Management of Athletes’ Medications

A Thesis
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The Degree Masters of Science in the
Graduate School of The Ohio State University

By
Alexis Gore, B.S.
Graduate Program in Allied Medicine
The Ohio State University
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Master’s Examination Committee:
Laura Harris, PhD., Advisor
Katherine Kelley, PhD
Kay Wolf, PhD
Jill Clutter, PhD
Abstract

State and federal violations of prescription (Rx) and over-the-counter (OTC) drug regulations by Athletic Trainers (ATs) and Physicians in all settings can have severe consequences. Anyone who is involved with handling medication must understand the limits of their authority. The penalties for individuals who fail to properly safeguard their actions can be severe and potentially career ending.

Unfortunately, there have been many reports and allegations from across the country concerning professional teams, universities, and colleges in regard to inappropriate handling of Rx and OTC medications. Because of this, research has been conducted regarding ATs’ handling of medications with athletes. These studies have yielded controversial results in regards to dispensing medication. Commonly sited potential violations include ATs engaging in drug distribution practices and improperly packaging medication. Due to these violations further research was needed to help assess to what level ATs in the state of Ohio, who work in a high school or collegiate setting, understand their state rules and regulations in regards to administering and dispensing over the counter drugs. This is significant because some practicing ATs may be unsure of or may disregard the rules of their state statues regarding this topic.

This study is classified as a cross-sectional descriptive study that will describe Ohio employed ATs’ knowledge of drug administration and dispensing laws. A questionnaire was developed and electronically administered to a population of athletic
trainers employed in Ohio colleges/universities and high schools. The
demographic data were compiled and analyzed with The Statistical Package for Social
Sciences (SPSS). Seven total demographic questions were analyzed by reporting
frequencies. The four multiple choice scenarios and four true/false statements were
graded to determine if the response was correct or incorrect. Further, test scores were
compared by the following demographic variables, title, years of experience, and work
setting.

The results of the study revealed that one third of the respondents had poor
knowledge on the topic and would have failed (scores equal to or less than 5/8) had this
been an actual test. It was noticed that there was no difference between knowledge of
Head ATs compared to Assistant ATs and that years of experience did not appear to have
an impact on knowledge. And lastly, it was revealed that overall athletic trainers who
work in the high school settings were least knowledgeable on the survey topic compared
to ATs that work in the collegiate setting.

Overall it appears that the respondents in this study struggled mostly with issues
surrounding minors and being able to differentiate between dispensing versus
administering medications. Continuing education in the area of drug dispensing and
administration is necessary, as indicated by 96% of the respondents.
Dedicated to my Mother Valerie and my Father Michael, 

a constant source of encouragement and strength.
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Vita

April 13, 1982......................Born, Columbus, Ohio

2006.................................B.S. Allied Medicine, The Ohio State University

2007-Present.......................Certified Athletic Trainer, OhioHealth Sports Medicine

Fields of Study

Major Field: Allied Medicine
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CHAPTER 1

INTRODUCTION

1.1 Background of the Problem:

Athletic trainers (AT) routinely deal with both over-the-counter (OTC) and prescription (Rx) medications in the performance of their jobs. Some examples of ATs dealing with OTC medications include administering a single dose of Tylenol for a headache or Pepto-Bismol for an upset stomach. It is important to ensure that medical and legal guidelines are followed for the administering and dispensing of all drugs whether OTC or prescription.¹

The methods by which drugs may be administered and dispensed vary according to individual state laws. Sports medicine settings are subject to those laws. An AT, unless specifically allowed by state licensure, is not permitted to dispense or administer a prescription drug. Failure to follow this regulation can be a violation of federal laws and state statutes. A violation of these laws could mean legal consequences for the physician, AT, school, school district, or even the league in which an AT’s patient participates.²

In most cases, the team physician is the individual ultimately responsible for prescribing medications. These prescription medications can then be dispensed by either the physician, the physician’s extender licensed to dispense, or the pharmacist. The AT may
not dispense medication. It is beyond the scope of practice for ATs. However, in most states they may legally administer a single dose of a non-prescription medication. After the Controlled Substances Act was passed, the act that established the authority of the Drug Enforcement Administration (DEA) to prepare rules regarding the proper handling of controlled substances, only individuals and institutions authorized by the state in which they are located can be registered by the DEA to administer, prescribe, or dispense controlled substances. Therefore, when working in a field like sports medicine it is important to make the central point of authority the registered practitioner who retains responsibility for all activities conducted under the DEA registration. Everyone who is involved with handling prescription and controlled substances must understand the limits of his/her practice. The penalties for individuals who fail to properly safeguard registration privileges can be severe. Appendix A lists and explains all Revised and Administrative Codes specific to Ohio.

The conduct of ATs has both legal and ethical undertones. One would think that acting ethically means acting legally, and vice versa. This is not always the case. It is possible for an act to be ethical but not legal. An example of this could involve an AT providing OTC topical ointment to a minor in a state that does not allow ATs to administer oral or topical OTC medications. This targets ethical dilemmas because the AT can recognize outbreaks from an allergic reaction, and would quite naturally want to apply a topical ointment to rid irritation to the area. However, in this situation it is illegal to provide mediation to a minor. ATs have to be concerned not only with practicing legally, but also with practicing ethically, and sometimes the two may not coincide.
There are times when choices to be made between alternative courses of action are unclear. The AT’s actions should always be consistent with his or her legal responsibilities. Sometimes, the law clearly indicates the appropriate behavior, and there is little room for interpretation. Yet, at other times, the law may be vague, purposefully leaving room for interpretation. In Ohio, the law governing an AT’s scope of practice is that ATs shall provide only those services for which they are qualified via education and/or experience.

1.2 Statement of Problem:

Because ATs often provide suggestions to athletes concerning types of medications to use for various injuries and or illnesses, it is important that the AT understands the possible legal and ethical consequences he/she could face regarding administering and dispensing drugs. Unfortunately, there have been many reports and allegations from across the country concerning professional teams, universities, and colleges in regard to inappropriate handling of prescription and over-the-counter medications. These reports involved state and federal rules and regulations being violated. The common theme appears to be that ATs and other sports medicine teams are either unaware of the laws or are unwilling to practice within the scope of the law. A first step to correcting this problem is to understand the true nature of the problem.
1.3 **Purpose of the Study:**

The purpose of this study is to develop an instrument that will assess to what level ATs in the state of Ohio, who work in a high school or collegiate setting, understand their state rules and regulations in regards to administering and dispensing over the counter drugs.

1.4 **Research Objective**

This study assessed:

1) ATs current comprehension of the Ohio laws regarding dispensing and administering OTC or Rx medication.

1.5 **Significance of the Study:**

The focus of this study is to develop an instrument that will measure the ATs’ current comprehension of the Ohio laws regarding administering and dispensing drugs. This is significant because some practicing ATs may be unsure of or may disregard the rules of their state statutes regarding this topic.

In 2003 a similar study was conducted nationally to determine the adherence to guidelines and laws regarding drug-dispensing and administering in collegiate athletic training rooms. The study described various unlawful acts but it could not be generalized to specific states. The current study is significant because it focuses solely on ATs in Ohio.
1.6 **Limitations of the Study:**

The population of the study is limited to ATs who are working in a high school or collegiate sport setting. It does not include ATs who are employed with professional teams, clinics, or hospitals. Therefore, results can not be generalized to other clinical settings for ATs.

A second limitation is that this study cannot be generalized to ATs employed outside of Ohio. This study will investigate Ohio high school and collegiate ATs relative to their knowledge of Ohio laws.

Another limitation is the fact that the study will be conducted as survey research, therefore allowing the possibility of error. Such error may include non-response bias from the sample, inaccurate contact information for the sample, and incomplete surveys. While efforts will be taken to reduce the error, it will be impossible to limit all sources of error.

