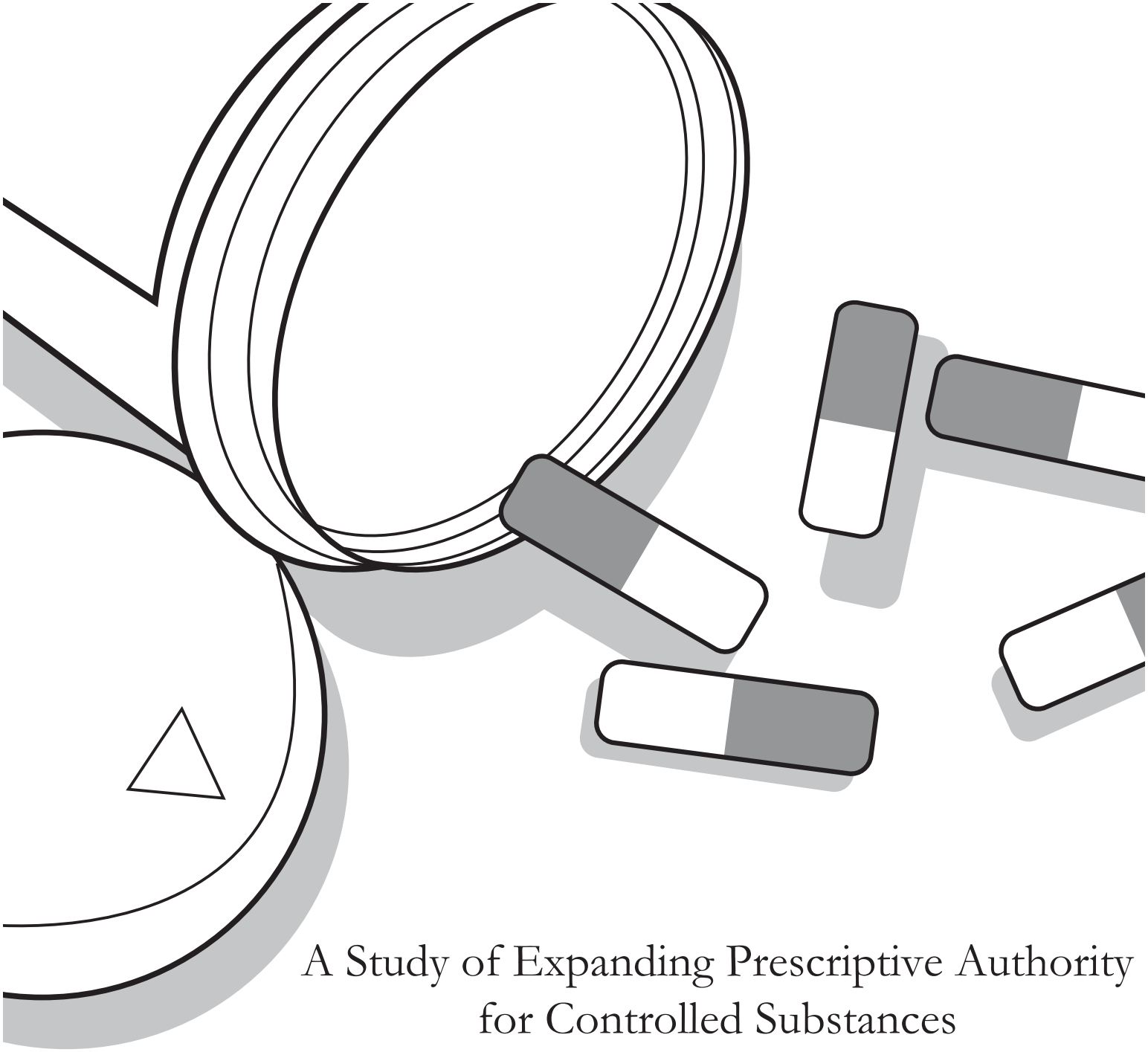

A Study of Expanding Prescriptive Authority for Controlled Substances to Advanced Registered Nurse Practitioners (2004 House Bill 595)

Research Report No. 323

Legislative Research Commission
Frankfort, Kentucky
lrc.ky.gov

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Foreword

The 2004 General Assembly directed the Legislative Research Commission to study the advisability of allowing advanced registered nurse practitioners to prescribe Schedules II through V controlled substances. In the course of the study, practices in other states would be surveyed and evaluated and testimony would be gathered from affected parties to determine the efficacy of expanding such prescriptive authority, including whether such broadened authority would be in the best interest of the patient. This report represents the results of that study.

Legislative Research Commission staff would like to acknowledge representatives from several organizations and associations who provided information for this report through personal interviews. These included the Kentucky Board of Nursing, Kentucky Board of Medical Licensure, Kentucky Nurses Association, Kentucky Medical Association, Kentucky Hospital Association, Kentucky Coalition of Nurse Practitioners and Nurse Midwives, Kentucky Society of Interventional Pain Physicians, Kentucky Society of Anesthesiologists, and the Kentucky Psychiatric Association.

Robert Sherman
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Frankfort, Kentucky
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Chapter 1

Introduction

HB 595 of the 2004 Regular Session directed the Legislative Research Commission to study the likely impact of authorizing ARNPs to prescribe controlled substances.

In the 1996 Regular Session of the Kentucky General Assembly, advanced registered nurse practitioners (ARNPs) were granted the legal authority to prescribe noncontrolled prescription drugs under a collaborative practice agreement with a physician. The agreement must define the ARNP's scope of prescribing authority and be signed by both the ARNP and the collaborating physician. During the 2004 Regular Session of the Kentucky General Assembly, the Kentucky Coalition of Nurse Practitioners and Nurse Midwives and the Kentucky Nurses Association advocated passage of House Bill 595, which, in its original form, would have expanded the prescriptive authority of ARNPs to include controlled substances. House Bill 595 was amended to remove the expanded prescriptive authority and to require a study by staff of the Legislative Research Commission of the likely impact of granting ARNPs the authority to prescribe controlled substances. House Bill 595 is included in Appendix A.

Proponents assert that allowing ARNPs to prescribe controlled substances would improve patient care.

Proponents of expanding the prescriptive authority of ARNPs to include controlled substances believe that quality of patient care would be improved. They also assert it would increase convenience for patients and physicians. In addition, proponents believe that this authority is important in building patient confidence and moving the profession forward. They argue that ARNPs have the education to safely and effectively prescribe controlled substances. Many ARNPs recognize that this authority would increase the number of drug seekers that they see; however, they say they are generally accustomed to identifying drug-seeking behaviors and would be judicious in prescribing these substances.

Opponents believe that illegal diversion of prescription drugs could increase.

Opponents of the proposal to authorize ARNPs to prescribe controlled substances raised several concerns. One argument was that authorizing additional provider groups to prescribe controlled substances would increase the illegal diversion of prescription drugs at a time when drug abuse in Kentucky has been identified as a major problem. Another issue was that ARNPs have less training in pharmacology than physicians. Finally, a question was raised regarding whether there is a need for ARNPs to prescribe controlled substances.

Advanced Registered Nurse Practitioners

ARNPs receive advanced graduate-level training.

ARNPs represent a group of nurses with advanced educational preparation at the graduate level. These nurses provide nursing care, as well as some care that is traditionally within the practice of medicine. This group includes nurse practitioners, nurse midwives, clinical nurse specialists, and registered nurse anesthetists. In some states, all of these types of practitioners are included in a broad category of advanced practice nurses. A distribution of Kentucky ARNPs by county is included in Appendix B.

Family nurse practitioners comprise the largest category of ARNPs.

The nurse practitioner category includes various specialties including family, adult, acute care, pediatric, women's health, and geriatric. The scope of practice and the types of patients that can be seen are limited to the specialty area of certification. Family nurse practitioners, the largest group, provide the widest range of services, which include obtaining medical histories, performing physical examinations, diagnosing and treating health conditions, prescribing medications, providing health promotion and disease prevention education and counseling, and providing care management. They generally practice in offices or clinics that are usually associated with a physician practice or other health care facility. A family nurse practitioner may provide care to children, adults, and the elderly in a family practice setting; whereas, a pediatric nurse practitioner sees only individuals under the age of 18.

Certified nurse midwives provide services to women of childbearing years.

Certified nurse midwives provide care to childbearing women, including prenatal care, childbirth, and postpartum care. Their practice is limited to the care of childbearing women and gynecologic care for women.

Clinical nurse specialists can help manage chronic and complicated health conditions.

Clinical nurse specialists provide a range of services including direct care, education, and interdisciplinary consultation. They work in community settings such as specialty clinics, as well as hospitals. They focus on helping individuals transition from one level of care to another and manage individuals with chronic health care conditions.

Nurse anesthetists provide anesthesia and pain management.

Nurse anesthetists provide anesthesia for individuals undergoing surgery. In most states, certified registered nurse anesthetists generally provide anesthesia in a hospital or outpatient surgical center. In some states, nurse anesthetists provide chronic pain management and have full authority to write prescriptions for controlled substances; however, Kentucky does not grant this authority.

Schedules of Drugs

The Controlled Substance Act of 1970 established the federal classification of dangerous drugs based on the potential for abuse or physical or psychological dependence: known as Schedule I, II, III, IV, and V. These are narcotics, depressants, stimulants, and hallucinogenic drugs. The five schedules are described in Table 1.1.

Table 1.1
Federal Classification of Scheduled Drugs

Classification	Potential for Abuse	Accepted Medical Use	Degree of Dependence	Examples
I	High	None	High	Heroin Marijuana LSD
II	High	Yes	Severe	Morphine Codeine Demerol Phenobarbital OxyContin
III	Less than Schedule II	Yes	Moderate or Low	Tylenol with Codeine Drugs with limited amounts of narcotics Anabolic steroids
IV	Low	Yes	Low	Valium Weight loss drugs
V	Low	Yes	Low	Cough syrups

Source: The Controlled Substance Act of 1970.

The most commonly abused prescription drugs include opioids, central nervous system depressants, and stimulants.

The most commonly abused prescription drugs can be generally grouped into three categories: opioids, prescribed to treat pain; central nervous system depressants, used to treat anxiety and sleep disorders; and stimulants, prescribed to treat narcolepsy, attention-deficit hyperactivity disorder, and obesity (Council).

Diversion and Abuse of Prescriptions for Controlled Substances: National and Kentucky Indicators

The potential for an increase in the diversion of prescription drugs is one of the major concerns related to granting ARNPs the authority to prescribe controlled substances. Substance abuse and the diversion of prescription drugs have been cited as major problems in the United States and in Kentucky.

National Prescription Drug Abuse and Diversion

Thirty-eight medical boards reported in a national survey that drug abuse increased over the last five years.

The National Household Survey on Drug Abuse reported in 2002 that the overall new illicit use of prescription medications had increased. After peaking between 1975 and 1980, illicit use of sedatives diminished, increasing slightly in 2000. New illicit use of stimulants, tranquilizers, and pain relievers also increased sharply (U.S. Department of Health and Human Services. Substance. Office. "Nonmedical"). In a national survey, state medical boards indicated that drug diversion and abuse generally had gotten worse in the last five years, with OxyContin being identified as a contributing factor (Hoffmann).

In 2002, 6.2 million persons (2.6 percent of the population) reported current nonmedical use of psychotherapeutics—any prescription-type pain relievers, tranquilizers, stimulants, and sedatives. A chart representing the nonmedical use of selected psychotherapeutics is presented in Table 1.2 (U.S. Department of Health and Human Services. Substance. Office. 2002). OxyContin was identified by 67 percent of state and local agencies as the most commonly diverted or illicitly used pharmaceutical narcotic (U.S. Department of Justice. National Drug Intelligence Center).

Kentucky Prescription Drug Abuse and Diversion

Kentucky law enforcement agencies report that prescription drug diversion is a problem in the Commonwealth.

Kentucky is experiencing problems with prescription drug abuse as well. The National Drug Intelligence Center conducted a survey of state law enforcement officials in 2003 to identify whether selected prescription drugs are commonly diverted or illicitly used in their jurisdictions. Sixty-five Kentucky law enforcement agencies participated in the survey. For each prescription drug included in the study, Kentucky law enforcement agencies were asked if it was commonly diverted or illicitly used. Table 1.3 lists some of drugs reported most frequently as problems.

Valium and Xanax were cited most often as diverted or illicitly used, with about 93 percent of Kentucky law enforcement agencies

reporting they are problems. Oxycodone and OxyContin were also frequently reported as problems.

Table 1.2
Illicit Drug Use in Lifetime, Past Year, and Past Month Among Persons Aged 13 or Older: Number in Millions
2002

Drug	TIME PERIOD		
	Lifetime	Past Year	Past Month
Nonmedical Use of Any Psychotherapeutic[1]	47.6	14.7	6.2
Pain Relievers	29.6	10.9	4.4
Tranquilizers	19.3	4.8	1.9
Stimulants	21.0	3.2	1.2
Methamphetamine	12.3	1.5	.60
Sedatives	9.9	.98	.43

[1] Nonmedical use of any prescription-type pain reliever, tranquilizer, stimulant, or sedative; does not include over-the-counter drugs.
Source: U.S. Department of Health and Human Services. Substance. Office. 2002.

Table 1.3
Commonly Diverted and Illicitly Used Prescription Drugs in Kentucky

Drug	Schedule	Percent of Kentucky Law Enforcement Agencies Responding the Drug is Commonly Diverted or Illicitly Used
Valium	IV	93
Xanax	IV	93
Oxycodone	II	87
OxyContin	II	85
Hydrocodone	III	82
Percocet	III	77
Percodan	III	69
Vicodin	III	60

Source: U.S. Department of Justice. Nation Drug Intelligence Center.

Methods of Diversion of Prescriptions

Doctor shopping is the primary diversion strategy in Kentucky.

"Doctor shopping" is the primary method of obtaining illicit pharmaceuticals in Kentucky (U.S. White House). Staff of the Kentucky State Police also attribute illicit pharmaceutical diversion to Internet sales (Sapp). Other sources of illegally obtained prescription drugs include theft of legally acquired pharmaceuticals and prescription fraud including illicit prescriptions by physicians (Council).

Electronic Reporting Systems

Concern about the illegal diversion of prescription drugs led to the development of monitoring strategies at the state and federal level. The federal Drug Enforcement Administration (DEA) implemented an Automation of Reports and Consolidated Orders System to track registrants who purchase large quantities of Schedule II and some Schedule III drugs. This system was used to identify the purchase of large quantities of amphetamine prescriptions in Wisconsin, which led to the conviction of two prescribers (Shapiro).

Kentucky monitors all controlled substances.

In response to drug abuse, 22 states, including Kentucky, are using or planning to implement a monitoring program for controlled substances. The schedules of drugs monitored vary across the country. Only Kentucky, Michigan, and Utah monitor all schedules of controlled substances (Droz, 1 and 7).

The federal government concluded that state monitoring programs achieve a reduction in drug diversion. Monitoring programs were found to reduce drug enforcement investigations by as much as 80 percent and to be a deterrent to doctor shopping (U.S. GAO, 2-3).

A common problem encountered by the states is the need to share information across state borders. A patient who lives in a border community may obtain a prescription in his or her home state but have it filled across the state line. If there is no agreement to share such information, the prescription will not be captured by the home state. The National Association of State Controlled Substance Authorities supports the sharing of information across state lines (Droz, 8-9).

Prescription Monitoring in Kentucky

Kentucky's prescription monitoring program is the Kentucky All Schedule Prescription Electronic Reporting, or KASPER, that is administered by the Kentucky Cabinet for Health and Family Services and became effective in 1999. The first full year of use resulted in more than 36,000 physician and law enforcement requests for information about patients in 2000; this number increased to more than 96,500 requests in 2002.

Immediate online information for Kentucky providers is planned in 2005.

Kentucky's monitoring program is projected to go online in 2005. This will make immediate information available to providers regarding their patients, which should contribute to the prevention of doctor shopping. Prior to 2004, it took approximately four weeks for prescription information to be reported to KASPER after the prescription was filled by a pharmacist. Physicians, pharmacists, licensure boards, and Department for Public Health personnel used the information to obtain accurate information about patients and, at times, to investigate suspected abuses (Commonwealth of Kentucky. Legislative Research Commission. 6-8).

Kentucky medical boards and government agencies can use the system to evaluate trends in prescribing practices.

In 2004, the General Assembly amended the statutory authority for the program to allow the Board of Medical Licensure and the Department for Medicaid Services to proactively identify trends in abuse among patients and physicians and to allow different law enforcement agencies to share specific reports received about an investigation.

Kentucky nursing boards could be granted the same authority if prescriptive privileges are expanded to ARNPS.

Advanced registered nurse practitioners have authority to order and review KASPER reports concerning patients. If ARNPs are given the authority to prescribe controlled substances, the Board of Nursing could also be given authority to proactively order reports to identify trends and irregular prescribing practices among ARNPs, much the same as the Kentucky Board of Medical Licensure can now order for physicians.

Purpose of the Study

The are three purposes of this study: 1) to evaluate whether data indicate a relationship between the utilization of controlled substances and the legal authority of ARNPs to prescribe these substances; 2) to discuss the potential positive and negative effects of legally authorizing ARNPs to prescribe controlled substances in Kentucky; and 3) to describe the educational preparation of ARNPs relevant to prescribing controlled substances.

Description of the Study

Data on drug utilization was analyzed to evaluate differences between states with and without prescriptive authority for ARNPs.

The study includes an analysis of data on the utilization of controlled substances in various states to determine whether there is a difference in the utilization of controlled substances in states that authorize ARNPs to prescribe these drugs as compared to states that do not. Two national data sets were used in the analysis. State-level data on the amount of controlled drugs shipped from drug manufacturers was collected from the federal DEA. Only controlled substances classified as Schedule II that were tracked by the DEA between 1997 and 2003 were included in the analysis. Data regarding the number of prescriptions written from 1996 through 2003 for selected controlled substances classified in Schedule II, III, and IV were provided by Verispan's Vector One, a private commercial company. Emergency room utilization data from the Drug Abuse Warning Network (DAWN) were analyzed related to narcotics and barbiturates.

ARNPs and physicians were surveyed to determine their opinions on the topic.

The study includes two surveys designed to collect information on the opinions of ARNPs and physicians about expanding the prescriptive authority of ARNPs to include controlled substances. Both of these surveys asked for opinions about the positive and negative effects that this authority would have on patients, physicians, ARNPs, and their practices.

Educational requirements for ARNPs and physicians were reviewed.

The amount of pharmacology content in ARNP and physician programs was described using the syllabi for courses required at the University of Louisville and the University of Kentucky. The controlled substance content of pharmacology courses at the two universities was compared to the U.S. Department for Health and Human Services' *Curriculum Guidelines and Regulatory Criteria for Family Nurse Practitioners Seeking Prescriptive Authority to Manage Pharmacotherapeutics in Primary Care*.

Interviews were conducted with several professional groups.

Staff also conducted numerous interviews with nursing and physician associations and completed an extensive literature review. Among those interviewed were representatives of the Kentucky Medical Association, Kentucky Coalition of Nurse Practitioners and Nurse Midwives, Kentucky Nurses Association, Kentucky Board of Medical Licensure, Kentucky Board of Nursing, Kentucky Hospital Association, Kentucky Society of Anesthesiologists, Kentucky Society of Interventional Pain Physicians, and Kentucky Psychiatric Association. Invitations for interviews were extended to the Kentucky Cabinet for Health and Family Services, the Kentucky Attorney General, and the

Kentucky Lieutenant Governor; however, these were not conducted.

As a part of the study, LRC staff reviewed all statutes and administrative regulations related to controlled substances in every state that has granted ARNPs prescriptive authority. In addition, a survey was sent to each state board of nursing to determine the date of the legislation or administrative regulation that granted the authority to prescribe controlled substances, as well as its implementation date. State boards of nursing were also asked to provide the number of advanced practice nurses who completed all the requirements to prescribe controlled substances for each year after the authority was granted. The academic nursing literature was also reviewed regarding the dates of prescriptive authority for controlled substances.

Organization of the Report

The remainder of Chapter 1 summarizes the conclusions and limitations of the study and outlines major arguments of proponents and opponents of expanding ARNPs prescriptive authority for controlled substances.

Chapter 2 describes the status of prescribing controlled substances in all 50 states and provides background information on ARNP practice.

Chapter 3 provides a description of the results of the surveys of physicians and ARNPs, including a summary of opinions related to expanding ARNP prescriptive authority to include controlled substances. It also includes results about current strategies used by ARNPs to obtain prescriptions for controlled substances for patients, and limitations on ARNP prescribing of controlled substances that the General Assembly should consider if this authority is granted.

Chapter 4 provides the findings of an analysis of the effect of authorizing ARNPs to prescribe controlled substances on drug use and abuse in states that have granted this authority.

Chapter 5 provides a summary and conclusions of the report.

Conclusions

1. Prescriptions written by ARNPs comprised only a small portion of the total number of prescriptions written for controlled substances. The percentage of prescriptions for controlled substances written by ARNPs has risen from 0.11 percent in 1996 to 1.5 percent in 2003.

2. States where ARNPs prescribe controlled substances have higher per capita levels of controlled substances than states that do not. States that have authorized ARNPs to prescribe controlled substances have about 1.4 percent per year more Schedule II prescriptions and 6.4 percent more Schedule III prescriptions than states that have not granted this authority.

3. States where ARNPs have the authority to prescribe Schedule II controlled substances have a higher amount measured in grams per capita (6.6 percent) of Schedule II controlled substances compared to states that have not granted this authority.

4. The clinical experience in medical programs is far more extensive than ARNP programs, but medical students generally do not have previous clinical experience related to controlled substances prior to entering their program. Nurses enter the ARNP program with prior experience in administering controlled substances. Therefore, the clinical experience related to controlled substances of medical students and ARNP students may be less different than it first appears. The curriculum in ARNP programs at the University of Kentucky and the University of Louisville include a 3-credit hour course in pharmacology, as compared to a 7-credit hour course in the medical school at the University of Louisville and 11 credit hours at the University of Kentucky. In addition to pharmacy content in the ARNP program, ARNPs generally complete a 3-credit course in pharmacology in the undergraduate nursing program. Both ARNP and medical programs include clinical experiences related to prescribing.

5. Ninety-six percent of the ARNP survey respondents believe that ARNPs should be granted the authority to prescribe controlled substances, compared with 31 percent of the physician respondents. Both groups responded that there should be limitations on this authority. A collaborative agreement with physicians that includes the specific classes of scheduled drugs that the ARNP may prescribe and a regular review of the ARNP's practice related to controlled

substances by the collaborating physician were the most favored of the limitations listed on the survey.

