and by all stakeholders within the educational process. These ethics will become the foundation for the student practitioner's behaviors in practice, change the prioritization for how he or she thinks and learns as a practitioner, and shapes interactions with all colleagues and patients with whom he or she comes in contact.

The ethics must be used to foster the patient-care culture in the students and also to be used as guideposts in changing the culture of pharmacy education. In this research, the ethics that were identified as being essential to pharmaceutical care practice were caring, trust, patient-centeredness, responsibility, and accountability. Although other ethics of

pharmaceutical care practice may exist, these were found to be consistently expressed by the research participants in practice. Although each can be defined independently of the others, together they describe characteristics of who the pharmaceutical care practitioner's identity in practice may be, and therefore must be fostered in the curriculum.

The development of the identity of the student or pharmacist as a practitioner begins with the fostering of these ethics by preceptors, administrators, faculty members, and colleagues. As the ethics are the reason why pharmaceutical care practice is practiced, they must be addressed from the beginning of the curriculum and reinforced and modeled by all participants. For the practitioners who participated in this research, much of their development was acknowledged as their own responsibility and often underwent the most dramatic change upon entry into practice. However, the ethics of pharmaceutical care practice are the driving force for why practitioners act and think the way in which they do.

Because of this, these ethics must be fostered as part of the culture of the curriculum. All participants must internalize the ethics as requirement for practice. In order to do so, all participants, including all faculty members, must accept the philosophy of practice, ethics, and standards of practice as the means through which all clinical knowledge and skills will be utilized once in practice.

The ethics that inform the practice of pharmaceutical care, practice standards, and learning strategies are all crucial to the development of the pharmaceutical care practitioner. In this research, the gap between the ideal pharmaceutical care curriculum and current pharmacy education was infinitely larger than the one that presently exists for the defined curricular content, which was primarily limited to the integration of patient knowledge. Although the curricular conceptual framework was developed from health care literature and practice observations, there are still several limitations to be considered in making such comparisons.

Recommendation 5: Preceptor and practice site development

Experiential education and the preceptors' role within the pharmaceutical care based curriculum are essential to student practitioner development. However, pharmaceutical care practice is relatively new and, as a result, the number of established pharmaceutical care practice sites in a given geographic area may not be sufficient to support a college of pharmacy's student practitioners. Additionally, once a practice site is established, it cannot be assumed that all practitioners will possess sufficient precepting skills. The faculty and administrators at colleges of pharmacy must work to develop both practice sites and preceptors to support the educational needs of student practitioners. One means to accomplish this is to establish preceptor training programs in which practitioners can receive training on the knowledge application and evaluation techniques that are desirable for student practitioner development. Additionally, colleges of pharmacy need to actively and aggressively seek opportunities to develop practice sites by establishing

partnerships with primary care clinics, health systems, pharmacies, health plans, pharmacy benefit managers, and payers. Without the development of pharmaceutical care practice sites and practitioners where students can be trained, colleges of pharmacy will be very challenged to develop graduates with the capacity for entry-level practice.

Recommendation 6: Student practitioner responsibility and accountability

The pharmaceutical care based curriculum must mirror expectations, standards, and behaviors in pharmaceutical care practice as a means of preparing the student practitioner for entry-level practice. The practitioners interviewed in this research commonly spoke of not truly understanding their responsibility and accountability for patient care until they were in practice for a period of time and often only realized the true responsibility of their patient care role after a negative event. This is neither an ideal nor acceptable manner of training practitioners for their responsibilities in practice. All health care practitioners must clearly understand the problems for which they are responsible and accept accountability for their decision making prior to entry into practice. To address this within the curriculum, the expectation must be that the student practitioner is responsible and will be held accountable for the theoretical (e.g. patient cases or examples) or actual patient care outcomes for every decision, recommendation, or action that he or she makes as part of his or her coursework, examinations, or experiential education experiences. This cannot be negotiable nor can it be enacted halfway.

Recommendation 7: Simultaneous development of clinical knowledge, clinical skills, and patient knowledge

The curricular content for the pharmaceutical care based curriculum consists of medication and disease state knowledge, clinical skills, and patient-specific knowledge. While completing the curriculum, student practitioners must develop competence in each of these domains and be able to integrate all three into their decision making. In this research, the ability to integrate knowledge of the patient into clinical decision making was often cited by the practitioners as developing after graduation, in practice.

In pharmacy curricula, clinical knowledge, clinical skills, and patient knowledge must be consistently integrated in all coursework. Separating clinical knowledge courses from skills labs or experiential education reinforces a silo approach to understanding which separates clinical knowledge from its application in practice. Integrating all components within the curriculum means that there must be intentionality in developing the curricular content in all three areas simultaneously regardless of stage of matriculation or designated course. Every course within the curriculum should have components that present medication or disease state information, activities and assessment of practice skills, and assimilation of individual patient factors into decision making.

The curricular content, as defined in the curricular conceptual framework, outlines items that comprise the clinical knowledge, clinical skills, and patient knowledge. The items provide an initial structure for what must be taught about any medication or disease state. However, it does not state which medications or conditions should be included in the

formal curriculum. The purpose of the pharmacy curriculum is to develop entry-level generalist practitioners; therefore colleges of pharmacy should ensure that all students receive training in caring for patients across ambulatory, inpatient, and long term care settings as well as the 15-25 most common medications and disease states encountered in each of these settings. Understanding how to manage the 15-25 most common disease states in each practice setting will account for 65-80% of disease states encountered in practice. This will focus the curriculum on content that is most applicable to practice and those medications and disease states that the students will most commonly encounter in their practice experiences. If the content cannot be directly applied in the way it is to used to care for patients, it is unlikely to be available once in practice.