1.7 **Definition of Terms:**

**Athletic Trainer (AT)**

An allied health care professional who, upon graduation from an accredited college or university, and after successfully passing the National Athletic Trainers’ Association Board of Certification (NATABOC) examination, is qualified and appropriately credentialed according to state regulations to work with individuals engaged in physical activity in the prevention of injuries and illnesses, the recognition, evaluation and
immediate care of injuries and illnesses, the rehabilitation and reconditioning of injuries and illnesses, and the administration of health care. This individual must have current certification in CPR and be qualified to provide first aid and manage blood borne pathogens.6

**Sport Medicine Team**

Sports medicine or sport medicine is an interdisciplinary subspecialty of medicine that deals with the treatment and preventative care of athletes, both amateur and professional. The sports medicine "team" includes specialty physicians and surgeons, ATs, physical therapists, coaches, other personnel, and, of course, the athlete. Due to the competitive nature of sports, a primary focus of sports medicine is the rapid recovery of patients.7

**Team Physician**

The team physician must have an unrestricted license and be an MD or DO who is responsible for treating and coordinating the medical care of athletic team members. The principle responsibility of the team physician is to provide for the well being of individual athletes, enabling each to realize his or her potential. The team physician should possess special proficiency in the care of musculoskeletal injuries and medical conditions encountered in sports. The team physician also must actively integrate medical expertise with other health care providers, including medical specialists, ATs and allied health professionals. The team physician must ultimately assume responsibility within the team structure for making medical decisions that affect the athlete’s participation; this includes prescribing necessary medications.6
National Athletic Trainers’ Association (NATA)

The National Athletic Trainers’ Association (NATA) is the professional organization governing ATs.

Over-the-counter (OTC) drugs/ Non-prescription drugs

OTC medications are drugs that may be sold without a prescription. They are typically purchased off the shelf of any retail store.

Prescription drugs

A prescription drug is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained. Prescription drugs are typically prescribed by physicians and dispensed by pharmacists.

Drugs

Drugs include prescription drugs, controlled substances, and over the counter (OTC) drugs. A drug is a chemical agent used in the prevention, treatment, or diagnosis of disorders that may be administered either internally or externally.

Administer a drug

Administering a drug involves giving a patient a single dose of a particular medication or drug.

Dispensing a drug

Dispensing a drug involves giving the patient a drug in a quantity greater than would be used in a single dose.
Prescribe a drug

Prescribing a drug includes the diagnosis of a medical condition and the determination of a specific drug to use for that treatment.

Physician Extender

Physician extenders are clinical professionals who practice in many of the areas similar to those in which physicians practice but are not credentialed as an MD or a DO degree.
Chapter 2

Literature Review

Introduction:

Anytime an athlete is injured during a sporting event, an athletic trainer (AT) most likely is the person running onto the field/court to assess the injured athlete. But that is not the only task that ATs perform. ATs help prevent and treat injuries encountered by a physically active population. AT’s clients include people from professional athletes to industrial workers. Since the National Athletic Trainers’ Association (NATA) was formed in Kansas City, Missouri, in 1950, the NATA has grown to almost 30,000 members worldwide. Recognized by the American Medical Association as allied health professionals, ATs specialize in the prevention, assessment, immediate care, and rehabilitation of injuries that result from physical activity.8

In May 2004 the U.S. Bureau of Labor Statistics (BLS) reported that athletic trainers held about 13,100 jobs nationwide. Most athletic trainers’ jobs are related to competitive sports, but many also work in non-sport settings.8 About 23 percent of athletic trainers work in the amusement, gambling, and recreation industry, working in fitness and recreation centers and with recreational sports teams.8 Another 21 percent work in colleges, universities, and professional schools, with approximately 16 percent
working in general medical and surgical hospitals. Other athletic trainers are employed in physician offices, elementary and secondary schools, performing arts companies, and professional sport industries.

In addition to working with their patients, ATs interact with members of their sports medicine team which includes, coaches, nurses, physicians, pharmacists, and other health care workers by discussing treatment, rehabilitation programs, injury-prevention practices, and guidelines for other health-related issues.

Physicians typically act as the head of the sports medicine team and supervise ATs’ medical practice. The level of medical supervision varies by work setting. Some ATs meet with a team physician or consulting physician once or twice a week, (e.g., high school setting), while others interact with a physician every day (e.g., clinic, collegiate, or professional sports). The extent of the physician’s supervision ranges from discussing specific injuries and treatment options with the AT to directing the AT in evaluating and treating athletes.

Typically, ATs also work with pharmacists in the collegiate and professional settings. Together the AT and the pharmacist should collaborate to create an approved formulary of non-prescription drugs which should be made available for the AT to administer to athletes. This will help promote optimal use and availability of non-prescription drugs.
2.1 Legal Precedence of Administering and Dispensing:

In most athletic programs the one member of the sports medicine team who is frequently available during athletic practices and events tends to be the AT rather than the team physician. Keeping this in mind, along with the need to outline appropriate steps to follow under certain circumstances, physicians often delegate standing orders to the AT. These standing orders are designed to free the physician’s time to see other patients while also ensuring appropriate and necessary care for injuries sustained in the physician’s absence.

When delegation of health care services is attempted by a physician to another member of the sports medicine team, and is found inappropriate, the provider as well as the physician may face legal consequences. An example of service delegation which was resolved legally involved a sports medicine team who was charged with improper dispensing of prescription medication in the late 1980’s. The pharmacist, physician, and the AT were charged with an array of criminal offenses related to the improper provision and prescription of medications for student athletes.

The charges were based upon a physician giving telephone authorization to the AT to allow provision of medication to student athletes when the physician was not available to do so. Because of this, the AT was charged with practicing medicine without a license and the physician was charged with writing false prescriptions. Additionally, in an unrelated case, a pharmacist was charged with filling a prescription for a student which had not been written by a physician, but instead directed by an AT through the
team physician. Ultimately in both cases, the university pharmacists and the ATs were acquitted at trial and the charges against the physicians were dismissed.\textsuperscript{9}

Despite the outcome of the previously referenced case,\textsuperscript{9} the energy spent by the sports medicine team to fight the charges was time consuming and costly. These cases opened the eyes of other health care practitioners who deal with the day-to-day realities of treating injured athletes. As a result it was made crystal clear that not knowing your state statutory enactments could cause potential problems for any sports medicine team.\textsuperscript{9}

The legal action taken in both cases highlight the importance that AT’s in every athletic training room understand and practice their current state rules and regulations regarding dispensing and administering medications. Because specific laws on this topic are limited and differ from state to state, health care practitioners should investigate and follow their state and federal laws regarding guidelines for practicing ATs. In the Kent State University (i.e., first referenced case) case involving charges against the physician, AT, and the student athletes, the Ohio statutes were used to decide the authorizations of the providers.\textsuperscript{10} As a result of the Kent State University case, The Ohio Board of Pharmacy now requires all athletic training rooms where prescription medications are dispensed to be licensed by the Board.\textsuperscript{10} This allows unannounced inspections to be permissible in the athletic training rooms. This also requires all athletic training rooms to follow all state and federal laws regarding dispensing, which includes physician or pharmacist dispensing only.\textsuperscript{10}

Due to the national headlines that the Kent State University case received, the first nationwide study evaluating drug distribution in athletic programs was conducted in
This was a two-year study which was funded by the National Collegiate Athletics Association (NCAA). The purpose of the study was to seek ways to promote the best possible patient–athlete health care through safe and appropriate distribution of prescription and non-prescription drugs. Upon the conclusion of this study an infinite number of problems related to ATs dispensing and administering drugs was discovered. Examples of these problems included: 1) unqualified personnel dispensing medications, 2) athletes receiving prescription and non-prescription medications with inappropriate package labeling according to federal guidelines, 3) a lack of security and control, and 4) a lack of required federal record keeping.

Since the conclusion of the NCAA study, there has been a limited number of research studies conducted regarding ATs administering and dispensing medications. It was not until 2003 that a similar study was conducted by Kahanov, Furst, Johnson, and Roberts. The purpose of this study was to assess adherence of collegiate athletic training rooms to federal drug laws and to describe current practices. The researchers created a survey instrument to assess whether or not AT’s employed nationwide in a collegiate setting followed the laws enforcing administering and dispensing practices of prescription and OTC medications. This survey was based on federal laws and the 2002-2003 NCAA Sports Medicine Handbook.