6. The number of emergency room mentions for narcotics was greater in states that have authorized ARNPs to prescribe controlled substances than in states that have not. However, the number of emergency room mentions for barbiturates was not greater in states with ARNP authority for controlled substances.

Study Limitations

There was no data available to assess the direct effect of ARNP prescribing on substance abuse.

There are several limitations of this study. Although the study finds that the utilization of controlled substances is significantly increased in states that have granted ARNPs the authority to prescribe controlled substances, it cannot be inferred from this finding that expanded authority of ARNPs would lead to an increase in illegal drug diversion. This study does not address the direct effect of ARNP prescribing of controlled substances on substance abuse because there was no data available to measure this effect. The DEA data and Verispan's Vector One data were used to determine if there is a relationship between the utilization of controlled substances and the granting of ARNP authority to prescribe controlled substances. While they may not represent proxies for abuse, it was not possible to measure abuse of controlled substances.

Data used on emergency room mentions of drugs has limitations.

Emergency room data from the federal DAWN was analyzed to determine if emergency room visits increased in states that have granted prescriptive authority for controlled substances compared to states that have not. The DAWN data is limited to data from 21 metropolitan areas of which only 17 were used between 1995 and 2002. This study further limited the analysis to narcotics and barbiturates. There have been questions raised about the accuracy of DAWN data. While this data is not direct evidence of abuse, it is used as a proxy to analyze the potential negative effects associated with prescriptive authority for ARNPs.

The study primarily addresses negative impacts because data on possible positive impacts was not available.

This study evaluates possible negative effects of granting ARNP prescriptive authority for controlled substances. Positive effects were not included in the study because there are no independent data available to assess these possible effects.

There were few disciplinary actions reported for nurses to a national database.

Data on the number of ARNP disciplinary actions were limited to a timeframe between 1997 and 2003. The federal Health Insurance

and Portability Act of 1996 requires states to report disciplinary actions to the Healthcare Integrity and Protection Data Bank beginning with 1996 data. The number of reports of disciplinary actions reported by states was very small, which prevented an analysis of whether the number of these incidences increased after states granted ARNPs the authority to prescribe controlled substances.

Opinions of Interested Parties in Kentucky

In Kentucky, the associations representing physicians and ARNPs have expressed opposing opinions as to whether ARNPs should be granted the authority to prescribe controlled substances. The Kentucky Coalition of Nurse Practitioners and Nurse Midwives advocate for this authority, while the Kentucky Medical Association opposes an expansion of scope of practice for ARNPs. The major arguments of each group are summarized below.

Proponents

Leading nursing groups assert that prescriptive authority would improve access to quality health care.

The Kentucky Coalition of Nurse Practitioners and Midwives, the Kentucky Board of Nursing, and the Kentucky Nurses Association support granting ARNPs prescriptive authority for controlled substances. These advocates argue that this authority would improve a patient's access to primary health care.

Kentucky has a shortage of primary care physicians.

The continuing shortage of health care providers is another reason offered for granting ARNPs prescriptive authority for controlled substances. Thirty-one counties are currently designated as health professional shortage areas by the United States Health Resources and Services Administration.

An ARNP in Kentucky must have a collaborative agreement with a physician in order to prescribe any medication.

Some ARNPs view the legal authority to prescribe controlled substances as significant to moving toward independent practice. According to Kentucky Revised Statutes, ARNPs can independently examine, diagnose, and treat patients. A collaborative agreement is required only for prescribing nonscheduled prescription drugs.

Supporters assert that accountability of ARNPs would increase if they had their own DEA number.

Supporters of ARNP prescriptive authority also argue that this authority would increase accountability of the nurse. In Kentucky, ARNPs can legally determine that a patient needs a controlled substance; however, the ARNP must make a recommendation to the physician and acquire the physician’s signature on the prescription. According to representatives of the Kentucky

Coalition of Nurse Practitioners and Nurse Midwives and the Kentucky Medical Association, some physicians do not independently examine the patient prior to signing a prescription for a controlled substance recommended by the ARNP. Supporters assert that the nurse would be more accountable for the treatment if ARNPs had to use their own DEA number instead of their collaborating physicians' numbers. In addition, supporters believe that if ARNPs had their own numbers, there could be more accurate tracking of health care provider prescribing patterns.

Finally, supporters assert that ARNPs have the educational preparation to safely and effectively prescribe controlled substances.

Opponents

The AMA endorsed ARNPs as a team member, with the physician supervising the care of patients.

The American Medical Association (AMA) endorses the role of the ARNP as part of an integrated team with the physician supervising care, but opposes independent authority. The AMA's guidelines for integrated practice of physicians and nurse practitioners support a relationship between the physician and ARNP where each practitioner cooperatively contributes to patient care.

The KMA strongly opposes expanding the prescriptive authority of ARNPs to include controlled substances.

The Kentucky Medical Association (KMA) endorsed a resolution to oppose future legislation in Kentucky that would expand the authority of ARNPs to prescribe controlled substances. In addition, the Kentucky Board of Medical Licensure (KBML) opposes legislation to grant ARNPs authority to prescribe controlled substances.

The potential for increased illegal diversion of prescription drugs and inadequate education of ARNPs regarding the appropriate prescribing of controlled substances were cited as the primary reasons for this opposition. The KMA and KBML indicated that adding another group able to prescribe the drugs most often abused would provide an additional portal for the illegal diversion of prescription drugs. The KBML officials noted that ARNPs receive only a two-year postgraduate program as compared to six years required for physicians. Generally, objections to prescribing controlled substances are related to patient safety and inadequate educational preparation of the nurse.

Chapter 2

Background on ARNP Prescriptive Authority and Education

Forty-four states authorize ARNPs to prescribe controlled substances.

ARNPs have the authority to prescribe controlled substances in 44 states and the District of Columbia. Laws and regulations granting the authority were primarily adopted during the 1990s. A survey of the research literature did not reveal credible research that provides information on how the expanded authority has effected the quality of patient care, drug utilization, or drug abuse. There is a substantial amount of research concluding that the quality of care provided by ARNPs is equivalent to that provided by physicians. No research could be found that documented adverse consequences in states that have granted this authority.

Currently, ARNPs practice both independently and collaboratively as primary health care providers in a variety of settings and specialties. ARNPs integrate many components of medical practice. The history of the evolution of ARNP practice and related research regarding patient outcomes is discussed in this section.

The concept of advanced nursing practice began in 1965 when a nurse, Loretta Ford, and a physician, Henry Silver, created the first advanced practice program. This program was established in response to a demand for health care services during a time when there was a shortage of primary care providers in Colorado (Mezey, 3-4).

Physician shortages and consumer demands for preventive health care influenced expansion of the role of ARNPs.

The role of ARNPs expanded as consumer demands on the national health care system increased. These demands included increased access to affordable health promotion and disease prevention. The health care needs of an aging population also influenced expansion of the role of ARNPs in the delivery of health care (Mezey, 3-11).

Most recently, the utilization of advanced practice nurses increased as a result of the Federation of State Medical Boards restricting the number of hours that a medical resident can work to 80 hours a week and mandating at least 10 hours off between shifts (Larkin).

Status of ARNP Prescribing Authority

ARNPs in Alaska began prescribing controlled substances in 1978.

ARNPs have been prescribing controlled substances in some states for more than 26 years. Independent prescribing of all prescription drugs, including controlled substances in Schedules II through V, began in Alaska in 1978 according to the executive director of the Alaska Board of Nursing. Over time, all 50 states and the District of Columbia have legally authorized ARNPs to prescribe nonscheduled prescription drugs. In eight states and the District of Columbia, ARNPs have the explicit authority to independently prescribe both controlled and noncontrolled substances without any involvement of a physician (Buppert, 183-185).

Physician involvement is required for ARNP prescribing in most states. In California, Michigan, and Georgia, physicians may delegate the prescribing of medications. LRC staff research found that in the remaining 39 states, ARNPs have the authority to prescribe under a collaborative agreement with a physician. While the particular requirements for ARNP collaboration with a physician differ among the states, generally the collaborative agreement establishes the provisions for referral and consultation between the physician and ARNP.

Kentucky Revised Statues 314.042 requires an ARNP to enter into a written collaborative agreement with a physician prior to prescribing nonscheduled prescriptions. The collaborative agreement must define the scope of prescriptive authority of the nurse practitioner. Nurse anesthetists are exempted from the requirements in order to deliver anesthesia care. Collaboration is defined in 201 Kentucky Administrative Regulation 20:057 as "the relationship between the advanced registered nurse practitioner and a physician in the provision of prescription medication and includes both autonomous and cooperative decision-making, with the advanced registered nurse practitioner and the physician contributing their respective expertise." A model collaborative agreement provided by the Kentucky Coalition of Nurse Practitioners and Nurse Midwives is included in Appendix C.

Kentucky is among six states that do not authorize ARNPs to prescribe controlled substances.

Kentucky is among six states that have not granted ARNPs the legal authority to prescribe controlled substances. Forty-four states and the District of Columbia have expanded the prescriptive authority of ARNPs to include controlled substances. In 36 states and the District of Columbia, this authority includes Schedules II through V, while 8 states limit the prescribing of controlled substances to Schedules III through V. In many states, ARNPs were granted the authority to prescribe controlled substances in

increments over time, beginning with Schedules III, IV, and V (lower-abused drugs) and later adding Schedule II (higher-abused narcotics). Alabama, Florida, Kentucky, Hawaii, Georgia, and Missouri do not authorize ARNPs to prescribe controlled substances. A chart of states with prescriptive authority for controlled substances is presented in Table 2.1. A list of the schedules of controlled substances that each category of ARNP is authorized to prescribe by state is included in Appendix D.

In 8 of the states, there are no limitations on the prescriptive authority of ARNPs, including controlled substances, while there are in 42 states. A table summarizing these limitations is included as Appendix E.

In states that have legally authorized ARNPs to prescribe controlled substances, some nurses do not choose to apply for registration with the DEA for a variety of reasons. These include employer restrictions on practice and a lack of the need to prescribe controlled substances in a particular employment setting. Also, the collaborative agreement with the physician may restrict the schedules of drugs that the ARNP can prescribe.

ARNP Practice

ARNPs practice independently and collaboratively in a variety of settings.

The relationship between the physician and the nurse began in a collaborative fashion. Generally, the role of ARNPs is supported by physicians; however, the American Medical Association supports an integrated team practice, with the physician as the head of the team (Guidelines). As some ARNPs have became more independent, there has been disagreement between ARNPs and physicians regarding issues that increase autonomy, including independent prescriptive authority and direct reimbursement (Phillips, 138).

The American Academy of Nurse Practitioners advocate for independent prescribing of controlled substances by ARNPs.

The American Academy of Nurse Practitioners argues that the ability of nurse practitioners to prescribe nonscheduled and controlled substances independently is essential in providing quality, cost-effective health care to diverse populations.

Two federal changes that provided the opportunity for ARNPs to prescribe independently were the ability to directly bill for Medicare services and to independently register with the federal DEA.

Table 2.1
Controlled Substances Nurse Practitioners are Authorized To Prescribe

Schedules II - V

Alaska
Arizona
California
Colorado
Connecticut
Delaware
District of Columbia
Indiana
Idaho
Iowa
Kansas
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oregon
Pennsylvania
Rhode Island
South Dakota
Tennessee
Utah
Vermont
Washington
Wisconsin
Wyoming

Schedules III - V

Arkansas
Illinois
Louisiana
Oklahoma
South Carolina
Texas
Virginia
West Virginia

No Authorization for Controlled Substances

Alabama
Florida
Georgia (can call in controlled substance)
Hawaii
Kentucky
Missouri

Source: LRC staff analysis.

The DEA established a new mid-level practitioner category for registration to prescribe controlled substances.

With the passage of the Balanced Budget Act of 1997, an ARNP could be reimbursed as an independent, self-employed practitioner at 85 percent of the physician rate. In addition, on June 1, 1993, the federal DEA published a final rule that established a new mid-level practitioner category of registration. The mid-level practitioner included nurse practitioners, nurse midwives, clinical nurse specialists, nurse anesthetists, and physician assistants (Minarik, 319). According to 21 USC, Sec. 823, prior to the mid-level practitioner being eligibility for a DEA number, the state in which the practice is located must legally grant the authority to prescribe controlled substances.

Research Literature Regarding the Effects of Authorizing ARNPs To Prescribe Controlled Substances

A literature search was conducted to identify research related to the possible effect of ARNP prescribing controlled substances. This section provides a discussion of the research on this topic.

Illegal Diversion

There are no reliable studies regarding the impact of ARNPs prescribing controlled substances on illegal diversion of prescription drugs.

LRC staff could not identify any reliable research studies regarding the effect on illegal diversion of authorizing ARNPs to prescribe controlled substances. A review of the literature revealed only one report, from the Florida Prescribing of Controlled Substances Task Force, that was related to the potential for substance abuse and the potential for harm if ARNPs in Florida were granted prescriptive authority for controlled substances. The Florida task force report was limited in scope and predominately included public testimony and a literature review.

As a part of the task forces' responsibilities, the Florida Board of Nursing surveyed the District of Columbia and the 36 state boards of nursing that had authorized ARNPs to prescribe controlled substances. The purpose of the survey was to determine the effect of ARNPs prescribing on quality of patient care. Twenty-three state boards of nursing responded to the survey. Of these, 14 indicated that prescriptive authority for controlled substances benefited patients. Several of the boards specified that access to care improved. The response rate was low and there was the potential for officials of boards of nursing to be biased in their assessments. Also, the responses represented the opinion of only one person at each state board of nursing that responded. Therefore, the report does not present reliable evidence that legally authorizing ARNPs to prescribe controlled substances actually benefits patients, in general.

Two studies reported that prescribing practices among physicians and ARNPs are similar.

Staff could identify no research indicating that ARNPs would be less judicious in prescribing controlled substances than physicians. The literature revealed one study that described the prescribing practices of psychiatrists as compared to ARNPs. In this study of medication management for 5,507 adult mental health clients, Fisher and Vaughan-Cole reported that both groups had similar prescribing patterns, but psychiatrists prescribed twice as many benzodiazepines (Valium) compared to the ARNPs. However, one study cannot be considered definitive. In addition, the U.S. Congressional Office of Technology Assessment (OTA) concluded in its 1986 report to Congress that prescribing patterns among nurse practitioners and physicians were comparable.

Quality of Care

ARNPs use a variety of strategies to obtain controlled substances for their patients.

Patient care may be affected by the lack of prescriptive authority for controlled substances. In one study, ARNPs reported that a less effective, noncontrolled drug is sometimes prescribed instead of the preferred controlled substance (Kaplan 28). In states without prescriptive authority for controlled substances, nurses reported that they obtained the medications for patients by various strategies:

- Obtaining a specific prescription from the physician;
- Calling in the prescription using the physician's name;
- Co-signing a prescribing pad previously signed by a physician; or
- Prescribing under protocols established by the physician and the nurse collaboratively (Pearson. How, 27).

Staff found no studies that compare the outcomes of patient care related to the prescribing of controlled substances by ARNPs as opposed to by physicians. Furthermore, no studies were found regarding the effect on patient outcomes of granting ARNPs prescriptive authority for controlled substances.

There are studies indicating that ARNPs contribute to increased quality of patient care. A longitudinal study of ARNPs conducted by the Division of Nursing of the U.S. Department of Health, Education, and Welfare reported that ARNPs improved access to quality and efficiency of health care (Sultz, Phase I and III).

Prescribing controlled substances is a subcomponent of the overall patient care. Substantial research exists that suggests that the overall quality of primary care provided by ARNPs is equivalent to that provided by primary care physicians (Brown). A review of the

literature found that all of the studies on this topic reported similar conclusions.

Several studies indicate that the quality of care provided by ARNPs is comparable to primary care physicians.

The most recent study reported in the literature was one conducted by a group of physicians and doctoral-prepared nurse researchers. This randomized trial compared the outcomes of 1,316 patients who received primary care from physicians as compared to nurse practitioners in three community-based primary care clinics and one primary care clinic where ARNPs and physicians had similar independence, responsibilities, and authority. In this study, patients were randomly assigned to a nurse practitioner or a physician. The study concluded that the outcomes for patients cared for by ARNPs and primary care physicians were comparable. There was no significant difference in the patient's health status after six months; no significant differences in physiologic outcomes for patients with asthma, diabetes, or hypertension; and no significant difference in utilization of services or inpatient satisfaction (Mundinger).

The U.S. OTA reported that the quality of care provided by ARNPs was equivalent to physicians.

The U.S. OTA report also concluded that the quality of care provided by nurse practitioners and nurse midwives was equivalent to care provided by physicians. The report also concluded that nurses surpassed physicians in areas of communication and preventive care.

Another study by Brown and Grimes indicated that patients had a higher level of compliance with treatment plans when care was provided by nurse practitioners as compared to physicians. The study reported that, compared to physicians, nurse practitioners spent more time with patients per visit and ordered more laboratory tests.

ARNP Education

One of the concerns expressed by opponents of expanding the scope of practice to include the prescribing of controlled substances is whether ARNPs are adequately prepared in their educational programs to prescribe them. There is a question as to how much education is necessary to safely prescribe controlled substances. In particular, there is a question as to whether ARNPs need the same amount of education as a physician in order to prescribe controlled substances safely under a collaborative agreement. What follows is a general description of the educational preparation of ARNPs.

The federal Department for Health and Human Services published *Curriculum Guidelines and Regulatory Criteria for Family Nurse Practitioners Seeking Prescriptive Authority to Manage Pharmacotherapeutics in Primary Care.* These guidelines recommend that ARNP programs offer a separate and distinct course of at least 45 contact hours, which would be equivalent to a three-credit-hour course. The recommended course content includes information on drugs to reduce anxiety (Valium), substance abuse, opioids (OxyContin), and other content pertinent to scheduled drugs. Furthermore, the guidelines recommend that the faculty for the pharmacology courses have a graduate degree in pharmacology or pharmacotherapeutics. The ARNP programs at both the University of Louisville and the University of Kentucky meet these particular federal guidelines.

Training requirements for ARNPs began in 1965 as a certificate program beyond the basic nursing program. As programs were established, there was concern about quality and standardization across programs. This prompted the National Organization of Nurse Practitioner Faculties and the American Association of Colleges of Nursing to develop competency standards for programs (Mezey, 421).

Most states, including Kentucky, require ARNPs to be certified by a nationally recognized body.

A master's degree in nursing is the standard education for advanced nursing practice. As of 2003, 42 of 51 nursing boards required ARNPs to be certified by a national professional body as a condition of legal recognition. An additional board required nurse practitioners without a master's degree to be certified by a national body (National Council of State Boards of Nursing, 285). Several of the recognized national certifying bodies require a master's degree in nursing as a condition of certification. The American Nurses Credentialing Center, the American Academy of Nurse Practitioners, and the National Certification Board of Pediatric Nurse Practitioners and Nurses require a master's degree; and the National Certification Corporation will require a master's degree by 2007 (Buppert, 5).

The curriculum of ARNPs includes advanced knowledge in pathophysiology, physical assessment, and pharmacology.

The curriculum of ARNP programs includes several courses pertaining to prescribing drugs, including pathophysiology, physical assessment, and pharmacology. ARNP programs include at least 500 hours of patient care, which includes clinical training in prescribing in an environment with physicians or ARNPs (Mezey, 135). Most ARNP programs include content in pain management, prescriptive authority, and controlled substances (Lazarus, 106-107).

Continuing education is required for ARNPs to renew their licenses. They must have at least 75 hours of continuing education every five years in order to renew their national certification. Some states require part of the continuing education to be in pharmacology.

Most states require continuing education in pharmacology. Kentucky requires five contact hours every licensure period.

Forty-three states explicitly require ARNPs to complete education in pharmacology prior to obtaining the authority to prescribe noncontrolled drugs. Twenty-six states require continuing education specifically related to pharmacology for each licensure period. The amount of required continuing education related to pharmacology varies widely, ranging from 1 hour of pain management in Michigan to 20 contact hours in South Carolina. A contact hour is equal to 50 clock minutes. A summary of states' requirements for pharmacy related continuing education is included in Table 2.2.

Table 2.2
States' Required Pharmacy Continuing Education for ARNPs

State	Required Contact Hours (50 minutes per contact hour)
Alaska	8 contact hours every 2 years.
California	Continuing education in Schedule II, amount not specified
Connecticut	8 contact hours every 2 years.
Delaware	10 hours every 2 years.
Hawaii	8 contact hours every 2 years.
Idaho	10 contact hours every 2 years
Indiana	8 contact hours every 2 years.
Kentucky	5 contact hours per licensure period
Michigan	1 contact hour in pain management
Mississippi	2 contact hours specific to controlled substances
Montana	10 contact hours every 2 years
Nebraska	10 contact hours every 2 years
New Hampshire	4 contact hours every 2 years
New Mexico	15 contact hours every 2 years
North Carolina	3 contact hours related to controlled substances
Ohio	12 contact hours every 2 years
Pennsylvania	16 contact hours every 2 years
Rhode Island	30 contact hours every 6 years
South Carolina	20 contact hours with 2 in controlled substances
Texas	5 contact hours every 2 years
Virginia	8 contact hours every 2 years
Washington	15 contact hours every 2 years, encourage education in pain management
West Virginia	8 contact hours every 2 years
Wisconsin	8 contact hours every 2 years
Wyoming	12 contact hours every 2 years

Source: LRC Staff analysis.

ARNP, Physician, and Physician Assistant Education

The educational preparations of ARNPs, physicians, and physician assistants are not comparable to one another. The standard preparation of an ARNP is a master's degree preceded by a basic four-year nursing program. Physicians have a four-year graduate degree in medicine plus one year of internship, which is often followed by a residency in a specialty. This preparation is preceded by a four-year baccalaureate degree. Physician assistants generally complete a two-year certificate program or a baccalaureate degree. A chart of nurse practitioners' education, license, and certification contrasted with that of other primary care providers is included in Table 2.3.

The curriculum of the physician program at the University of Kentucky requires 11 credit hours of pharmacology and the University of Louisville requires 7, compared to 3 credits in the ARNP programs. The University of Louisville also offers its ARNP students an elective course in psychopharmacology. A review of the syllabi for the physician program and the ARNP program at the University of Kentucky and the University of Louisville revealed that the amount of classroom time designated to content related to controlled substances is similar. A chart of the amount of class instruction related to controlled substances for these universities is included in Table 2.4. The curriculum for the ARNP, physician, and physician assistant programs for Kentucky programs is included in Appendix F.

Table 2.3

Education, License, and Certification of Primary Care Providers in the U.S.

