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Minnesota Council of Health Boards

Legislative Review of Health Occupation Program

Expanded Scope of Prescriptive Authority for Optometrists

Contents

MINNESOTA COUNCIL OF HEALTH BOARDS

REVIEW OF LEGISLATIVE REQUEST
HEALTH OCCUPATION REVIEW

ENHANCED SCOPE OF PRESCRIPTIVE AUTHORITY FOR OPTOMETRISTS

FINAL REPORT

Application Submitted By: Jim Meffert-Nelson, Executive Director, Minnesota Optometric Association

Review Panel for the Council of Health Boards:
Joseph Willett, D.O and Robert Leach J.D., Minnesota Board of Medical Practice;
Dirk Colby, O.D. and Laurie Mickelson, Minnesota Board of Optometry;
Randy Snyder, Minnesota Board of Nursing Home Administrators

In the 2002 legislative session, H.F. No. 2591 / S.F. No. 2461 was introduced which would enhance the scope of practice for board certified optometrists. Currently, the scope of prescribing practice for optometrists is limited to topical legend drugs only. The proposed enhanced scope of authority would allow optometrists to prescribe any legend drug, including Schedule II, III, and IV controlled substances related to the treatment of the human eye and adnexa. This legislative proposal was forwarded to the Council of Health Boards for its review pursuant to Minnesota Statutes Chapter 214.

The Council of Health Boards established a subcommittee to review the proposal and report back to the council with its findings.

Each member of the subcommittee was sent a copy of the materials submitted by the Minnesota Optometric Association. These materials consisted of a copy of the proposed legislation, the association's answers to the questions contained in the Minnesota Health Occupation Review Program Worksheet, a copy of answers given to the Senate and House Health committees and background documents providing further information.

The first task was for Subcommittee members to review the responses to the Minnesota Health Occupation Review Program Workbook and numerically rate the workbook responses on the ratings worksheet. A rating of positive 1 or 2 would indicate that the

information supports the proposal, a rating of negative 1 or 2 would mean that the information provided does not support the proposal.

Unfortunately, the Workbook and ranking system was designed to facilitate the evaluation of a new emerging health profession seeking first time regulation. Because our exercise involved an established regulated profession seeking expansion of it's scope of practice, the use of the workbook rating system proved to be of limited value to the subcommittee. This was reflected in the wide range of scores presented for each of the questions.

The subcommittee met on October 30, 2002, December 19, 2002 and January 3, 2003. The subcommittee determined that more information should be obtained relating to two of the categories of the Workbook which were determined to be the most relevant to the decision making process in a scope of practice exercise; Education and Training and Safety and Efficacy. Specifically, the subcommittee wanted more information in the following areas to be addressed to the legislature:

- Content of Pharmacology curriculum in schools of Optometry
- Quality and Quantity of continuing education courses available in pharmacology
- Information on incidents of malpractice claims resulting from enhanced prescriptive authority
- Information on disciplinary actions from contiguous state Boards of Optometry where greater prescriptive authority exists.

The 2001 legislation enhancing the scope of prescriptive authority for Optometrists has been opposed by both the Minnesota Medical Association and the American Osteopathic Association. The Minnesota Medical Association and American Osteopathic Association believe that this unlimited expansion of prescriptive authority to Optometrists would seriously compromise patient safety because, in their view, Optometrists do not have sufficient education, training and experience to prescribe systemic drugs and controlled substances. (see attachment 1)

The Minnesota Optometric Association believe their education, and training is comparable to that of Podiatric Medicine, and Dentistry with similar enhanced prescription authority. They also state that consumer savings would occur by avoiding duplicative office visits currently required. (see attachment 2)

Subcommittee Summary:

A review of the materials submitted by the Minnesota Optometric Association reveals that Optometrists believe enhanced prescriptive authority is warranted because:

1. It would increase treatment options available to patients.

2. Single source providers help to lower health care costs;

3. Schools of Optometry provide comprehensive pharmacological education;

4. 38 states already allow Optometrists enhanced prescribing authority;

5. Optometrists often encounter eye conditions requiring treatment with pharmaceuticals other than topical medications.

Only licensed optometrists who are board certified to prescribe and administer topical medications will be eligible for this enhanced prescriptive authority.

As previously stated, the main objections to enhancing Optometrists prescribing authority have come from Minnesota Medical Association and American Osteopathic Association and are based on patient safety concerns relating to the amount and type of pharmacological education which is provided in schools of Optometry. The subcommittee has received the curriculum from five colleges of Optometry, which, we assume is typical to the curriculum in other schools of Optometry. (See attachment 3) The subcommittee feels that it is not within our role to assess if the curriculum is comparable to the track of pharmacological education for other like situated professions, specifically, Podiatry and Dentistry.

In addition, the subcommittee obtained information on continuing educational opportunities in pharmacology that are available to Optometrists, as well as examination content from the National Board of Examiners in Optometry. Once again, the subcommittee does not feel it is in our role to evaluate education opportunity or examination content. (See attachment 4)

Finally, assuming medical malpractice settlements and judgments may be indicative of patient safety issues, the subcommittee obtained a copy of a letter written by William K. Lee, CPCU, Vice President, Maginnis and Associates, a professional liability insurance underwriter for Optometrists. According to Mr. Lee, "...(they) have seen no direct correlation between topical or oral pharmaceutical drug usage and the frequency or severity of Professional Liability claims against Optometrists, nor any premium differential between topical/non-topical, oral or non-oral pharmaceutical drug states," (See attachment 5).

Currently, 33 states have passed laws allowing Optometrists full prescriptive authority including North Dakota, South Dakota, Iowa and Wisconsin, states which are contiguous to Minnesota. In addition, nine states have passed laws allowing some level of oral prescribing authority. The Minnesota Optometry Association reports that no existing state which has granted the authority to prescribe controlled substance has ever revoked or limited that authority. In some instances, they have further enhanced the scope of prescriptive authority. (See attachment 6).

KEY: ~~stricken~~ = old language to be removed
underscored = new language to be added

NOTE: If you cannot see any difference in the key above, you **need to** change the display of stricken and/or underscored language.

Authors and Status ■ List versions

H.F No. 2591, as introduced: 82nd Legislative Session (2001-2002) Posted on Dec 10, 2001

A bill for an act

relating to occupations and professions; removing the restriction of prescribing only topical legend drugs by board certified optometrists; requiring that legend drugs be used as included in optometry curricula; authorizing the prescription of controlled substances; amending reporting requirement of health professionals to include all legend drugs; requiring optometrists using legend drugs be held to the same standards as physicians; amending Minnesota Statutes 2000, sections 147.111, subdivision 4; 148.574; 148.575, subdivisions 1, 2; 148.576; 148.577; 151.37, subdivision 11; 152.11, subdivision 2; 152.12, subdivisions 1, 4.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. Minnesota Statutes 2000, section 147.111, subdivision 4, is amended to read:

Subd. 4. [LICENSED PROFESSIONALS.] A licensed health professional and persons holding a residency permit under section 147.0391, shall report to the board personal knowledge of any conduct which the person reasonably believes constitutes grounds for disciplinary action under sections 147.01 to 147.22 by any physician or person holding a residency permit under section 147.0391, including any conduct indicating that the person may be medically incompetent, or may have engaged in unprofessional conduct or may be medically or physically unable to engage safely in the practice of medicine. A licensed physician or other health professional licensed under this chapter shall also report to the board any occurrence of any adverse reaction resulting from an optometrist's prescription, use, or administration of any ~~topical~~ legend drug. Any reports received by the board must be reported to the board of optometry. No report shall be required if the information was obtained in the course of a physician-patient relationship if the patient is a physician or person holding a residency permit under section 147.0391, and the treating physician successfully counsels the person to limit or withdraw from practice to the extent required by the impairment.

Sec. 2. Minnesota Statutes 2000, section 148.574, is amended to read:

148.574 [PROHIBITIONS RELATING TO LEGEND DRUGS; AUTHORIZING SALES BY PHARMACISTS UNDER CERTAIN CONDITIONS.]