The survey was mailed to 300 ATs which were identified through the National Athletic Trainers’ Association (NATA) membership listing. Of the 300 surveys mailed, the researchers could only use data from 168 surveys due to nonrespondents, insufficient addresses, and unusable data, resulting in a 62% response rate. The results revealed that
many of the participating college athletic programs still had a plethora of drug
distribution problems. For example, one common scenario involved ATs providing
multiple doses of OTC medications. This is considered dispensing medication since the
total dosage is prescription strength. Even though this is considered illegal for an AT to
do, many respondent ATs admitted to this infraction. The researchers concluded that such
actions are considered beyond an AT’s scope of practice, which could quite possibly lead
to a medical malpractice suit.⁵

2.2  **Labeling Requirements for Non-prescription Drugs:**

Over-the-counter drugs are required to have adequate directions for use, precautions,
and adequate readability. Table 1 identifies the requirements of the Federal 8-point Label
for non-prescription drugs.¹² Non-prescription drugs may not be repackaged without
meeting labeling criteria. All drugs dispensed from the athletic training room must be
properly labeled. Legal violations can occur if a portion of a non-prescription drug is
removed from its original properly labeled package and dispensed to an athlete.¹³ This
repacking practice poses a potential violation for many AT’s who travel with teams.

For example, if an AT removes OTC medication from its original packaging and
places the medication into a more convenient carrying case for traveling purposes, he/she
has removed important information such as the drug directions, expiration date, and the
lot number. This is problematic for many reasons. There are no directions for use or
knowledge if the medication is expired. Also, if there happened to be a drug recall on that
medication, the AT no longer has the provided drug information to determine if the medication is affected by the recall.

The practice mentioned above carries the same liability as dispensing prescription drugs, because the athlete is not given the opportunity to review the label for name, contents, precautions, directions, and other information considered essential for the safe use of the product. Liability for any adverse patient outcome is then transferred to the healthcare practitioner who dispensed the improperly labeled over-the-counter drug.13

The Label of a non-prescription drug is required to contain the following information:

1. The name of the product
2. The name and address of the manufacturer, packager, or distributor
3. The net contents of the package
4. The established name of all active ingredients and the quantity of certain other ingredients whether active or not
5. The name of any habit-forming drug contained in the preparation
6. Cautions and warnings to protect the consumer
7. Adequate directions for safe and effective use
8. Expiration date and lot number

Table 2.1 FEDERAL 8-POINT LABEL12

2.3 Medication and Record Keeping:

Those involved in any health care profession are aware of the necessity of maintaining complete, up-to-date medical records. The athletic training setting is no exception. The AT who administers medications must realize that maintaining accurate
records of the types of medications administered is just as important as recording progress notes, treatments records, and rehabilitation plans.

The AT typically handles a number of different patients simultaneously while trying to prepare a team for practice or competition. Situations may become chaotic, and stopping to record each time a medication is administered is difficult. Nevertheless, the AT should include the following information on the medication administration log: 1) name of athlete, 2) complaint or symptoms, 3) current medications, 4) any drug allergies, 5) name of medications given, 6) lot number if available, 7) expiration date, 8) quantity of medication given, 9) method of administration, and 10) date and time of administration.\textsuperscript{12-13} This information is needed to assure that the average person can safely and effectively use the drug. It is also required documentation in case of a state inspection in Ohio.

Each AT should be aware of state regulations and laws that pertain to ordering, prescribing, distributing, storing, and dispensing or administering medications. Obtaining legal counsel, working with the state board of pharmacy or student health clinic, working in cooperation with a team physician, and establishing strict written policies are all actions that can minimize the chances of violating state laws that regulate the use of medications.\textsuperscript{12-13}

2.4 Ohio Law:

One of the ways in which professions have traditionally governed the behavior of their members is through a code of ethics, a statement of general principles of duty to
which the members of the profession commit themselves and from which the profession takes its moral character.

The Code of Ethics of the Ohio Athletic Trainers’ Association (OATA) is a guideline for standards of behavior. Article 2:02 of the OATA Code of Ethics states that members shall be committed to providing competent care consistent with both the requirements and the limitations of their profession. Members shall provide only those services for which they are qualified via education and/or experience and by pertinent legal regulatory process. Article 2:04 further states that members shall use only those techniques and preparations for which they are qualified and authorized to administer. Specifically, OATA members should not dispense/supply, recommend, or encourage any drug, medication, or food supplement except with extreme caution and in accordance with policies consistent with legal parameters, institutional, and sport governing body guidelines (i.e., article 2:05).

The Ohio Revised Code (ORC) targets all statutes of a permanent and general nature of the state and are revised and consolidated into general provisions, titles, chapters, and sections. The ORC will be referenced throughout this chapter to help clarify proper state practices involving medicine and medical personnel in Ohio.

The best method for ATs in Ohio to become compliant with the law is to stay familiar with the Ohio statutes. This will assist in defining the scope of practice and authorizations of the sports medicine team members. In Ohio ATs are required to hold national certification and state licensure, thus granting ATs the legal right to administer
medication without a state license. However, ATs are not allowed to prescribe medication.

The Ohio Revised Code Section 4731.34 Unauthorized Practice, prohibits the practice of medicine without the proper certification (licensure).9,15 The Ohio Revised Code Section 4731.34 defines the practice of medicine as, a person who examines, diagnoses, prescribes, advises, recommends, administers or dispenses a drug, medicine, or treatment for the cure or relief of bodily injury.9,16

The Ohio Revised Code section 4731.41 Practicing Medicine Without Certificate, states that a person must be certified by his/her state medical board to practice medicine.15

2.5 Ohio High School Law:

The NATA encourages high schools to have, whenever possible, an AT as an integral part of the high school’s sport medicine team.17 Because of this, ATs who choose to work in a secondary school setting should make sure they pay close attention not only to their state’s rules and regulations regarding administering medications, but also to the rules involving minors and athletics.

In most secondary school settings ATs cannot administer OTC medications to athletes who are minors. This can become an ethical and legal dilemma when emergency situations are involved, such as allergic reactions or anaphylactic shock. In these situations it may be most appropriate for the AT to administer one dose of an anti-histamine type of drug to the athlete during this medical emergency. To do this legally in
an Ohio high school setting, ATs should provide an emergency medical authorization form to the parents/guardians of the participating athletes at the beginning of the school year. An example of the recommended emergency medical form is located in Appendix C.

The next two statements are from the ORC regarding emergency medical authorization forms and policies for employees to administer drugs prescribed by physicians to students.

The Ohio Revised Code section 3313.712 Emergency Medical Authorization, states that an AT working in a secondary school setting must have an emergency medical authorization form signed by the athlete’s parents providing consent to treat the athlete in case of an emergency.18

According to the Ohio Revised Code section 3313.713 Policy for Employees to Administer Drugs Prescribed by Physicians to Students, no drug prescribed for a student shall be administered until the following occurs: 1) The board receives a written request signed by the parent allowing drug administration to the child. 2) The student’s name must be on the container, prescribed by a pharmacist or physician, and must be given to the person who will administer the drug. 3) For all drugs that shall be administered, there must be an established storage space.19 Furthermore, this section of the ORC states that if the rules mentioned above are followed, no AT is liable in civil damages for administering or failing to administer a drug in a secondary school setting unless, the AT acts in a manner that constitutes gross misconduct.19
2.6 Ohio Law for Collegiate Facilities:

Any institution in Ohio that holds medication within their athletic training rooms is required to have a pharmacist who holds a current identification card to practice pharmacy in Ohio. According to the Ohio Administrative Code (OAC) section 4720-17-02, the designated pharmacist will be responsible for the practice of pharmacy performed within the institution.15

Section 4729-17-03(B) of the OAC states, the pharmacist assigned to this institution is responsible for the supply of dangerous drugs. These drugs must be maintained in patient care areas as follows: 1) only a limited quantity of dangerous drugs should be maintained at any one location, 2) all drugs should have proper storage and labeling, and 3) all drugs should be stored in a secure area. This section also states that the pharmacist in charge is responsible for the inspection and replacement of the drugs used, as well as providing adequate record keeping to document the disposition of drugs from the supply.15

In summary the ORC and OAC collectively mean ATs, by law, may not order, administer, prescribe, or dispense prescription drugs at any time.3 The laws pertaining to OTC drugs are not clear for many states. However, in the state of Ohio, an AT can administer one dose of a non-prescription drug but cannot dispense non-prescription or prescription drugs legally.5 (Refer to Appendix A)

As any reader can determine by reviewing these statutes, the enactments are very broadly written and all encompassing. Because statutes such as these are supposed to be enacted for the good of the public they are subject to broad judicial interpretation.9
2.7 Medication and Traveling in a Collegiate Setting:

ATs frequently provide initial screening and care for the athlete who has a minor illness or injury. However, this may not take place in the athletic training room but while traveling on the road with a team unaccompanied by the team physician. The athlete may need a non-prescription drug that would not be readily accessible without the AT’s assistance. That is why it is important for a traveling AT to plan ahead and make sure there is a source of medication while traveling. When traveling, medications should be carried by the AT or the patient rather than in a stored bag or checked luggage. The AT should only carry enough supply to cover emergency situations while on the road. Furthermore, medications should always be stored in its original packaging for identification purposes, and should be maintained in a secure safe place.
Chapter 3

Methodology

Introduction

The purpose of this study is to (1) develop an instrument and (2) use that instrument to assess Ohio employed athletic trainers’ (ATs) knowledge of the state rules and regulations governing the practice of administering and dispensing medications.