Health Professional	Years of College	Undergraduate Degree or Other Education	Graduate Degree	License	Continuing Education (Minimum)	Certification (Renewal)
Nurse Practitioner	2-4	AA, BS, or RN diploma	Master's degree required in 24 states	Yes (RN plus specific area of NP certification)	75 hours/5 years	Yes, every 5 years
Physician Assistant	2-4	BS or certificate	Not required	Not required	100 hours/2 years	Yes, every 6 years
Primary Care Physician	4	BA/BS	Doctor of medicine or osteopathy required in all states	YES (MD or DO)	50 hours/year	Optional

Source: Buppert, 13.

Legend:
AA - Associate Degree
BA - Baccalaureate in Arts Degree
BS - Baccalaureate in Science Degree
MD - Medical Doctor
NP - Nurse Practitioner
OD - Doctor of Osteopathy
RN - Registered Nurse

Table 2.4
Content of Physician and ARNP Programs Related to Controlled Substances

Program	Content	Allotted Classroom Time
UofL School of Medicine	Sedative/Hypnotics Antianxiety Drugs Pain Management Opioid Analgesics Drugs of Abuse	7 hours
UK College of Medicine	Benzodiazepines Drug Dependence Harmful Effects of Abused Drugs Opioid Analgesics	8 hours
UK – ARNP program	Pain Anxiety Pharmacology of CNS Drugs Sedative/Hypnotics Opioid Analgesics	# hours not specified on syllabus
UofL – ARNP program	Introduction to CNS Sedative/Hypnotics Antianxiety Agents Drugs of Abuse Analgesics	6 hours

Source: LRC staff analysis of syllabi from UK and UofL.

Disciplinary Actions

One of the concerns expressed regarding an expansion of prescriptive authority is an increase in illegal drug diversion and substance abuse by nurses. In the past, disciplinary actions against ARNPs in Kentucky have been few, which is consistent with reports in other states (Commonwealth of Kentucky. Kentucky).

The Kentucky Board of Medical Licensure and the Kentucky Board of Nursing have established policies to protect the public from poor medical practices. The Kentucky Board of Medical Licensure took 139 actions against 114 physicians (0.09 percent of Kentucky physicians) during 2003. This ranks Kentucky as number one among state boards of medical licensure in the number of disciplinary actions against licensees (Federation of State Medical Boards). The Kentucky Board of Medical Licensure reported 94 disciplinary actions related to controlled substances or

unauthorized prescribing of medication against physicians to the National Practitioner Data Bank between 1997 and 2003.

The Kentucky Board of Nursing also has established disciplinary procedures to regulate the nursing professions. KRS 314.031 requires all misdemeanor or felony convictions that directly affect the ability of the applicant or licensee to practice nursing to be reported to the Kentucky Board of Nursing. The board is authorized under KRS 314.085 to order a licensee to undergo a mental health dependency evaluation or to issue an order for an emergency suspension in accordance with KRS 314.089. The board also has the authority to revoke or deny a license in accordance with KRS 314.091. In addition, all boards of nursing are required to report disciplinary actions to the National Healthcare Integrity and Protection Data Bank beginning with 1996 data (PL. 104-191).

During the time period between June 30, 1996, and December 7, 2004, the Kentucky Board of Nursing reported disciplinary actions against 65 ARNPs. Of these, 15 disciplinary actions were related to overall ARNP practice, with 5 of these for illegal prescribing. Twenty-six of the disciplinary actions during this time period were related to drug or alcohol abuse by the ARNP. A summary of ARNP disciplinary actions is included in Table 2.5.

Other states have reported that disciplinary actions for ARNPs are rare. In a survey of 36 states and the District of Columbia, 23 nursing boards collectively reported only one disciplinary action related to controlled substances (State of Florida). It is unclear whether ARNPs are not doing anything wrong or whether boards are lax in monitoring, enforcement, or reporting.

Table 2.5
ARNP Disciplinary Actions in Kentucky
June 30, 1996, to December 7, 2004

Type of Complaint	Nurse Practitioner	Anesthetist	Midwife	Clinical Nurse Specialist	Total
Practice	9, (5) related to illegal prescribing	2	1	3	15
Drug and Alcohol Abuse	7	17		2	26
Conviction/Falsification		1			1
Criminal Conviction	1	2			3
Action in Another State	2	6	1		9
Violation of Board Order		1			1
Employment		1			1
Bad Check					
Other		2	1		3
Continuing Education not Completed		6			6
Total	19	38	3	5	65

Source: Kentucky Board of Nursing.

Cost Effectiveness of Primary Care by ARNPs

Staff could identify no research regarding the effect of ARNPs having the authority to prescribe controlled substances on the cost of health care. Staff found limited research related to the cost of health care provided by an ARNP. A cost analysis of a nursing center for the homeless associated with the University of Buffalo School of Nursing found that the cost per visit was $62.71 at the nursing center compared to $92 in a general clinic and $213.27 for an emergency room visit. Cost categories identified included labor, capital equipment, supplies, overhead, and other expenditures (Hunter, 2).

Another study conducted at Vanderbilt University analyzed the impact of ARNPs in several care models that included primary care centers, physician partnerships, outsourcing of nurse practitioners, and employee-based care. The study reported that in these models, care was provided at 23 percent of the average cost of other primary care providers. The study related the lower cost of care to a lower rate of inpatient care and fewer laboratory tests (Spitzer).

The University of Virginia Health System reported that an ARNP model in neuroscience resulted in a $2.4 million savings during the

first year (Larkin, 2). In addition, a case study of a 57-year old psychiatric woman with bipolar disorder with psychosis indicated that care provided under a collaborative practice with a ARNP and a physician reduced the cost of care from $40,000 to $4,000 a year (Cornwell, 59). However, these studies are limited to specific facilities.

Chapter 3

Survey of Practitioners

Introduction

Physicians and ARNPs were surveyed to better understand their opinions about expanded prescriptive authority for ARNPs.

In order to understand Kentucky medical practitioners' opinions about expanding ARNP prescriptive authority to controlled drugs, LRC staff developed and implemented two surveys that were reviewed by an outside nurse researcher and physician. The surveys contained both open ended and multiple choice questions. One survey was designed for and administered to physicians in Kentucky. The other survey was created for and administered to ARNPs in Kentucky. The two survey instruments contained several identical questions so direct comparisons between ARNP and physician opinions could be made. Both the physician and ARNP samples were randomly drawn from their total Kentucky populations as provided by their respective licensing boards. A total of 1,294 surveys were mailed to physicians and 1,113 surveys were mailed to ARNPs. Of those, 322 completed surveys were returned by physicians, and 418 were returned by ARNPs from across the Commonwealth.[1] The two survey instruments, summary statistics of responses, and survey methodology can be found in Appendix G.

Survey Results

There are distinct differences in the opinions of the physicians and ARNPs who responded to the survey concerning whether ARNPs should have the ability to prescribe controlled substances. This is demonstrated most clearly by the single question of "Should ARNPs be granted prescriptive authority for controlled substances?" A summary of the responses is shown in Table 3.1.[2]

[1]While the samples of ARNPs and physicians were selected at random, the results of these surveys may not be representative of the entire populations. This is because the individuals who chose to respond to the survey (potentially individuals with very strong feelings about the topic) may have different opinions, on average, than those who did not respond. The response rate for the physician survey was 25 percent and the ARNP survey was about 38 percent.

[2] It should be noted that the figures in tables in this chapter will not always exactly match reported figures in Appendix G. This is because in generating results for the tables in this chapter, only individuals who responded were considered. The summary statistics reported in Appendix G contain “non-responders” or “no-answers” in the percent calculations. In addition, only active practicing physicians' responses were included in figures for this chapter. Doing this does not materially change the results.

Table 3.1
Should ARNPs be Granted Prescriptive Authority for Controlled Substances?

	Yes, with no limitations	Yes, with certain limitations	No	No opinion
ARNP	60%	36%	3%	1%
Physician	4%	27%	68%	1%

Source: 2004 LRC Physician and 2004 LRC ARNP Surveys

Most physicians felt ARNPs should not have controlled substance auhority. Most ARNPs felt they should be granted authority.

Only 4 percent of physicians responded that ARNPs should be allowed to prescribe controlled substances with no restrictions. Another 27 percent responded that ARNPs should be granted authority but with some limitations. The largest response by physicians was that ARNPs should not be granted prescriptive authority for controlled substances at all, 68 percent of the total.

ARNPs responded differently. Approximately 60 percent of ARNP respondents stated that ARNPs should be allowed to prescribe controlled substances with no limitations. Another 36 percent responded that ARNPs should have the authority extended but with some limitations. Only 3 percent of ARNPs responded that ARNPs should not have the authority to prescribe controlled substances.

More than 83 percent of ARNPs responded they would prescribe controlled substances if they had the legal authority.

ARNP respondents were also asked about their practices and whether they would prescribe controlled substances if allowed. Specifically, ARNPs were asked how many patients on average they see in a week and how many they believe need a certain schedule of controlled substance. More than 83 percent of ARNPs stated that they would prescribe controlled substances if they were granted the authority. ARNP respondents also reported that, on average, they see about 71 patients per week. Of those patients, 27 percent were believed to need some controlled substance.

While ARNPs cannot currently prescribe a controlled substance in Kentucky, they can call on their collaborating physicians who do have the authority.[3] This could require a patient to wait longer for a controlled substance prescription than he or she would otherwise have to wait if ARNPs had authority or if they were seen initially

[3] In Kentucky, ARNPs must have a written "collaborative" agreement with a physician before they can prescribe nonscheduled drugs. This agreement defines the scope of authority of the ARNP.

by a physician. To measure how long it generally takes a collaborating physician to respond to an ARNP's request for a controlled substance, both physicians and ARNPs were asked to report on the experience in their practice. Table 3.2 reports the responses.

Table 3.2
Average Amount of Time it Takes a Collaborating Physician to Respond to an ARNP's Request for a Controlled Substance[4]

Amount of Time Before Response by Collaborating Physician	ARNP Responses	Physician Responses
5 Minutes or Less	33%	69%
6 - 15 Minutes	32%	16%
16 - 30 Minutes	16%	9%
31 - 60 Minutes	10%	3%
More than 60 Minutes	9%	2%

Source: 2004 LRC Physician and 2004 LRC ARNP Surveys.

Eighty-five percent of physicians and 65 percent of ARNPs stated the average time for a collaborating physician to respond to a controlled substance request is less than 15 minutes.

About 85 percent of physicians and 65 percent of ARNPs responded that it takes physicians 15 minutes or less to respond to an ARNP request for a patient in need of a controlled substance. Roughly 2 percent of physicians and 9 percent of ARNPs responded that the average response time is more than an hour for such a request to be filled. These results imply that the majority of patients determined to need a controlled substance and seen by an ARNP normally receive a response from the collaborating physician in less than 15 minutes. Only a small proportion of cases were reported to take more than one hour.

Interestingly, the ARPNs who responded that the average wait time is more than one hour had practices located throughout the state and were not exclusively rural. It might be expected that rural areas with lower densities of physicians would report longer response times by collaborating physicians, other factors the same. This did not appear to be the case in general. About half of ARNPs who responded that the average wait time is more than an hour listed their primary practice city as one of Kentucky's major cities including Louisville, Lexington, Owensboro, Elizabethtown,

[4] These percentages are for those physicians and ARNPs for which this practice was applicable. On the survey instrument, "Not Applicable" was a valid answer. Roughly 20 percent of ARNPs and 26 percent of physicians responded "Not Applicable."

Danville, and Murray.

ARNPs use a variety of methods to obtain controlled substances for patients.

In addition to the response time of a collaborating physician, physicians and ARNPs were asked their perceptions of the frequency of certain practices ARNPs could currently use to acquire a controlled substance for their patients. Table 3.3 lists the practices as well as the ARNP and physician responses.

Table 3.3
Percent of ARNPs and Physicians Responding to What Practices ARNPs Currently Use for a Patient Diagnosed in Need of a Controlled Substance

		Practitioner Responses			
ARNP Practices		**Often**	**Some-times**	**Rarely**	**Never**
Use a noncontrolled substance instead of preferred controlled substance	*ARNP*	49%	38%	10%	3%
	Physician	30%	40%	19%	11%
Refer the patient to physician for evaluation and prescription	*ARNP*	35%	43%	15%	6%
	Physician	45%	38%	12%	5%
Discuss patient with physician and obtain prescription signed by physician	*ARNP*	66%	22%	8%	3%
	Physician	65%	25%	5%	6%
Discuss patient with physician and obtain order and call prescription to pharmacy	*ARNP*	36%	32%	12%	20%
	Physician	33%	39%	14%	14%
Obtain signed prescription from physician without discussing case	*ARNP*	10%	15%	20%	55%
	Physician	8%	15%	24%	54%
Write a prescription on presigned prescription pad without discussing case	*ARNP*	8%	8%	16%	68%
	Physician	5%	10%	15%	70%
Call prescription into pharmacy without discussing case	*ARNP*	6%	13%	19%	61%
	Physician	6%	14%	22%	58%

Source: 2004 LRC Physician and 2004 LRC ARNP Surveys.

It should be noted that some of the practices listed are not within normally accepted medical practices. For example, an ARNP referring a patient to the collaborating physician for further evaluation and a prescription is a generally accepted medical practice. However, an ARNP writing a prescription for a controlled substance on a prescription pad presigned by a physician is not. It should be expected that both physicians and ARNPs would underreport less-accepted practices. It is informative that there were responses indicating that such activities are taking place at all.

More than 70 percent of physicians and 87 percent of ARNPs report that ARNPs "often" or "sometimes" use a non-controlled substance instead of a preferred controlled substance in treatment.

Approximately 30 percent of physicians and 49 percent of ARNPs indicated that ARNPs use a noncontrolled drug "often" instead of a preferred controlled drug. An additional 38 percent of ARNPs and 40 percent of physicians stated this practice occurs "sometimes." These statistics could have a variety of interpretations. It could be viewed as evidence that individuals who are in need of a controlled substance being seen by an ARNP are not receiving prescriptions that could better help their condition. It is unclear, however, whether it is an ARNP's lack of authority to prescribe a controlled substance that causes some patients to not get a preferred controlled substance or, rather, that the attending ARNP is not referring the patient to a physician. An ARNP in Kentucky must have a collaborating physician who can prescribe controlled substances. Referring a patient to a physician is a normally accepted step if a patient is in need of a controlled substance. In fact, about 36 percent of ARNPs stated that if a patient is in need of a controlled substance, they are referred "often" to a physician for evaluation. About 45 percent of physicians responded that ARNPs "often" refer patients for further evaluation if they are determined to need a controlled substance.

There is evidence that practices outside of generally accepted medical practices are being used by ARNPs and physicians to obtain controlled substances for patients seen by ARNPs.

Referring a patient who has been determined to need a controlled substance to a physician is one method of obtaining a controlled substance by an ARNP. The survey asked about other methods in which ARNPs obtain controlled substances for patients they determined are in need. Of particular note are the actions that are outside of widely accepted medical practice. Roughly 8 percent of ARNPs and 5 percent of physicians responded that ARNPs "often" write a controlled substance prescription on a prescription pad presigned by the collaborating physician. Another 15 percent of ARNPs and 15 percent of physicians report this occurs "sometimes." In addition, slightly more than 10 percent of ARNPs and about 8 percent of physicians responded that ARNPs "often" obtain a signed prescription from a physician without discussing the patient first. If these statistics are accurate, they imply that there may already be a nontrivial amount of controlled substances being prescribed by ARNPs as a practical matter in Kentucky even though they do not have the legal authority.

About 93 percent of physicians and 44 percent of ARNPs stated they think there should some be practice limitations on ARNP controlled substance authority if granted.

A series of questions was posed asking what, if any, restrictions should be placed on ARNPs if they were granted the authority to prescribe controlled substances. Almost 93 percent of responding physicians stated that if ARNPs are granted the authority to prescribe controlled substances, there should be some practice restrictions. This is compared to the 44 percent of ARNPs reporting there should be some restrictions on the authority.

Respondents who answered that there should be restrictions on ARNPs' practice were asked to additionally respond about certain specific limitations. Table 3.4 shows these limitations and responses.

Table 3.4
Percent of ARNPs and Physicians Responding Yes to Specific Limitations on ARNP Authority if They are Granted Controlled Substance Authority

Limitation on ARNP Practice	ARNP Responses	Physician Responses
Collaborative agreement must include specific classes of controlled substances	64%	97%
Submit collaborative agreement to KY Board of Nursing	70%	90%
ARNP must practice at the same location of physician	24%	81%
Amount of controlled substances restricted to 72-hour dose	19%	70%
ARNP must have onsite supervision for specified period of time	21%	85%
Collaborating physician's name, number, and address printed on prescription	41%	85%
Prescriptions limited to patients with acute, self-limiting diseases, stable chronic conditions, and terminal comfort	58%	89%
Prescribing limited to refills and dosage changes	17%	53%
Collaborating physician must regularly review ARNP practice	61%	99%
ARNP must consult with collaborating physician prior to refilling controlled substance	20%	83%

Source: 2004 LRC Physician and 2004 LRC ARNP Surveys.

For every individual category of limitation, more than 70 percent of physicians responded that the limitation should be imposed, except limiting authority to prescribing of refills. For two categories of limitations (that the collaborative agreement with a physician must include specific classes of controlled substances the ARNP may prescribe and that the ARNPs practice must be reviewed regularly by the collaborating physician) 97 percent of physicians said the limitations should be in place.

A majority of ARNPs and physicians agreed on three limitations that should be placed on ARNP prescriptive practice.

The ARNPs' responses were somewhat different from the physicians. Most of the limitations were supported by only a minority of responding ARNPs. However, it is informative that three of the limitations were supported by more than 60 percent of responding ARNPs. In addition, these same three limitations had more than 90 percent of physicians responding they should be imposed. These three limitations are 1) Collaborative agreement must include specific classes of controlled substances; 2) Submit collaborative agreement to the Kentucky Board of Nursing; 3) Collaborating physician must regularly review ARNP practice.

ARNPs and physicians were asked open ended questions about their opinions on potential positive and negative impacts of expanded ARNP prescriptive authority.

Along with closed ended questions, both surveys contained open ended questions asking about potential positive and negative effects of granting ARNPs prescriptive authority. This was done in order to provide an opportunity for practitioners to give their opinions outside of the defined survey answers. As might be expected, there was duplication in answers from respondent to respondent. In order to summarize this information, staff analyzed and grouped survey responses into categories for each question.

A common response of ARNPs to what positive impacts would accrue from expanded controlled substance authority was convenience for patients, themselves, and physicians. In addition, about 29 percent of responding ARNPs stated that patients would experience an improved quality of care.

Thirty-three percent of physicians stated that there would be no positive impacts to patients from ARNP prescriptive authority. However, 47 percent stated granting such authority would lead to a higher quality of care.

When asked about potential negative impacts from expanded prescriptive authority, 75 percent of responding ARNPs stated that there would be no negative effects for patients. ARNPs also responded frequently that physician and ARNP practices in general would experience no negative impacts. However, almost 39 percent of responding ARNPs stated that for their own practice, increased requests for controlled substances and dealing with drug-seeking patients would result from having prescriptive authority for controlled substances.

For responding physicians, slightly more than 33 percent stated that there would be no positive effects from ARNPs having the authority to prescribe controlled substances. Close to 63 percent stated that there would be no positive impacts for their own practices. Interestingly, close to 47 percent of responding physicians stated ARNPs being granted prescriptive authority would lead to improved quality of care for patients. More than half of responding physicians noted that ARNPs would experience greater independence and an expanded scope of practice if granted the authority to prescribe controlled substances.

Just over 42 percent of physicians thought granting ARNPs prescriptive authority would lead to more illegal drug diversion.

As for negative impacts stemming from ARNP prescriptive authority, slightly more than 42 percent of physicians responded that a negative effect experienced by patients would be increased drug diversion. About 16 percent of physicians responded that patients would experience no negative impacts from ARNP prescriptive authority while another 15 percent stated patients would experience a decreased quality of care. Forty-two percent of physicians responded that there would be minimal to no negative effects on their own medical practice. Just more than 26 percent of physicians responded that ARNPs would experience greater exposure to drug-seeking and dependent patients. Another 23 percent of physicians stated that ARNPs would experience greater liability from their expanded prescriptive authority.

Chapter 4

Impacts of Advanced Registered Nurse Practitioners Prescribing Controlled Substances

Since there was little research on the impacts of granting ARNP prescriptive authority for controlled substances, new research was performed.

To better understand the experience of states that have allowed ARNPs to prescribe controlled substances, the academic research literature was reviewed. However, the academic literature was largely silent. Because of this, staff performed new empirical research. This research examined the experience of states where ARNPs can prescribe controlled substances. To provide the most information, the ARNP classification was broken into three practitioner components: nurse practitioners, clinical nurse specialists, and certified registered nurse anesthetists.

The results of this research indicated that states are affected when ARNPs can prescribe controlled substances. There is evidence that states that allow ARNPs to prescribe controlled substances have higher per capita amounts of specific controlled substances. In addition, there is evidence that emergency room visits involving controlled substances are higher in states where ARNPs prescribe controlled substances. However, no conclusions can be drawn about the effect of ARNPs prescribing controlled substances on licensure actions taken against ARNPs. For a more detailed explanation of methods and data employed, see Appendix H.

Data Analysis

New research aimed to examine the effects of allowing ARNPs to prescribe controlled substances on the quantity of controlled substance as well as positive and negative impacts.

Because of the lack of research investigating the impacts of allowing ARNPs to prescribe controlled substances, staff performed new data analysis. While there are many potential research questions of interest, the lack of relevant data constrained what could be investigated. With this constraint, staff aimed to provide information on two questions regarding expanded ARNP prescriptive authority where a contribution to knowledge was felt to be possible.

1) Is there a relationship between the amount of controlled substances utilized in a state and ARNPs having the authority to prescribe them?

2) Are there positive or negative effects of expanding of ARNP prescriptive authority to include controlled substances?

To answer the first question, data was collected on both the number of prescriptions of controlled substances in each state as well as the quantity in grams shipped by manufactures to each state. The data for the number of prescriptions was obtained from Verispan's Vector One for years 1996 through 2003. The quantity in grams data was obtained from the U.S. Department of Justice Drug Enforcement Agency ARCOS system for years 1997 through 2003.

Not all controlled substance were investigated. Rather those that are most likely to be abused and diverted were considered.

Not all controlled substances were included in the study. Rather, controlled substances that are commonly cited as diverted and abused were selected. This narrower list of drugs allowed the research to focus on the impact of ARNPs prescribing substances that are most likely to be diverted or abused. The listing was compiled by consulting U.S. Drug Enforcement Agency Retail Drug Summaries for 1997 - 2002, listings in the National Forensic Laboratories Annual Reports, and Drug Abuse and Warning Network (DAWN) reports, among others. Staff also added additional controlled substances of special interest to Kentucky.