An optometrist shall not purchase, possess, administer,

prescribe or give any legend drug as defined in section 151.01 or 152.02 to any person except as is expressly authorized by sections 148.571 to 148.577. ~~The authorizations in sections 148.571 to 148.577 apply only to topical legend drugs.~~ Nothing in chapter 151 shall prevent a pharmacist from selling topical ocular drugs to an optometrist authorized to use such drugs according to sections 148.571 to 148.577. Notwithstanding section 151.37, an optometrist is prohibited from dispensing legend drugs at retail.

Sec. 3. Minnesota Statutes 2000, section 148.575, subdivision 1, is amended to read:

Subdivision 1. [CERTIFICATE REQUIRED FOR USE OF ~~TOPICAL~~ LEGEND DRUGS.] A licensed optometrist must be board certified to use ~~topical~~ legend drugs for therapy under section 148.576.

Sec. 4. Minnesota Statutes 2000, section 148.575, subdivision 2, is amended to read:

Subd. 2. [BOARD CERTIFIED DEFINED.] "Board certified" means that a licensed optometrist has been issued a certificate by the board of optometry certifying that the optometrist has complied with the following requirements for the use of ~~topical~~ legend drugs described in section 148.576:

(1) successful completion of at least 60 hours of study in general and ocular pharmacology emphasizing drugs used for examination or treatment purposes, their systemic effects and management or referral of adverse reactions;

(2) successful completion of at least 100 hours of study in the examination, diagnosis, and treatment of conditions of the human eye with ~~topical~~ legend drugs;

(3) successful completion of two years of supervised clinical experience in differential diagnosis of eye disease or disorders as part of optometric training or one year of that experience and ten years of actual clinical experience as a licensed optometrist; and

(4) successful completion of a nationally standardized examination approved by the board on the subject of treatment and management of ocular disease prepared, administered, and graded by the International Association of Boards of Examiners in Optometry or an equivalent national board examination.

Sec. 5. Minnesota Statutes 2000, section 148.576, is amended to read:

148.576 [USE OF ~~TOPICAL~~ LEGEND DRUGS; LIMITATIONS; REPORTS.]

Subdivision 1. [AUTHORITY TO PRESCRIBE OR ADMINISTER.] A licensed optometrist who is board certified under section 148.575 may prescribe or administer ~~topical~~ legend drugs to aid in the diagnosis, cure, mitigation, prevention, treatment, or management of disease, deficiency, deformity, or abnormality of the human eye and adnexa included in the curricula of accredited schools or colleges of optometry.

Subd. 2. [ADVERSE REACTION REPORTS.] An optometrist certified to prescribe ~~topical~~ legend drugs shall file with the board of optometry within ten working days of its occurrence a report on any adverse reaction resulting from the optometrist's administration of a drug. The report must include the optometrist's name, address, and license number; the patient's name, address, and age; the patient's presenting problem; the diagnosis; the agent administered and the method of administration; the reaction; and the subsequent action taken.

Sec. 6. Minnesota Statutes 2000, section 148.577, is amended to read:

148.577 [STANDARD OF CARE.]

A licensed optometrist who is board certified under section 148.575 is held to the same standard of care in the use of those legend drugs as physicians licensed by the state of Minnesota.

Sec. 7. Minnesota Statutes 2000, section 151.37, subdivision 11, is amended to read:

Subd. 11. [COMPLAINT REPORTING.] The board of pharmacy shall report on a quarterly basis to the board of optometry any complaints received regarding the prescription or administration of ~~topical~~ legend drugs under section 148.576.

Sec. 8. Minnesota Statutes 2000, section 152.11, subdivision 2, is amended to read:

Subd. 2. [WRITTEN OR ORAL PRESCRIPTION REQUIREMENT FOR SCHEDULE III OR IV CONTROLLED SUBSTANCES.] No person may dispense a controlled substance included in schedule III or IV of section 152.02 without a written or oral prescription from a doctor of medicine, a doctor of osteopathy licensed to practice medicine, a doctor of dental surgery, a doctor of dental medicine, a doctor of podiatry, a doctor of optometry, or a doctor of veterinary medicine, lawfully licensed to prescribe in this state or a state bordering Minnesota, and having a current federal drug enforcement administration registration number. Such prescription may not be dispensed or refilled except with the written or verbal consent of the prescriber, and in no event more than six months after the date on which such prescription was issued and no such prescription may be refilled more than five times.

Sec. 9. Minnesota Statutes 2000, section 152.12, subdivision 1, is amended to read:

Subdivision 1. [PRESCRIBING, DISPENSING, ADMINISTERING CONTROLLED SUBSTANCES IN SCHEDULES II THROUGH V.] A licensed doctor of medicine, a doctor of osteopathy, duly licensed to practice medicine, a doctor of dental surgery, ~~or~~ a doctor of dental medicine, ~~or~~ a licensed doctor of podiatry, or a licensed doctor of optometry, and in the course of professional practice only, may prescribe, administer, and dispense a controlled substance included in Schedules II through V of section 152.02, may cause the same to be administered by a nurse, an intern or an assistant under the direction and supervision of the doctor, and may cause a person who is an appropriately certified and licensed health care professional to prescribe and administer the same within the expressed legal scope of the person's practice as defined in Minnesota Statutes.

Sec. 10. Minnesota Statutes 2000, section 152.12, subdivision 4, is amended to read:

Subd. 4. [SALE OF CONTROLLED SUBSTANCES NOT PROHIBITED FOR CERTAIN PERSONS AND ENTITIES.] Nothing in this chapter shall prohibit the sale to, or the possession of, a controlled substance in schedule II, III, IV or V by: Registered drug wholesalers, registered manufacturers, registered pharmacies, or any licensed hospital or other licensed institutions wherein sick and injured persons are cared for or treated, or bona fide hospitals wherein animals are treated; or by licensed pharmacists, licensed doctors of medicine, doctors of osteopathy duly licensed to practice medicine, licensed doctors of dental surgery, licensed doctors of dental medicine, licensed doctors of podiatry, licensed doctors of optometry, or licensed doctors of veterinary medicine when such practitioners use controlled substances within the course of their professional practice only.

Nothing in this chapter shall prohibit the possession of a

controlled substance in schedule II, III, IV, or V by an employee or agent of a registered drug wholesaler, registered manufacturer, or registered pharmacy, while acting in the course of employment, ~~or~~; by a patient of a licensed doctor of medicine, a doctor of osteopathy duly licensed to practice medicine, ~~or~~ a licensed doctor of dental surgery, a licensed doctor of dental medicine, or a licensed doctor of optometry; or by the owner of an animal for which a controlled substance has been prescribed by a licensed doctor of veterinary medicine, when such controlled substances are dispensed according to law.

Important message regarding HF 2591 (Senate file to be introduced on January 29).

In December, the Minnesota Medical Association sent out the following message to its membership regarding the pending optometric legislation (HF 2591). HF 2591 removes the current restriction that limits optometrists in Minnesota to treating conditions of the eyes and eye lids with topical pharmaceuticals only. Minnesota is one of only 11 states that has such a limitation. As in the past, the medical community lacks understanding of optometry, optometric education, and the reality of the current state of optometric practice.

Please note: The *italicized* portion contain the points from the medical association while the **bolded text** is the response.

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From: MMA [mailto:mma@mnmed.org]
Sent: Thursday, December 20, 2001 1:13 PM
Subject: Call To Action: Optometric Prescribing Bill

CALL TO ACTION
LEGISLATIVE ALERT

POINTS TO MAKE (MMA Points in italics):
HF 2591 would endanger public health:
Optometrists do not have sufficient training or experience to prescribe systemic drugs and controlled substances.

(Optometry's response)
Optometrists prescribe topical medications in all 50 states and the District of Columbia. Currently, optometrists in 39 states are allowed to utilize a wider range of pharmaceuticals than optometrists in Minnesota. 31 of those states allow optometrists to prescribe controlled substances. An objective review of these facts and the real curriculum of optometry schools demonstrate that the training and experience to prescribe all types of medications is there. Optometry students gain the same type of classroom training in pharmacology as dentists and podiatrists. The difference is that in optometry school, the training is focused on pharmacology of eye medications and the systemic effects and drug interactions of medication to treat the eye. In addition, the clinical training they receive gives them the experience that has lead to the successful integration of treating conditions of the eye that has been experienced in Minnesota and around the nation.

Limiting optometrists to the tasks for which they are trained and competent is in the best interest of patients.