3.1 Research Design

This study is classified as a cross-sectional descriptive study that will describe Ohio employed ATs’ knowledge of the laws governing administering and dispensing drugs. A questionnaire was developed and administered to a population of 260 athletic trainers employed in Ohio. The population was obtained from the National Athletic Trainers’ Association.

The questionnaire included four sections: 1) demographic information, 2) scenarios, 3) true or false statements, and 4) general questions. Sections two and three were evaluated to determine the knowledge of state statutes and describe current practices of athletic trainers currently employed within the collegiate and high school settings in
the state of Ohio. Section four was evaluated to determine Ohio AT’s perceived need for continuing education courses on the practices governing administering and dispensing drugs.

3.2 Instrumentation

Survey Instrument

The instrument, which was used to describe current knowledge of Ohio state statutes, was developed specifically for this study. The questions and scenarios used to determine ATs’ understanding of their scopes of practices were based on (1) Ohio State Statutes, (2) Ohio Revised Codes, (3) the NCAA Sports Medicine Handbook, (4) the National Athletic Trainers’ Association Code of Ethics, and (5) the Ohio Athletic Trainers’ Association Code of Ethics. Codes, statutes and recommendations regarding administering and dispensing medications were exclusively targeted. The questionnaire consisted of 18 total questions, which were broken down into four sections that included: (1) seven demographic questions, (2) four multiple choice scenario based questions, (3) four true or false questions, and (4) three general questions. The demographic questions collected information on respondents’ age, gender, title, setting, certifications, and number of years in the profession. These questions assisted in describing the respondent population. The scenario based multiple choice questions and the true-false questions collectively assessed the respondents’ understanding of Ohio’s administering and dispensing laws and regulations. The three general questions included one multiple choice and two yes or no questions. These questions targeted ATs’ perceived need for
knowledge regarding Ohio state statutes and laws on administering and dispensing medication.

Content and Face Validity

Human Subjects approval (protocol number 2008E0277) was obtained in April 2008 prior to any data collection or field and pilot tests. A field test was conducted to determine if the instrument was considered valid. The field test participants (N=7) consisted of three ATs, three pharmacists, and one physician. Five of the participants were healthcare practitioners who specialize in sports medicine, and two were instrument design experts within the field of Pharmacy. Each field test participant had over ten years of experience in his/her respective field. Face validity was addressed by asking the participants if the instrument appeared to assess knowledge of state statutes and laws. Content validity was assessed by asking the participants to comment on each question and provide feedback in regards to clarity and content. All seven participants were given a hard copy of the instrument and were asked to provide their feedback within a two week deadline. Of the seven surveys mailed five completed surveys were returned to the researcher. Once all the questionnaires were returned to the researcher, each questionnaire was analyzed to identify any inadequacies or misunderstandings.

Based on the comments from the field test participants, changes were made to the questionnaire. One unanimous comment from the participants was to make sure that the people in each scenario were clearly defined. For example each question should clearly identify the AT, who is responsible for care, and the patient /athlete, who is receiving
care. The researcher made amendments to each scenario and true-false question in order to clearly define who the health care provider was and who the patient was.

The participants also recommended that the researcher not only include questions regarding administering drugs, but to also include questions clearly involving dispensing drugs to test the respondents’ differentiation between the two. One new question was added to address this suggestion.

Following the amendments that resulted from the face and content validity field tests, the researcher asked one of the participants who was an AT to once again evaluate the questionnaire in order to verify the correct answers. The participants’ responses confirmed that the researcher’s answer key was correct.

Reliability

After the field tests were assessed and validity established, the reliability of the survey instrument was assessed. Using 17 senior Athletic Training Students from The Ohio State University, two separate pilot tests were conducted two weeks apart on February 9, 2009 and February 23, 2009. In order to match tests, participants were asked to write the last four digits of their phone numbers on top of the test. This allowed the researcher to match the first test to the second test while maintaining anonymity. Test – retest reliability was used to establish the trustworthiness of each item within the knowledge test sections (ie., multiple choice and true-false questions). Pilot test participants were instructed to refrain from discussing the test items with each other following the first exam in order to minimize a participant’s change in test response prior to the second test.
Table 3.1 outlines the percentage of correct answers for each knowledge test item from the first test administration to the second. The percentage of correct answers ranges from .35 to 1.00 on the test-retest administration. Within each item, the number of correct responses remained the same or increased in accuracy on the second administration of the test, with the exception of the first item (i.e., scenario question 7). This provides evidence that the questionnaire will produce similar results over time, thus establishing reliability.

<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>Correct Responses Test 1</th>
<th>Correct Responses Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate steps</td>
<td>100%</td>
<td>94%</td>
</tr>
<tr>
<td>Storing &amp; Administering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EpiPens to Student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario Question 8:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate procedures</td>
<td>35%</td>
<td>59%</td>
</tr>
<tr>
<td>Regarding Storing &amp;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administering Inhalers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Athletes who are minors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario Question 9:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which state governs an</td>
<td>71%</td>
<td>71%</td>
</tr>
<tr>
<td>Athletic Trainer's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice when traveling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and Administering Medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scenario Question 10:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate actions</td>
<td>76%</td>
<td>88%</td>
</tr>
<tr>
<td>When Administering unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose packets of Medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Coaches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True / False Question 11:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can AT's legally</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Dispense Medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True / False Question 12:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can AT's legally</td>
<td>71%</td>
<td>82%</td>
</tr>
<tr>
<td>Administer one Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose packet to Adult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True / False Question 13:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can AT's legally</td>
<td>65%</td>
<td>76%</td>
</tr>
<tr>
<td>Dispense OTC Medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With a Physician's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>True / False Question 14:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can AT's legally</td>
<td>59%</td>
<td>65%</td>
</tr>
<tr>
<td>Administer OTC Medication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Adult Athletes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.1. Percentage of Correct Answers on Test - Re-Test Administration
Table 3.2 illustrates the number of respondents who changed their responses from the first test administration to the second. No individual item changed more than 35%.

There was no change for two items (i.e., scenario question 9 and true-false question 11), providing further evidence of consistency over time.

<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>Correct to Incorrect Responses</th>
<th>Incorrect to Correct Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7: Appropriate steps regarding storing &amp; administering EpiPens to student athletes</td>
<td>6%</td>
<td>0%</td>
</tr>
<tr>
<td>Scenario Question 8: Appropriate procedures regarding storing &amp; administering inhalers to athletes who are minors</td>
<td>12%</td>
<td>35%</td>
</tr>
<tr>
<td>Scenario Question 9: Which state governs an ATs practice when traveling and administering medication</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Scenario Question 10: Appropriate actions when administering unit dose packets of medication to coaches</td>
<td>0%</td>
<td>12%</td>
</tr>
<tr>
<td>True / False Question 11: Can ATs legally dispense medications</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>True / False Question 12: Can ATs legally administer one unit dose packet to adult athletes</td>
<td>0%</td>
<td>12%</td>
</tr>
<tr>
<td>True / False Question 13: Can ATs legally dispense OTC medications with a physicians permission</td>
<td>12%</td>
<td>24%</td>
</tr>
<tr>
<td>True / False Question 14: Can ATs legally administer OTC medication to adult athletes</td>
<td>6%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Table 3.2. Changes Between Test Administrations
Table 3.3 describes the consistency of respondents on the two test administrations. Most respondents answered items consistently between the two test administrations, resulting in a reliability coefficient per item of no less than 0.53.