Data was not available to systematically investigate potential positive impacts of ARNP controlled substance prescriptive authority.

For the second question, both positive and negative impacts from ARNP prescriptive authority were investigated. However, no data was found that allowed staff to analyze positive impacts from ARNP prescriptive authority. Proponents of expanded ARNP prescriptive authority put forth many positive effects they believe could come from expanded ARNP authority including better health care access, better health outcomes for patients, and decreases in the cost of health care. While these are valid issues to research, no data was found that allowed staff to empirically investigate such effects. While this is a recognized shortcoming of the current research, it does not render the other results invalid. However, literature cited in Chapter 2 tends to support the general notion that primary care, of which prescribing controlled substances is a part, delivered by an ARNP is of similar quality to that delivered by a physician.

Potential negative effects from expanded ARNP prescriptive authority were investigated by looking at emergency room mentions of controlled substances and licensure actions taken against ARNPs.

The question of potential negative consequences from ARNPs prescribing controlled substances was addressable. The first data employed is from the U.S. Department of Health and Human Services DAWN emergency room mentions.

An "emergency room mention" occurs when an individual enters the emergency room and a specific substance is made part of that individual's record. This may or may not be the primary reason an individual enters the emergency room. The data is compiled by reviewing patient records after the emergency room visit is

completed. Specific controlled substances are tracked as are many other substances, both of prescription and nonprescription origin. In order to examine emergency room visits clearly related to controlled substances, two categories of drugs—narcotics and barbiturates—were selected.

The second question was also addressed by looking at actions taken against ARNPs by their regulating boards of nursing and hospital and insurance reports. The data used for this analysis was obtained from the Healthcare Integrity and Protection Data Bank (HIPDB). However, it could not be used to compare states with and without ARNP controlled substance authority.

The ARNP group was separated into three categories to provide more information.

In addition, as mentioned above, the category of ARNP was separated into its component groups in the statistical models: 1) nurse practitioners; 2) clinical nurse specialists; and 3) certified registered nurse anesthetists.[5] By breaking the ARNPs into separate groups, it is possible to learn more about the individual categories of practitioners and their impact on controlled substance prescribing.

Multivariate regression analysis was used to estimate the impact of ARNP controlled substance authority.

Standard multivariate regression techniques were used to investigate the data except where that was not possible. Regression analysis is a statistical tool that allows a researcher to control for many different variables that are believed important. For example, if income affects the number of controlled substance prescriptions, this income effect can be accounted for. By taking into account other important variables that could impact the quantity of controlled substances or emergency room mentions, the effect of ARNP prescriptive authority can be more reliably uncovered. As is the case for any regression analysis, all variables cannot be controlled for, as data sometimes does not exist. Incorporating additional control variables, to the extent that they are important to either the quantity of controlled substances or emergency room mentions, would improve the estimation. Variables that were explicitly controlled for include race, age, population growth rates, income levels, income growth rate, unemployment, uninsured, sex, state prescription monitoring program, area effects and year effects.

[5] Certified nurse midwives were also considered, but because of multicolinearity issues, they could not be investigated separately.

Results

Uncovering the effects of prescriptive authority is complicated and the results must be carefully considered. There is evidence that states where ARNPs prescribe controlled substances have higher per capita levels of controlled substances than states where they do not. Additionally, there is evidence that emergency room mentions are more frequent in areas where ARNPs prescribe controlled substances. However, nothing can be said about the effect of granting controlled substance authority to ARNPs on the number of licensure actions taken against ARNPs.

Quantity of Controlled Substances in States

ARNPs have become more active in prescribing controlled substances on a national level but still only wrote about 1.5 percent of the total number of prescriptions in 2003.

For the entire United States, the number of prescriptions per capita of the controlled substances investigated for this study increased by slightly more than 16 percent between 1996 to 2003. In addition, the total percentage share of prescriptions written by ARNPs, while still a small part of the total number of prescriptions, has increased significantly during this period. In 1996 ARNPs prescribed slightly more than one-tenth of 1 percent of controlled substance prescriptions. By 2003, ARNPs prescribed almost 1.5 percent of prescriptions written. It is unclear whether or not the past growth in prescriptions written by ARNPs will continue. It could be that ARNPs will continue to become a larger component in prescribing controlled substances. It could also be the case that the growth in the number of prescriptions written by ARNPs levels off, or even falls.

States with ARNP controlled substance authority had higher controlled substance prescriptions per capita than states that have not granted ARNPs authority.

With evidence that ARNP prescribing has become a larger part of the total number of prescriptions, the analysis was taken further. Table 4.1 shows the impact of ARNPs having prescriptive authority on the number of per capita prescriptions of specific controlled substance schedules. States that have granted ARNPs authority for Schedule II have about 1.4 percent per year more Schedule II prescriptions per capita than states that have not. Nurse practitioners were found to drive this result. Granting authority to the other two categories of ARNPs in addition to nurse practitioners did not change the total effect. Similarly, ARNPs having authority for Schedule III also increased Schedule III prescriptions per capita. No difference was found in states that did and did not have ARNPs prescribing Schedule IV prescriptions.

Table 4.1
Effect of ARNP Controlled Substance Authority
on Per Capita Prescriptions and Quantity in Grams

Difference in Number of Prescriptions as Compared to States Not Granting Authority			Difference in Quantity in Grams as Compared to States Not Granting Authority
Schedule II	**Schedule III**	**Schedule IV**	**Schedule II**
1.4% per year of authority	6.4% in total	no effect	6.6% per year of authority *

* When certified registered nurse anesthetists are granted authority in addition to nurse practitioners and clinical nurse specialists, there is no overall impact on quantity in grams.

Note: Effects are for a hypothetical state with the average per capita number of prescriptions (or quantity in grams) of all U.S. states. The impact of ARNP authority would be different depending upon the actual amount in a single state.

Source: LRC staff analysis.

States where nurse practitioners and clinical nurse specialists can prescribe controlled substances, grams per capita have higher amounts of those schedules of drugs than do states where they cannot.

Table 4.1 also shows the impact of ARNPs having Schedule II authority on the quantity, measured in grams per capita, of Schedule II controlled substances. While similar to the number of prescriptions, this is a slightly different measure of the amount of controlled substances in a state. Again, states where ARNPs have Schedule II authority have higher amounts of Schedule II controlled substances, about 6.6 percent more per year. This is the effect when nurse practitioners have authority alone or whether clinical nurse specialists also have authority. However, in states where certified registered nurse anesthetists also have this prescribing authority, in addition to nurse practitioners and clinical nurse specialists, there was no difference found between states. Why nurse anesthetists would cause there to be no overall impact from ARNPs having authority is not clear. However, their clinical practices are traditionally hospital based and generally different from that of both nurse practitioners and clinical nurse specialists.

States more often than not grant multiple schedules to ARNPs.

States that have granted prescriptive authority to ARNPs for controlled substances do not normally grant a single schedule. Rather, they tend to grant authority for multiple schedules together. In addition, if ARNPs are granted a higher schedule, they generally have authority for the lower schedules. For example, when ARNPs have Schedule II authority, it is also true that they have Schedules

III, IV, and V.[6] Thus, in interpreting the results, it should be considered that if practitioners can prescribe Schedule II controlled substances in a state, they can also prescribe Schedules III, IV, and V substances.

Higher amounts of controlled substances in states where ARNPs have controlled substance authority does not imply a problem.

While there is evidence that granting prescriptive authority to ARNPs leads to an increase in some per capita measures of scheduled controlled substances in a state, this is not necessarily evidence of a problem. Nor is it evidence that ARNPs are miss-prescribing these substances. It is not known from the results if the increase in drugs is the result of the new prescribers being ARNPs or whether there are simply more prescribers in the world. This is a subtle, but important, point. Consider that there are approximately 170,000 ARNPs in the U.S. (Pearson. Sixteenth).[7] If, instead of being ARNPs, these 170,000 individuals were new doctors, it is not known whether the effects on per capita controlled substances would be the same or different. Thus, it is not known if the effects on per capita amounts of controlled substances in states where ARNPs have been granted authority stems from the individuals being ARNPs specifically or whether from there simply being more prescribers generally.

In addition, an increase in per capita amounts of schedule drugs may or may not indicate a problem. One of the arguments made for ARNP prescriptive authority is that it would increase access to medically undeserved individuals. It could be the case that the observed increase in controlled substance stems from individuals who were undeserved previously now being given access to drugs they need.

What is clear is that states that have granted nurse practitioners, and other categories of ARNPs, prescriptive authority are impacted. ARNPs prescribing controlled substances in a state tends to increase the per capita number of prescriptions and quantity in grams of controlled substances as compared to states that do not grant such authority.

Emergency Room Mentions

The second research question addressed was whether there are any negative effects associated with ARNPs prescribing controlled

[6] It is also the case that many states that have granted ARNPs Schedule III authority also have granted them Schedule II authority. Having authority for a higher schedule was taken into account in the statistical models.

[7] As a reference, there were more than 285,000 physicians practicing "general primary care" in 2000 according to the American Medical Association (Physician).

substances. To first answer this question, emergency room data from DAWN was used for years 1995 to 2002. The two drug categories selected for analysis were narcotics and barbiturates. Both categories include substances from multiple schedules. This makes separating the effect of having an individual schedule difficult. Thus, the results speak to having Schedules II through V authority together, not having any schedule individually.

It should be noted that questions have been raised concerning the accuracy of DAWN data. DAWN administrators are currently redesigning the DAWN system and have noted these concerns in the redesign (U.S. Department of Health and Human Services. Substance. Office. Drug. Development). However, DAWN data continues to be used in the academic research literature in spite of these questions. Examples can be found in Dave (2004) and Model (1993). The current results using DAWN data are provided with consideration of any potential weaknesses in the data.

ARNPs were found to increase emergency room mentions for narcotics and to have no impact on mentions for barbiturates.

Table 4.2 summarizes the results for emergency room mentions. ARNPs being able to prescribe controlled substances was found to increase the number of emergency room mentions per 100,000 people for narcotics. This effect was unchanged whether clinical nurse specialists and/or certified registered nurse anesthetists had authority or not in addition to nurse practitioners.

Table 4.2
Impact of ARNP Controlled Substance Authority on Emergency Room Mentions Per 100,000 People

	Difference in Emergency Room Mentions Compared to States Not Granting Authority
Narcotics	**Barbiturates**
7.6% more per year of authority	no effect

Source: LRC staff analysis.

For emergency room mentions for barbiturates, no difference was found between areas where ARNPs could prescribe controlled substances and in those areas where they could not. Again, this result did not change whether clinical nurse specialists or certified registered nurse anesthetists had authority in addition to nurse practitioners.

It is not clear whether the increase in emergency room mentions stem from there being new prescribers or from the new prescribers being ARNPs.

It cannot be determined from these results if the increase in the number of emergency room mentions stems from the new prescribers being ARNPs or from there simply being more prescribers in the world. If, instead, there had been a similar increase in the number of physicians, the results could have been the same or different. Thus, an increase in emergency room mentions when ARNPs have been granted controlled substance authority does not necessarily imply that ARNPs perform poorly relative to physicians. Rather, there could be an increase in emergency room mentions whether ARPNs are identical, better, or worse than physicians at prescribing controlled substances on average.

Licensure Actions for ARNPs

The number of disciplinary actions taken against ARNPs related to controlled substances was also analyzed. Using data from the HIPDB, the number of actions taken against ARNPs was examined for years 1997 through 2003. The HIPDB is a national database and requires all adverse actions taken against health care practitioners, providers, and suppliers to be reported.[8]

Licensure actions taken against ARNPs for controlled substances are rare.

There were relatively few actions found given the roughly 170,000 practicing ARNPs (Pearson. Sixteenth. 31). For all 50 states through the six-year period, there was a total of 41 actions related to controlled substances. In addition, 37 states reported no actions for all years. With such a small number of total actions and many states with no actions at all, it is difficult for statistical analysis to uncover any effects from ARNP prescriptive authority. The only information that can be drawn from this data is that, overall, reported actions taken against ARNPs based on controlled substance or other substance abuse problems are rare. A valid comparison across states is not possible.[9]

[8] HIPDB administrators did caution staff that while it is federally mandated that all entities report actions to the data bank, it is not clear that all do so perfectly or define practitioner categories identically. The HIPDB is believed to be credible, but its accuracy cannot be explicitly verified. Staff did, when surveying state boards of nursing, ask whether the board reported to HIPDB. The vast majority responded that they did.

[9] Similar analysis was explored for the National Practitioner Data Bank, which requires reporting of all malpractice payments made for a medical practitioner. However, it was not possible to narrow the reported malpractice claims to controlled substances specifically. When the malpractice allegation of "medication related" was used, a total of 43 cases resulted for the entire 1996 to 2003 period.

Chapter 5

Summary

House Bill 595 of the 2004 Regular Session of the General Assembly directed the staff of the Legislative Research Commission to study the likely effects of authorizing ARNPs to prescribe controlled substances. The purpose of House Bill 595, in its original form, was to authorize ARNPs to prescribe controlled substances. HB 595 was amended to remove the expanded prescriptive authority.

Kentucky is one of six states that has not granted ARNPs the authority to prescribe controlled substances. Of the 44 states that have, 8 states granted ARNPs the explicit authority to prescribe all drugs independently. In the remaining states, ARNPs prescribe controlled substances under a collaborative agreement with a physician. In all 50 states and the District of Columbia, ARNPs are authorized to prescribe nonscheduled prescription drugs. In most states, a collaborative agreement with a physician is required for prescribing these medications.

A review of the academic research literature revealed no studies that systematically examined the effects of authorizing ARNPs to prescribe controlled substances. Only one non-peer-reviewed study conducted by the Florida Prescribing of Controlled Substances Task Force was found. There was literature that evaluated the overall quality of care provided by ARNPs as compared to general practice physicians. This literature indicated that there is no significant difference in the quality of care provided by ARNPs and general practice physicians. However, this literature did not deal specifically with care involving controlled substances. Rather, it investigated overall practice, of which controlled substance prescribing is one component.

Because of the lack of research literature, LRC staff performed new data analysis. To determine if there is a difference in the quantity of controlled substances in states where ARNPs can prescribe and in states where they cannot, the number of prescriptions per capita and quantity in grams per capita were collected for specific controlled substances. In addition, to understand if there are negative outcomes from ARNPs prescribing controlled substances, emergency room mentions and licensure actions taken against ARNPs involving controlled substances were investigated. While positive impacts of ARNPs prescribing

controlled substances were considered, no data allowed formal investigation.

Finally, ARNPs and physicians in Kentucky were surveyed regarding their opinions of the positive and negative effects of allowing ARNPs to prescribe controlled substances. The surveys also collected information regarding the perceived need of ARNPs to prescribe controlled substances. In addition, ARNPs and physicians were asked about current procedures used by ARNPs to obtain prescriptions for controlled substances for their patients and limitations that the General Assembly should consider if expanded prescriptive authority is considered.

Conclusions and Discussion

In 1996, slightly more than one-tenth of 1 percent of all prescriptions for controlled substances investigated were written by ARNPs. By 2003, the proportion of controlled substance prescriptions written by ARNPs has increased to 1.5 percent. While this is a large change, ARNPs still make up a relatively small part of the controlled substance prescription market.

The results of the data analysis indicate that states where ARNPs prescribe controlled substances have higher per capita levels of controlled substances than states where they do not. Specifically, states where ARNPs can prescribe controlled substances have about 1.4 percent per year more Schedule II prescriptions per capita than states that have not granted this authority. There was also an increase in the amount of Schedule III prescriptions (6.4 percent). There was no significant change in the number of prescriptions for Schedule IV drugs if ARNPs had prescriptive authority.

It was also found that areas where ARNPs could prescribe controlled substances had a higher number of emergency room mentions for narcotics. However, ARNPs prescribing controlled substances did not impact the number of emergency room mentions for barbiturates.

While there is evidence that the utilization of controlled substances is higher in states where ARNPs prescribe controlled substances, this does not indicate that a problem exists. Nor does is necessarily mean that ARNPs are misprescribing these substances. It is possible that the effects are related to there being more prescribers and increased access to care. It cannot be determined whether the

increase in controlled substances in a state and any increase in emergency room mentions related to controlled substances stem from the new prescribers being ARNPs or from there just being more prescribers. It is not clear whether the impacts would be the same, greater, or smaller if the new prescribers were physicians instead of ARNPs.

There was a distinct difference in the opinions of physicians and ARNPs who responded to the surveys regarding whether ARNPs should be authorized to prescribe controlled substances: 96 percent of the ARNPs felt that they should have this authority; 68 percent of physicians felt ARNPs should not be granted this authority. Eighty-three percent of ARNPs stated they would use this authority in their practices if it is granted.

Most physicians (93 percent) and less than half of ARNPs (44 percent) indicated that if the General Assembly considers granting ARNPs prescriptive authority for controlled substances, there should be limitations placed on that authority. However, if limitations are created, the three limitations that were most supported by physicians and ARNPs were the same: 1) ARNP required to have a collaborative agreement with a physician; 2) The collaborative agreement must be submitted to the Kentucky Board of Nursing; and 3) Collaborating physician must regularly review ARNP practice.

Education programs for ARNPs and physicians were described. ARNPs are required to complete a four-year basic nursing program and earn a master's degree in an advanced practice specialty. Physicians complete a four-year baccalaureate program, four years of medical school, an internship, and possible residency. The amount of pharmacy credit hours in medical schools is substantially larger than ARNP requirements. However, the number of credit hours devoted to controlled substances, excluding anesthesia, is similar among ARNP and physician programs at the University of Louisville and the University of Kentucky.

Limitations

While making a contribution to knowledge, this study is limited. The major limitation is that data was not available to allow potential positive effects of ARNPs prescribing controlled substances to be investigated. Proponents maintain that better health care outcomes, better health care access, and lower health care costs could result from ARNPs being allowed to prescribe

controlled substances. Opponents of ARNPs being able to write controlled substance prescriptions maintain this would not be the case. However, none of these potential outcomes could be tested by data analysis.

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Appendix A
2004 House Bill 595

A Concurrent Resolution to direct the Legislative Research Commission to study the advisability of allowing advanced registered nurse practitioners to prescribe Schedule II through V controlled substances.

WHEREAS, there is a shortage of physicians in rural areas, and advanced registered nurse practitioners help to improve access to care in lieu thereof; and

WHEREAS, there is some disagreement as to whether the advanced registered nurse practitioners' assuming the duty of prescribing Schedule II through V controlled substances is in the best interest of the patient; and

WHEREAS, over 45 states allow advanced registered nurse practitioners to prescribe controlled substances at various levels under a collaborative agreement with a licensed physician; and

WHEREAS, the advanced registered nurse practitioners are increasingly valued in providing medical services; and

WHEREAS, allowing the advanced registered nurse practitioners to prescribe medications provides terminally ill patients better access to care;

NOW, THEREFORE,

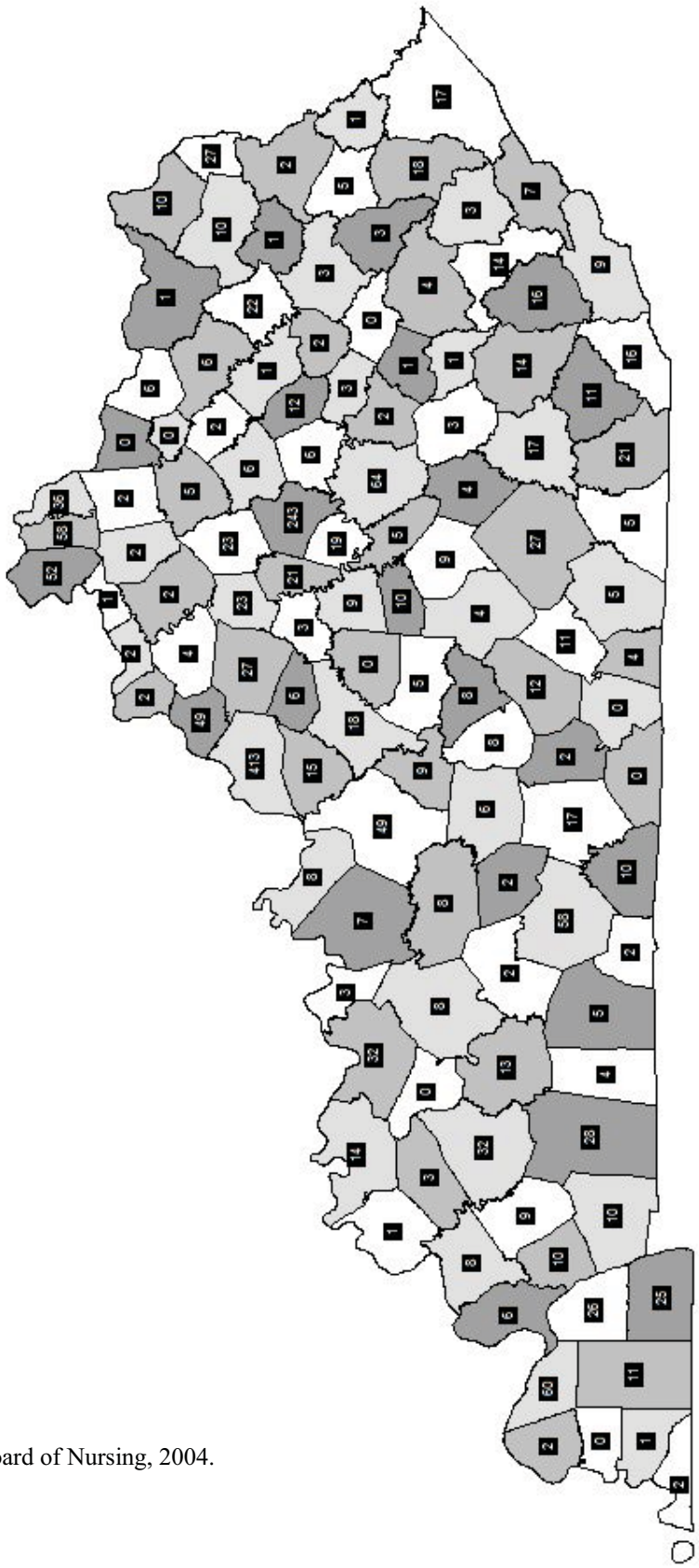
Be it resolved by the Senate of the General Assembly of the Commonwealth of Kentucky, the House of Representatives concurring therein:

Section 1. The Legislative Research Commission shall conduct a study regarding the advisability of advanced registered nurse practitioners prescribing Schedule II to V controlled substances. The study shall survey and evaluate practices in other states and gather data and testimony from affected persons and professionals as to the efficacy of these practices.