In addition to the curricular content, emphasis must be placed on the development of the curricular foundation, which, as shown in Figure 5: Curricular Conceptual Framework, ensures that the curricular content is organized to ensure the appropriateness of the practitioner's decision making. The curricular foundation provides additional guidance for how curricula must be oriented with pharmaceutical care practice and how the practice standards and ethics are used to inform curricular organizations and decisions.

Recommendation 8: Patient knowledge as context for decision making

Traditionally, pharmacists have been trained to be "medication experts." They receive more pharmacology, drug delivery, and medical chemistry coursework than any other

health professional. However, as demonstrated by the curricular conceptual framework, possession of drug knowledge is simply not sufficient to provide pharmaceutical care. Practitioners must be able to integrate the patient specific factors (such as preferences, multiple disease states, socio-economic status, educational level, lifestyle, etc) into their decision making and balance this information with evidence-based guidelines and references. Physicians, and even more so, nurses are taught early in their curricula to integrate the patient into decision making and with their respective clinical knowledge. The ability to integrate the patient into decision making makes them potential candidates to integrate pharmaceutical care into their practices. Presently, however, they are not taught the same in-depth level of medication knowledge that pharmacists receive. In contrast, physicians and nurses are taught to make patient-centered, patient-driven decisions within their professional domain (Pringle, Melczak et al. 2011).

Nurses and physicians may feel sufficiently prepared to provide pharmaceutical care because they possess some medication knowledge, know the available medication references from which they can supplement this knowledge, and are confident in their ability to integrate the patient into their decision making. However, in doing so, nurses and physicians are relying upon their ability to assess the appropriateness of the medication reference for the individual for whom they are trying to make the drug therapy decision. For example, a nurse may understand that the patient has been experiencing increasing episodes of weakness and dizziness possibly due to his medications. However, in reviewing the medication references the nurse finds four

different medications that list dizziness as a side effect and does not possess the pharmacokinetic or pharmacologic background to identify the medication most likely causing dizziness in this particular patient along with his host of medications and comorbidities. This is in contrast to how the researcher has commonly observed student pharmacists using medication references. In these instances the student pharmacist approaches the literature looking for an answer to a specific, detailed medication question outside of the context of a patient and quickly becomes frustrated when they cannot find an answer. For example, the researcher has witnessed many instances of student pharmacists trying to determine when a follow up visit should be scheduled after starting a particular medication. The medication reference may cite the onset of action for the medication, when it may reach its peak effect, and when lab values should be monitored. However, as the student begins to gather this information for the 10 medications a patient is taking, they commonly become frustrated trying to integrate all of the "data" into the practical context of what makes sense for this patient. The patient's lack of transportation to clinic, busy work schedule, combination of medical conditions all put him at risk for certain side effects. In these situations, the "answer" to the student pharmacists' and also the nurses' questions lie in the combination of clinical and patient knowledge.

Some may argue that the ability to resolve the complexity of these issues can only be learned after graduation, during residency training or in practice. However, as in the profession of medicine, residencies, fellowships, and continuous learning in practice

results in the refinement of the knowledge, skills, and ethics, not the initial development. The capacity to understand this complexity and the development of a rational approach to addressing such issues must be fostered within the curriculum.

Presently no profession adequately trains its graduates to make complex drug therapy decisions on a routine basis. The profession of pharmacy has a brief window to address how to teach student practitioners to develop as *both* medication experts and patient care providers before the professions of nursing or medicine begin to provide more expansive medication knowledge within their curricula.

Recommendation 9: Experiential learning with defined responsibilities

Pharmaceutical care practice, like all professional practice is an action. In order to learn what it means to be a practitioner, students must be given the opportunity to be 'in practice' as 'in practice' is where the understanding of how to think, act, and learn the identity of a practitioner, develops. Student practitioners do require didactic coursework in order to gain the expert knowledge that will be required in their professional decision making. However, it is important the didactic portion of the curriculum mirrors the expectations of how practitioners think, act, and learn in practice as closely as possible. The components of the curricular framework: the practice standards; patient care ethics; and teaching, application, and evaluation techniques, are used to provide this structure.

In addition to assisting each student in internalizing the standards of practice as the framework for the didactic knowledge required for practice, the students must also be placed into practice settings early in the curriculum. Although introductory pharmacy practice experiences (IPPEs) are now a required portion of pharmacy curricula, such experiences must not merely be an opportunity to watch a pharmacist do his or her job. When learning in practice, the student practitioner must have a defined level of direct patient care responsibility and specific learning objectives that are appropriate for the stage of matriculation. Both the responsibilities and learning objectives must be defined by the college of pharmacy in conjunction with the preceptors. This does not mean that the college should wait for the preceptors to define what should be accomplished during the practice experience, but rather the learning objectives and level of responsibility should be established by the college of pharmacy with input from preceptors. Correspondingly, assessment must be based on the defined level of responsibility and desired performance.

Recommendation 10: Problem-based learning, critical reflection, and team-based learning

As described previously, problem based learning and critical reflection should be considered ideal learning strategies for the development of competence in pharmaceutical care practice. Both of these learning strategies help to develop the students' skills to critically appraise situations and identify strategies for problem setting and problem solving. In addition, as pharmaceutical care practice and primary care reform have identified the importance of integrating patient care across multiple health care providers,

team-based learning and interdisciplinary opportunities should be used whenever possible to develop the skills required in practice.