<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>Correct Responses on Both</th>
<th>Incorrect Responses on Both</th>
<th>Reliability Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7: Appropriate steps regarding storing &amp; administering EpiPens to student athletes</td>
<td>94%</td>
<td>0%</td>
<td>94%</td>
</tr>
<tr>
<td>Scenario Question 8: Appropriate procedures regarding storing &amp; administering inhalers to athletes who are minors</td>
<td>24%</td>
<td>29%</td>
<td>53%</td>
</tr>
<tr>
<td>Scenario Question 9: Which state governs an ATs practice when traveling and administering medication</td>
<td>59%</td>
<td>18%</td>
<td>77%</td>
</tr>
<tr>
<td>Scenario Question 10: Appropriate actions when administering unit dose packets of medication to coaches</td>
<td>76%</td>
<td>12%</td>
<td>88%</td>
</tr>
<tr>
<td>True / False Question 11: Can ATs legally dispense medications</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>True / False Question 12: Can ATs legally administer one unit dose packet to adult athletes</td>
<td>71%</td>
<td>18%</td>
<td>89%</td>
</tr>
<tr>
<td>True / False Question 13: Can ATs legally dispense OTC medications with a physicians permission</td>
<td>53%</td>
<td>12%</td>
<td>65%</td>
</tr>
<tr>
<td>True / False Question 14: Can ATs legally administer OTC medication to adult athletes</td>
<td>53%</td>
<td>29%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Table 3.3. Consistency Between Test Administrations
3.3 Data Collection

The final draft of the instrument was distributed electronically using Zoomerang, an e-mail based survey system. The researcher received the population of 260 (259 deliverable questionnaires) athletic trainers employed in Ohio high schools and colleges from the National Athletic Trainers’ Association (NATA). The NATA only provided the names and emails addresses of those ATs who had previously given permission to the NATA to distribute contact information for research purposes; therefore, the population used in this study does not include every AT employed in Ohio high schools and colleges. Through email, a cover letter describing the study and its protocols and the questionnaire were sent to the entire population. Incentives were given for participation. Two gas gift cards of $100.00 each were awarded to randomly selected respondents who completed their instruments. Despite the incentive, all responses remained confidential. The ability to enter into a drawing to receive incentives was set up so that the website could collect a list of respondents independent of their individual responses to the questionnaire.

Due to the tracking ability provided by Zoomerang, the researcher was able to track non-respondents. The respondents who did not respond to the survey within one week were sent a follow-up email seven days after the initial email and another email 10 days after the first reminder if no response was received.
3.4 Data Analysis

The seven demographic questions were analyzed by reporting frequencies. The four multiple choice and four true false statements were graded to determine if the response was correct or incorrect. A score was assigned for each respondent based upon the number of correct responses out of eight (e.g., four correct responses is a 50%). A score of 100% (eight correct answers) was considered excellent knowledge. A score of 88% (seven correct answers) was considered good knowledge. A score of 75% (six correct answers) was considered fair knowledge. A score of 63% and below (five or less correct answers) was considered poor knowledge. The score for each respondent was reported, along with the percentage of correct and incorrect responses per item. The percentage of correct responses per item was also reported for the following categories: (1) title or employment position, (2) years of experience, and (3) employment setting. The final three questions were reported with frequencies in order to describe the respondents academic preparation and the desire of respondents to receive additional training on the practices governing administering and dispensing statutes and codes.

3.5 Ethical Issues

Any potential harm to respondents resulting from respondents’ answers was minimized by keeping each respondent’s answers anonymous. In no way were respondents’ names associated with their answers. The researcher is only interested in describing Ohio AT’s collective knowledge of their scopes of practice with OTC and Rx medications. This will also help determine if there is a need for continuing education on
this topic in order to assist ATs in staying accurate and current with their professional obligations. Data was not collected to report individual adherence to the state laws and statutes.

All participation was voluntary and respondents could withdraw or discontinue participation at any time. Further, any participant could refuse to answer any question that he/she did not wish to answer.

Some respondents may have provided socially desirable answers as opposed to answering how they truly practice athletic training for fear of legal ramifications. To avoid this error the researcher tried to reinforce that all respondents’ comments and suggestions would be confidential.
Chapter 4

Results

Introduction

This chapter will report the results of the “Management of Athletes’ Medications” Questionnaire (n=106), which was specifically created for this study to describe Ohio employed Athletic Trainers’ (ATs) knowledge of the laws governing administering and dispensing. This chapter is organized into the following sections: (1) introduction, (2) questionnaire results, and (3) summary.

4.1 Questionnaire Results

Descriptive Data

The population surveyed included athletic trainers in the state of Ohio, who were employed within high school or collegiate settings during 2009. The sample was given by the National Athletic Trainers Association based on members who permitted their names to be on the email list for research related activities. At the time of sample retrieval, there were only 260 members accessible out of the 638 members in Ohio that truly fit the researcher’s qualifications. Of the 260 instruments electronically mailed, there were 111 returned, one questionnaire was undeliverable, and 106 were usable. This produced a 42.9% response rate within a two month time period.
The demographic data were compiled and analyzed with the Statistical Package for Social Sciences (SPSS). The demographical items were listed in the beginning of the questionnaire as items 1-6, gathering information such as age, gender, current position, number of years employed as an AT, earned credentials, and current employment setting. Item 15 also was included as a demographic question that asked respondents about their academic preparation (e.g., curriculum or internship routes). Altogether, seven total demographic questions were analyzed by reporting frequencies.

Of the 106 respondents the ages ranged from 24-68 years of age (X=37.76). The gender of the respondents was nearly equal with 52% reporting as female (n=55) and 48% reporting as male (n=51). Comparing this to the actual percentage of male ATs in Ohio 47% (n= 796/1678) and female ATs in Ohio 53% (n=882/1678), there is a noticeable similarity. This provides evidence that our sample resembles the actual population in Ohio.

Thirty-seven percent of the respondents were head athletic trainers (n=39), 39% were assistant athletic trainers (n=41) and 25% described their position as other (n=26). Examples of positions labeled as “other” included teacher, faculty, graduate athletic training student, and program director. The minimum number of years a respondent had served as an AT was 1 year and the maximum reported was 39 years (X=14.08).

One hundred percent of the respondents (n=106) were employed as athletic trainers, 3% (n=3) were physical therapists (PT), and 14% (n=15) were certified strength and conditioning specialists (CSCS). The vast majority of the respondents reported working in a collegiate setting (74%, n=78) followed by the high school setting (24%,
n=25). Only 1% (n=1) of the respondents worked in a clinic outreach. Comparing this to the actual Ohio data, 41.5% (n=265/638) work in the collegiate setting, 25.9% (n=165/638) work in the high school setting, and 32.7% (n=208/638) work in the clinic setting. This demonstrates that our sample was slightly biased towards the collegiate setting with inadequate representation of the clinical setting.

Forty-four percent (n=46) of the respondents graduated from an internship program. Respondents who graduated from an accredited curriculum program included 51% (n=54) of the population. Respondents graduating from a non-accredited program included 2% (n=2) of the responding population. Three percent (n=3) of the respondents included their preparation as other.

Construct Frequencies

The four multiple choice scenarios (items 7-10) and four true false statements (items 11-14) were graded to determine if the response was correct or incorrect. A score was assigned for each respondent based upon the number of correct responses out of eight (e.g., four correct responses is a 50%). A score of 100% (eight correct answers) was considered excellent knowledge. A score of 88% (seven correct answers) was considered good knowledge. A score of 75% (six correct answers) was considered fair knowledge. A score of 63% and below (five or less correct answers) was considered poor knowledge. Of the 106 respondents that participated in the study, 39% (n=41) of the respondents would have failed (scores equal to or less than 5/8) had this been an actual test. (Refer to Table 4.1).
Table 4.1 Respondents’ Overall Test Performance

At the conclusion of the scenario and true-false questions, there were two yes/no questions about continuing education courses. One question targeted the need for continuing education on the topic. The second question analyzed if the respondents would attend continuing education classes regarding the topic. Of the 106 respondents, 96% (n=101) felt that both education was needed on the topic and that they would attend a continuing education class on the topic.