Section 2. The Legislative Research Commission shall transmit the results of the study required by Section 1 of this Resolution to the appropriate committees by October 1, 2004.

Section 3. Provisions of this Resolution to the contrary notwithstanding, the Legislative Research Commission shall have the authority to alternatively assign the issues identified herein to an interim joint committee or subcommittee thereof, and to designate a study completion date.

Appendix B
Number of ARNPs by County



Source: Kentucky Board of Nursing, 2004.

Appendix C

Collaborative Practice Agreement For Prescriptive Authority

THIS COLLABORATIVE PRACTICE AGREEMENT (the "Agreement") is entered into this _____day of the month of _____in the year_____, by and between_____ ARNP., herein after the "ARNP", and_____ M.D., herein after the "Physician consultant".

WITNESSETH:

WHEREAS, the ARNP and the physician desire to enter into a Collaborative Practice Agreement pursuant to KRS 314.042(8); and

WHEREAS, this Collaborative Practice Agreement is entered by and between the ARNP and the Physician for the sole purpose of defining the scope of prescriptive authority to be exercised by the ARNP, all in compliance with the applicable sections of KRS Chapter 314; and

WHEREAS, this agreement is not a substitute for the independent clinical judgment of the ARNP based on the specific needs of the patient. The ARNP shall remain responsible and accountable pursuant to KRS 314.021(2).

NOW, THEREFORE, the parties agree as follows:

1. All of the foregoing are a part of this agreement and are not mere recitals.

2. The ARNP shall be permitted to prescribe all nonscheduled legend drugs appropriate for conditions which the ARNP may treat pursuant to the ARNPs scope of practice as defined in 201 KAR 20:057 in the specialty of _____.

3. The ARNP shall only be permitted to prescribe nonscheduled legend drugs as defined in KRS 217.905, and under the conditions set forth in KRS 314.042 and KRS 314.011.

4. This agreement shall not be construed as limiting, in any way or to any extent, the scope of practice authority provided to the ARNP pursuant to KRS Chapter 314, and the administrative regulations promulgated pursuant thereto, 201 KAR 20:056 and 20:057; nor shall it be construed as governing the authority of the nurse anesthetist to deliver anesthesia care.

5. This agreement is not intended to serve as a substitute for the independent clinical judgement of the ARNP based on specific needs of the patient and this agreement does not place increased liability on the Physician for those decisions made by the ARNP.

6. This agreement shall remain in effect unless terminated by either party with thirty (30) days notice.

_____	_____
ARNP	Physician
_____	_____
RN license no.	Physician license no.
_____	
ARNP license no	
_____	_____
Practice address	Practice address
_____	_____
City, state, zip	City, state, zip
_____	_____
Phone	Phone

Source: Kentucky Coalition of Nurse Practitioners and Nurse Midwives.

Appendix D

State Regulation Of Prescribing of Controlled Substances by ARNPs

STATE	NP	NM	CNS	CNA
Alabama	N/A	N/A	N/A	N/A
Alaska	II-V	II-V	Not a Category	II-V
Arizona	II-V	II-V	N/A	N/A
Arkansas	III-V	III-V	III-V	III-V
California	II -V	II -V	N/A	N/A
Colorado	II-V	II-V	II-V	II-V
Connecticut	II-V	II-V	II-V	N/A
Delaware	II-V	II-V	II-V	II-V
Washington, D.C.	II-V	II-V	II-V	II-V
Florida	N/A	N/A	Not a Category	N/A
Georgia	N/A	N/A	N/A	N/A
Hawaii	N/A	N/A	N/A	N/A
Idaho	II-V	II-V	II-V	II-V
Illinois	III-V	III-V	III-V	III-V
Indiana	II-V	II-V	II-V	N/A
Iowa	II-V	II-V	II-V	II-V
Kansas	II-V	II-V	II-V	N/A
Kentucky	N/A	N/A	N/A	N/A
Louisiana	III-V	III-V	III-V	N/A
Maine	II -V	II -V	N/A	N/A
Maryland	II-V	II-V	N/A	N/A
Massachusetts	II-V	II-V	II-V	N/A
Michigan	II-V	II-V	Not a Category	
Minnesota	II-V	II-V	II-V	II-V
Mississippi	II-V	II-V	N/A	II-V
Montana	II-V	II-V	II-V	II-V
Nebraska	II-V	II-V	Not a Category	II-V
Nevada	II-V	Not a sep. title	Not a Category	N/A
New Hampshire	II-V	II-V	Not a Category	II-V
New Jersey	II-V	II-V	II-V	N/A
New Mexico	II-V	II-V	II-V	II-V
New York	II-V	II-V	Not a Category	N/A
North Carolina	II-V	II-V	N/A	N/A
North Dakota	II-V	II-V	II-V	II-V
Ohio	II-V	II-V	II-V	II-V
Oklahoma	III-V	III-V	III-V	II-V
Oregon	II-V	II -V	N/A	N/A
Pennsylvania	II-V	Not a Category	Not a Category	N/A
Rhode Island	II-V	II-V	II -V	
South Carolina	III-V	III-V	III-V	N/A
South Dakota	II-IV	II-IV	N/A	N/A
Tennessee	II-V	II-V	II-V	N/A
Texas	III-V	III-V	III-V	II-V
Utah	II-V	II-V	II-V	II-V
Vermont	II-V	II-V	II-V	II-V
Virginia	III-V	III-V	N/A	N/A
Washington	II-V	II-V	II-V	II-V
West Virginia	III-V	III-V	III-V	III-V
Wisconsin	II-V	II-V	II-V	II-V
Wyoming	II-V	II-V	II-V	II V

N/A = NO AUTHORITY

Source: LRC staff analysis.

Appendix E

States' Requirements Related to ARNP Prescribing

State	Limitations on ARNP Prescribing
Alabama	• Not authorized to prescribe controlled substances.
Alaska	• Must apply to prescribe. • 1 year experience prescribing legend drugs within 5 years prior to application. • ID number on prescription.
Arizona	• Apply prescriptive authority. • File DEA number with Board. • Schedule II - No refills. • Schedule III-IV-Refills limited to five in six months. • Schedule V - may refill 1 year. • Must examine patient.
Arkansas	• Apply for prescriptive authority. • Prescriptive Authority Advisory Committee. • 300 hours prescribing experience. • 1,000 hours - post-APN education experience.
California	• Physicians and NPs name on container label. • I.D. number issued by board. • 6 months supervised experience in ordering drugs.
Connecticut	• CNA-may only prescribe related to surgery and if MD present in the institution.
Colorado	• Apply for prescriptive authority. • Post graduate experience of 1,800 hours in immediate 5 years prior to prescribing. • Limited to patients within practice area. • May prescribe for acute self-limiting disease, stable chronic condition or terminal comfort care. • Advise patient that symptoms or purpose of medication is put on order.
Delaware	• To continue licensure must practice at least 1,500 hours last 5 years or no less than 600 hours in past 2 years in area of specialization. • Must register biennially with the Office of Narcotics and Dangerous Drugs. • Application to prescribe to the Joint Practice Committee. • Prescribed prior to legislation under a waiver from Board of Medicine.
District of Columbia	• CRNA - no refills.
Florida	• Not authorized to prescribe controlled substances.
Georgia	• May call in prescriptions for controlled substances. • NPA - law and guidelines.
Hawaii	• Prescription must include name and phone number of the collegial working relationship physician. • Board of Medical Examiners provides exclusionary formulary to Board of Nursing annually. • Nurse must request prescriptive authority. • 1,000 hours of clinical practice within 3 years of application for prescriptive authority.

Idaho	• For renewal of prescriptive authority, must have 200 hours of advanced practice during preceding 2 years. • May apply for prescriptive authority as part of initial licensure or separately. • Must complete continuing competency assessment program of the American College of Nurse Midwives within 5 years of initial certification.
Illinois	• Name of collaborating M.D. on all prescriptions. • Obtain a midlevel practitioner controlled substance license. • Medication orders-reviewed periodically by collaborating M.D. • Collaborating M.D. required to file notice with the Dept. of Professional Regulation of delegation of prescriptive authority prior to license being issued. • Collaborating physician on site 1 time per month.
Indiana	• Apply for authority to prescribe controlled substances. • Proof of collaborative agreement. • Review of at least 5% of chart by M.D. regarding prescribing.
Iowa	• Registration with Iowa Board of Pharmacy Examiners.
Kansas	• Prescription to include the name, address, and phone number of responsible physician.
Kentucky	• Not authorized to dispense controlled substances.
Louisiana	• Joint Administrative Committee approves the schedules of drugs that may be prescribed. • Prohibited prescribing controlled substances for chronic intractable pain, obesity or for oneself or family. • Prior to licensure as APN 500 hours patient care within past 6 months of applying for prescriptive authority and 160 hours with each additional request. • Joint Administrative Committee on Prescription Authority for APRN (medical & nursing boards). • Application for prescriptive authority (with initial ARNP licensure or separately). • Name, address, and phone number of collaborating MD on prescription.
Maine	• Joint Practice Council on Advanced Practice Registered Nursing. • Must practice for 24 months under M.D. supervision for licensure as APN or work hospital or client with a medical director.
Maryland	• Regulation on prescribing adopted by state Board of Nursing and State Board of Physicians. • CNM - prescribe based on formulary mutually developed by BON, BOM and BOP.
Massachusetts	• II-No refills. • Prescriptions electronically transmitted or written. • State registration for prescriber. • Prescription to include name of supervising M.D.
Michigan	• III-IV not refilled more than 5 times in 6 months. • M.D. may delegate authority to prescribe Schedule II if nurse and M.D. practice within a health facility, free standing surgical outpatient hospitals or hospices and the patient is in the facility. • Schedule II - discharge limited to 7-day supply. • Prohibit M.D. delegating the prescription of a drug for the intent of causing miscarriage or fetal death.
Minnesota	• None listed.

Mississippi	• Use caution for weight loss. • Stimulants-may prescribe for two, 30 day supplies in any 12 month period. Up to 5 refills. • Apply for prescriptive authority for controlled substances. • Maintenance of patient record required - Board may audit. • Prohibited from presigning a prescription pad. • Only one controlled substance per prescription blank. • Prohibit e-mailing or faxing prescriptions for controlled substances.
Missouri	• Not authorized to prescribe controlled substances.
Montana	• Require 400 hours prescription work prior to licensure and 250 hours didactic. • Apply for prescriptive authority. • Prohibited from prescribing controlled substances for self or family. • Schedule II - not exceed FDA quantities. • Schedule III-V - not exceed 3 months. • Refills must be in writing. • Quality Assurance - 15 charts or 5% of charts audited by ARNP or M.D. in same specialty.
Nebraska	• 2,080 hours - practice within previous 5 years immediately preceding renewal application.
Nevada	• Application to issue prescriptions for controlled substances. • Controlled substances prescribed must be listed in the practitioner's protocols approved by the collaborating M.D. • Review of list of controlled substance that may be prescribed annually by M.D. and ARNP. • Examination on Nevada law related to prescriptions.
New Hampshire	• Apply for certification to prescribe controlled substances. • Minimum 480 hours clinical practice undergraduate.
New Jersey	• Physician identifying information on prescription pad and DEA number and licensure of collaborating M.D. • May prescribe controlled substances to reissue an order of a collaborating M.D. or to adjust the dosage of a controlled substances order of a collaborating M.D. or for terminal illness, plus joint protocols. • Charts reviewed by collaborating M.D. • Must place on prescription reissue, dosage change, or information related to terminally ill.
New Mexico	• Application to prescribe. • 400 hours work experience prescribing controlled substances with a preceptor (CNP, CNS, or M.D.) within 2 years of application. • Register with Board of Pharmacy.
New York	• Schedule II limited to 72-hour supply. • Must be certified for authority to prescribe. • II - not be refilled. • III-V - may be refilled, but no more than 6-month supply.
North Carolina	• II-III - 30 days, no refills • III-IV refilled 5 times in 6 months. • V - 1 year • Prescription must have name of supervising physician. • Nurse and M.D. - written plan for review of care.

North Dakota	• Apply for prescriptive authority. • Schedule II may be dispensed in emergency situations based upon oral prescription promptly reduced to writing. • Schedule II - not refilled. • Schedule III-V - refilled 5 times in 6 months. • Must collaborate regularly prescriptive authority with M.D. at least every 2 months.
Ohio	• Certificate to prescribe. • 1,500 hours extensive internship experience with direct supervision for 500 of the hours. • No steroids for muscle building. • Written application for certificate to prescribe.
Oklahoma	• Schedule III-V - limited to 7-day supply. • Name of supervising M.D. on prescription. • III & IV of refills-5 times over 6 month period. • Separate registration w/ Bureau of Narcotics and Dangerous Drugs. • CRNA - controlled substances only during perioperative or periobstetrical period.
Oregon	• II - no refills. • Application to dispense to board. • III-V not refilled more than 5 times in 6 months. • II-written prescriptions required. • Prohibit prescription for weight reduction, methadone for narcotic addiction, and marijuana. • Application for prescriptive authority. • Prescribing controlled substances for chronic pain requires history and assessment to rule out substance abuse. • Intractable pain requires nurse to document diagnosis of pain by practitioner specializing in treatment of the body area and consultation and review of pain management plan with a pain management expert. • 1 controlled substances per prescription. • Prohibited prescribing for self, may prescribe for family or friends if client/provider relationship is established.
Pennsylvania	• II - limited to 72 hours, must notify M.D. within 24 hours. • III-IV - 30-day supply - no refill unless authorized by M.D. • M.D. identified on prescription.
Rhode Island	• Psychiatric and mental health clinical nurse specialist cannot prescribe controlled substances in independent practice.
South Carolina	• Must register with Department of Health and Environmental Control. • Prescription to designate number of refills. • Prescription must include physician's name, address, and phone number.
South Dakota	• Register as dispenser.
Tennessee	• Preprinted pad with name of supervising physician and CNP. • Apply for certificate to prescribe. • M.D. to review and sign 20% charts within 30 days.
Texas	• 400 hours current practice within last 2 years prior to prescribing. • "Intended use of drugs" name, address, and phone number of RN, printed or stamped. • Controlled substance prescription must have DEA number of delegating M.D., intended use of drug, if appropriate. • Must consult with M.D. prior to refill. • No controlled substance prescription for a child less than 2 years without consulting M.D.

Utah	• None listed in laws.
Vermont	• Triplicate prescription for controlled substances.
Virginia	• Disclose that the nurse is NP and provide name, number, and address of supervising M.D. • State certification with Board of Pharmacy. • 1,000 hours practice prior to initial approval for prescriptive authority. • Monthly random reviewing of charts on which NP has entered a prescription.
Washington	• Application for approval to prescribe. • Dispensing limited to 72-hour supply of II-IV but does not apply to prescribing. • May not be filled or refilled after 6 months after issue, may not request be refilled more than 5 times.
West Virginia	• Schedule IV-V limited to 30 days, no more than 5 refills, prescription expires in 6 months. • State issued prescription identification number. • Application to prescribe. • Prohibited from prescribing Schedule I-II, general anesthetics, radio-pharmaceuticals, antineoplastics, and anticoagulants. • Schedule III limited to 72-hour supply. • Apply for prescriptive authority. • No parental preparations except insulin and epinephrine. • Prescription for phenodiazepines and benzodiazepines limited to 72 hours within 30 days, record evaluation of the effectiveness of controlled substances prescribed. • Prohibited prescribing controlled substances for self or immediate family.
Wisconsin	• Prescription Certification number issued by Board of Nursing. • Prohibited from prescribing any amphetamine, sympathomimetic amine drug in Schedule II. • Schedule II only for treatment of cancer-related pain, narcolepsy, hyperkinesis, drug-induced brain dysfunction, epilepsy, and depression. • Prohibited prescribing anabolic steroids for enhancing athletic performance. • Cannot prescribe to self or family. • Guidelines for dealing with drugs abusers.
Wyoming	• Apply for prescriptive authority. • 400 hours practice with last 2 years prior to application.

Source: LRC staff analysis.

Appendix F

ARNP, Physician, and Physician Assistant Curriculum in Kentucky Schools

ARNP Curriculum	
School	**Required Courses**
Eastern Kentucky University	MASTER OF SCIENCE IN NURSING CORE: Nursing Theory Professional Issues Research in Rural Nursing Research Project Epidemiology and Risk Management RURAL COMMUNITY HEALTH CARE NURSING OPTION: Public Sector Organization and Management Public Health Organization and Administration Health Assessment Rural Health Care Nursing I Rural Health Care Nursing II Rural Nursing Administration Rural Health Internship RURAL HEALTH FAMILY NURSE PRACTITIONER OPTION: Pharmacology Health Assessment Advanced Pathophysiology Rural Health FNP I Rural Health FNP II Rural Health FNP III Rural Health Internship
Frontier School of Midwifery and Family Nursing	CERTIFICATE ON NURSE-MIDWIFERY (CNEP): Health Promotion & Disease Prevention Pathophysiology for Primary Care Decision Making in Health Assessment The Role of Midwifery and Birth Centers in America Reproductive Anatomy and Physiology Pharmacology for Advanced Practice Women's Health I Primary Health Care I Role Development II - Community Assessment & Market Research Antepartum Care I Intrapartum Care I Postpartum and Newborn Care Health Assessment

Frontier School of Midwifery and Family Nursing, (cont.)	Professional Issues in Health Care Delivery Women's Health II Antepartum Care II Intrapartum Care II Postpartum Care II Newborn Care II Women's Health III Women's Health Clinical Antepartum Care III Antepartum Care Clinical Intrapartum Care III Intrapartum Care Clinical Postpartum/Newborn Care III Postpartum/Newborn Care Clinical Health Policy: Birth Centers as a Case Study MASTER'S OF SCIENCE IN NURSING (CNEP): Health Promotion & Disease Prevention Pathophysiology for Primary Care Decision Making in Health Assessment Theories and Concepts for Advanced Primary Care Nursing The Role of Midwifery and Birth Centers in America Reproductive Anatomy and Physiology Pharmacology for Advanced Practice Women's Health I Primary Health Care I Research Role Development II - Community Assessment & Market Research Antepartum Care I Intrapartum Care I Postpartum and Newborn Care Health Assessment Professional Issues in Health Care Delivery Women's Health II Antepartum Care II Intrapartum Care II Postpartum Care II Newborn Care II Women's Health III Women's Health Clinical Antepartum Care III Antepartum Care Clinical Intrapartum Care III Intrapartum Care Clinical

Frontier School of Midwifery and Family Nursing, (cont.)	Postpartum/Newborn Care III Postpartum/Newborn Care Clinical Health Policy: Birth Centers as a Case Study MASTER'S OF SCIENCE IN NURSING (CFNP): Health Promotion and Disease Prevention Pathophysiology for Primary Care Decision Making in Health Assessment Theories and Concepts for Advanced Primary Care Nursing Role of the NP in the Health Care Delivery System Inquiry I Pharmacology for Advanced Practice Women's Health I Primary Health Care I Research Care of the Childbearing Woman Primary Health Care II Primary Care of Children Inquiry II Inquiry III Health Assessment Professional Issues in Health Care Delivery Women's Health II Advanced Diagnostics Primary Health Care III: Emergencies and Trauma in Primary Care Primary Health Care IV: Psychosocial Problems in Primary Care Health care Financing Primary Care Clinical I Primary Care Clinical II Health Care Policies: Implications for Practice Primary Health Care V: Complex Health Problems in Primary Care
Murray State University	ADVANCED NURSING CORE COURSES: Concepts and Theories in Nursing Issues in Rural Health Care Research in Nursing Research Applications in Nursing CLINICAL CORE COURSES: Pathophysiology Advanced Nursing Assessment for Health Promotion/Maintenance

Murray State University, (cont.)	Advanced Pharmacology SPECIALTY COURSES: CLINICAL NURSE SPECIALIST (CNS): Critical Care Concepts Diagnosis and Management of Adult Health Problems Advanced Adult Nursing I Advanced Adult Nursing II Advanced CNS Practicum I Advanced CNS Integration Practicum II Research Project
Northern Kentucky University	FAMILY NURSE PRACTITIONER (FNP): Primary Care of the Family I Primary Care of the Family II Advanced FNP Integration Practicum Research Project MASTER'S OF NURSING: CORE REQUIREMENTS: Nursing Research Methods II Health Issues and Policies Leading and Managing Change Health Care Informatics Health Care Economics Investigative Project Project/Thesis Continuing Credit Statistics Elective (one of the following): Curriculum Development in Nursing, Educational Foundations in Nursing, Nursing Case Management I, Nursing Case Management II, Long-Term Care Regulations, Issues in Gerontology, Role Development PRIMARY CARE NURSING PRACTITIONER TRACK: Diagnostic Reasoning and Advanced Physical Assessment Clinical Pharmacology and Intervention Advanced Physiology Clinical Residencies Primary Care Residency I Primary Care Residency II Primary Care Residency III

Northern Kentucky University, (cont.)	FAMILY NURSE PRACTITIONER (FNP) SPECIALTY COURSES: Pediatric Pharmacology Geriatric Pharmacology Primary Health Care of Infants and Children Primary Care of Obstetric Patients Primary Care of the Gynecologic Patient Primary Care of the Aged Wellness Care of Infant, Child, and Adolescent Common Health Problem Across the Lifespan Primary Care of Adults ADULT NURSE PRACTITIONER SPECIALTY COURSES: Geriatric Pharmacology Primary Care of the Gynecologic Patient Primary Cared of the Aged Common Health Problems Across the Lifespan Primary Care of Adolescents Primary Care of Adults PEDIATRIC NURSE PRACTITIONER SPECIALTY COURSES: Pediatric Pharmacology Primary Health Care of Infants and Children Wellness Care of Infant, Child, and Adolescent Common Health Problems Across the Lifespan Primary Care of Adolescents GERIATRIC NURSE PRACTITIONER SPECIALTY COURSES: Issues in Gerontology Geriatric Pharmacology Primary Care of Aged Common Health Problems Across the Lifespan Primary Care of Adult
Spaulding University	FAMILY NURSE PRACTITIONER (FNP): Theoretical Foundations of Nursing Trends and Issues in Health Care Nursing Research I Nursing Research II Theoretical Foundations of the Family Principles of Pharmacology Applied Pharmacology in Primary Care Pathophysiology