Agreed! This is why the current statute and proposal limits optometrists to treating conditions of the eye and eye lid. Just as dentists are trained to treat the oral cavity and podiatrists are trained to treat conditions of the foot and lower leg, optometrists are trained to treat the eye and eye lid. In addition, all of these professions are trained to understand the unique effects that systemic conditions have on the specific

anatomy (i.e. the effects of diabetes on the retina) and the reverse. Optometrists are also trained to understand the systemic effects of the pharmaceuticals they prescribe in addition to their interaction with other medications.

** Oral medications impact the whole body and have greater risk for serious drug interactions. Medical schools uniquely provide the necessary knowledge base for this.*

As the medical community correctly stated back in the early 90's when optometrists were seeking the privilege to treat with topical medications, "Any drug, once placed in the eye, is destined to reach every part of the body." In addition, the medical community presented information and testimony that, "(l)imiting the use of drugs to topical pharmaceuticals (those applied directly to the eye) does not decrease the risk to the patient. Eye drops are absorbed into the body's bloodstream as fast as if they were injected. Reay H. Brown, MD of Emory University said, 'with increased systematic absorption, topical ophthalmic medications can carry increased risks.'" (Emphasis not added). Every state in the nation allows optometrists to treat eye conditions with these types of medications. Optometrists in Minnesota gained that privilege in the early 90's.

It is clear from the good track record in Minnesota and around the nation that optometrists are well trained to utilize all types of pharmaceuticals in the treatment of eye conditions.

Neither dentists nor podiatrists attend medical school. Both professions are trained to provide a full scope of services from routine treatment to the use of anesthetics in surgery. To say the medical school training provides a unique education in understanding systemic drug interactions is simply false.

** This bill would give optometrists one of the broadest scopes of practice in the US.*

In 1993, the Minnesota Legislature gave optometrists in this state one of the broadest scopes to utilize topical medications. At that time it was argued that allowing optometrists to treat glaucoma would "endanger the health and lives of Minnesotans by allowing people without medical training or experience to prescribe drugs." (Ed Holland, MD from Minnesotans for Safe Eye Care press release, January 30, 1991). The Minnesota Legislature decided that optometrists were trained to understand and utilize topical medications and that it was not necessary for them to put a formulary of types of medications into statute. The question that needs to be asked is if optometrists have proven that they know how to diagnose and treat, and understand their own limits.

Optometrists in Minnesota have proven that they have broad knowledge in diagnosing and treating conditions of the eyes and the interaction of medications. In addition, just as family physicians, internists, general practice dentists, and other primary care specialists know their limits, so do optometrists. They have proven that in Minnesota and throughout the country.

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In 2001, similar wide open legislation was rejected in Washington, Hawaii, Iowa, Vermont, Louisiana, Mississippi, Georgia and South Carolina.

In addition, similar legislation to what we are proposing passed in Oregon. Every legislator knows that it is much more difficult to pass legislation than to defeat it. Especially when your opponents include interest groups as strong and politically connected as the state medical association. If it were strictly left up to political strength, optometry, podiatry, advance practice nursing, and possibly dentistry would not exist at the level they are at today. Fortunately for the public, legislatures around the nation have seen past this and made choices that are in the best interest of good and safe patient care.

The reality is that every state in this nation allows optometrists to treat with topical medications (you remember - those medications with increased risks) and 39 states allow optometrists to utilize medications beyond those allowed in Minnesota (31 of those states allow the use of controlled substances). It is unfortunate that the "politics" of these "turf battles" get in the way of an objective look at the facts.

The Bottom Line:

Optometrists in Minnesota and around the country have answered the questions and criticisms that were presented in the past and are offered here. The arguments presented by the medical community are no different than those presented in the early 1980's. At that time the question was whether optometrists should utilize drops to dilate the eyes and diagnose conditions of the eyes. In the early 1990's the question was whether or not to allow optometrists to treat with topical medications. Optometrists prove every day, in communities throughout the state, that they have the training and experience to provide a full range of primary eye care services including the treatment of conditions of the eye with all types of medications.

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AMERICAN OSTEOPATHIC ASSOCIATION
142 EAST ONTARIO STREET, CHICAGO, ILLINOIS 60611-2864 • 800-621-1773 • 312-202-8000 • FAX 312-202-8200

March 18, 2002

The Honorable Tim Wilkin
Representative, Minnesota
Chairman, Subcommittee on Healthcare Licensing and Mandates
413 State Office Building
Saint Paul, MN 55155

Re: HB 2591 *(A Bill for an Act Relating to Occupations and Professions*-Optometry)

Dear Representative Wilkin:

The American Osteopathic Association (AOA) is the national organization representing the over 47,000 D.O.s in this country. As I am sure you are aware, there are two types of "complete" physicians eligible for medical licensure in the United States -- the osteopathic physician, to whom a D.O. (Doctor of Osteopathic Medicine) degree is conferred, and the allopathic physician, to whom an M.D. (Doctor of Medicine) degree is conferred. D.O.s and M.D.s are considered parallel by all 50 states and the federal government and are the only two degrees that fulfill the education requirement for the unlimited practice of medicine.

I am writing in regard to HB 2591, which was introduced on January 29, 2002 and has been assigned to your subcommittee. The AOA appreciates the opportunity to comment on this bill. The AOA believes that optometrists provide a valuable service to our citizens. However, we must strongly oppose this bill as currently written, as it would expand an optometrist's scope of practice without adding sufficient safety measures. In particular, HB 2591 would remove the restriction of prescribing/administering only topical legend drugs by optometrists and allow optometrists to prescribe schedule II through V controlled substances. It is the AOA's position that non-physician clinicians, including optometrists, should be allowed to expand their roles only after it is proven they have the ability to provide health care within these roles safely and effectively. As introduced, H.B. 2591 broadly expands an optometrist's prescriptive authority without incorporating adequate regulation and oversight requirements. The AOA believes that this bill, if enacted, would seriously compromise patient safety.

Thank you for taking the time to hear the AOA's position on this bill. If you would like to discuss this issue further, please contact Linda Mascheri, Director of the AOA's Division of State Government Affairs at (800) 621-1773 x 8184.

Sincerely,

James E. Zini D.O.

James E. Zini, D.O.
President
American Osteopathic Association

c: Anthony A. Minissale, D.O., AOA President-Elect
John B. Crosby, J.D., AOA Executive Director
Peter B. Ajluni, D.O., Chair, Department of Governmental Affairs
Karen J. Nichols, D.O., Chair, Bureau of State Government Affairs
Michael Mallie, Director, Department of State, Specialty, and Socioeconomic Affairs
Linda L. Mascheri, Director, Division of State Government Affairs

Top Health Care Issues—AOA
Non-Physician Clinicians

Subject/Topic

The expansion of the scopes of practice of non-physician clinicians (NPCs) in today's health care workforce.

Synopsis of Subject/Topic

Non-physician clinicians have been granted or are currently seeking roles that were once within the sole domain of physician practice. However, these roles are often granted without establishing appropriate standards and processes for education, training, examination, and licensure. This lack of standards could jeopardize the medical profession's primary goal of patient safety.

History ***(Legislative, Regulatory, Statutory, Court, Current Events, etc.)***

Non-physician clinicians are often divided into three different categories: mid-level professionals, such as nurse practitioners (NPs) and physician assistants (PAs), non-physician traditional professions, such as optometrist, podiatrist, pharmacists, physical therapists, and psychologists, and alternative medical providers, such as chiropractors, naturopaths, homeopaths, and acupuncturists.

For a variety of reasons, the number of NPC providers and their scope of practice has grown in the past decade. Broadly speaking a NPC's scope of practice encompasses the following issues, physician supervision, prescriptive authority, and direct reimbursement. For each profession, the scope of practice is dependent upon state law and therefore varies from state to state.

Within the last decade, mid-level practitioners have significantly increased their scope of practice by decreasing the level of physician supervision and obtaining prescriptive authority. Most significantly NPs are allowed to practice independently in 22 states. Physician assistants must still work under physician supervision in all 50 states, however, the definition of "supervision" varies widely among the states. For example, many states do not require the physician's presence in the state were the PA is practicing. In addition, both NPs and PAs have broad prescriptive privileges. Nurse practitioners have some form of prescriptive privileges in every state, while PAs have privileges in 46 states.