Individual Items Frequencies

Table 4.2 illustrates the number of correct responses per item. None of the questions received a 100% correct response rate. However, one question did have a 99% correct response rate. Three questions had an 80% and higher correct response rate, and four questions had a 70% and below correct response rate.
### Table 4.2 Percentage of Correct Responses per Item

<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>% Correct</th>
<th>% Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7: Appropriate steps regarding storing &amp; administering EpiPens to student athletes</td>
<td>88%</td>
<td>22%</td>
</tr>
<tr>
<td>Scenario Question 8: Appropriate procedures regarding storing &amp; administering inhalers to athletes who are minors</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Scenario Question 9: Which state governs an ATs practice when traveling and administering medication</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Scenario Question 10: Appropriate actions when administering unit dose packets of medication to coaches</td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td>True / False Question 11: Can ATs legally dispense medications</td>
<td>99%</td>
<td>1%</td>
</tr>
<tr>
<td>True / False Question 12: Can ATs legally administer one unit dose packet to adult athletes</td>
<td>81%</td>
<td>19%</td>
</tr>
<tr>
<td>True / False Question 13: Can ATs legally dispense OTC medications with a physicians permission</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>True / False Question 14: Can ATs legally administer OTC medication to adult athletes</td>
<td>80%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 4.3 illustrates the number of correct responses per item by position, excluding respondents who answered as “other.” Interestingly enough, the average
percentage of the number of correct responses for questions 7-14 for Head ATs and Assistant ATs was nearly equal with Head ATs with 75% and Assistant ATs with 73%. This suggests that the Head ATs and Assistant ATs who responded to this questionnaire had similar knowledge on the topic.

<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>Head Athletic Trainer (n=39)</th>
<th>Assistant Athletic Trainer (n=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7: Appropriate steps regarding storing &amp; administering EpiPens to student athletes</td>
<td>87%</td>
<td>85%</td>
</tr>
<tr>
<td>Scenario Question 8: Appropriate procedures regarding storing &amp; administering inhalers to athletes who are minors</td>
<td>49%</td>
<td>44%</td>
</tr>
<tr>
<td>Scenario Question 9: Which state governs an ATs practice when traveling and administering medication</td>
<td>69%</td>
<td>73%</td>
</tr>
<tr>
<td>Scenario Question 10: Appropriate actions when administering unit dose packets of medication to coaches</td>
<td>49%</td>
<td>66%</td>
</tr>
<tr>
<td>True / False Question 11: Can ATs legally dispense medications</td>
<td>97%</td>
<td>100%</td>
</tr>
<tr>
<td>True / False Question 12: Can ATs legally administer one unit dose packet to adult athletes</td>
<td>79%</td>
<td>85%</td>
</tr>
<tr>
<td>True / False Question 13: Can ATs legally dispense OTC medications with a physicians permission</td>
<td>67%</td>
<td>49%</td>
</tr>
<tr>
<td>True / False Question 14: Can ATs legally administer OTC medication to adult athletes</td>
<td>85%</td>
<td>83%</td>
</tr>
</tbody>
</table>

Table 4.3 Percentage of Correct Responses per Item by Position
Table 4.4 illustrates the number of correct responses per item by years of service. This table illustrates a 0-5 year, a 6-10 year, and 10+ year span of experience. The largest number of respondents (n=62) reported having 10+ years of work experience as ATs. The remaining respondents reported having 6-10 years (n=21) and 0-5 years (n=23). This data indicates a relatively mature workforce within the responding population who possess similar knowledge as the less experienced workforce.
<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>0-5 Years (n=23)</th>
<th>6-10 Years (n=21)</th>
<th>10≤ Years (n=62)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate steps regarding storing &amp; administering EpiPens to student athletes</td>
<td>87%</td>
<td>95%</td>
<td>84%</td>
</tr>
<tr>
<td>Scenario Question 8:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate procedures regarding storing &amp; administering inhalers to athletes who are minors</td>
<td>43%</td>
<td>43%</td>
<td>50%</td>
</tr>
<tr>
<td>Scenario Question 9:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which state governs an ATs practice when traveling and administering medication</td>
<td>74%</td>
<td>71%</td>
<td>63%</td>
</tr>
<tr>
<td>Scenario Question 10:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate actions when administering unit dose packets of medication to coaches</td>
<td>78%</td>
<td>76%</td>
<td>48%</td>
</tr>
<tr>
<td>True / False Question 11:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can ATs legally dispense medications</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
</tr>
<tr>
<td>True / False Question 12:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can ATs legally administer one unit dose packet to adult athletes</td>
<td>83%</td>
<td>90%</td>
<td>74%</td>
</tr>
<tr>
<td>True / False Question 13:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can ATs legally dispense OTC medications with a physicians permission</td>
<td>48%</td>
<td>57%</td>
<td>63%</td>
</tr>
<tr>
<td>True / False Question 14:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can ATs legally administer OTC medication to adult athletes</td>
<td>87%</td>
<td>67%</td>
<td>79%</td>
</tr>
</tbody>
</table>

Table 4.4 Percentage of Correct Responses per Years of Service

Table 4.5 illustrates correct responses per item by work setting. The surveyed work settings included college/university, junior college, high school, and clinic outreach. The majority of the respondents worked in a college/university setting (n=78). Less than one-third of the respondents (n=23) worked in a high school setting. Only one respondent
(n=1) worked in a clinic outreach setting, and no respondents worked at a junior college.

In Table 4.5, it appears that the high school employed respondents demonstrated less knowledge than the collegiately and outreach employed respondents.

<table>
<thead>
<tr>
<th>Item Number &amp; Description</th>
<th>College / University (n=78)</th>
<th>High School (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario Question 7: Appropriate steps regarding storing &amp; administering EpiPens to student athletes</td>
<td>92%</td>
<td>23%</td>
</tr>
<tr>
<td>Scenario Question 8: Appropriate procedures regarding storing &amp; administering inhalers to athletes who are minors</td>
<td>46%</td>
<td>15%</td>
</tr>
<tr>
<td>Scenario Question 9: Which state governs an ATs practice when traveling and administering medication</td>
<td>64%</td>
<td>26%</td>
</tr>
<tr>
<td>Scenario Question 10: Appropriate actions when administering unit dose packets of medication to coaches</td>
<td>68%</td>
<td>13%</td>
</tr>
<tr>
<td>True / False Question 11: Can ATs legally dispense medications</td>
<td>100%</td>
<td>31%</td>
</tr>
<tr>
<td>True / False Question 12: Can ATs legally administer one unit dose packet to adult athletes</td>
<td>79%</td>
<td>26%</td>
</tr>
<tr>
<td>True / False Question 13: Can ATs legally dispense OTC medications with a physicians permission</td>
<td>58%</td>
<td>21%</td>
</tr>
<tr>
<td>True / False Question 14: Can ATs legally administer OTC medication to adult athletes</td>
<td>78%</td>
<td>27%</td>
</tr>
</tbody>
</table>

*Clinic were not tabulated due to insufficient number

Table 4.5 Percentage of Correct Responses per Work Setting
4.2 Summary

The results of the study indicated that the respondents were fairly balanced in regards to gender. With 52% respondents reporting as female (n=55) and 48% reporting as male (n=51), we can conclude that there is some gender-equity among the ATs that responded and who are employed in collegiate or high school settings.

The number of years that a respondent had served as an AT revealed some interesting data. The common theme with the respondents of this questionnaire seemed to be maturity. Having 67% (n=71) of the respondents with 10+ years of service as an AT indicates a seasoned work force within the respondents of the study.

The results of the questionnaire also showed which work settings varied on the knowledge of the topic. It appears that the only group that demonstrated an obvious difference in knowledge was the college and high school settings.

The instrument had two general questions that focused on the need for continuing education on this topic. Based on the answers from the respondents, ninety-six percent (n =101) see a need for a continuing education on the questionnaire topic and felt like they would attend a course similar to the research topic if it was offered. The overall results of the questionnaire would support the need for continuing education, with 39% of the respondents failing to demonstrate adequate knowledge on the laws governing drug administering and dispensing.
Chapter 5

Discussion

Introduction

The 1993 NCAA Drug Distribution Study for University Athletic Programs\textsuperscript{11} and the 2003 Adherence to Drug-Dispensing and Drug-Administration Laws and Guidelines in collegiate Athletic Training Rooms\textsuperscript{5} concluded similar results. Those studies discovered that ATs who worked in NCAA university/college settings may have illegally dispensed medication to athletes and therefore may have engaged in drug distribution practices that violated federal and state statutes, such as unqualified personnel dispensing medications.\textsuperscript{5,11} The purpose of the “Management of Athletes’ Medication” study was to develop an instrument that assessed to what level athletic trainers in the state of Ohio, who work in a high school or collegiate settings, understand their state rules and regulations in regards to administering and dispensing over the counter drugs.