Spaulding University (cont.)	Advanced Health Assessment Children and Adolescents Primary Care Nursing Adult Primary Care Nursing Reproductive and Women's Health Practicum in Primary Care of Children and Adolescents Practicum in Primary Care of Adults Nurse Practitioner Perceptorship Primary Care Procedures ADULT NURSE PRACTITIONER (ANP): Theoretical Foundations of Nursing Trends and Issues in Health Care Nursing Research I Nursing Research II Theoretical Foundations of the Family Principles of Pharmacology Applied Pharmacology in Primary Care Pathophysiology Advanced Health Assessment Adult Primary Care Nursing Reproductive and Women's Health Practicum in Primary Care of Adults Nurse Practitioner Preceptorship Primary Care Procedures Primary Care Practicum PEDIATRIC NURSE PRACTITIONER (PNP): Theoretical Foundations of Nursing Trends and Issues in Health Care Nursing Research I Nursing Research II Theoretical Foundations of the Family Principles of Pharmacology Applied Pharmacology in Primary Care Pathophysiology Advanced Health Assessment Children and Adolescents Primary Care Nursing Reproductive and Women's Health Practicum in Primary Care of Children and Adolescents Nurse Practitioner Preceptorship Primary Care Procedures Primary Care Practicum POST-MASTER FAMILY NURSE PRACTITIONER CERTIFICATE PROGRAM: Theoretical Foundations of Nursing

Spaulding University, (cont.)	Principles of Pharmacology Applied Pharmacology in Primary Care Pathophysiology Advanced Health Assessment Children and Adolescents Primary Care Nursing Adult Primary Care Nursing Reproductive and Women's Health Practicum in Primary Care of Children and Adolescents Practicum in Primary Care of Adults Nurse Practitioner Preceptorship Primary Care Procedures Primary Care Practicum POST-MASTER ADULT NURSE PRACTITIONER CERTIFICATE PROGRAM: Theoretical Foundations of Nursing Principles of Pharmacology Applied Pharmacology in Primary Care Pathophysiology Advanced Health Assessment Adult Primary Care Nursing Reproductive and Women's Health Practicum in Primary Care of Adults Nurse Practitioner Preceptorship Primary Care Procedures Primary Care Practicum POST-MASTER NURSE PRACTITIONER CERTIFICATE PROGRAM: Theoretical Foundations of Nursing Principles of Pharmacology Applied Pharmacology in Primary Care Pathophysiology Advanced Health Assessment Children and Adolescent Primary Care Nursing Reproductive and Women's Health Practicum in Primary Care of Children and Adults Nurse Practitioner Preceptorship Primary Care Procedures Primary Care Practicum

University of Kentucky	ACUTE CARE NURSE PRACTITIONER TRACK: Advanced Health Assessment Theoretical Bases for Advanced Practice Nursing Pathophysiology Primary Care Advanced Practice Nursing Seminar Clinical Reasoning in Advanced Practice Nursing Applications of Advanced Health Assessment Pharmacology Advanced Practice Nursing Care of Acutely Ill Adults Comprehensive Patient Management I Research Methods in Advanced Practice Nursing Leadership in Advanced Practice Nursing Advanced Practice Nursing Care of Critically Ill Adults Evidence-Based Nursing Practice Comprehensive Patient Management II Elective ADULT CLINICAL NURSE SPECIALIST TRACT: Advanced Health Assessment Theoretical Bases for Advanced Practice Nursing Pathophysiology Research Methods in Advanced Practice Nursing Clinical Reasoning in Advanced Practice Nursing Applications of Advanced Health Assessment Pharmacology Acute and Chronic Illness and Nursing Therapeutics I Leadership in Advanced Practice Nursing Acute and Chronic Illness and Nursing Therapeutics II Evidence-Based Nursing Practice Measuring and Documenting Nursing Practice Elective PARENT-CHILD NURSING TRACK: Advanced Health Assessment Theoretical Bases for Advanced Practice Nursing Pathophysiology Research Methods in Advanced Practice Nursing Clinical Reasoning in Advanced Practice Nursing Applications of Advanced Health Assessment Pharmacology Advanced Parent-Child Nursing Seminar Comprehensive Patient Management I Leadership in Advanced Practice Nursing Advanced Nursing Care for Families Pre-conception Through Adolescence I Evidence-Based Nursing Practice

University of Kentucky, (cont.)	Comprehensive Patient Management II Advanced Nursing Care for Families Pre-conception Through Adolescence II Elective PRIMARY CARE NURSE PRACTITIONER TRACK: Advanced Health Assessment Theoretical Bases for Advanced Practice Nursing Pathophysiology Primary Care Advanced Practice Nursing Seminar Clinical Reasoning in Advanced Practice Nursing Applications of Advanced Health Assessment Pharmacology Primary Care Advanced Practice Nursing Comprehensive Patient Management I Leadership in Advanced Practice Nursing Research Methods in Advanced Practice Nursing Evidence-Based Nursing Practice Comprehensive Patient Management II Primary Care Advanced Practice Nursing Practicum II ADULT PSYCHIATRIC/MENTAL HEALTH NURSE PRACTITIONER OR CLINICAL NURSE SPECIALIST TRACK: Advanced Health Assessment Theoretical Bases for Advanced Practice Nursing Pathophysiology Clinical Topics in Advanced Practice Psychiatric Mental Health Nursing Applications of Advanced Health Assessment Pharmacologic Applications in Primary Care Advanced Practice Psychiatric Nursing I Research Methods in Advanced Practice Nursing Clinical Reasoning in Advanced Practice Nursing Advanced Practice Psychiatric Nursing II Elective Leadership in Advanced Practice Nursing Evidence-Based Nursing Practice Comprehensive Patient Management I Comprehensive Patient Management II PUBLIC HEALTH NURSING TRACK: Theoretical Bases for Advanced Practice Nursing Pathophysiology Research Methods in Advanced Practice Nursing Public Health Science

University of Kentucky, (cont.)	Clinical Reasoning in Advanced Practice Nursing Epidemiology Advanced Practice In Public Health Nursing: Assessment Advanced Health Assessment Leadership in Advanced Practice Nursing Advanced Practice in Public Health Nursing: Policy Development Evidence-Based Nursing Practice Advanced Practice in Public Health Nursing: Assurance Elective ACUTE CARE NURSE PRACTITIONER TRACK (POST M.S.N.): Pharmacology Pathophysiology Advanced Health Assessment and Applications Primary Care Advanced Practice Nursing Seminar Advanced Practice Nursing Care of Acutely Ill Adults Comprehensive Patient Management I Advanced Practice Nursing Care of Critically Ill Adults Comprehensive Patient Management II ADULT CLINICAL NURSE SPECIALIST TRACK (POST M.S.N.): Pharmacology Pathophysiology Advanced Health Assessment and Applications Nursing Elective Acute and Chronic Illness Nursing Therapeutics I Acute and Chronic Illness Nursing Therapeutics II Measuring and Documenting Nursing Practice PARENT-CHILD NURSING TRACK (POST M.S.N.): Pharmacology Pathophysiology Advanced Health Assessment and Applications Nursing Elective Advanced Parent-Child Nursing Seminar Comprehensive Patient Management I Advanced Nursing Care for Families Pre-conception Through Adolescence I Comprehensive Patient Management II Advanced Nursing Care for Families Pre-Conception Through Adolescence II

University of Kentucky, (cont.)	PRIMARY CARE NURSE PRACTITIONER TRACK (POST M.S.N.): Pharmacology Pathophysiology Advanced Health Assessment and Applications Advanced Practice Nursing Seminar for Nurse Practitioners Primary Care Advanced Practice Nursing Seminar Comprehensive Patient Management I Primary Care Advanced Practice Nursing Practicum II Comprehensive Patient Management II ADULT PSYCHIATRIC/MENTAL HEALTH PRACTITIONER TRACK (POST M.S.N.): Pharmacology Pathophysiology Advanced Health Assessment and Applications Nursing Elective Clinical Topics in Advanced Practice Psychiatric Mental Health Nursing Advanced Practice Psychiatric Nursing I Advanced Practice Psychiatric Nursing II Comprehensive Patient Management I Comprehensive Patient Management II Nursing Elective PUBLIC HEALTH NURSING TRACK (POST M.S.N.): Pharmacology Pathophysiology Advanced Health Assessment and Applications Nursing Elective Public Health Science Elective Advanced Practice in Public Health Nursing: Policy Development Advanced Practice in Public Health Nursing: Assurance
University of Louisville	MASTER OF SCIENCE IN NURSING CORE COURSES: Foundations for Advanced Practice Health Care Systems Clinical Decision Making: Psychopathology Clinical Psychopharmacology Advanced Nursing Pharmacology Nursing Research Statistics Advanced Practice Roles

University of Louisville, (cont.)	Informatics in Health Care Pathophysiology for Clinical Decision Making Advanced Clinical Assessment *or* Neonatal Advanced Health Assessment Interventions for Health Promotion Research Project *or* Thesis Genetics ADVANCE NURSING PRACTICE COMPONENT: Advanced Clinical Practice: Women's Health NP (includes 560 clinical hours) Advanced Clinical Practice: Adult CNS (includes 500 clinical hours) Advanced Clinical Practice: Adult NP (includes 560 clinical hours) Clinical Management: Neonatal NP High Risk Clinical: Neonatal NP (includes 600 clinical hours) Advanced Clinical Practice: Psychiatric Mental Health CNS (includes 532 clinical hours) Advanced Clinical Practice: Gerontology NP (includes 500 clinical hours) Family Nurse Practitioner (includes 812 clinical hours) ADVANCED NURSING NP (POST M.S.N.): Advanced Practice Roles Advanced Nursing Pharmacology Pathophysiology for Clinical Decision Making Advanced Clinical Assessment (includes 42 clinical hours) ADVANCED CLINICAL PRACTICE (POST M.S.N.): Advanced Clinical Practice (includes 560 clinical hours) Family Nurse Practitioner (812 clinical hours) NEONATAL NP (POST M.S.N.): Advanced Nursing Pharmacology Advanced Practice Roles Genetics Neonatal Advanced Health Assessment 600 clinical hours CNS (POST M.S.N.): Clinical Decision Making: Psychopathology Clinical Psychopharmacology Advanced Practice Roles Pathophysiology for Clinical Decision Making

University of Louisville, (cont.)	Advanced Clinical Assessment Advanced Nursing Pharmacology Advanced Clinical Practice: Adult Psychiatric Mental Health CNS (includes 532 clinical hours) Advanced Clinical Practice: Adult CNS (includes 500 clinical hours)

Physician Curriculum	
School	**Required Courses**
University of Kentucky	COLLEGE OF MEDICINE CURRICULUM: Patients, Physicians, and Society I Introduction to the Medical Profession Human Structure/Gross Anatomy Human Structure/Histology Healthy Human Cellular Structure & Function/Biochemistry Neurosciences Human Function Patients, Physicians, and Society II Introduction to the Medical Profession Immunity, Infection, and Disease Mechanisms of Disease and Treatment Pathology Mechanisms of Disease and Treatment Pharmacology Women's Maternal & Child Health/Pediatrics Women's Maternal & Child Health/OBGYN Clinical Neurosciences Primary Care/Family Practice/Internal Medicine Medicine/Surgery Clerkship Dean's Colloquium Emergency Medicine Rotation PHYSICIAN ASSISTANT DIDACTIC COURSE CURRICULUM: Human Anatomy Intro to PA Profession Human Physiology Overview of Health Care Delivery Basic Statistical Analysis Seminar in PA Studies I Intro to Human Diseases Research Methods and Epidemiology Clinical Lecture Series I Pharmacology I Clinical Methods Clinical Lab Procedures

University of Kentucky, (cont.)	Master's Project I Clinical Lecture Series II Pharmacology II Psychosocial Factors in Primary Care Patient Evaluation and Management Survey of Geriatric Medicine Applied Nutrition
University of Louisville	SCHOOL OF MEDICINE M.D./PH.D.: Gross Anatomy Microstructure and Development Neurosciences Biochemistry Human Physiology Intro to Clinical Practice Science I Intro to Clinical Practice Science II Clinical Neuroscience Microbiology and Immunology Pathology Genetics Pharmacology Advanced Cardiac Life Support Two Hour Elective Course The United State Medical Licensing Examination Step 1 Graduate Research Primary Care Clerkship Obstetrics and Gynecology Clerkship Psychiatry Clerkship Basic Surgery Clerkship Anesthesiology and Perioperative Medicine Neurology Clerkship In-Patient Medicine In-Patient Surgery AHEC Rotation Ambulatory Primary Care Ambulatory Rotation Clinical Electives The United State Medical Licensing Examination Step 2

Physician Assistant Curriculum	
School	**Required Courses**
University of Kentucky	PHYSICIAN ASSISTANT DIDACTIC COURSE CURRICULUM: Human Anatomy Intro to PA Profession Human Physiology Overview of Health Care Delivery Basic Statistical Analysis Seminar in PA Studies I Intro to Human Diseases Research Methods and Epidemiology Clinical Lecture Series I Pharmacology I Clinical Methods Clinical Lab Procedures Master's Project I Clinical Lecture Series Pharmacology II Psychosocial Factors in Primary Care Patient Evaluation and Management Survey of Geriatric Medicine Applied Nutrition

Source: LRC staff analysis.

Appendix G

In order to better understand physician and ARNP opinions in Kentucky about expanded prescriptive authority, LRC staff designed and implemented two surveys. One was for physicians and the other was for ARNPs. Both surveys contained open ended and multiple choice questions. Each of the survey instruments can be found at the end of this appendix.

Practitioner Samples

The universe of physicians was the entire listing of physicians with licenses in Kentucky. The Kentucky Medical Licensure Board provided names and address for all physicians with licenses in Kentucky. From this listing, 1,294 were randomly selected to receive the survey. It was assumed that the response rate would be 30 percent, which would have provided a sample of 388 physicians, allowing a 5 percent confidence interval. The actual response rate was about 25 percent, slightly less than expected. However, this response still allows a confidence interval of 5.5 percent.

The universe of ARNPs was the entire listing of ARNPs with licenses in Kentucky. The Kentucky Board of Nursing provided names and address for all ARNPs in Kentucky. From this listing, 1,113 were randomly selected to receive the survey. It was assumed that the response rate would be 30 percent, which would have provided a sample of 334 ARNPs, allowing a 5 percent confidence interval. The actual response rate was about 38 percent, greater than expected.

It should be noted that while the practitioners were selected at random, the results of the surveys may not be generalizable because of selection bias in responses. It could be the case that those individuals who responded, whether ARNPs or physicians, were the individuals most concerned about this topic. This in itself is not a problem unless these most concerned individuals do not have opinions similar to the groups as a whole. It cannot be known if the sample suffers from selection bias or not. Thus, the results should be considered with this in mind.

Summary of Survey Responses

Table G.1 lists the summary statistics for the responses to the closed ended questions of the ARNP survey. Table G.2 presents the same for the physicians. In addition, three primary open ended questions were asked to both the ARPNs and the physicians. Staff classified the responses to these open ended questions. The results for the ARNPs can be found in Table G.3. The corresponding results for the physicians can be found in Table G.4

Table G.1
Summary Statistics for the Responses to the ARNP Survey

Years in Practice	*Number of Responses*	*Mean*
Nurse Practitioner	274	7.1
Certified Nurse Midwife	18	12.4
Clinical Nurse Specialist	18	12.3
Certified Nurse Anesthetist	57	18.3

Work Status	*Number of Responses*	*Percent*
Full Time	334	80.0
Part Time	68	16.3
No Answer	16	3.8

Advanced Practice Education	*Number of Responses*
Masters	322
Doctorate	15
Post Bach Certificate	65
Post Masters Preparation	74

Primary Practice Site	*Number of Responses*	*Percent*
Clinic or Office	291	69.6
Hospital	99	23.7
Hospice	2	0.5
Nursing Home	10	2.4
No Answer	16	3.8

Q1: Would You Prescribe Controlled Substances?	*Number of Responses*	*Percent*
Yes	334	80.0
No	65	15.6
No Answer	19	4.6

	Number of Responses	*Mean*
Q2: Average Number of Patients Per Week	417	65.4

	Number of Responses	*Mean*
Q3a: Average Number of Patients Per Week Needing Schedule II	418	4.7

	Number of Responses	*Mean*
Q3b: Average Number of Patients Per Week Needing Schedule III	418	6.2

	Number of Responses	*Mean*
Q3c: Average Number of Patients Per Week Needing Schedule IV	418	4.8

	Number of Responses	*Mean*
Q3d: Average Number of Patients Per Week Needing Schedule V	418	3.3

Q4a: Should ARNPs be Granted Controlled Substance Authority	*Number of Responses*	*Percent*
Yes	328	78.5
No	80	19.1
No Answer	10	2.4

	Number of Responses	*Mean*
Q4b: Number of Additional Pharmacology Hours per Licensure Period	417	2.6

Q5: Average Time it Takes Collaborating Physician to act on ARNP Controlled Substance Recommendation	*Number of Responses*	*Percent*
5 minutes or less	109	26.1
6 - 15 minutes	104	24.9
16 - 30 minutes	53	12.7
31 - 60 minutes	32	7.7
61 or more minutes	28	6.7
Not Applicable	80	19.1
No Answer	12	2.9

Q6: Likely effect of ARNP Controlled Substance Authority on Illegal Prescription Drug Abuse	*Number of Responses*	*Percent*
No Effect	330	79.0
Increase	18	4.3
Decrease	55	13.2
No Answer	15	3.6

Q9a: Use a Non Controlled Substance Instead of a Preferred Scheduled Drug	*Number of Responses*	*Percent*
Often	181	43.3
Sometimes	140	33.5
Rarely	37	8.9
Never	12	2.9
No Answer	48	11.5

Q9b: Refer a Patient to MD for Evaluation and Rx	*Number of Responses*	*Percent*
Often	133	31.8
Sometimes	163	39.0
Rarely	58	13.9
Never	21	5.0
No Answer	43	10.3

Q9c: Discuss the case with MD and obtain a prescription signed by the MD	*Number of Responses*	*Percent*
Often	251	60.1
Sometimes	83	19.9
Rarely	31	7.4
Never	13	3.1
No Answer	40	9.6

Q9d: Discuss the case with MD, obtain and order, and call in the prescription to a pharmacy	*Number of Responses*	*Percent*
Often	135	32.3
Sometimes	120	28.71
Rarely	46	11.0
Never	73	17.5
No Answer	44	10.5

Q9e: Obtain signed prescription from MD without discussing the case	*Number of Responses*	*Percent*
Often	39	9.3
Sometimes	57	13.6
Rarely	73	17.5
Never	204	48.8
No Answer	45	10.8

Q9f: Write a prescription on a presigned pad without discussing the case with MD	*Number of Responses*	*Percent*
Often	30	7.2
Sometimes	30	7.2
Rarely	59	14.1
Never	254	60.8
No Answer	45	10.8

Q9g: Call in prescription with MD's order but without discussing the case	*Number of Responses*	*Percent*
Often	23	5.5
Sometimes	50	12.0
Rarely	72	17.2
Never	229	54.8
No Answer	44	10.5

Q10: If the General Assembly Grants ARNPs prescriptive authority for controlled substances, should there be any limitations placed on this practice?	*Number of Responses*	*Percent*
Yes	174	41.6
No	218	52.1
No Answer	26	6.2

Q10a: The collaborative agreement should include specific classes of controlled substances that the ARNP may prescribe.	*Number of Responses*	*Percent*
Yes	145	34.7
No	81	19.4
No Answer	192	45.9

Q10b: The ARNP must submit the collaborative agreement regarding controlled substances to the KY Board of Nursing	*Number of Responses*	*Percent*
Yes	156	37.3
No	68	16.3
No Answer	194	46.4

Q10c: The ARNP must practice at the same location as the physician.	*Number of Responses*	*Percent*
Yes	54	12.9
No	173	41.4
No Answer	191	45.7

Q10d: The amount of controlled substance must be restricted to a 72 hour dose	*Number of Responses*	*Percent*
Yes	44	10.5
No	182	43.5
No Answer	192	45.9

Q10e: The ARNP must have on-site supervision for a specified time prior to prescribing controlled substances under a collaborative agreement	*Number of Responses*	*Percent*
Yes	47	11.2
No	178	42.6
No Answer	193	46.2

Q10f: The collaborating MD's name, phone number, and address must be printed on the prescription	*Number of Responses*	*Percent*
Yes	91	21.8
No	130	31.1
No Answer	197	47.1

Q10g: Prescribing controlled substances must be limited to patients with acute, self-limiting diseases, or stable chronic conditions; and for terminal comfort care	*Number of Responses*	*Percent*
Yes	129	30.9
No	92	22.0
No Answer	197	47.1

Q10h: Prescribing controlled substances must be limited to refills or dosage changes	*Number of Responses*	*Percent*
Yes	37	8.9
No	187	44.7
No Answer	194	46.4

Q10i: The collaborating MD must regularly review the ARNP's practice	*Number of Responses*	*Percent*
Yes	136	32.5
No	88	21.1
No Answer	194	46.4

Q10j: The ARNP must consult with the collaborating MD prior to refilling a controlled substance	*Number of Responses*	*Percent*
Yes	43	10.2
No	176	42.1
No Answer	199	47.6

Q11: In your opinion, should ARNPs be granted prescriptive authority for controlled substances?	*Number of Responses*	*Percent*
Yes, with no limitations	242	57.9
Yes, with certain limitations	146	34.9
No	13	3.1
No Opinion	4	1.0
No Answer	13	3.1

Table G.2
Summary Statistics for the Responses to the Physician Survey

	Number of Responses	*Mean*
Years in Practice	322	17.6

Actively Practicing in Kentucky	*Number of Responses*	*Percent*
Yes	257	79.8
No	58	18.0
No Answer	7	2.2

Primary Practice Site	*Number of Responses*	*Percent*
Clinic or Office	217	67.4
Hospital	100	31.1
Nursing Home	1	0.3
No Answer	4	1.2

Q1: Have you ever practiced in a state that authorized ARNPs to prescribe controlled substances	*Number of Responses*	*Percent*
Yes	17	5.3
No	278	86.3
No Answer	27	8.4

Q2: Number of years you have served as a collaborative physician for an	*Number of Responses*	*Mean*
Nurse Practitioner	322	1.7
Nurse Midwife	322	0.1
Clinical Nurse Specialist	322	0.4

Q3: In your current practice, what is the average time it takes you to act on an ARNP's recommendation that the patient be given a controlled substance	*Number of Responses*	*Percent*
5 minutes or less	68	21.1
6 - 15 minutes	15	4.7
16 - 30 minutes	9	2.8
31 - 60 minutes	3	0.9
61 or more minutes	2	0.6
Not Applicable	38	11.8
No Answer	187	58.1

Q4: Likely Effect of ARNP Controlled Substance Authority on Illegal Prescription Drug Abuse	*Number of Responses*	*Percent*
No Effect	64	19.9
Increase	227	70.5
Decrease	2	0.6
No Answer	29	9.0