Since many of the non-physician traditional professions already practice independently from physicians, their focus has been on expanding the type of treatments they can provide. For example, optometrists have expanded their scope of practice in Oklahoma where they are now permitted to perform laser surgery. Likewise, podiatrist, who traditionally were only permitted to treat the foot, are permitted in some states to treat patient's hands. Furthermore, physical therapist are currently allowed to treat patients without a physician referral in 33 states and evaluate patients without a physician referral in 47 states. Non-physician traditional professions have also focused on expanding their prescriptive privileges. For example, optometrists possess

some form of prescriptive privileges specific to eye ailments in all 50 state, likewise, podiatrists possess prescriptive privileges in all 50 states. Currently psychologists do not possess prescriptive privileges in any state, however, legislation has been introduced in several states that would have given psychologists some prescriptive authority. Finally, pharmacists have secured collaborative practice agreements with physicians in 27 states which would allow them to initiate and modify prescriptions.

Alternative medical providers have expanded their scope of practice in varying degrees. For example, naturopaths and acupuncturists are licensed in only 11 and 3 states respectively. By contrast, acupuncturists are licensed in 35 states and chiropractors are licensed in all 50 states. In addition, chiropractors continue to move for expanded scope of practice. Most recently, chiropractors have lobbied the Department of Veterans Affairs to include chiropractors in the definition of "primary care provider" and permit direct access to chiropractic services without a referral from a physician. While acupuncturists and chiropractors continue to look for ways to expand their scope of practice, acupuncturists are the only alternative medical providers who have any prescriptive privileges. This privilege, however, remains minimal as only 19 states allow acupuncturist to prescribe herbal remedies.

Non-physician clinicians are also advocating for direct reimbursement by third party payors for their services. Chiropractors, nurse practitioners, physician assistants, optometrists, podiatrists, physical therapists, and psychologists are all reimbursed for their services by Medicare, Medicaid, and private insurance companies. Pharmacists are not reimbursed directly for their services but rather, pharmacies are reimbursed for the services of their pharmacists. Pharmacists, however, are strongly advocating for direct reimbursement. In addition, a growing number of private insurance companies provide direct reimbursement for naturopaths and acupuncturists.

Regardless of the current status of their scopes of practice, all NPC professions are lobbying in state legislatures for increased practice rights and are succeeding at an alarming rate. The problem is not that NPCs have secured increased practice rights, but that they have done so without establishing appropriate standards in education, training, examination, and licensure. Also, often times NPCs practice without any form of physician involvement and ignore the physician's role as the leader of the health care delivery "team." Without these appropriate standards and referral processes, patient care and safety may be jeopardized.

(Current/Previous) AOA Positions

The AOA believes that as NPCs seek expanded roles in the delivery of healthcare, these professions' educational curricula, training, examination, and licensure should likewise expand to match the level of care they wish to provide patients within the "team" framework. Furthermore, the AOA supports this "team" approach to medical care and believes that the physician should be the leader of the team.

Please refer to the AOA resolution and policy statement on the expanded scope of practice of non-physician clinicians.

NON-PHYSICIAN CLINICIANS

WHEREAS, non-physician clinicians are healthcare providers who can be categorized into one of the three following groups: midlevel medical professionals who are meant to work under the supervision of or in collaboration with physicians, non-physician independent traditional professionals who practice independently within specialty areas, and alternative medicine providers who follow and independently practice alternative therapies; and

WHEREAS, non-physician clinicians have gained increased licensure and practice privileges in areas that were once only held by physicians including, but not limited to, prescribing drugs and medical or surgical treatments, practicing autonomously, performing surgery, and being reimbursed by all types of third-party payors; and

WHEREAS, many non-physician clinicians are actively seeking even more expansive privileges than they already possess; and

WHEREAS, patient safety is the foremost concern when addressing issues of expanding scopes of practice for any healthcare profession; and

WHEREAS, patient safety and state laws mandate that physicians meet a minimum threshold of education, post-graduate training, examination, and regulation for an unlimited license to practice medicine; and

WHEREAS, many of these non-physician clinician professions are undertaking tasks that overlap with physician practice without being required to meet the equivalent threshold of education, post-graduate training, examination, and regulation established for physicians by state licensing boards; now, therefore, be it

RESOLVED, that the American Osteopathic Association adopt the attached policy paper as its position on non-physician clinicians including appropriate onsite supervision. 2000:

Policy Statement

NON-PHYSICIAN CLINICIANS

(July 2000)

The American Osteopathic Association recognizes nurse practitioners, physician assistants, certified nurse midwives, certified registered nurse anesthetists, chiropractors, naturopaths, acupuncturists, homeopaths, optometrists, podiatrists, psychologists, pharmacists, physical therapists, occupational therapists and numerous other non-physician clinicians have unique and valid roles in providing healthcare. In recent years, the growth of these non-physician clinicians has been significant. This growth is due in part to public demand, an expanded healthcare market, changes in state laws regarding these professions, and an increase in the number of non-physician clinicians being trained.

The AOA acknowledges many of these professions are growing or have grown in a manner not unlike the osteopathic profession, which has seen dramatic and far-reaching changes through time to arrive as the prominent medical profession it is today, equivalent only to the allopathic physician. The osteopathic profession has overcome enormous hurdles in reaching full recognition for osteopathic physicians.

As non-physician clinicians seek new roles in the delivery of healthcare, the AOA feels it is important to look at the growth of healthcare professions in a historical context. The practice of medicine or "healing" expanded in the 18 th and early 19 th centuries into many different areas, to a point where there were almost two dozen competing medical systems in use in the 1840s. As allopathic medicine grew in popularity, validity, strength, and number, it slowly became the prevailing medical practice in the United States. Licensure laws in the 1890s began to set standards into place for medical practice, providing patients with protection from those who offered

less-than-adequate care. In 1910 Abraham Flexner, a medical education reformer, wrote *Medical Education in the United States and Canada*, a study which exposed the inadequacies of a large number of medical schools in the U.S. The report stimulated the closing of a large number of medical schools, both osteopathic and allopathic schools.

Those schools and professions wishing to remain viable had to be able to establish and implement standards to ensure extensive education, training, examination, and licensure for the level of care being provided. Through time, only osteopathic and allopathic medicines' curricula, training, examinations and licensure have been established as the two models for the unlimited practice of medicine.

Throughout medicine's history, the osteopathic profession and the AOA have worked tirelessly to ensure the medical care being provided to patients is safe, effective, and of the highest quality. To facilitate this need and its responsibility as a profession, the AOA has historically instituted the highest standards across its medical landscape. For example, in 1902, the AOA first adopted standards for the approval of osteopathic colleges and began conducting on-site evaluations in 1903. In 1936, the AOA held its first inspection and approval of osteopathic hospitals for the training of interns. In 1952 and continuing through today, the AOA has been recognized as the accrediting body for osteopathic education by the U.S. Office of Education, Department of Health, Education and Welfare. In 1967, the AOA was recognized by the National Commission on Accrediting as the accrediting agency for colleges of osteopathic medicine, which continues under its successor, the Council for Higher Education Accreditation (CHEA). Maintaining this recognition requires 63 that osteopathic criteria and standards are continually being reviewed and updated to meet strict guidelines.

The osteopathic profession, through the AOA, has repeatedly shown its standards for education, training, and examination to be appropriate for the unlimited practice of medicine. State medical boards have reinforced this finding by recognizing osteopathic education, post-graduate training, examination, and – in those states with such a requirement– board certification for licensure of the unlimited practice of medicine.

Today, non-physician clinicians are seeking expanded scopes of practice and other increased rights – into areas traditionally reserved for physicians. Many non-physician clinicians have succeeded in attaining new rights in a number of these areas. Specifically, non-physician clinicians have succeeded in increasing their autonomy, scopes of practice, prescriptive rights, and direct reimbursement from third party payors. However, there are disturbing inconsistencies in the manner in which these rights have been expanded.

Patient Care and Safety

The practice of medicine and the quality of medical care are the responsibility of properly licensed physicians. As the DO/MD medical model has proven its ability to provide professionals with complete medical education and training, their leadership in such an approach is logical and most appropriate. Further, the states' medical boards confirm the appropriateness of the medical model by utilizing it for medical licensure requirements.