It is important that learning strategies not be driven by available evaluation techniques rather the evaluation techniques must be selected based on the desired learning strategies. Using this approach, evaluation of student performance must be based on patient outcomes or likelihood of patient outcomes, explanation or demonstration of rational decision making, and demonstration of patient care ethics. Early in the student's development, evaluation should assess the student's ability to demonstrate the appropriate level of decision making based upon his or her matriculation. Cases should not be over-simplified to remove the complexity for the student. Students must learn that all cases are complex and to remove factors that may be perceived as too challenging for the student will not help him or her to learn how to make decisions in practice where all patients have medication preferences, histories, and circumstances that may be labeled as complex. In such situations, student performance should be evaluated based on the ability to demonstrate the appropriate level of decision making based on the student's matriculation. As students advance in the curriculum, evaluation should focus the refinement in decision making and increasing ability to address the complexity of the patient case. For example, a patient case may be presented to a first year pharmacy student and the student is asked to assess only one disease state of the patient's 12 for the presence of drug therapy problems. In doing so, the student would then be evaluated on their classification of the drug therapy problem and resolution plan. At this stage of

learning the identification of the appropriate major category of drug therapy problem and recommended drug class to resolve the problem would be considered appropriate performance. For a student in their final year of school, the same patient case may require them to assess all 12 conditions, determine goals of therapy for each condition, identify all drug therapy problems and make specific drug therapy recommendations (drug, dose, route, frequency, and follow up parameters and schedule).

Integrating the recommendations into the curriculum

Integrating patient care experiences with clinical knowledge and skills are essential for the development of competence in pharmaceutical care practice. The following example outlines one manner in which the curriculum recommendations could be integrated and implemented into a pharmacy curriculum. There remains a need for further exploration of innovative strategies in which didactic and experiential components of the curriculum can be coordinated and bridged in order to create explicit connections between the clinical knowledge, clinical skills, and patient knowledge through the curriculum.

The researcher utilized the concepts of the curricular conceptual framework in her first year pharmaceutical care course The in-classroom coursework was grounded in the pharmaceutical care practice components of the therapeutic relationship, assessment, care plan development, drug therapy problem identification and resolution, and follow up. For each of these components the students were first introduced to the component via discussion or patient care video and then completed an in-class active learning activity

using high fidelity patient cases. Finally, the students were asked to apply their knowledge and skills by identifying a patient in the community and providing the specific components of pharmaceutical care during their appointment. For example, the first patient care assignment was to develop a therapeutic relationship with a patient and understand his or her medication experience. As the semester progressed, the students would identify new patients, complete the previously learned components and add the newly learned component so that at the end of the semester the students completed a full patient assessment, constructed care plans, established a plan for resolving drug therapy problems, and established follow up parameters and timeframe. This process was designed to reinforce the clinical knowledge, practice skills, and patient knowledge that are necessary in pharmaceutical care.

However, during the years of conducting the course in this manner, students often stated that they did not feel they had an understanding of the clinical knowledge that they would need to identify, resolve, and prevent drug therapy problems. Although, as first year student pharmacists, their drug knowledge is very limited, the purpose of these experiences is to lay the foundation on how clinical knowledge is learned and applied to make drug therapy decisions. In order to address this and to have students establish for themselves how to access and organize the available medication references, the students were asked, as a class, to develop a care plan guideline for a particular disease state (see Appendix 8: Pharmaceutical Care Plan Guideline). Care plan guidelines are a defined format of clinical reference designed to mirror how the assessment and decision making

process are used by pharmaceutical care practitioners in practice. The care plan guidelines integrate disease state, drug therapy, and patient factors from multiple clinical references (Cipolle 2007). As a class, the students selected hypothyroidism, a disease state that was common in the patients that they had cared for as part of the course assignments. The class was then divided into active learning groups of 4-6 students and each active learning group was assigned a specific component of the care plan guideline format. Upon the completion of each group's component, the care plan guideline for hypothyroidism was compiled, shared with the class, and discussed. To apply this new knowledge to a patient, a patient case from a pharmaceutical care practice was provided to the students in which the patient's primary concern was her hypothyroidism. The students then completed the assessment, created care plans for hypothyroidism, and identified and resolved drug therapy problems relating to hypothyroidism utilizing the class' care plan guideline as their primary reference. Upon completion of the care plans, the case was discussed, as a class, to compare, contrast, and discuss how each student identified and resolved the drug therapy problem presented in the case.

Addressing Potential Limitations

This research was used to develop an initial prototype for the pharmaceutical care based curriculum. This creates several limitations for its utility. First, it is an initial construct from which further ideas and processes can be developed and tested (2007). Therefore, by definition, the curricular conceptual framework is not a fully developed structure. However, this should not limit the usefulness of this research. The developmental nature

of the research question required a high degree of innovation that could have only been achieved by the development of a prototype. This type of research would not be feasible within an existing or even new college of pharmacy. Now that the structure has been defined it can be challenged, implemented, and refined.

A limited number of practitioners who were practicing in a geographically similar area were used for all practice observations which may have influenced the curricular conceptual framework design. The practitioners in this research were also contemporaries of each other and likely have influenced each other's practice behaviors. The standards of practice are the same standards that apply to all pharmaceutical care practitioners and are commonly seen in health care policy that relates to medication therapy management and pharmaceutical care. However, due to the varying practice activities completed by pharmacists in patient care settings under the guise of pharmaceutical care (Deselle and Rappaport 1997), it could be argued that the use of a small number of practitioner who consistently demonstrated the philosophy and standards of practice is a strength of this research that allowed for a more in-depth look at what is required for pharmaceutical care practice as defined by legislation, policy, other professions, and payers (Public Law 108-173 2003; Isetts 2007; Patient Centered Primary Care Collaborative 2011).