Q7a: Use a Non Controlled Substance Instead of a Preferred Scheduled Drug	*Number of Responses*	*Percent*
Often	54	16.8
Sometimes	79	24.5
Rarely	36	11.2
Never	21	6.5
No Answer	132	41.0

Q7b: Refer a Patient to MD for Evaluation and Rx	*Number of Responses*	*Percent*
Often	91	28.3
Sometimes	76	23.6
Rarely	24	7.5
Never	11	3.4
No Answer	120	37.3

Q7c: Discuss the case with MD and obtain a prescription signed by the MD	*Number of Responses*	*Percent*
Often	131	40.7
Sometimes	50	15.5
Rarely	10	3.1
Never	12	3.7
No Answer	119	37.0

Q7d: Discuss the case with MD, obtain and order, and call in the prescription to a pharmacy	*Number of Responses*	*Percent*
Often	68	21.1
Sometimes	80	24.8
Rarely	24	7.5
Never	28	8.7
No Answer	122	37.9

Q7e: Obtain signed prescription from MD without discussing the case	*Number of Responses*	*Percent*
Often	13	4.0
Sometimes	35	10.9
Rarely	47	14.6
Never	102	31.7
No Answer	125	38.8

Q7f: Write a prescription on a presigned pad without discussing the case with MD	*Number of Responses*	*Percent*
Often	9	2.8
Sometimes	25	7.8
Rarely	30	9.3
Never	130	40.4
No Answer	128	39.8

Q7g: Call in prescription with MD's order but without discussing the case	*Number of Responses*	*Percent*
Often	10	3.1
Sometimes	30	9.3
Rarely	43	13.4
Never	109	33.9
No Answer	130	40.4

Q8: If the General Assembly Grants ARNPs prescriptive authority for controlled substances, should there be any limitations placed on this practice?	*Number of Responses*	*Percent*
Yes	267	82.9
No	25	7.8
No Answer	30	9.3

Q8a: The collaborative agreement should include specific classes of controlled substances that the ARNP may prescribe.	*Number of Responses*	*Percent*
Yes	257	79.8
No	7	2.2
No Answer	58	18.0

Q8b: The ARNP must submit the collaborative agreement regarding controlled substances to the KY Board of Nursing	*Number of Responses*	*Percent*
Yes	230	71.4
No	25	7.8
No Answer	67	20.8

Q8c: The ARNP must practice at the same location as the physician.	*Number of Responses*	*Percent*
Yes	213	66.2
No	51	15.8
No Answer	58	18.0

Q8d: The amount of controlled substance must be restricted to a 72 hour dose	*Number of Responses*	*Percent*
Yes	179	55.6
No	81	25.2
No Answer	62	19.3

Q8e: The ARNP must have on-site supervision for a specified time prior to prescribing controlled substances under a collaborative agreement	*Number of Responses*	*Percent*
Yes	222	68.9
No	35	10.9
No Answer	65	20.2

Q8f: The collaborating MD's name, phone number, and address must be printed on the prescription	*Number of Responses*	*Percent*
Yes	227	70.5
No	34	10.6
No Answer	61	18.9

Q8g: Prescribing controlled substances must be limited to patients with acute, self-limiting diseases, or stable chronic conditions; and for terminal comfort care	*Number of Responses*	*Percent*
Yes	225	69.9
No	30	9.3
No Answer	67	20.8

Q8h: Prescribing controlled substances must be limited to refills or dosage changes	*Number of Responses*	*Percent*
Yes	135	41.9
No	118	36.7
No Answer	69	21.4

Q8i: The collaborating MD must regularly review the ARNP's practice	*Number of Responses*	*Percent*
Yes	261	81.1
No	3	0.9
No Answer	58	18.0

Q8j: The ARNP must consult with the collaborating MD prior to refilling a controlled substance	*Number of Responses*	*Percent*
Yes	216	67.1
No	46	14.3
No Answer	60	18.6

Q9: In your opinion, should ARNPs be granted prescriptive authority for controlled substances?	*Number of Responses*	*Percent*
Yes, with no limitations	15	4.7
Yes, with certain limitations	86	26.7
No	201	62.4
No Opinion	5	1.6
No Answer	15	4.7

Table G.3
Summary Statistics for ARNPs' Open Ended Responses

Q6: What do you believe the likely effect would be on illegal prescription drug abuse in KY if ARNPs are granted legal authority to prescribe controlled substances?

If ARNPs answered : DECREASE to Q6

	Number of Responses	*Percent*
Nurses prescribe judiciously	26	51.0
ARNPs have better rapport with patients	11	21.6
State/federal regulatory control	6	11.8
ARNPs spend more time with patients	6	11.8
Other	2	3.9

If ARNPs answered : INCREASE to Q6

	Number of Responses	*Percent*
Increasing the number of prescribers increases opportunities for abuse	16	88.9
Other	2	11.1

If ARNPs answered : NO EFFECT to Q6

	Number of Responses	*Percent*
Nurses prescribe judiciously	104	48.1
Other	47	21.8
ARNPs are prescribing now, MDs just sign pads	22	10.2
ARNPs spend more time with patients	15	6.9
Substance abusers are already getting what they want	15	6.9
ARNPs unlikely to treat chronic pain or deal with Schedule II or III	6	2.8
ARNPs have better rapport with patients	4	1.9
State/federal regulatory control	3	1.4

Q7 (for Patients): List the positive impacts for patients from ARNP controlled substance authority	*Number of Responses*	*Percent*
Convenience or efficiency	236	58.7
Improved quality of care	116	28.9
Other	46	11.4
No positive effects	4	1.0

Q7 (for Yourself): List the positive impacts for yourself (MD) from ARNP controlled substance authority	*Number of Responses*	*Percent*
Convenience or efficiency	159	42.1
Professional independence and respect	79	20.9
Improved quality of care	64	16.9
Other	57	15.1
No positive effects	19	5.0

Q7 (for ARNP Practice): List the positive impacts for ARNP practice from ARNP controlled substance authority	*Number of Responses*	*Percent*
Expanded scope of and independence of practice	228	60.8
Enabled to provided better care	84	22.4
Convenience or efficiency	34	9.1
Other	25	6.7
No positive effects	4	1.1

Q7 (for Physicians): List the positive impacts for physicians from ARNP controlled substance authority	*Number of Responses*	*Percent*
Convenience or efficiency	274	71.5
Decreased liability and responsibility	85	22.2
Other	19	5.0
No positive effects	5	1.3

Q8 (for Patients): List the negative impacts for patients from ARNP controlled substance authority	*Number of Responses*	*Percent*
No negative effect	222	75.0
Increased drug diversion	32	10.8
Decreased quality/access to care	12	4.1
Other	25	8.5
Initial confusion of patients wanting to see physician	5	1.7

Q8 (for Yourself): List the negative impacts for yourself (ARNP) from ARNP controlled substance authority	*Number of Responses*	*Percent*
Increased request for controlled substances/dealing with drug seekers	120	38.5
Minimal to no effect	111	35.6
Increased liability	47	15.1
Other	34	10.9

Q8 (for ARNP Practice): List the negative impacts for ARNP practice from ARNP controlled substance authority	*Number of Responses*	*Percent*
Minimal to no effect	138	47.4
Increased request for controlled substances/dealing with drug seekers	48	16.5
Increased liability	45	15.5
Other	42	14.4
Closer scrutiny by MDs and bad press when ARNP does abuse privilege	18	6.2

Q8 (for Physicians): List the negative impacts for physicians from ARNP controlled substance authority	*Number of Responses*	*Percent*
No negative Effect	156	54.6
Loss of control over primary care/ARNPs	40	14.0
Competition/Loss of revenue	43	15.0
Other	25	8.7
Increased liability and need for increased monitoring/oversight of ARNPs	22	7.7

Table G.4
Summary Statistics for Physicians' Open Ended Responses

Open ended explanation to answer for Q4: "What do you believe would be the likely effect of illegal prescription drug abuse in KY if ARNPs are granted the legal authority to prescribe controlled substances?"	*Number of Responses*	*Percent*
Increased drug diversion and Dr. Shopping	121	58.7
Less Education, experience, expertise	35	17.0
ARNPs are responsible prescribers	26	12.6
Other	21	10.2
Drug abuse by ARNPs	3	1.5

Q5 (for Patients): List the positive impacts for patients from ARNP controlled substance authority	*Number of Responses*	*Percent*
Improved quality of care	116	46.8
No positive effects	83	33.5
Convenience or efficiency	27	10.9
Other	22	8.9

Q5 (for Yourself): List the positive impacts for yourself (MD) from ARNP controlled substance authority	*Number of Responses*	*Percent*
No positive effects	140	62.5
Convenience or efficiency	45	20.1
Other	31	13.8
Improved quality of care	8	3.6

Q5 (for ARNP Practice): List the positive impacts for ARNP practice from ARNP controlled substance authority	*Number of Responses*	*Percent*
Expanded scope of and independence of practice	115	51.6
No positive effects	53	23.8
Other	37	16.6
Convenience or efficiency	18	8.1

Q5 (for Physicians): List the positive impacts for physicians from ARNP controlled substance authority	*Number of Responses*	*Percent*
No positive effects	95	45.7
Convenience or efficiency	73	35.1
Other	40	19.2

Q6 (for Patients): List the negative impacts for patients from ARNP controlled substance authority	*Number of Responses*	*Percent*
Increased drug diversion	101	42.1
Less education, experience and lack of expertise	43	17.9
No negative effects	38	15.8
Decreased quality of care	35	14.6
Other	23	9.6

Q6 (for Yourself): List the negative impacts for yourself (MD) from ARNP controlled substance authority	*Number of Responses*	*Percent*
Minimal to no effect	81	42.2
Other	42	21.9
Concerns from inappropriate prescribing and seeing sicker patients	32	16.7
Increased liability	20	10.4
Decreased responsibility and control	12	6.3
Reduced income	5	2.6

Q6 (for ARNP Practice): List the negative impacts for ARNP practice from ARNP controlled substance authority	*Number of Responses*	*Percent*
Exposure to drug seeking/dependent patients	49	26.2
Increased liability	43	23.0
No Impact	34	18.2
Other	31	16.6
Loss of physician oversight/increased responsibility	23	12.3
Increased financial gain/patients	7	3.7

Q6 (for Physicians): List the negative impacts for physicians from ARNP controlled substance authority	*Number of Responses*	*Percent*
Concerns from inappropriate prescribing and seeing sicker patients	41	21.1
Minimal to no effect	41	21.1
Increased liability	34	17.5
Other	34	17.5
Decreased responsibility and control	27	13.9
Reduced income	17	8.8

ARNP Survey
ARNP Prescriptive Authority for Controlled Substances Survey

For each question, please check the appropriate box or boxes or fill in requested information. In the short-answer section, please provide the information in the space allotted.

Your Background Information:
Number of years in practice: NP ____ CNM ____ CNS ____ CRNA ____
Specialty area of practice: _____
Work status: full time ☐ part time ☐
Advanced practice education: (check all that apply) master's ☐ doctorate ☐
post bach certificate ☐ post master's preparation ☐
Primary site: Clinic or office ☐ Hospital ☐ Hospice ☐ Nursing home ☐
City or town of primary practice: _____

1. If you are authorized to prescribe controlled substances, would you prescribe controlled substances in your practice? Yes ☐ No ☐

2. List the average number of patients you see per week, including all practice sites. ____

3. On average, how many patients do you see each week who need a prescription in any of the following schedules?

Schedule	Average Number of Patients Per Week Needing Prescription
II	
III	
IV	
V	

4. (a) Do you believe that ARNPs who have a legal right to prescribe controlled substances should be required to complete continuing education specific to controlled substances? Yes ☐ No ☐
(b) If yes, how many contact hours do you believe should be added to the 5 contact hours in pharmacology currently required for each licensure period? ____

5. In your current practice, what is the average amount of time it takes your collaborative physician to act on your recommendation that the patient be given a controlled substance?

5 minutes or less	☐	31 to 60 minutes	☐
6 to 15 minutes	☐	61 or more minutes	☐
16 to 30 minutes	☐	Not applicable	☐

6. What do you believe would be the likely effect on illegal prescription drug abuse in KY if ARNPs are granted the legal authority to prescribe controlled substances?

No effect ☐ Increase ☐ Decrease ☐

Please explain: _____

_____

_____

7. Please list the positive effects you expect to see for patients, yourself, ARNP practice, and physicians if the General Assembly authorized ARNPs to prescribe controlled substances.

For Patients:

For Yourself:

For ARNP Practice:

For Physicians:

8. Please list the negative effects you expect to see for patients, yourself, ARNP practice, and physicians if the General Assembly authorized ARNPs to prescribe controlled substances.

For Patients:

For Yourself:

For ARNP Practice:

For Physicians:

9. In your experience, how often are the following practices used by an ARNP who has determined that a patient needs a prescription for a controlled substance?

Practice	Often	Some-times	Rarely	Never
(a) Use a noncontrolled drug instead of the preferred scheduled drug	☐	☐	☐	☐
(b) Refer the patient to MD for evaluation and Rx	☐	☐	☐	☐
(c) Discuss the case with MD and obtain a prescription signed by the MD	☐	☐	☐	☐
(d) Discuss the case with MD, obtain an order, and call in the prescription to a pharmacy	☐	☐	☐	☐
(e) Obtain a signed prescription from MD without discussing the case	☐	☐	☐	☐
(f) Write prescription on a presigned pad without discussing the case with MD	☐	☐	☐	☐
(g) Call in the prescription with MD's order but without discussing the case	☐	☐	☐	☐
(h) Other (list) _____	☐	☐	☐	☐

10. If the General Assembly grants ARNPs prescriptive authority for controlled substances, should there be any limitations placed on this practice?

Yes ☐ No ☐

If your response to question #10 is "Yes," read the list of potential limitations below and check "Yes" if you agree or "No" if you do not agree that the limitation should be included.

Limitation	Yes	No
(a) The collaborative agreement must include specific classes of controlled substances that the ARNP may prescribe.	☐	☐
(b) The ARNP must submit the collaborative agreement regarding controlled substances to the KY Board of Nursing.	☐	☐
(c) The ARNP must practice at the same location as the physician.	☐	☐
(d) The amount of the controlled substance must be restricted to a 72-hour dose.	☐	☐
(e) The ARNP must have on-site supervision for a specified time prior to prescribing controlled substances under a collaborative agreement.	☐	☐
(f) The collaborating MD's name, phone number, and address must be printed on the prescription.	☐	☐
(g) Prescribing controlled substances must be limited to patients with acute, self-limiting diseases, or stable chronic conditions; and for terminal comfort care.	☐	☐
(h) Prescribing controlled substances must be limited to refills or dosage changes.	☐	☐
(i) The collaborating MD must regularly review the ARNP's practice.	☐	☐
(j) The ARNP must consult with the collaborating MD prior to refilling a controlled substance.	☐	☐
(k) Others (list) _____	☐	☐

11. In your opinion, should ARNPs be granted prescriptive authority for controlled substances?

Yes, with no limitations ☐

Yes, with certain limitations ☐

No ☐

No Opinion ☐

If you have any questions about this survey, please contact Barbara Baker at 502-564-8100, ext. 580 or by e-mail at barbara.baker@lrc.ky.gov.

Thank you for taking the time to complete this survey. **Please return it in the enclosed, self-addressed envelope by October 11, 2004.**

Physician Survey
ARNP Prescriptive Authority for Controlled Substances

For each question, please check the appropriate box or boxes or fill in requested information. In the short-answer section, please provide the information in the space allotted.

Your Background Information:
States in which currently licensed to practice: _____
States previously licensed in: _____Years in medical practice: _____
Actively practicing in Kentucky: Yes ☐ No ☐
Specialty area of medical practice: _____
Primary site: Clinic or office ☐ Hospital ☐ Hospice ☐ Nursing Home ☐
City or town of primary practice: _____

1. Have you ever practiced in a state that authorized ARNPs to prescribe controlled substances? Yes ☐ No ☐

Skip to question #4 if you have **never** served as a collaborating physician for an ARNP.

2. For each of the following categories of ARNPs, how many years have you served as a collaborative physician?

Category	Number of Years
Nurse Practitioner	
Nurse Midwife	
Clinical Nurse Specialist	

3. In your current practice, what is the average time it takes you to act on an ARNP's recommendation that the patient be given a controlled substance?

5 minutes or less	☐	31 to 60 minutes	☐
6 to 15 minutes	☐	61 or more minutes	☐
16 to 30 minutes	☐	Not applicable	☐

4. What do you believe would be the likely effect on illegal prescription drug abuse in KY if ARNPs are granted the legal authority to prescribe controlled substances?

No effect ☐ Increase ☐ Decrease ☐

Please explain: _____

_____

_____

5. List the positive effects you expect to see for patients, yourself, ARNP practice, and physicians if the General Assembly authorized ARNPs to prescribe controlled substances.

For Patients:

For Yourself:

For ARNP Practice:

For Physicians:

6. List the negative effects you expect to see for patients, yourself, ARNP practice, and physicians if the General Assembly authorized ARNPs to prescribe controlled substances.

For Patients:

For Yourself:

For ARNP Practice:

For Physicians:

7. In your experience, how often are the following practices used by an ARNP who has determined that a patient needs a prescription for a controlled substance?

Practice	Often	Some-times	Rarely	Never
(a) Use a noncontrolled drug instead of the preferred scheduled drug	☐	☐	☐	☐
(b) Refer the patient to MD for evaluation and Rx	☐	☐	☐	☐
(c) Discuss the case with MD and obtain a prescription signed by the MD	☐	☐	☐	☐
(d) Discuss the case with MD, obtain an order, and call in the prescription to a pharmacy	☐	☐	☐	☐
(e) Obtain a signed prescription from MD without discussing the case	☐	☐	☐	☐
(f) Write prescription on a presigned pad without discussing the case with MD	☐	☐	☐	☐
(g) Call in the prescription with MD's order but without discussing the case	☐	☐	☐	☐
(h) Other (list) _____	☐	☐	☐	☐

8. If the General Assembly grants ARNPs prescriptive authority for controlled substances, should there be any limitations placed on this practice?

Yes ☐ No ☐

If your response to question #8 is "Yes," read the list of potential limitations below and check "Yes" if you agree or "No" if you do not agree that the limitation should be included.

Limitation	Yes	No
(a) The collaborative agreement must include specific classes of controlled substances that the ARNP may prescribe.	☐	☐
(b) The ARNP must submit the collaborative agreement regarding controlled substances to the KY Board of Nursing.	☐	☐
(c) The ARNP must practice at the same location as the physician.	☐	☐
(d) The amount of the controlled substance must be restricted to a 72-hour dose.	☐	☐
(e) The ARNP must have on-site supervision for a specified time prior to prescribing controlled substances under a collaborative agreement.	☐	☐
(f) The collaborating MD's name, phone number, and address must be printed on the prescription.	☐	☐
(g) Prescribing controlled substances must be limited to patients with acute, self-limiting diseases, or stable chronic conditions; and for terminal comfort care.	☐	☐
(h) Prescribing controlled substances must be limited to refills or dosage changes.	☐	☐
(i) The collaborating MD must regularly review the ARNP's practice.	☐	☐
(j) The ARNP must consult with the collaborating MD prior to refilling a controlled substance.	☐	☐
(k) Others (list) _____	☐	☐

9. In your opinion, should ARNPs be granted prescriptive authority for controlled substances?

Yes, with no limitations ☐

Yes, with certain limitations ☐

No ☐

No Opinion ☐

If you have any questions about this survey, please contact Barbara Baker at 502-564-8100, ext. 580 or by e-mail at barbara.baker@lrc.ky.gov.

Thank you for taking the time to complete this survey. **Please return it in the enclosed, self-addressed envelope by October 11, 2004.**

Appendix H

With the research literature silent on state level impacts of ARNPs prescribing controlled substances, new empirical work was undertaken. This appendix lays out in more detail the methodology and data used in the empirical analysis.

Data

Various public and private data sources were used. Table H.1 lists the data sources employed. The primary variables of interest—ARNPs prescriptive authority for controlled substances by category—were compiled by staff. Each board of nursing was surveyed and asked when each category of ARNP received authority to prescribe controlled substances by schedule. These responses were compared to staff reviews of state statutes as well as to annual legislative updates performed by the journal *The Nurse Practitioner*.

Quantity of Controlled Substances

LRC staff collected state-level data on both the number of prescriptions as well as the quantity in grams of controlled substances distributed in each state. The prescription data was obtained from Verispan's Vector One system for each state and the District of Columbia covering the period 1996 through 2003. The quantity in grams data was obtained from the U.S. Department of Justice Drug Enforcement Administration's (DEA) ARCOS system and covers years 1997 through 2003. ARCOS is the system the DEA uses to track Schedule II controlled substances and Schedule III narcotic controlled substances from their manufacture through distribution.

Table H.2 lists the substances identified to be analyzed. This list also shows which substances' quantity in grams data was obtained from DEA's ARCOS system. Data for some substances of interest were not available from ARCOS.

Emergency Room Mentions

The data used to evaluate emergency room mentions was obtained from the Drug Abuse Warning Network (DAWN) maintained by the U.S. Department of Health and Human Services. The two substance groups used to evaluate emergency room mentions for controlled substances were narcotics and barbiturates.[10] Both of these categories are comprised of multiple drug schedules. In addition, all metropolitan areas that are reported in DAWN were not used. The metropolitan areas of the District of Columbia, Philadelphia, and St. Louis were excluded because they contained counties from different states. Thus, whether ARNPs had prescriptive authority in these areas was different dependent on the county (and thus state) of the reporting hospital.[11] A listing of the metropolitan areas that are included in the DAWN analysis can be found in Table H.3

[10] It should be noted that bendzodiazepines, which are mostly Schedule IV substances, were also considered but because of collinearity problems between schedules of authority, they were not examined.

[11] It should be noted that the Minneapolis-St. Paul area also had one county in Wisconsin. However, since this was a small part of the 11- county region, it was retained.

It should be noted that questions have been raised concerning the accuracy of DAWN data. DAWN administrators are currently redesigning the DAWN system and have noted these concerns in the redesign (Drug Abuse Warning Network: Development of a New Design Methodology Report, 2002). However, DAWN data continues to be used in the academic research literature in spite of these questions (Dave 2004, and Model 1993). The current results using DAWN data are provided with consideration of any potential weaknesses in the data.