Non-physicians are currently seeking roles that increasingly overlap with the

activities of a physician. Too often at the state level, expanded rights of non-physician clinicians become "turf battles" with other professions – including physicians – where political maneuvering and other personal biases lead to decisions on non-physician clinician practice rights that directly affect patients' lives. Such a formula for making these decisions is not based on empirical evidence proving patient safety, but rather the professional aspirations of non-physician clinicians and their ability to persuade state and federal legislatures and regulatory authorities. Public policy dictates patient safety and proper patient care should be foremost in mind when the issues encompassing expanded practice rights for non-physician clinicians – autonomy, scopes of practice, prescriptive rights, liability and reimbursement, among others – are addressed.

In the healthcare marketplace, a physician's board certification may be considered one of the highest standards an individual physician can achieve in a particular specialty or subspecialty. Today, many hospitals and managed care organizations are requiring board certification for employment of physicians. In addition, state medical boards are likewise beginning to look at increasing the number of postgraduate training years required for physician licensure. While these higher standards are being placed on physicians, the same scrutiny is not faced by non-physician clinicians, in spite of the fact that at the same time they are asking for and receiving increased scopes of practice.

However, many non-physician clinician professions themselves are beginning to recognize the need for proper instruction and training levels in the education of their professionals. For example, many of these professions are moving towards master's level requirements for accreditation purposes, and some are requiring continuing education for licensure purposes. As professions seek expanded 64
roles in the delivery of healthcare, these professions' educational curricula, training, examination, and licensure should likewise expand to match the level of care they wish to provide patients within the "team" framework.

The AOA supports the "team" approach to medical care, with the physician as the leader of that team. The AOA further supports the position that patients should be made clearly aware at all times whether they are being treated by a non-physician clinician or a physician. The AOA recognizes the growth of non-physician clinicians and supports their rights to practice within the scope of the relevant state statutes. However, it is the AOA's position that new roles for non-physician clinicians may be granted after appropriate processes and programs are established in all of the following four areas: education, training, examination, and regulation. It is further the AOA's stance that non-physician clinicians may be allowed to expand their rights only after it is proven they have the ability to provide healthcare within these new roles safely and effectively.

Independent Practice

Certain non-physician clinician professional groups, including some groups who traditionally have worked under the supervision of physicians, such as nurses, are currently seeking roles in the delivery of healthcare without any physician involvement. These individuals and groups seek to completely separate their role

from that of a physician, with little to no supervision, referral, collaboration or contact whatsoever. Many of these roles sought increasingly overlap with the traditional activity of physicians. This lack of physician involvement, again, does not appropriately attend to patient safety or proper patient care.

As patient safety and proper patient care must be the foremost concern of any healthcare professional, all non-physician clinicians should recognize and refer those patient cases that require knowledge beyond their training. Just as a family practice physician will refer a patient to a specialist when his or her illness or injury is beyond the physician's scope of expertise, so too must any non-physician clinician call upon a physician when a patient's condition warrants such action. To ignore the physician's role as the leader of the "team" approach in the delivery of healthcare is to compromise the patient's safety.

As the physician is the leader of the "team" approach to medical care, the roles for all members of the team need to be clearly defined and understood, through established protocols or written agreements. The AOA feels non-physician clinician professions that have traditionally been under the supervision of physicians must retain physician involvement in patient care. Those non-physician clinician professions that have traditionally remained independent of physicians must involve physicians in patient care when warranted. All non-physician clinicians must refer a patient to a physician when the patient's condition is beyond the non-physician clinician's scope of expertise.

Liability

Patient safety mandates that those physicians who act as supervisors must exercise due care within this "team" approach to healthcare delivery. It is crucial to understand the delegation of duties by a physician to a non-physician clinician does not equate with the delegation of liability. Physicians, as leaders of the "team," 65 should be held liable for the acts of those they supervise or work in collaboration with, if they fail to provide adequate and reasonable supervision.

Conversely, in the "team" model to healthcare, holding a supervising physician liable does not exonerate the non-physician clinician from liability. Non-physician clinicians are accountable for the adverse treatment decisions they make. In legal terms, both the non-physician clinician (for the adverse medical treatment) and the physician (for failure to provide adequate supervision) would be named defendants to a malpractice suit. Because these non-physician clinicians can not shield themselves from liability, those working under the supervision of or in collaboration with physicians should obtain their own individual malpractice insurance.

The AOA endorses the view that physician liability for non-physician clinician actions should be reflective of the quality of supervision being provided and should not exonerate the non-physician clinician from liability.

For those non-physician clinicians who desire to practice autonomously without any form of physician supervision or collaboration, there should be a

corresponding exclusive, personal liability. This is because the physician would no longer operate in a supervisory capacity and therefore should not be held accountable for the acts of the independent provider. Liability for treatment decisions should be placed on the individual or institution responsible for providing the treatment, and not default onto the physician.

It is the AOA's position that non-physician clinicians acting autonomously of physicians should be held to the equivalent degree of liability as that of a physician. Within this independent practice framework, the AOA further believes that non-physician clinicians should be required to obtain malpractice insurance in those states that currently require physicians to possess malpractice insurance.

Educational Standards

As the osteopathic profession has continually proven its ability to meet and exceed standards necessary for the unlimited practice of medicine, non-physician clinician professions should also meet educational, training, examination, and regulation standards for the roles they seek. Current standards may not exist and may need to be formulated.

Non-physician clinician professional standards should be implemented, reviewed, and validated for the roles they currently fill as well as for the roles being sought. Once education, training, examination, and regulation are all proven effective, either through documented studies or other empirical means, expanded roles may be granted within the "team" framework.

The review and validation of non-physician clinician standards may need to come from an objective, independent body. Possible sources of this review may be the U.S. Department of Education, an accrediting agency that it recognizes, or CHEA. Alternatively, a national advisory board on health profession issues could be utilized, as is suggested in the Pew Commission Taskforce on Health Care Workforce Regulation's 1998 report, *Strengthening Consumer Protection: Priorities for Health Care Workforce Regulation*. The taskforce recommends the creation of a national advisory body to study existing scopes of practice, competency requirements, and other professional matters for all health professions and establish clear guidelines in each of these areas. However, this board would strictly serve an advisory function and its guidelines would not be binding. That is, the individual state licensing boards would still possess the exclusive authority to license and discipline its medical personnel. The individual states could choose to incorporate the guidelines into state law, but this decision would be within the sole discretion of the states.

The AOA holds the position that education, training, examination and regulation must all be documented and reflective of the expanded scopes of practice being sought by non-physician clinicians. The AOA recognizes there may be a need for an objective, independent body to review and validate non-physician clinician standards.

Conclusion

As DOs/MDs have proven and continue to prove the efficacy of their education, training, examinations, and regulation for the unlimited practice of medicine, it is the AOA's firm conviction that only holders of DO and MD degrees be licensed for medicine's unlimited practice. The AOA feels the education, training, examination and regulation necessary and proven effective for the unlimited practice of medicine validate the physician's role the leader of the "team" approach for the delivery of medical care. As non-physician clinicians seek wider roles, standards of education, training, examination, and regulation must all be adopted to protect the patient and ensure that proper patient care is being given. The AOA recognizes these standards may need to come from an objective, independent organization. Liability considerations for non-physician clinicians should appropriately be shared between those parties making treatment decisions, and those non-physician clinicians who act autonomously of physicians should be held completely liable for the outcomes of those decisions. Further, it is the AOA's position that roles within the "team" framework must be clearly defined, through established protocols and signed agreements, so physician involvement in patient care is sought when a patient's case dictates. Only proper attention to each of these considerations will ensure that the care being provided by non-physician clinicians is safe, effective, and of the highest quality.

Non-Physician Clinician

Monograph Series

May 2000

Prepared by
Division of State Government Affairs
American Osteopathic Association

EXECUTIVE SUMMARY

INTRODUCTION

There are many people nationwide who lack the healthcare they need and desire. Accordingly, there is growing support for the notion that public health is best served by the broadest access to healthcare possible. There are persistent efforts to promote the use of providers other than physicians to supply the population with this access. These providers are also known as non-physician clinicians (NPCs). They include, but are not limited to, nurse practitioners (NPs), physician assistants (PAs), anesthesiologist assistants (AAs), certified registered nurse anesthetists (CRNAs), optometrists, pharmacists, podiatrists, psychologists, chiropractors, homeopaths, and naturopaths.