In addition to the small sample of practitioners, the manner in which themes were triangulated with interview responses and practice observations may have led to

practitioners stating their ideal practices rather than their actual practice behaviors. This was described in detail relating to one practitioner's vocalization of patient centered behaviors, but contradictory actions. Paley identified this limitation in his research on caring behaviors in the profession of nursing saying, "People often express intentions rather than behaviors when asked directly" (Paley 2001). This challenge remains present in this research. However, it is mitigated by the fact that the intent of a curriculum should be to develop the intentional, deliberate practice which would foster the desired knowledge, skills, and ethics of practice even if they are not always enacted in every practice situation. This is also addressed by the necessity of developing the student's capacity for critical reflection to resolve situations where they do not witness the completion of the practitioner's deliberate practice.

Finally, and ultimately, the greatest limitation to this research is that it has not been translated into the creation of a formal curriculum. The conceptual framework and its components must now be taken and translated into actionable items within a curriculum. As stated in the outset of this research, the focus was limited to the requirements for the provision of pharmaceutical care to a patient. As this research is translated into practice, additional research will be required to identify the influences and requirements outside of the identification, prevention, and resolution of drug therapy problems that will need to be added into the curriculum.

Areas for Future Research

As alluded to by the limitations of this research, the conceptual framework must be put into action in a curriculum, evaluated, and refined. This will require significant future research, beginning with the determination of the specific competency statements required for the implementation of the curricular content. The competency statements were not included in this research as it was determined that competency statements need to be written within the context of how they are being put into action which can only be understood upon implementation.

While completing the conceptual framework, the importance of the patients' and preceptors' roles within the curriculum become increasingly apparent. In order to provide more explicit description of how both roles can enhance student learning as well as receive benefits from their respective participation, further research is needed that explores preceptor and patient needs. This should be complemented by additional research on how novices (i.e. students) and expert practitioners make decisions about the identification, preventions, and resolution of drug therapy problems.

The primary limitation of the conceptual framework is that the prototype has not been tested in any curriculum. These ideas need to be put into action. However, they need to be put into action as a whole across a curriculum. Although it will be beneficial to include these concepts within individual courses in colleges of pharmacy, they were designed to be implemented as the foundation for the entire curriculum.

Educating for Action

The next challenge in pharmacy education will be to fully enact its commitment to pharmaceutical care by grounding the curriculum, in its entirety, in pharmaceutical care practice. Pharmaceutical care is quickly being adopted as a core component of patient care and if colleges of pharmacy cannot produce practitioners who can provide this level of care, the practice will be adopted by other professions. This will require that colleges of pharmacy align curricula with the ethics and standards required in pharmaceutical care and adopt teaching, knowledge application, and evaluation strategies that explicitly mirror the realities of health care, including pharmaceutical care practices.

Pharmacy educators, pharmacists, current and future pharmacy students must decide if they are ready to accept the challenges of being a patient care provider. As stated by one of the practitioners in this research, this cannot be done halfway. Now is the time to educate future pharmacists to not only possess medication knowledge, but to put that education into action. In order to accomplish this, education and practice must become more closely aligned than they have at any other point in history. Practice, research, and teaching must be the used to explicitly inform each other in order to generate the momentum for the dramatic change that is required for pharmacy education to create pharmaceutical care practitioners who are ready for practice. There will be much to learn from all three groups as the profession of pharmacy learns how to educate for action.

Research begins in wonder and curiosity
but ends in teaching.
(Shulman 1986)

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Appendices

Appendix 1: Invitation to Participate-Practitioner

UNIVERSITY OF MINNESOTA

Twin Cities Campus | *Peters Institute of Pharmaceutical Care* | *College of Pharmacy* | *Room 7-123 Weaver-Densford Hall 308 Harvard Street S.E., Minneapolis, MN 55455-0343*

March 26, 2010

Dear MTM Academy Member,

Based on your participation in the MPhA MTM Academy and experience in pharmaceutical care/medication therapy management practice, I would like to invite you to participate in a research project that will help us to understand how we can better design pharmacy curricula to prepare pharmacists who are able to provide pharmaceutical care. The title of my dissertation is "Educating for Action: Understanding the Development of Pharmaceutical Care Practitioner."

Please allow me to introduce myself. My name is Victoria Losinski and I am a PhD Candidate in the Social and Administrative Pharmacy Program at the University of Minnesota. As part of my research, I want to understand what skills, knowledge, and values are needed to provide pharmaceutical care and what experiences have helped practitioners to develop them.

In order to do this, I am going to observe pharmacists and student pharmacist with varying experience levels who are providing pharmaceutical care to patients. After the observations, I will interview the pharmacist (or student pharmacist) to gain an understanding of how the she or he developed her or his practice skills. Those pharmacists and student pharmacists who participate would be asked to allow me to observe 3 different patient assessments and conduct a 60 to 90 minute interview which would be conducted at a time and location that is most convenient for you.

Although I am unable to provide an honorarium for your time, I hope that the results generated from this work will be of benefit to you. In addition, you will be provided a copy of the final product.

If you are interested in helping to develop a new way to prepare pharmacists for pharmaceutical care practice or would like more information on research please contact Victoria Losinski at losi0006@umn.edu or 612-810-7775.

This research is an essential step in the continued patient care evolution in the profession pharmacy. I look forward to working with you.