Econometric Models

Quantity of Controlled Substances

Four different regression models were used to estimate the impact of ARNPs prescribing controlled substances on the amount of controlled substances in a state. Three employed prescription data from Verispan and examined Schedule II, Schedule III, and Schedule IV prescriptions separately. The fourth employed quantity in grams data for Schedule II substances from the Drug Enforcement Agency. The specifications of all four estimations are similar. In general, the models estimated took the form:

$$PerCapAmount_{i,t} = \beta_1 + \beta_2 NP_{i,t} + \beta_3 CNS_{i,t} + \beta_1 CNA_{i,t} + X_{i.t} + \varepsilon$$

PerCapAmount is the dependent variable being explained and is the amount of prescriptions or quantity of grams divided by the population of the respective state. *NP* is a matrix of variables for nurse practitioner controlled substance authority and trends. *CNS* and *CNA* are similar matrixes for clinical nurse specialists and certified registered nurse anesthetists respectively.[12] The *X* matrix is composed of control variables and are listed in Table H.4.

The variables of interest are found in the *NP*, *CNS,* and *CNA* matrixes. The exact composition of the *NP*, *CNS,* and *CNA* matrixes depends on what controlled schedule is being regressed. When examining the number of Schedule II controlled substances, *NP*, *CNS*, and *CNA* all contain a single dichotomous variable that is "turned on" if they have Schedule II authority and "turned off" if they do not. In addition, the matrixes also contain a trend variable that is calculated as the number of years the practitioner category had authority for Schedule II. Thus, when investigating Schedule II quantities, there are two variables of interest for nurse practitioners, clinical nurse specialists, and certified registered nurse anesthetists each: a dichotomous variable and a trend variable. The dichotomous variable should identify any contemporaneous effect of granting the category authority and the trend variable will identify any trend post authority. It is reasonable to expect that any impact ARNPs might have after being granted controlled substance authority will not show up immediately but rather in the years that follow. The trend variable should address this issue.

Examining the number of Schedule III and Schedule IV prescriptions involved an additional complexity. For the number of Schedule III prescriptions estimation, the *NP* matrix (as well as the *CNS* and *CNA* matrixes) contains two dichotomous variables and two trend variables. The

[12] Certified nurse midwives were also considered but because their prescriptive authority was highly collinear with nurse practitioners, they could not be separated and were included in that category.

first dichotomous variable is turned on if nurse practitioners have Schedule III authority. Another is turned on if nurse practitioners have Schedule II authority. There is one trend variable for Schedule III authority and another for Schedule II authority. A control for Schedule II authority was included to capture any differences that stem from having Schedule III alone or having both Schedule II and Schedule III together. All things equal, if a practitioner had both Schedule III and Schedule II authority, the total amount of Schedule III prescriptions written could be different than if the practitioner only had Schedule III authority. This specification should capture the marginal effect of having Schedule II authority on Schedule III prescriptions.

Similarly, for Schedule IV prescriptions, the *NP*, *CNS,* and *CNA* matrixes each contained two dichotomous variables and two trend variables. In this case, the first dichotomous variable was turned on if the practitioner had Schedule IV authority and turned off otherwise. The second dichotomous variable was turned on if the practitioner had Schedule II and III controlled substance authority. Again, this should capture the marginal impact of having Schedule II and III authority on the quantity of Schedule IV prescriptions. There are also two trend variables for each dichotomous variable. A complete listing of variables of interest for all regressions, with definitions, can be found in Table H.5.

While it is possible to control for the marginal impact of having a higher schedule on a lower schedule (i.e. control for having Schedule II's authority on the number of Schedule III prescriptions) it is not possible to estimate the impact of having authority for a lower Schedule on the number of prescriptions of a higher schedule. For example, estimating the effect of having Schedule III authority in addition to Schedule II authority on the number of Schedule II prescriptions is not possible. This is because if a practitioner has Schedule II authority, he or she always has Schedule III authority. Thus, the estimated coefficient of having Schedule II authority is actually the effect of having Schedule II authority in addition to having Schedules III - V.

To estimate, a standard state fixed effects model was employed. For the number of prescriptions for Schedules III and IV and the quantity in grams of Schedule II, Huber-White standard errors were also employed to address heteroskedasticity. The estimation results for each of the four models can be found in Tables H.6 -H.9.

Emergency Room Mentions

Two different estimations were used to investigate emergency room mentions for controlled substances: one for narcotics mentions and one for barbiturate mentions. Both estimations employed the same specification as described in the *Quantity of Controlled Substances* detailed above with a couple of noteworthy differences. First, because the DAWN data report statistics for metropolitan areas and not full states, the percent uninsured was unavailable. Second, because both the narcotics and barbiturates categories span different schedules, the variable of interest was whether the practitioner had Schedule II authority or not. The effect of having authority for different schedules could not be isolated. Third, the dependent variables were logged to address heteroskedaticity. Last, a fixed effects estimation technique was not employed. While this is a preferred estimation technique it could not be used because the area fixed effects and variables of interest were collinear for the sample of areas that were investigated, thus not allowing the different effects of each of the ARNP practitioner groups to be precisely identified.

It should be noted, however, that when area fixed effects are included and one of the practitioner groups (CNS) that is collinear is excluded, the results of the estimations do not materially change. This provides some assurance that the effects being estimated are indeed from ARNP prescriptive authority. The results of the estimations can be found in Tables H.10 and H.11

Table H.1
Primary Data Sources

American Academy of Physician Assistants
United States Bureau of Economic Analysis
United States Census Bureau
United States Department of Justice Drug Enforcement Agency
United States Bureau of Labor Statistics
Verispan Vector One
LRC Surveys to the State Boards of Nursing
U.S. Department of Health and Human, Abuse and Mental Health Services Administration (SAMHSA)
Source: LRC staff

Table H.2
Controlled Substances Identified for Data Analysis
With Schedule and Common Names

Substance	Schedule	Common/Brand Names
ACETAMINOPHEN WITH OXYCODONE	II	Percocet, Roxicet
ACETYSALICYIC ACID WITH OXYCODONE	II	Percodan
ALFENTANIL*	II	Alfenta
AMOBARBITAL (SCHEDULE 2)*	II	Amytal, Tuinal
AMPHETAMINE*	II	Desoxyn, Dexedrine, Amphetamine
COCAINE*	II	Cocaine
CODEINE*	II	Codeine phosphate, Codeine sulfate
DIHYDROCODEINE*	II	Didrate, Parzone, Synalgos-DC
FENTANYL BASE*	II	Duragesic Transdermal System, Actiq, Fentanyl citrate
HYDROCODONE*	II	Dihydrocodeinone, Hycodan. Loratab, Loriset, Vicodin, Hydroset
HYDROMORPHONE*	II	Dilaudid
LEVORPHANOL*	II	Levo-Dromoran
MEPERIDINE (PETHIDINE)*	II	Demerol
METHADONE*	II	Dolophine, Methadose
METHYLPHENIDATE*	II	Ritalin, Concerta, Metadate
MORPHINE*	II	MS Contin, Roxanol, Roxanol
OPIUM POWDERED*	II	Powdered Opium
OPIUM TINCTURE*	II	Laudanum
OXYCODONE*	II	OxyContin, Percocet, Percodan, Roxicet, Tylox
OXYMORPHONE*	II	Numorphan
PENTOBARBITAL (SCHEDULE 2)*	II	Nembutal
REMIFENTANIL	II	Ultiva
SECOBARBITAL (SCHEDULE 2)*	II	Seconal
SUFENTANIL*	II	Sufentanil
ACETAMINOPHEN WITH CODEINE	III	Tylenol #3
ACETAMINOPHEN WITH HYDROCODONE	III	Lortab, Vicodin, Hydrocet
ACETYSALICYIC ACID WITH CODEINE	III	Asprin,Butalbital, Caffeine and Codeine Phosphate combination
BOLDENONE	III	Equipoise, Parenabol
BUTALBITAL*	III	Butisol, Butibel, Phrenilin Forte, Analor
DRONABINOL*	III	Marinol
FLUOXYMESTERONE	III	Anadroid-F, Halotestin
KETAMINE	III	Ketaset, Ketalar
MESTEROLONE	III	Proviron
METHANDROSTENOLONE	III	Dianabol, Metablina,
NANDROLONE	III	Deca-Durabolin, Durabolin-50,
OXANDROLONE	III	Anavar, Lonavar, Provitar
OXYMETHOLONE	III	Anadrol-50, Adroyd, Pardroyd
PAREGORIC/OPIUM	III	Paregoric
PHENDIMETRAZINE TARTATE	III	Plegin, Prelu-2, Bontril,
STANOZOLO	III	Winstol,
TESTOSTERONE	III	Android-T, Androlan, Delatestryl, Testoderm
ALPRAZOLAM	IV	Xanax
CLONAZEPAM	IV	Klonopin, Clonopin
DIAZEPAM	IV	Valium
DIETHYLPROPION	IV	Tenudate, Tepanil

Substance	Schedule	Common/Brand Names
FENFLURAMINE	IV	Pondimin, Ponderal
FENPROPOREX	IV	Gacillin, Solvolip
LORAZEPAM	IV	Ativan
MAZINDOL	IV	Sanorex, Mazanor
MEFENOREX	IV	Anorexic, Amexate
PHENTERMINE	IV	Ionamin, Fastin, Zantryl, Adipex-P
PROPOXYPHENE	IV	Darvon, Darvocet-N
SIBUTRAMINE	IV	Meridia

*Denotes substance used in the DEA ARCOS data analysis.
Source: LRC staff analysis

Table H.3
Metropolitan Areas Included from Drug Abuse and Warning Network (DAWN)

Atlanta	Minneapolis - St. Paul
Baltimore	New Orleans
Boston	New York
Buffalo	Newark
Chicago	Phoenix
Dallas	San Diego
Denver	San Francisco
Los Angeles - Long Beach	Seattle
Miami - Hialeah	

Source: LRC staff analysis

Table H.4
Control Variables for Regression Analysis

Variable	Description
monitor	State prescription monitoring system
popgrow	Percent growth of population
p_nonwht	Percent of population who is non-white
p_male	Percent of population who is male
p_0-19	Percent of population 19 years old and younger
p_20_39	Percent of population between 20 and 39 years old
p_40_59	Percent of population between 40 and 59
pecunempl	Percent of population that is unemployed
unins	Percent of population that is uninsured
realpcapinc	Real per capita income
rpci_grow	Real per capita income growth
bach_or_more	Percent of population with a bachelors degree of higher.
y#	Dichotomous year variable for each year in data
PA_sii	Physicians Assistant Schedule 2 Controlled Substance authority
PA_siiTREND	Physicians Assistant Schedule 2 Controlled Substance authority interacted with year trend
PA_siii	Physicians Assistant Schedule 3 Controlled Substance authority
PA_siiiTREND	Physicians Assistant Schedule 3 Controlled Substance authority interacted with year trend
PA_siv	Physicians Assistant Schedule 4 Controlled Substance authority
PA_sivTREND	Physicians Assistant Schedule 4 Controlled Substance authority interacted with year trend
PA_2and3	Physician Assistant Schedule 2 and 3 Controlled Substance authority
PA_2and3TREND	Physician Assistant Schedule 2 and 3 Controlled Substance authority interacted with year trend

Source: LRC staff analysis

Table H.5
Variables of Interest

Variable	Description
NP_sii	Nurse Practitioner Schedule 2 Controlled Substance authority
NP_siiTREND	Nurse Practitioner Schedule 2 Controlled Substance authority interacted with year trend
NP_siiii	Nurse Practitioner Schedule 3 Controlled Substance authority
NP_siiiiTREND	Nurse Practitioner Schedule 3 Controlled Substance authority interacted with year trend
NP_siv	Nurse Practitioner Schedule 4 Controlled Substance authority
NP_sivTREND	Nurse Practitioner Schedule 4 Controlled Substance authority interacted with year trend
CNS_sii	Clinical Nurse Specialist Schedule 2 Controlled Substance authority
CNS_siiTREND	Clinical Nurse Specialist Schedule 2 Controlled Substance authority interacted with year trend
CNS_siii	Clinical Nurse Specialist Schedule 3 Controlled Substance authority
CNS_siiiTREND	Clinical Nurse Specialist Schedule 3 Controlled Substance authority interacted with year trend
CNS_siv	Clinical Nurse Specialist Schedule 4 Controlled Substance authority
CNS_sivTREND	Clinical Nurse Specialist Schedule 4 Controlled Substance authority interacted with year trend
CNA_siii	Certified Registered Nurse Anesthesist Schedule 2 Controlled Substance authority
CNA_siiiTREND	Certified Registered Nurse Anesthetist Schedule 2 Controlled Substance authority interacted with year trend
CNA_siii	Certified Registered Nurse Anesthetist Schedule 3 Controlled Substance authority
CNA_siiiTREND	Certified Registered Nurse Anesthetist Schedule 3 Controlled Substance authority interacted with year trend
CNA_siv	Certified Registered Nurse Anesthetist Schedule 4 Controlled Substance authority
CNA_sivTREND	Certified Registered Nurse Anesthetist Schedule 4 Controlled Substance authority interacted with year trend
NP_2and3	Nurse Practitioner Schedule 2 and 3 Controlled Substance authority
NP_2and3TREND	Nurse Practitioner Schedule 2 and 3 Controlled Substance authority interacted with year trend
CNS_2and3	Clinical Nurse Specialist Schedule 2 and 3 Controlled Substance authority
CNS_2and3TREND	Clinical Nurse Specialist Schedule 2 and 3 Controlled Substance authority interacted with year trend
CNA_2and3	Certified Registered Nurse Anesthetist Schedule 2 and 3 Controlled Substance authority
CNA_2and3TREND	Certified Registered Nurse Anesthetist Schedule 2 and 3 Controlled Substance authority interacted with year trend

Source: LRC staff analysis

Table H.6
Regression Estimation Results for Schedule II Per Capita Number of Prescriptions

Variable	Coefficient Estimates	t	P>|t|
NP_sii	0.0034	0.57	0.569
*NP_siiTREND***	0.0028	1.94	0.053
CNS_sii2	0.0050	0.62	0.533
CNS_sii2TREND	-0.0010	-0.76	0.448
CNA_sii	-0.0105	-1.56	0.119
CNA_siiTREND	0.0004	0.30	0.762
PA_sii	0.0037	0.47	0.638
*PA_siiTREND**	0.0029	2.83	0.005
*monitor**	0.0327	3.04	0.003
*popgrow**	0.9413	2.10	0.036
p_nonwht	0.1748	0.62	0.534
*p_male**	9.2996	3.83	0.000
*p_0_19**	-3.7858	-5.87	0.000
*p_20_39**	-4.9313	-7.50	0.000
*p_40_59**	-3.6939	-4.65	0.000
*percumempl**	0.0080	3.58	0.000
*unins**	-0.0018	-2.39	0.018
*realpcapinc**	0.0000	-3.24	0.001
*rpci_grow***	0.1516	1.96	0.051
bach_or_more	-0.0011	-1.47	0.142
constant	-0.7847	-0.73	0.463

* significant at the 5% level,
** significant at 10% level
Data from Verispan Vector One
Note: Year and state fixed effects are not reported for space considerations.
Source: LRC staff analysis

Table H.7
Regression Estimation Results for Schedule III Per Capita Number of Prescriptions

Variable	Coefficient Estimates	t	P>|t|
NP_siii	-0.0088	-0.60	0.550
*NP_siiiTREND**	0.0196	3.76	0.000
NP_sii	0.0046	0.38	0.705
*NP_siiTREND**	-0.0245	-5.11	0.000
CNS_siii	-0.0071	-0.34	0.734
CNS_siiiTREND	0.0033	0.43	0.669
CNS_sii	0.0057	0.28	0.782
CNS_siiTREND	0.0012	0.17	0.867
CNA_siii	0.0150	0.62	0.537
CNA_siiiTREND	-0.0043	-0.59	0.552
CNA_sii	-0.0286	-1.00	0.318
CNA_siiTREND	0.0001	0.02	0.987
PA_siii	-0.0139	-1.45	0.149
*PA_siiiTREND***	-0.0078	-1.87	0.062
*PA_sii**	0.0757	3.55	0.000
PA_siiTREND	0.0027	0.93	0.352
popgrow	-0.5139	-0.55	0.584
*p_nonwht**	1.1854	2.18	0.030
*p_male**	31.1060	5.43	0.000
*p_0_19**	-5.6750	-4.12	0.000
*p_20_39**	-5.5427	-3.63	0.000
*p_40_59**	-6.7732	-4.03	0.000
percumempl	0.0037	0.81	0.417
unins	0.0005	0.37	0.710
*monitor**	0.0622	4.24	0.000
*realpcapinc**	0.0000	-4.95	0.000
*rpci_grow**	0.6046	3.61	0.000
*bach_or_more**	-0.0040	-3.08	0.002
constant	-9.4980	-4.15	0.000

* significant at the 5% level,
** significant at 10% level
Data from Verispan Vector One
Note: Year and state fixed effects are not reported for space considerations.
Source: LRC staff analysis

Table H.8
Regression Estimation Results for Schedule IV Per Capita Number of Prescriptions

Variable	Coefficient Estimates	t	P>|t|
NP_siv	0.0034	0.28	0.778
NP_sivTREND	0.0028	0.60	0.551
NP_2and3	-0.0035	-0.30	0.766
*NP_2and3TREND***	-0.0071	-1.76	0.080
CNS_siv	0.0056	0.35	0.724
CNS_siv2TREND	0.0047	1.18	0.241
*CNS_2and3**	-0.0328	-2.08	0.039
*CNS_2and3TREND***	0.0076	1.75	0.082
CNA_siv	-0.0262	-1.13	0.259
CNA_sivTREND	0.0091	1.45	0.147
CNA_2and3	0.0181	0.69	0.489
*CNA_2and3TREND**	-0.0196	-3.09	0.002
PA_siv	0.0046	0.43	0.667
PA_sivTREND	-0.0032	-0.86	0.393
PA_2and3	0.0177	1.11	0.269
PA_2and3TREND	0.0030	1.06	0.289
popgrow	-0.5682	-0.91	0.364
p_nonwht	0.5979	1.33	0.186
*p_male**	14.8473	3.96	0.000
p_0_19	-1.6610	-1.08	0.279
*p_20_39**	-3.3448	-2.05	0.042
p_40_59	0.1179	0.07	0.948
*percumempl***	0.0077	1.85	0.065
*unins***	-0.0021	-1.73	0.084
monitor	0.0145	0.85	0.397
*realpcapinc**	0.0000	-2.54	0.012
rpci_grow	0.2060	1.58	0.116
bach_or_more	0.0017	1.41	0.161
constant	-5.4589	-3.18	0.002

* significant at the 5% level,
** significant at 10% level
Data from Verispan Vector One
Note: Year and state fixed effects are not reported for space considerations.
Source: LRC staff analysis

Table H.9
Regression Estimation Results for Schedule II Grams per Capita

Variable	Coefficient Estimates	t	P>|t|
*NP_sii**	0.0252	2.53	0.012
NP_siiTREND	-0.0026	-1.02	0.309
CNS_sii2	0.0011	0.10	0.919
CNS_sii2TREND	0.0007	0.37	0.709
*CAN_sii**	-0.0264	-3.99	0.000
CAN_siiTREND	0.0017	0.89	0.373
PA_sii	-0.0012	-0.14	0.889
PA_siiTREND	0.0002	0.11	0.912
popgrow	-0.3395	-0.48	0.634
p_nonwht	0.1837	0.43	0.667
*p_male**	11.0948	2.69	0.008
*p_0_19**	-2.6553	-2.61	0.010
*p_20_39**	-4.0453	-4.21	0.000
*p_40_59**	-2.5181	-1.99	0.048
percumempl	-0.0021	-0.70	0.486
unins	-0.0012	-1.12	0.263
*monitor***	0.0171	1.79	0.075
*realpcapinc**	0.0000	-3.13	0.002
*rpci_grow**	0.2933	2.92	0.004
bach_or_more	-0.0009	-0.87	0.383
constant	-2.2758	-1.26	0.208

* significant at the 5% level,
** significant at 10% level
Data from Drug Enforcement Agency ARCOS database
Note: Year and state fixed effects are not reported for space considerations.
Source: LRC staff analysis

Table H.10
Regression Estimation Results for Number of Emergency Room Mentions of Barbiturates Per 100,000 People

Variable	Coefficient Estimates	t	P>|t|
NP_sii	-0.2282	(0.79)	0.430
NP_siiTREND	-0.0361	(0.67)	0.506
CNS_sii2	0.3708	0.88	0.381
CNS_sii2TREND	0.0660	0.68	0.496
CNA_sii	-0.7805	(1.45)	0.150
CNA_siiTREND	0.1371	1.10	0.272
*PA_sii**	0.6511	2.55	0.012
PA_siiTREND	0.0156	0.39	0.698
*monitor**	0.7577	3.73	0.000
p_male	5.6153	0.34	0.735
*p_nonwht**	6.0513	5.00	0.000
p_0_19	-2.1179	(0.55)	0.581
*p_20_39**	-26.4371	(3.46)	0.001
p_40_59	2.0122	0.29	0.769
*popgrow**	31.5590	3.02	0.003
*realpcapinc***	0.0000	(1.78)	0.078
rpci_grow	-2.7765	(0.96)	0.337
*percumempl **	-0.2042	(3.81)	0.000
constant	6.6839	0.71	0.477

* significant at the 5% level,
** significant at 10% level
Data from Drug Abuse Warning Network (DAWN)
Note: Year effects are not reported for space considerations.
Source: LRC staff analysis

Table H.11
Regression Estimation Results for Number of Emergency Room Mentions of Narcotics Per 100,000 People

Variable	Coefficient Estimates	t	P>|t|
NP_sii	0.1056	0.70	0.487
*NP_siiTREND**	0.0766	2.57	0.012
CNS_sii2	0.0455	0.20	0.842
CNS_sii2TREND	-0.0473	(1.15)	0.254
CNA_sii	-0.2103	(1.16)	0.249
CNA_siiTREND	-0.0107	(0.29)	0.775
*PA_sii***	0.2288	1.85	0.068
PA_siiTREND	0.0136	0.55	0.581
*monitor**	0.6612	7.48	0.000
*p_male**	18.1512	2.14	0.035
*p_nonwht**	3.1843	5.03	0.000
*p_0_19**	5.2500	3.07	0.003
*p_20_39**	-16.7706	(4.63)	0.000
*p_40_59**	18.9743	5.23	0.000
*popgrow**	11.4743	2.40	0.018
realpcapinc	0.0000	(1.29)	0.200
rpci_grow	0.1303	0.09	0.929
*percumempl **	-0.1161	(3.63)	0.000
constant	-7.0684	(1.56)	0.122

* significant at the 5% level,
** significant at 10% level
Data from Drug Abuse Warning Network (DAWN)
Note: Year effects are not reported for space considerations.
Source: LRC staff analysis