These NPCs occupy different niches within the healthcare framework. Midlevel medical professionals such as NPs, PAs, AAs, and CRNAs are meant to work under the supervision of or in collaboration with physicians. Others such as optometrists, pharmacists, podiatrists, physical therapists, and psychologists are non-physician traditional professionals who practice independently within specialty areas. The alternative medicine providers like the acupuncturists, homeopaths, chiropractors, and naturopaths are practitioners who follow and independently practice alternative therapies.

Besides the need for increased availability of healthcare, there is growing support for some of these professions because of the increased popularity of alternative medicine in the United States. This strengthened support, coupled with the need for access to healthcare, has led to growth in both the number of NPCs and in their practice parameters. NPCs have already made significant strides in the recent past in expanding areas such as scopes of practice and reimbursement, and will continue to petition the states for more privileges in the future.

SCOPE OF PRACTICE

For each profession, the scope of practice is dependent upon state law and therefore varies from state to state. Generally speaking, NPCs have substantially increased their scopes of practice in the last decade. Today, NPCs are doing everything from prescribing medications to performing surgery.

The mid-level medical professionals have significantly expanded their scopes of practice in the last decade. NPs are currently allowed to practice independently in 22 states. Of the 22, some states require physician supervision, while others require collaboration, and still other states require no form of physician oversight whatsoever. Besides this autonomy of practice, NPs are allowed to prescribe drugs to some extent in every state, whether they are acting in collaboration with a physician or independently prescribing.

PAs have also seen an expansion in their scope of practice. PAs practice under the supervision of a physician who is either directly present or immediately available.

Under this PA-supervising physician team, PAs are granted much autonomy and are allowed to prescribe drugs in 46 states.

AAs work under the direct supervision of an anesthesiologist to develop and implement anesthesia care plans. However, to date only five states have statutes or regulations that specifically address AAs. In one of these states (Georgia) AAs are licensed under the PA practice act and are considered a category of PAs. Some other states which do not explicitly license AAs or specifically qualify them as PAs may include AA practice in the laws governing PAs. Alternatively, in other states, AAs are unregulated and practice under an anesthesiologist's delegated authority. AA scope of practice varies from state to state.

CRNAs have also seen their scope of practice expanded. Among other tasks, today CRNAs are generally allowed to administer most types of anesthesia, including general, regional, selected local and conscious sedation. The most important recent development related to CRNA practice has been the implementation of a new federal CRNA rule. Under the rule, which was finalized in November 2001, the current federal physician supervision requirement would be maintained, unless the governor of a state exercises the option of exemption from this requirement. The governor must certify that specific criteria have been met before the "opt-out" can be approved. It is too soon to say how many states will "opt-out" of the federal supervision requirement and allow their CRNAs to practice independently.

The non-physician traditional professions have also experienced a growth in their respective scopes of practice. Optometrists practice autonomously within their scope of practice and possess various prescriptive privileges specific to eye ailments in all 50 states. One state even permits optometrists to perform some forms of laser eye surgery.

Podiatrists are licensed in all 50 states to treat the foot and its related structures by medical or surgical means. Some states even allow them to treat the hand. Podiatrists usually work independent of physicians and they possess independent prescriptive privileges in all of the 50 states.

Pharmacists dispense medications prescribed by authorized providers. Collaborative practice agreements between pharmacists and physicians expand the pharmacist's authority to initiate and modify prescriptions. Currently 27 states allow for these collaborative practice agreements. However, states vary on the amount of prescriptive authority granted to pharmacists within these agreements.

Psychologists can practice independently or under the supervision of other professionals. Psychologists currently do not possess any prescriptive authority in any state. However, some states are moving close to securing prescriptive privileges for psychologists.

The alternative professions are experiencing the least growth among all of the NPCs in their scopes of practice. This is probably due to apprehensiveness towards their therapies as well as intrinsic problems with establishing licensing mechanisms. However, they are advocating strongly for more expansive practice rights. Chiropractors practice independently within their scopes of practice from physicians and are not allowed to prescribe in any of the 50 states. Naturopaths are currently licensed in only 11 states, have little to no relationship with physicians, and have few prescriptive privileges. Homeopaths are only licensed in 3 states. However, most homeopaths in the U.S. hold another medical degree, such as an M.D. or a D.O., that allows them to diagnose and prescribe medications.

REIMBURSEMENT

Many NPCs are considered low cost alternatives to physicians. Therefore, often insurance companies are beginning to view some NPCs as cost-effective providers of primary care and reimbursing them at rates equal to that of physicians. However, a number of NPCs are not reimbursed by insurance companies for their services, or they are reimbursed by only a few insurance companies. Therefore, reimbursement is one of the main goals on the professional agendas of many of the NPCs.

CONCLUSION

As mentioned above, the soaring cost of healthcare has led to the increased need for a low cost means to access the healthcare system. NPCs have benefited from this public demand and often times found themselves the focus of discussions on how to address this concern. Many NPCs are considered primary care providers and low cost alternatives to physicians.

As primary care providers, many of the NPCs perform functions and duties similar to that of physicians. For example, some diagnose conditions, some prescribe medications, some perform surgery, some practice independently, and most get reimbursed by insurance companies at rates similar to that of physicians. Not surprisingly, because of this great overlap of job functions, many NPCs are referring to themselves as "physicians." For example, in some states podiatrists are known as podiatric physicians, chiropractors are known as chiropractic physicians, homeopaths are known as a homeopathic physicians, and in one state an optometrist is known as an optometric physician. Therefore, as the various niches within the healthcare framework start to blend, the professional titles are being used interchangeably.

Regardless of the nomenclature used, NPCs are considered a major part of today's healthcare industry. As they continue to lobby state legislatures for increases in practice rights, prescriptive privileges, and reimbursement, a number of concerns arise. These concerns include, first and foremost, questions related to protecting patient safety, such as what is considered adequate education and training for practice. Further, as more NPCs look to act independent of physicians, questions of professional autonomy resonate throughout the healthcare arena. These and other concerns are important in any evaluation of the growth of these professions.

NOTE

In the "Legislative Agenda" sections of each non-physician clinician report that follows, you will find reference to the number of times the profession being profiled is identified in the *subject heading* of legislation and in *legislative drafts*.

Subject heading statistics reflect the number of bills whose titles refer to the profession by name. A search by subject heading is done to identify bills whose focus is most likely a single group and unlikely to include other non-germane provisions. Whereas, a search of legislative drafts is much broader and includes bills particular to the profession as well as legislation that simply covers existing language citing the profession.

A thorough legislative search of any non-physician clinician profession would not be complete if one used only subject headings of bills. All too often at the state level, bills do not have accurate or specific subject headings giving enough detail to make a determination as to whether the bill pertains to an expanded scope of practice.

ANESTHESIOLOGIST ASSISTANTS

INTRODUCTION

Anesthesiologist Assistants (AAs), to be distinguished from PAs, are allied health professionals who work under the direct supervision of a licensed anesthesiologist to develop and implement anesthesia care plans.[1] According to the American Academy of Anesthesiologist Assistants (AAAA), AAs perform a wide variety of functions under an anesthesiologist's direction. These functions include the following: eliciting a pre-anesthesia health history and performing a physical exam; establishing patient monitoring devices and intravenous access; assisting in the application and interpretation of advanced monitoring techniques; assisting in the induction, maintenance and emergence of a patient's anesthetic; securing the patient's airway through mask, endotracheal tube or laryngeal mask airway; interpreting and recording the patient's physiological and pharmacological status; and providing continuity of care into and during the post-operative period. Additional functions may be delegated depending on an individual's qualifications and skills. These functions include performing and maintaining regional anesthesia, clinical teaching, or responding to life-threatening situations with the cardiopulmonary resuscitation team.[2]

The AA profession has its roots in the 1960's when there were qualitative and quantitative changes in the scope of anesthesia practice. These changes include increased complexity of anesthesia care, advances in monitoring technology, demands for higher quality anesthesia care, and the evolution of the anesthesia care team. These factors coupled with personnel shortages due to the retirement of physicians and nurses who entered the field immediately after World War II led to the eventual birth of the AA profession.[3]