Sincerely,

Victoria Losinski

Victoria Losinski, Pharm.D., PhD Candidate

Appendix 2: Pharmacist Informed Consent Form (Observation)

Project Title: Educating for Action: Understanding the Development of Pharmaceutical Care Practitioners

You are invited to be in a research study that will focus on understanding how pharmacists learn to provide pharmaceutical care. Please read this form and ask any questions you may have before agreeing to participate in the study.

This study is being conducted by: Victoria Losinski, PharmD. She is a graduate student in Social, Administrative, and Clinical Pharmacy at the University of Minnesota. This study is part of her Ph.D. requirements. You may contact her by phone (612-810-7775) or by email at losi0006@umn.edu.

Background Information

The purpose of this research is to better understand how pharmacists learn to provide pharmaceutical care so that changes can be made in order to improve the preparation of pharmaceutical care practitioners.

Procedures:

If you agree to be in this study, I will observe you while you are providing pharmaceutical care to three different patients. I will not interrupt your conversation, but I will take notes while I am observing.

Risks and Benefits of being in the Study

The risk of being in this study is that you may feel embarrassed or emotional while being observed or during the interview. You are free to refuse to participate at any time. This study is not designed to make you feel uncomfortable; however, being observed may result in you feeling uncomfortable.

There are no direct benefits to you as a participant in this study.

Compensation:

There are no costs involved in participating in this study. You will not be paid for your participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we

will not include any information that will make it possible to identify you. Research records will be stored securely and only the researchers. The audio recordings will be house on a secure, password protected computer that only the researchers can access. They will be destroyed at the end of the study by the principle investigator. The information obtained will be used only for educational purposes (completion of the PhD dissertation) and the findings of the study may be published. Names and identifying information of participants will not be mentioned in the findings.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations your clinics, pharmacies, health care providers, or with the University of Minnesota. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:

Victoria Losinski is the researcher conducting the study. She is a graduate student at the University of Minnesota. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them at Dr. Losinski at 612-810-7775 or losi0006@umn.edu or her advisor, Dr. Linda Strand at 952-746-8185 or stran001@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than Dr. Losinski, **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Appendix 3: Pharmacist Informed Consent Form (Interview)

Project Title: Educating for Action: Understanding the Development of Pharmaceutical Care Practitioners

You are invited to be in a research study that will focus on understanding how pharmacists learn to provide pharmaceutical care. Please read this form and ask any questions you may have before agreeing to participate in the study.

This study is being conducted by: Victoria Losinski, PharmD. She is a graduate student in Social, Administrative, and Clinical Pharmacy at the University of Minnesota. This study is part of her Ph.D. requirements. You may contact her by phone (612-810-7775) or by email at losi0006@umn.edu.

Background Information

The purpose of this research is to better understand how pharmacists learn to provide pharmaceutical care so that changes can be made in order to improve the preparation of pharmaceutical care practitioners.

Procedures:

If you agree to be in this study, you will be asked to meet with the investigator for a 60 to 90 minute interview. During the interview you will be asked questions about how you learned to provide pharmaceutical care. This will take place at your clinic, pharmacy, or at a place of your convenience. The interviews will be audio-taped.

Risks and Benefits of being in the Study

The risk of being in this study is that you may feel embarrassed or emotional while being observed or during the interview. You are free to refuse to participate at any time. This study is not designed to make you feel uncomfortable; however, the interview questions may result in you feeling uncomfortable in thinking about your experiences providing pharmaceutical care.

There are no direct benefits to you as a participant in this study.

Compensation:

There are no costs involved in participating in this study. You will not be paid for your participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely and only the researchers. The audio recordings will be house on a secure, password protected computer that only the researchers or transcriptionists can access. They will be destroyed at the end of the study by the principle investigator. The information obtained will be used only for educational purposes (completion of the PhD dissertation) and the findings of the study may be published. Names and identifying information of participants will not be mentioned in the findings.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations your clinics, pharmacies, health care providers, or with the University of Minnesota. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:

Victoria Losinski is the researcher conducting the study. She is a graduate student at the University of Minnesota. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them at Dr. Losinski at 612-810-7775 or losi0006@umn.edu or her advisor, Dr. Linda Strand at 952-746-8185 or stran001@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than Dr. Losinski, **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Appendix 4: Patient Informed Consent Form (Observation)

Project Title: Educating for Action: Understanding the Development of Pharmaceutical Care Practitioners

You are invited to be in a research study. This study will focus on understanding how pharmacists learn to provide pharmaceutical care. Please read this form and ask any questions you may have before agreeing to participate.

This study is being conducted by: Victoria Losinski, PharmD. She is a graduate student in Social, Administrative, and Clinical Pharmacy at the University of Minnesota. This study is part of her Ph.D. requirements. You may contact her by phone (612-810-7775) or by email at losi0006@umn.edu.

Background Information

Pharmaceutical care, also called medication therapy management, is a health care service that focuses on helping patients with their medications. This is a new service in the health care system. This study is designed to understand how pharmacists learn to provide pharmaceutical care. I want to observe how the pharmacist provides you with pharmaceutical care. This will allow me to help pharmacy schools better prepare pharmacists to provide this service.

Procedures:

If you agree to be in this study, I will observe you and your pharmacist while the both of you are talking. I will not interrupt your conversation, but I will take notes during it.

Risks and Benefits of being in the Study

The risk of being in this study is that you may feel embarrassed while being observed. You are free to refuse to be observed at any time.

There are no direct benefits to you as a participant in this study.