This chapter will discuss the relevance of findings regarding the results of the Management of Athletes’ Medication, in an attempt to describe Ohio employed Athletic Trainers’ (ATs) knowledge of the laws governing administering and dispensing drugs. The discussion of the survey results will incorporate the following sections: (1) demographics (2) summary, (3) limitations of the study, (4) questions for future research and (5) conclusion.
5.1 Demographics

The demographics of the study covered an array of information regarding age, gender, current position, number of years as an AT, earned credentials, current employment setting, and educational preparation. The current study indicated that the respondents had an age range from 24-68 years of age, with an average age of 37.76. This data suggests that these individuals comprised a relatively mature professional base. Fifty-two percent were females, and 48% were males. Other demographic data supported the observation that this population is relatively mature due to the fact that the respondents (n=106) had a minimum of 1 year and a maximum of 39 years of work experience as an AT, with an average number of 14.08 years.

Thirty-seven percent of the respondents were head athletic trainers (n=39). Head ATs are making the final decisions in their athletic training rooms because they are the main correspondent with the athlete when dealing with physicians, coaches, and parents.\textsuperscript{5,11} Thirty-nine percent of the respondents were assistant athletic trainers (n=41). This is noteworthy because it is common in some athletic training rooms for the assistant athletic trainer to be assigned the health care duties associated with one or two particular sports as opposed to the head athletic trainer who is ultimately responsible for all sports. The data suggest that 76% (n=80) of the ATs who responded to this questionnaire are involved in direct patient care and therefore should have a good understanding of their state statutes and regulations regarding athletes and medications. Additionally, the majority of the athletic trainers that responded to the questionnaire worked in a collegiate
setting (74%; n=78). This shows that most of the ATs in this sample work in university settings.

5.2 Results Summary

Overall the questionnaire yielded some interesting results. In the results section of this study it was noted that of the 106 respondents that participated in the study, 39% (n=41) of the respondents would have failed had this been an actual test (Table 4.1). That data suggests that ATs in a third of Ohio’s athletic training rooms have an inadequate knowledge base regarding the state drug laws and regulations. Having poor knowledge of the state laws could possibly lead to practitioners breaking laws and ultimately compromising the welfare of the student athlete. This conclusion is similar to the results reported in the 2003 NCAA study and the 1993 adherence study.

When we analyzed correct responses on item eight, fifty-one percent (n=54) of the ATs did not understand the appropriate way to store and handle medications (e.g., asthma inhalers, insulin) that have been prescribed to minors (Table 4.2). This can lead to ATs providing care beyond their scope of practice. Furthermore, based upon the answers provided on item 13, 41% (n=43) of ATs thought it was legally acceptable for an Ohio AT to dispense over-the-counter medication (OTC) as long as that AT has a physician’s permission (Table 4.2). In the state of Ohio it is illegal for an AT to dispense medication in any situation, regardless of physician involvement. Unrestricted dispensing is a scope of practice that is germane to Pharmacists and Physicians; ATs are only permitted to administer one dose of an OTC in Ohio. Item 10 also targeted dispensing OTC
medications. This question revealed that 39% (n=41) of ATs in Ohio felt it was acceptable to dispense OTCs as long as the medication was packaged in unit dose packaging (Table 4.2). Once again, unrestricted dispensing of any medication in the state of Ohio is permitted only by Pharmacists and Physicians.

Answers to individual items were further analyzed according to three variables: (1) by position, (2) by years of service, and (3) by work setting. The researcher compared Head ATs to Assistant ATs, compared 0-5, 6-10, and 10-plus years of experience, and compared collegiate/university and high school work settings to see if any particular category responded differently. The same trend was notice for two of the three categories. When the researcher compared the head athletic trainers to assistant athletic trainers, it was noticed that the Head ATs and Assistant ATs who responded to this questionnaire had similar knowledge on the topic because the average percentage of correct responses for items 7-14 for each position was 73% (Table 4.3). Head ATs and Assistant ATs both had difficulty with one question that targeted providing prescription medication to an athlete who is a minor. Fifty-one percent (n=20) of Head ATs and 56% (n=23) of Assistant ATs who responded to the survey were unaware of the appropriate procedures to follow when administering prescription medication (e.g., inhaler, insulin) to an athlete who is legally unable to make medical decisions on his/her behalf. Similarly, 33% (n=13) of the Head ATs and 51% (n=21) of Assistant ATs thought it was legally acceptable to dispense OTC medication as long as that AT received permission from a physician.
The same trend was noticed for the ATs based on years of experience (Table 4.4). Years of service did not appear to impact respondents’ knowledge. Each item varied on average by 14%, with only one item varying by more than 20% (item 10). Each item’s correct responses ranged from 3% (item 11) to 30% (item 10).

Overall the ATs employed in the high school setting had more incorrect answers; item 11 was the item answered correctly most often by high school ATs (i.e., 31% of respondents answered item 11 correctly (Table 4.5)). In comparison, collegiate ATs answered each item correctly in the range of 46%-100%.

Lastly, it was determined that the majority (n= 101) of the Ohio ATs that responded to this survey felt it would be helpful to have a continuing education course on this topic and reported that they would personally attend a class if it were offered. This is important information because it targets the ATs’ personal desire for a course regarding administering and dispensing medications which would help keep them up to date with their state laws and regulations. It also indicates that most respondents were perhaps uncertain of their answers given in the multiple choice and true false sections of the questionnaire.

5.3 Implications

Overall it appears that the respondents in this study struggled mostly with issues surrounding minors and the differentiation between dispensing and administering medications. It seems that ATs understand that they are only allowed to administer medication but ATs may be unclear as to when administering becomes dispensing. This
is alarming and potentially dangerous. First of all, it is illegal and unethical for an AT to provide any OTC medication beyond one dosage. Second, ATs educationally are not prepared to understand pharmacology dynamics and potential drug interactions that OTC medication may have with already prescribed prescription medications. Lastly, the largest concern resulting from this study is that the current results indicate that practices have not changed for many ATs despite the NCAA study in 1992 and the Kent State lawsuit.

5.4 Limitations to the Study

The first limitation that should be considered is the response rate for the survey.\textsuperscript{22-23} The sample was given by the National Athletic Trainers Association based on members who allow their names to be on the email list for research related activities. At the time of sample retrieval, there were only 260 members that fit the researchers’ qualifications on that list. However, this sample is not representative of all ATs in Ohio because there are 638 members in Ohio that fit the researchers’ qualifications. Of the 260 electronically mailed surveys that were administered, there were 111 usable, one was undeliverable, and 106 were usable. This produced a 42.9% response rate within a two month time period. Having a high response rate is important because the researcher needs to make sure he/she is reaching the desired respondents. Furthermore, low response rates limit the researcher’s ability to generalize the results of the study. The researcher tried to prevent a low response rate by providing an incentive for completing the survey. However, it does
not appear that the incentive was motivation enough to complete the survey based on the less than desired 80% response rate.

A low response rate can be caused by many things. In this study the time frame in which the survey was distributed is being considered for one of the possible reasons for the low response rate. For example, this survey was first launched on April 17, 2009 with a reminder message sent out on April 29, 2009. Unfortunately, this is a time frame where most of the schools in Ohio are either out of school or preparing to end the school year. This is suggestive that around the time that the surveys were distributed most ATs were preparing to end the school year and may have not found it high on their priority lists to take the time to participate in the survey. By the time the survey officially closed on June 11, 2009, all of the ATs that participated in the study were most likely not working directly with student athletes during the day which may further include not participating in work related activities such as educational surveys.

A low response rate could also be caused by distributing surveys over the internet through email.\textsuperscript{22-23} This is an obvious limitation because the response rate is limited to only people who have internet access. However, it is possible that people may not have access outside of work and may be limited to when and where they can access the internet.