EDUCATION

There are currently two recognized AA programs in the United States which are accredited by the Commission for the Accreditation of Allied Health Education Programs (CAAHEP). These programs are Emory University's Master of Medical Science Degree in Anesthesiology and Patient Monitoring Systems and Case Western Reserve University's Master of Science in Anesthesiology. Prerequisites for these programs entail a baccalaureate degree and an educational background in the sciences that would qualify the students to pursue a career in the medical sciences. Both programs are approximately two years in duration and involve both didactic and clinical training. The classroom training is designed to enhance basic science knowledge with special emphasis on the cardiovascular, respiratory, renal, central nervous and neuromuscular systems. The clinical portion is designed to educate students extensively in patient monitoring and anesthesia delivery systems.[4]

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[1] American Academy of Anesthesiologist Assistants (AAAA)
[2] AAPA
[3] http://www. Emory.edu/WHSC/MED/ANESTHESIOLOGY/history.html
[4] http://www. Emory.edu/WHSC/MED/ANESTHESIOLOGY/history.html

After successfully completing the two year program, AAs may become nationally certified by *taking an examination* administered by the National Commission for the Certification of Anesthesiologist Assistants (NCCAA) and the National Board of Medical Examiners. Those AAs who have passed the examination are designated as Anesthesiologist Assistants-Certified (AA-C). To maintain certification AAs are required to engage in continuing medical education.[5] For example, in Alabama, certified AAs must complete 12 hours of Category 1 CME a year.[6]

LICENSURE

To date, there are few statutes or regulations that specifically address AAs. Currently, South Carolina, New Mexico, Alabama, Georgia, and Ohio explicitly regulate the licensure and practice of AAs.[7] To be licensed in South Carolina an AA must be a graduate of an accredited AA program and be currently certified by the NCCAA. New Mexico's education and certification requirements for licensure are similar to the requirements in South Carolina. However, New Mexico is unique in that it grants licenses to only those individuals who are employed by a university in New Mexico with a medical school.[8] Both Alabama and Ohio require an AA to be certified by the NCCAA and are regulated by their state medical board. Additionally, both require continuing education for re-certification purposes each year.[9]

Georgia's law, which was promulgated by the Composite State Board of Medical Examiners differs from Alabama and Ohio because in Georgia AAs are licensed under the PA practice act. Unlike Alabama and Ohio, AAs in Georgia are considered a category of PAs. Similar to Alabama and Ohio, however, to obtain licensure in Georgia the individual must have graduated from an AA school, passed the national licensure examination, and undergo re-certification similar to a PA.

Some states, which do not explicitly license AAs or specifically qualify them as PAs, may include AA practice in the laws governing PAs. In Texas, AAs work by physician authority with regulation by the state medical board. Alternatively, in other states such as Vermont, Wisconsin, Michigan, West Virginia, Colorado, and New Hampshire, AAs are unregulated and practice under an anesthesiologist's delegated authority.[10] In these states, physicians can delegate tasks to those they deem responsible under the auspices of the hospital where they are employed.[11]

DISTINCTION FROM PAS

The American Academy of Physician Assistants (AAPA) strongly emphasizes that there is a distinction between the AA and the PA professions. The AAPA states that despite

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[5] http: //www.anesthetist.org

[6] Alabama rule 540-X-7-.33 → .60

[7] http://www.anesthesiaprogram.com/AA%20Work%20States.tif

[8] Lexis-Nexis tracking service, 2001.

[9] *See* 2001 ORC Ann. 4760.06; Alabama Code 540-X-7-.57 Continuing Medical Education - Anesthesiologist Assistant (A.A.)

[10] http://www.anesthesiaprogram.com/AA%20Work%20States.tif

[11] http;//www.anesthetist.org

the parallels between the two professions, AAs are not PAs and each profession has its own separate educational curriculum, standards for CAAHEP accreditation, and national certification agency. While it would seem that the AAPA would not support Georgia's decision to license its AAs as PAs, it does not appear that they have taken any action. However, other states like Mississippi have expressly excluded AAs from being licensed as PAs.[12] The AAPA states that a PA who specializes in anesthesiology, but has not completed an AA program and passed the NCCAA exam, is not considered an AA. Regardless of state law nomenclature, therefore, it seems that the training program and examination distinguish an AA from a PA.[13]

RELATIONSHIP WITH PHYSICIANS

As mentioned above, AAs work under the direct supervision of an anesthesiologist. Of some importance is the number of AAs an anesthesiologist may supervise. Under Medicare rules, an anesthesiologist may supervise up to four assistants, however, state regulations may further limit this number.[14]

LIABILITY

While each states' policies regarding AA discipline vary to some degree, the majority of anesthesiologist assistants have no legal standing in the state. In general, states that license AAs have procedures in place to discipline a licensed AA.[15] Therefore, even when the Board has no formal mechanism to monitor AA practice, reports may still be investigated. However, the supervising physicians remain ultimately and completely liable for all acts of the AA.

[12] http://www.aapa.org/ms-statute.htm
[13] http;//www.aapa.org/ganp/aas2.html
[14] http://www.gasnet.org/maillist/1997/december/msg00463.html
[15] Alabama Code 540-X-7-.41 Discipline Of License - Anesthesiologist Assistant (A.A.)

CERTIFIED REGISTERED NURSE ANESTHETISTS

INTRODUCTION

Certified Registered Nurse Anesthetists (CRNAs) are registered nurses licensed to practice nursing who have specialized in anesthesia care by taking graduate level coursework. CRNAs are legally responsible for the anesthesia care they provide.[1]

Nurse anesthetists are generally allowed to administer most types of anesthesia, including general, regional, selected local and conscious sedation. According to the American Association of Nurse Anesthetists, which represents more than 28,000 CRNAs, they are also taught to manage fluid and blood replacement therapy, and to interpret data from monitoring devices. [2] Other clinical responsibilities may include the insertion of invasive catheters, the recognition and correction of complications that occur during the course of an anesthetic, the provision of airway and ventilatory support during resuscitation, and pain management. [3]

EDUCATION

All nurse anesthesia programs in the United States are accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA), which is recognized by the U.S. Secretary of Education and the Commission on Higher Education Accreditation as the sole accrediting authority for nurse anesthesia programs.[4]

Nurse anesthesia education has evolved since the first organized course in anesthesia for graduate nurses in 1909. There are now 80 programs in the United States affiliated with, or operated by, universities and offer a minimum of a master's degree upon completion. Approximately one-half of the programs are within schools of nursing, with the remainder housed within schools of health science and other appropriate graduate schools. [5] Most nurse anesthesia programs range from 45 to 75 graduate semester credits in courses pertinent to the practice of anesthesia. [6] The science curriculum of graduate nurse anesthesia programs includes a minimum of 30 semester credit hours of courses in anatomy, physiology, pathophysiology, pharmacology, chemistry, biochemistry, and physics. [7]

CRNAs must meet more stringent standards now than in the past if they are to become licensed, but the newer standards remain significantly lower than that of a physician anesthesiologist. The registered nurse's education as a nurse anesthetist requires a Bachelor of Science in Nursing (or other appropriate baccalaureate degree); one year experience in critical care nursing; and completion of two to three years of Master's level graduate work, including both classroom and

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[1] American Association of Nurse Anesthetists. *Qualifications and Capabilities of the Certified Registered Nurse Anesthetist.* (http://www.aana.com/crna/qualifications.asp

[2] *Id.*

[3] *Id.*

[4] American Association of Nurse Anesthetists. *Qualifications and Capabilities of the Certified Registered Nurse Anesthetist.* (http://www.aana.com/crna/qualifications.asp

[5] *Id.*

[6] *Id.*

[7] *Id.*

clinical studies, on the administration of anesthesia.[8] The physician anesthesiologist's course of study is much more vigorous and requires a baccalaureate degree, completion of medical school, and a four-year residency in anesthesiology. [9] Also, despite the more stringent standards for new CRNA licensees, even today only two-thirds of all CRNAs hold bachelor's degrees.[10]

LICENSURE

Upon completion of a COA-accredited program, a graduate is eligible to take the national certification examination that is developed and administered by the Council on Certification of Nurse Anesthetists (CCNA).[11] Each graduate of an accredited nurse anesthesia program must successfully pass this examination to earn the title of Certified Registered Nurse Anesthetist. CRNAs are recertified by the Council on Recertification of Nurse Anesthetists.[12] This group ensures that CRNAs maintain their skills and keep current. The recertification period for CRNAs is two years, and must be maintained for an individual to practice as a CRNA in the United States and to stay in compliance with state nursing regulations.