Compensation:

There are no costs involved in participating in this study. You will not be paid for your participation in this study.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify you. Research

records will be stored securely. They will be destroyed at the end of the study.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations your clinics, pharmacies, health care providers, or with the University of Minnesota. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:

Victoria Losinski is the researcher conducting the study. She is a graduate student at the University of Minnesota. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact them at Dr. Losinski at 612-810-7775 or losi0006@umn.edu or her advisor, Dr. Linda Strand at 952-746-8185 or stran001@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than Dr. Losinski, **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Appendix 5: Expert Panel Invitation Letter

Dear Dr./Ms/Mr XXXX,

Based on your XXXX [Work as a physician, educator, in practice, etc], I would like to invite you to consider participating as a member on an expert panel for Ph.D. work I am completing. My Ph.D. dissertation is aimed at understanding how we can better design pharmacy curricula to prepare pharmacists who can provide pharmaceutical care. The title of my dissertation is "Educating for Action: Understanding the Development of Pharmaceutical Care Practitioner."

Please allow me to introduce myself. My name is Victoria Losinski and I am a PhD Candidate in the Social and Administrative Pharmacy Program at the University of Minnesota. My research goal is to build a framework for pharmacy curricula that centers on the practice of pharmaceutical care. In order to do this, I am developing an expert panel to provide input and feedback during the design of this framework.

If you agree to participate, expert panel members will be asked to participate in at least two (2) two-hour meetings. Meeting times will be available at least 2 months in advance and at least two meeting times will be offered. These meetings will be held at the University of Minnesota and via GoToMeeting web conferencing. During these meetings you will be asked to react to materials regarding pharmacy curricula based on your area of expertise. No preparation is necessary for the work asked of you at these meetings. Specifically, you will be asked to provide your thoughts, impressions, questions, and critique of the research results that I will present at the beginning of each meeting.

I will reimburse you for parking and provide you with sustenance during the meetings if you choose to attend the meeting in person. Although I am unable to offer you an honorarium for your time, I hope that the results generated from this work will be of benefit to you. You will be acknowledged as members of the expert panel in the body of the dissertation and you will receive a copy of the end product.

If you are interested in helping to develop a new way to prepare pharmacists for pharmaceutical care practice or would like more information on this research endeavor, please contact me at losi0006@umn.edu or 612-810-7775.

This research is an essential step in the continued patient care evolution in the profession of pharmacy. I look forward to working with you.

Sincerely,

Victoria Losinski, Pharm.D., PhD Candidate

Appendix 7: Standards for Pharmaceutical Care Practice

(Cipolle, Strand et al. 2004)

I. Assessment

A. The practitioner collects relevant patient-specific information to use in decision-making concerning all drug therapies.

B. The practitioner analyzes the assessment data to determine if the patient's drug-related needs are being met, that all the patient's medications are appropriately indicated, the most effective available, the safest possible, and the patient is able and willing to take the medication as intended.

C. Identification of drug therapy problems: The practitioner analyzes the assessment data to determine if any drug therapy problems are present.

II. Care plan development

A. The practitioner identifies goals of therapy that are individualized to the patient.

B. The practitioner develops a care plan that includes interventions to: resolve drug therapy problems, achieve goals of therapy, and prevent drug therapy problems.

C. The practitioner develops a schedule to follow-up and evaluates the effectiveness of drug therapies and assesses any adverse events experienced by the patient.

III. Follow-up evaluation

A. The practitioner evaluates the patient's actual outcomes and determines the patient's progress toward the achievement of the goals of therapy.

B. The practitioner determines if any safety or compliance issues are present.

C. The practitioner assesses whether any new drug therapy problems have developed.

Measurement Criteria for Standards Evaluation

I. Assessment

A. Collection of Patient-specific Information

The practitioner collects relevant patient-specific information to use in decision making concerning all drug therapies.

1. Pertinent data are collected using appropriate interview techniques.
2. Data collection involves the patient, family and care-givers, and health care providers when appropriate.
3. The medication experience is elicited by the practitioner and incorporated as the context for decision-making.
4. The data are used to develop a pharmacologically relevant description of the patient and the patient's drug-related needs.
5. The relevance and significance of the data collected are determined by the patient's present conditions, illnesses, wants, and needs.
6. The medication history is complete and accurate.
7. The current medication record is complete and accurate.
8. The data collection process is systematic and ongoing.
9. Only data that are required and used by the practitioner are elicited from the patient.
10. Relevant data are documented in a retrievable form.
11. All data elicitation and documentation is conducted in a manner that ensures patient confidentiality.

B. Assessment of Drug-related Needs

The practitioner analyzes the assessment data to determine if the patient's drug-related needs are being met, that all the patient's medications are appropriately indicated, the most effective available, the safest possible, and the patient is able and willing to take the medication as intended.

1. The patient-specific data collected in the assessment are used to decide if all of the patient's medications are appropriately indicated.
2. The data collected are used to decide if the patient needs additional medications that are not presently being taken.
3. The data collected are used to decide if all of the patient's medications are the most effective products available for the conditions.
4. The data collected are used to decide if all of the patient's medications are dosed appropriately to achieve the goals of therapy.
5. The data collected are used to decide if any of the patient's medications are causing adverse effects.
6. The data collected are used to decide if any of the patient's medications are dosed excessively and causing toxicities.

7. The patient's behavior is assessed to determine if all of his/her medications are being taken appropriately in order to achieve the goals of therapy.

C. Identification of Drug Therapy Problems

The practitioner analyzes the assessment data to determine if any drug therapy problems are present.