The other limitation that should be considered is the concept of social desirability bias. This is when respondents want to please the interviewer by giving socially acceptable responses that do not reflect the actual behavior of the respondent. The respondent may report what they think the researcher wants to hear.\textsuperscript{22} For example, one
of the questions that had the highest amount of correct responses targeted knowledge of dispensing medication. This question provided pictures of a medicine bottle as well as a scenario in which the respondents were supposed to select the appropriate action in regards to dispensing medication to an athlete. Ninety-nine percent of the respondents answered the question correctly by saying that it was illegal to dispense medication to this athlete. However, just because the respondents know what the appropriate actions are does not mean that they always practice medicine within the lines of those appropriate actions. Although there is no foolproof way to control for this type of bias, the researcher did emphasize that respondents’ answers were completely anonymous and their names would not be associated with their answers.

5.5 Questions for Further Research

It seems that ATs understand that they are only allowed to administer medication but ATs may be unclear as to when administering becomes dispensing. It also seems that ATs are unaware of the proper procedures to take when dealing with medications prescribed to athletes who are minors. Both of these specific topics could be investigated in more depth in order to determine where the confusion lies. Is it a matter of knowingly violating state statutes? Or are ATs inadvertently violating the statutes due to poor understanding? Even more, are ATs attempting to perform the role of health care providers who are not as accessible in athletic training facilities (i.e. Pharmacist)?

Furthermore, the idea that college ATs understand the knowledge better than high school ATs needs probing. Could it be the lawsuit involving Kent State University was
the impetuous for collegiate ATs to having a better understanding of the drug laws in Ohio? Because ATs work more closely with team physicians and pharmacist in the college setting could they have a better understanding of the laws compared to high school ATs? Could college ATs have better structure with their organizations, creating more resources and access to Pharmacists and Physicians? Or, do collegiate handbooks with guidelines of appropriate moral, ethical, and legal actions regarding ATs’ scope of practice make college ATs more informed when dealing with Ohio state laws?

Regarding high school ATs apparent lack of knowledge, more questions should be investigated. For example, do high school ATs have a team physician available to verify information on a regular basis? Is it possible that high school athletic trainers may chose not to deal with medication at all, leaving the need to understand drug laws unnecessary because they don’t administer medication in any circumstance? Or, do high school ATs have inadequate resources and guidelines geared strictly toward ATs working in a high school setting?

The last area for future research involves the expressed desire for additional continuing education. In order to determine if continuing education is the most effective means to improve the knowledge of state statutes, pre-test and post-test measures could be taken on a course designed to explain Ohio rules and regulations governing administering and dispensing drugs.
5.6 Conclusion

The dispensing of medication to athletes by non-physician members of the sports medicine team is full of legal pitfalls. It is difficult for ATs to adhere to Ohio state laws and regulations if they do not have good knowledge of these laws. Information and discussion is needed to address this ongoing problem. The researcher suggests that ATs review their state laws and regulations, seek out athletic training room drug policies, consult with pharmacists and physicians and try to revise policies so they comply with the Ohio state laws. Guidelines for handling prescription and nonprescription drugs have been well documented in the peer-reviewed literature and by Ohio statutes and should be reviewed by athletic trainers. Blatant nonadherence to the guidelines can be a factor but was not addressed in this study. This may be an area of future research. Also, an increase in sample size along with improving the response rate would improve the generalizability to the athletic training population.
List of References


APPENDIX A

OHIO REVISED CODES & OHIO ADMINISTRATION CODE
1) The Ohio Revised Code Section 4731.34 Unauthorized Practice, prohibits the practice of medicine without the proper certification (licensure).  

A person shall be regarded as practicing medicine,... who examines or diagnoses for compensation of any kind, or prescribes, advises, recommends, administers, or dispenses for compensation of any kind, direct or indirect, a drug or medicine, appliance, mold or cast, application, operation, or treatment, of whatever nature, for the cure or relief of a wound, fracture or bodily injury, infirmity, or disease.....

2) The Ohio revised Code section 4731.41 Practicing Medicine Without Certificate, states, in part:  

No person shall practice medicine and surgery, or any of its branches, without the appropriate certificate from the state medical board to engage in the practice.  

3) The Ohio Revised Code section 3313.712 Emergency Medical Authorization, States, in part:  

Annually the board of education of each city, exempted village, local, and joint vocational school district shall, before the first day of October, provide to the parent of every pupil enrolled in schools under the board’s jurisdiction, an emergency medical authorization form…… If a parent does not wish to give such written permission, he shall indicate in the proper place on the form the procedure he wishes school authorities to follow in the event of a medical emergency involving his child…… Even if a parent gives written consent for emergency medical treatment, when a pupil becomes ill or is injured and requires emergency medical treatment
while under school authority, or while engaged in an extra-curricular activity
authorized by the appropriate school authorities, the authorities of his school shall
make reasonable attempts to contact the parent before treatment is given. The school
shall present the pupil’s emergency medical authorization form or copy thereof to the
hospital or practitioner rendering treatment.18

4) According to the Ohio Revised Code section 3313.713 Policy for Employees to
Administer drugs Prescribed by Physicians to Students, Division (C) (1) States in
part:
No drug prescribed for a student shall be administered..... until the following occurs:
The board, or a person designated by the board, receives a written request, signed by
the parent, guardian, or other person having care of the student, that the drug be
administered to the student. Division (C) (5) states, the drug is received by the person
authorized to administer the drug to the student for whom the drug is prescribed in
the container in which it was dispensed by the prescriber of a licensed pharmacist.19
Division (D) of the ORC section 3313.713 states, in part:
If a drug is administered to a student, the board of education shall acquire and
retain copies of the written request....... The board, or a person designated by the
board, shall establish a location in each school building for the storage of drugs to be
administered under this section and federal law. All such drugs shall be stored in that
location in a locked storage place, except that drugs that require refrigeration may be
kept in a refrigerator in a place not commonly used by students.19
Finally, Division (E) of the ORC section 3313.713 states, in part:

*No person who has been authorized by a board of education to administer a drug and has a copy of the most recent statement of this section prior to administering the drug is liable in civil damages for administering or failing to administer the drug, unless such person acts in a manner that constitutes gross or wanton or reckless misconduct.*

5) According to the Ohio Administration Code (OAC) section 4720-17-02, the designated pharmacist will be responsible for the practice of pharmacy performed within the institution regarding the development, direction, implementation, supervision, and coordination of all services provided by the pharmacy.
APPENDIX B

FEDERAL REGULATIONS GOVERNING PHARMACEUTICAL CARE
Federal Regulations Governing Pharmaceutical Care

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Food, Drug, and Cosmetic Act (FDCA) of 1938*</td>
<td>Regulates the quantity, strength, bioequivalence, and labeling of prescription and nonprescription drugs</td>
</tr>
<tr>
<td>Durham-Humphrey Amendment of 1951†</td>
<td>Separates prescription from non-prescription drugs</td>
</tr>
<tr>
<td>Federal Anti-Tampering Act of 1983‡</td>
<td>Created 7-point label requirements and tamper-resistant packaging on all nonprescription medications</td>
</tr>
<tr>
<td>Omnibus Reconciliation Act of 1990 (OBRA)§</td>
<td>Mandates drug review, patient medication records, and verbal patient education as part of dispensing of prescription medications</td>
</tr>
</tbody>
</table>


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APPENDIX C

EMERGENCY MEDICAL AUTHORIZATION FORM
EMERGENCY MEDICAL AUTHORIZATION FORM

School ................... Student Name ...................

Address ...................

................................

Telephone .................

Purpose – To enable parents and guardians to authorize the provision of emergency treatment for children who become ill or injured while under school authority, when parents or guardians cannot be reached.

Residential Parent or Guardian

Mother’s Name ............. Daytime Phone ............

Father’s Name ............ Daytime Phone ............

Other’s Name ............. Daytime Phone ............

Name of Relative or Childcare Provider

...................... Relationship .............

Address ................. Phone ................

PART I OR II MUST BE COMPLETED

PART I – TO GRANT CONSENT

I hereby give consent for the following medical care providers and local hospital to be called:

Doctor ............ Phone ............

Dentist ............ Phone ............

Medical specialist ............ Phone ............

Local Hospital ............ Emergency Room

Phone ............

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