1. Drug therapy problems are identified from the assessment findings.
2. Drug therapy problems are validated with the patient, his/her family, caregivers, and/or health care providers, when necessary.
3. Drug therapy problems are expressed so that the medical condition and the drug therapy involved are explicitly stated and the relationship or cause of the problem is described.
4. Drug therapy problems are prioritized, and those that will be resolved first are selected.
5. Drug therapy problems are documented in a manner that facilitates the determination of goals of therapy within the care plan.

II. Care Plan Development

A. Development of Goals of Therapy

The practitioner identifies goals of therapy that are individualized to the patient.

1. Goals of therapy are established for each indication for drug therapy.
2. Desired goals of therapy are described in terms of the observable or measurable clinical and/or laboratory parameters to be used to evaluate effectiveness of drug therapy.
3. Goals of therapy are mutually negotiated with the patient and health care providers when appropriate.
4. Goals of therapy are realistic in relation to the patient's present and potential capabilities.
5. Goals of therapy are attainable in relation to resources available to the patient.
6. Goals of therapy include a timeframe for achievement.

B. Statement of Interventions

The practitioner develops a plan of care that involves interventions to resolve drug therapy problems and interventions to achieve goals of therapy

1. Each intervention is individualized to the patient's condition, needs, and drug therapy problems.
2. All appropriate therapeutic alternatives to resolve the drug therapy problems are considered, and the best are selected.

3. The plan is developed in collaboration with the patient, his/her family and/or caregivers, and health care providers, when appropriate.
4. All interventions are documented.
5. The plan provides for continuity of care by including a schedule for follow-up.

C. Establishing a Schedule for Follow-up Evaluations

The practitioner develops a schedule to follow-up and evaluates the effectiveness of the outcomes from drug therapies and assesses any adverse events experienced by the patient.

1. The clinical and laboratory parameters to evaluate effectiveness are established, and a timeframe for collecting the relevant information is selected.
2. The clinical and laboratory parameters that reflect the safety of the patient's medications are selected, and a timeframe for collecting the relevant information is determined.
3. A schedule for the follow-up evaluation is established with the patient.
4. The plan for follow-up evaluation is documented.

III. Follow-up Evaluation

A. Evaluation of Actual Patient Outcomes – Appropriateness and effectiveness of the medication

The practitioner evaluates the patient's actual outcomes and determines the patient's progress toward the achievement of the goals of therapy.

1. The patient's actual outcomes from drug therapies and other interventions are documented.
2. The effectiveness of drug therapies is evaluated, and the patient's status is determined by comparing the outcomes within the expected timeframe to achieve the goals of therapy.

B. Evaluation of safety and compliance.

The practitioner determines if any safety or compliance issues are present.

1. The safety of the drug therapy is evaluated.
2. Patient compliance is evaluated.

C. Re-assessment for presence of new drug therapy problems.

The practitioner assesses whether any new drug therapy problems have developed.

1. The care plan is revised, as needed.
2. Revisions in the care plan are documented.

3. Evaluation is systematic and ongoing until all goals of therapy are achieved.
4. The patient, family and/or care-givers, and health care providers are involved in the evaluation process, when appropriate.

Appendix 8: Pharmaceutical Care Plan Guideline Format

Care Plan Title (16 font, bold)

INDICATION (16 font all caps)

Definition (14 font, underline)

Text is 12 font, regular
Includes an explanation of:
the condition described in this care plan both in the big picture (hyperlipidemia) and specifically (hypercholesterolemia)
how patients contract the condition (idiopathic, hereditary, etc.)
possible complications during the course of the disease (heart attack, end organ damage, etc)
Italics on main words
Tables: one line space before and after table, use 10 font for text, + borders
Do NOT use abbreviations

Presenting Signs and Symptoms (14, underline)

Bullet point multiple points, otherwise, use one paragraph (3-4 lines)
Define key terms
Give % when possible, as in 45% of patients present with a rash.

Frequency and Incidence (14 font, underline)

Text is 12 font, regular
Use round black bullet points
secondary bullet points are round and open
Include information below that is relevant to the condition
total number of people with the condition
number of diagnosed vs. undiagnosed people with condition
number of new people diagnosed each year
age groups
men vs. women
ethnic groups
Also include any facts you find related to the morbidity and mortality of the condition.
Morbidity
Diabetes is the leading cause of new cases of blindness among adults 20-74 years.
More than 60% of nontraumatic lower-limb amputations in the US occur among people with diabetes, which is about 82,000 amputations each year.
Mortality
6^{th} leading cause of death
X people with this condition die from a heart attack

Risk Factors (14, underline)
Use bullet points
Look for genetic and lifestyle risk factors.
Be as specific as possible. For example, instead of "overweight," say "overweight (BMI >25 kg/m^2)."

Unique Diagnostic Criteria (14, underline)
Format is open, but should be consistent with the overall format (bullet points, tables, etc).
Tests, exams, or lab values that determine a diagnosis
Short explanation of what the test/exam entails. For example, fasting plasma glucose >126 mg/dL. Fasting is defined as no caloric intake for 8 hours.
Explain whether the test/exam is an X-ray, scan, blood, or other test.

Assessment Checklist (14, underline)
Use bullet points
You are not diagnosing, but need to assess what the state of the patient's condition is.
Include information needed to establish goals of therapy and to evaluate effectiveness and safety on a consistent basis. (e.g., signs and symptoms, recent lab values, medication experience)
Add why/how the value may be used. For example, "current weight and height for BMI and normal growth development"

EFFECTIVENESS (16 FONT, ALL CAPS)

Short-term Goals of Therapy (time frame) (14, underline)
Use bullet points
Each goal must include a parameter, value, and timing.
If all goals have the same timing, put the time frame in parentheses above, e.g., (4-6 weeks).
These goals of therapy are related to the patient's drug therapy.

Long-term Goals of Therapy (14, underline)
Use bullet points
Includes prevention of complications/end organ damage and/or risk reduction.

Therapeutic Alternatives (14, underline)
The standard approach to the treatment (or prevention) of _(indication)_ (12, bold)
Synopsis of the current guidelines for initial drug selection
in patients without complications.
Rationale
when adding or changing drug therapies.

Rationale

Explain the reasoning behind the order used to list the pharmacological classes and the drugs within each class. Also explain what the bolding means and cite the Top 200.

Insert any flow chart that would help students decide where to start in selecting a drug.

Pharmacological Class (12 font, bold)
Pharmacology: (12, regular, colon)
Efficacy: (12 font, regular, colon) use bullet points
Dosage Guidelines:

Subclass of drugs (font 12, italics), if applicable (e.g., loop diuretics)
Pharmacology: if applicable
Efficacy: if applicable. Use bullet points
Dosage Guidelines:
Generic Drug Name (Brand name if only available in brand)
An ER/XL formulation should be considered a unique drug and given its own number. If the drug is on the Top 200 list, bold the name(s) of the drug.
Initial: (italics and colon)
Adjustments: (italics and colon) include intervals and dosage changes
Maximum: (italics and colon)
Use bullet points for additional information (renal, hepatic, concomitant therapies, elderly, or peds) if relevant to the condition.

SAFETY (font 16, all caps)

General safety concerns: Explain general safety concerns for the condition that applies to all patients. For hypertension, explain hypotension in this format:
Hypotension (font 12, bold)
Definition: (font 12, underline, colon)
Signs and Symptoms:
Treatment:

Pharmacological class (font 12, bold)
List by class in the same order as used in "EFFECTIVENESS"

Contraindications: (font 12, underline, colon) List the contraindications and separate with commas. If there is a pregnancy contraindication, give the risk category in parentheses e.g. (risk category X)

Consider Discontinuation of Drug: (font 12, underline, colon)

Adverse Drug Reactions: (font 12, underline, colon) List and use % when possible.

In rare instances, italicize the drug name and separate if there are entirely different ADRs.

Dose-related toxicity: (font 12, underline, colon) If it is dose-related for therapeutic doses (not overdoses), no matter what, it goes here.

COMPLIANCE (font 16, all caps)

General Patient Instructions (font 14, underline)

Effectiveness: Explain the positive outcomes patients should expect to see and when.
Safety: Explain safety concerns that all patients should be aware of regardless of the drug therapy they are taking. For example, with hypertension, explain what patients need to know about hypotension. (There may be some repeat from the "SAFETY" section.)

Pharmacological Class (font 12, bold)
Use bullets and give information that the patient needs to know regarding the administration of the drug or other unique information.
Take with meals.
Avoid alcohol (increased risk of hypoglycemia).

Self Care (font 14, underline)

Format is open, but should be consistent with overall format (bullet points, tables, etc.)
Include additional information that the patient can do to optimize the therapeutic response and prevent progression of the disease (exercise, nutrition, quit smoking, check blood glucose regularly).
Be as explicit as possible. Explain what the patient should do, for how long, what the activity entails, and how it will affect their condition (lower blood pressure 2-4 mmHg).
Therapeutic lifestyle changes go here.

DRUG THERAPY PROBLEMS (font 16, all caps)

Of the 7315 adult patients receiving pharmaceutical care between 01-01-1999 and 12-31-2003, 2460 patients were being treated for hyperlipidemia. Of these patients, 638 (26%) experienced one or more drug therapy problem associated with their hyperlipidemia. There were 833 drug therapy problems identified and resolved in these patients.

Drug Therapy Problem Category	**% of Total Drug Therapy Problems Identified (n=833)**
Unnecessary drug therapy	2 %
Additional drug therapy needed	29 %
Ineffective drug	6 %
Dosage too low	20 %

Adverse drug reaction	11 %
Dosage too high	3 %
Noncompliance	29 %

The ten most frequent causes of drug therapy problems associated with hyperlipidemia are listed on the table below.

Type of Medication Involved in the Drug Therapy Problem	**The Specific Cause of the Drug Therapy Problem**	**# of Drug Therapy Problems**
HMG CoA Reductase Inhibitor	Patient could not afford the drug	109
HMG CoA Reductase Inhibitor	Additional drug therapy required	67
HMG CoA Reductase Inhibitor	Patient did not understand instructions	56
HMG CoA Reductase Inhibitor	Dose was too low	53
HMG CoA Reductase Inhibitor	Undesirable effects	39
HMG CoA Reductase Inhibitor	Patient prefers not to take the drug	37
HMG CoA Reductase Inhibitor	Patient forgets to take the drug	22
HMG CoA Reductase Inhibitor	Dose was too high	16
Nicotinic Acid Derivatives	Undesirable effects	13
Salicylates	Preventive therapy required	13

FOLLOW-UP EVALUATION (font 16, all caps)

EFFECTIVENESS (FONT 14, UNDERLINE)
Use bullet points.
Follow-up when the patient is not at goal. Include parameter, value, and timing.
Follow-up when the patient has met goal and is stable. Include parameter, value, and timing.

Safety ***(font 14, underline)***
Pharmacological class (font 12, bold) List by class in the same order as in "EFFECTIVENESS" and in "SAFETY."
Evaluate: (font 12, colon) For each class, explain what parameters (exams, lab tests) the practitioner should evaluate and when to evaluate them.

REFERENCES (FONT 14, UNDERLINE)