RELATIONSHIP WITH PHYSICIAN

Only New Hampshire clearly allows independent practice of CRNAs. All of the remaining states either require "medical direction" or "supervision" by a physician or "collaboration" with a physician, or the states give only physicians the authority to prescribe potent anesthetic drugs. [13] Many states have enacted hospital codes defining how anesthesia is to be delivered, including the requirement for physician supervision. [14] State statutes in Alaska, Colorado, Connecticut, the District of Columbia, Nebraska, Pennsylvania, Tennessee, Texas, Wisconsin [15] all give their CRNAs authority in the following areas provided that they are supervised by a physician:

- Requesting consultations and diagnostic studies; selecting, obtaining, ordering, and administering pre-anesthetic medications and fluids; and obtaining informed consent for anesthesia.
- Developing and implementing an anesthetic plan.
- Initiating the anesthetic technique which may include: general, regional, local, and sedation.
- Selecting, applying, and inserting appropriate non-invasive and invasive monitoring modalities for continuous evaluation of the patient's physical status.

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[8] Kansas Association of Nurse Anesthetists. *Anesthesia: The Practice of Nursing or the Practice of Medicine?* (http://www.kana.org/anesthesia.htm)

[9] American Society of Anesthesiologists. (http://www.asahq.org)

[10] Cys, Jane. *HCFA Lifts Supervision of Nurse Anesthetists*. American Medical News, February 5, 2001.

[11] American Association of Nurse Anesthetists. *Qualifications and Capabilities of the Certified Registered Nurse Anesthetist.* (http://www.aana.com/crna/qualifications.asp

[12] *Id.*

[13] American Society of Anesthesiologists. *New Rule Restores Physician Supervision While Addressing States' Rights.(* http://www.asahq.org/FAQS7601.htm)

[14] *Id.*

[15] American Nurses Association. *ANA Analysis and Comparison Chart of Advanced Practice Recognition*, May 2000.

- Selecting, obtaining, and administering the anesthetics, adjuvant and accessory drugs, and fluids necessary to manage the anesthetic.
- Managing a patient's airway and pulmonary status using current practice modalities.
- Facilitating emergence and recovery from anesthesia by selecting, obtaining, ordering and administering medications, fluids, and ventilatory support.
- Discharging the patient from a post-anesthesia care area and providing post-anesthesia follow-up evaluation and care.
- Implementing acute and chronic pain management modalities.
- Responding to emergency situations by providing air-way management, administration of emergency fluids and drugs, and using basic or advanced cardiac life support techniques.

LEGISLATIVE AGENDA

The most controversial piece of legislation surrounding CRNAs has been the introduction of a rule that would allow CRNAs to practice anesthesiology without the supervision of a physician. The decision on May 17, 2001 by the Health Care Financing Administration (HCFA), now called the Centers for Medicare and Medicaid Services (CMS), announced the delay in the final rule.

The rule, *Medicare and Medicaid Programs: Hospital Conditions of Participation-Anesthesia Services*, was originally published January 18, 2001 by the Clinton Administration. The rule was then further delayed until February 18th due to procedural problems. In early February, HHS Secretary Tommy Thompson reopened the rule for public comments. Upon reviewing those comments, which included the serious concerns of licensed physicians across the country, President Bush and Secretary Thompson decided to rewrite the rule, thereby suspending its implementation. The effective date of the new rule is November 14, 2001. This proposed rule contains two important changes from the original rule as presented in December. First, the rule will not eliminate the federal requirement for physician supervision across the board for all patients who receive anesthesia in Medicare participating hospitals, critical access hospitals, and ambulatory surgical centers. Governors must "opt-out" of the supervision requirement for their states. [16] Second, the new rule calls for a prospective study or monitoring program to assess outcomes-of-care issues relating to anesthesia nurses' practice and involvement.[17]

The delay and changes to the rule are a reasonable effort to address patient safety, but the rule still departs from the original supervision standard by allowing state governors to "opt-out" of the supervision requirement if certain conditions are met.[18] The governors would first need to 1) consult with the state's Board of Medicine and Board of Nursing on issues of anesthesia-care access and quality, 2) demonstrate that the change is consistent with state law, and 3) show that the requested exemption is in the best interest of the citizens of that state.

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[16] American Society of Anesthesiologists. *New Rule Restores Physician Supervision While Addressing States' Rights.(* http://www.asahq.org/FAQS7601.htm)

[17] *Id.*

[18] AOA-Net. *Victory! Community Obtains Nearly 500 Individuals, 20 Groups to Support CRNA Petition.* Government Relations, Osteopathic Legislative Hotline (September 6, 2001). http://www.aoa-net.org/government/relations/dgrhotline.htm.

On the state level, in 2001derivatives of the term "certified registered nurse anesthetist" were found in the synopses of 32 pieces of state legislation. The same derivatives were found in 357 different drafts of legislation text that moved through the state legislatures.[19]

[19] Lexis-Nexis 2001 state legislation search.

NURSE PRACTITIONERS

INTRODUCTION

The title of "nurse practitioner" is used to refer to nurses who have received additional education beyond their RN or BSN degrees. The American College of Nurse Practitioners (ACNP) specifically defines a nurse practitioner (NP) as "a registered nurse with advanced academic and clinical experience, which enables him or her to diagnose and manage most common and many chronic illnesses, either independently or as part of a health care team".[1] Services provided by NPs include but are not limited to ordering, conducting, and interpreting appropriate diagnostic and laboratory tests, prescription of pharmacological agents and treatments, and therapies. Teaching and counseling individuals, families, and groups are also a major part of NP's activities.[2]

The first NP program was developed as a master's degree curriculum at the University of Colorado in 1965 by Henry K. Silver and Loretta C. Ford. During the late 1960s and early 1970s, a projected physician shortage stimulated an increased interest and funding of sources for NP programs.[3]

In 1996 it was estimated that 71,000 registered nurses had the formal preparation to practice as NPs. They accounted for 44% of the RNs with formal preparation as advanced practice nurses. Between 1992 and 1996, the estimated number of RNs with formal preparations as NPs increased about 47% from 1992.[4] Currently there are over 40 NP programs in the United States.[5]

EDUCATION

NPs have traditionally been educated through programs that grant either a certificate or a master's degree.[6] Certificate programs for NPs began in the 1960s. These programs are completed in about 1 year of study followed by an internship that is similar to the clinical training of those NPs who receive masters degrees.[7] Nurse practitioners who complete a certificate program are not awarded an academic degree. About 50% of NPs practicing today completed a nurse practitioner certificate program. While the amount of certificate programs have diminished, in part because the NP organizations are attempting to unify the curriculum, some programs are still around today. In more recent years the federal government began to deny funds to certificate programs and increase funds available to the graduate programs.[8]

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[1] Health resources and Services Administration Division of Nursing, *Selected Facts About Nurse Practitioners* (prepared June 1997) http://www.nurse.org/acnp/facts/whatis.shtml.
[2] American Medical Association Series on NonPhysician Clinicians, 1999 pg. 53.
[3] Health Central, *General Encyclopedia- Nurse Practitioner Profession* (visited Feb. 11, 2000) <http:www.healthcentral.com/mhc/top/001934.cfm>.
[4] Health resources and Services Administration Division of Nursing, *Selected Facts About Nurse Practitioners* (prepared June 1997) http://www.hrsa.dhhs.gov/bhpr/DN/npnmdata.htm.
[5] Health Central, *General Encyclopedia- Nurse Practitioner Profession* (visited Feb. 11, 2000) <http:www.healthcentral.com/mhc/top/001934.cfm>.
[6] Health resources and Services Administration Division of Nursing, *Selected Facts About Nurse Practitioners* (prepared June 1997) http://www.nurse.org/acnp/facts/whatis.shtml.
[7] Phone interview with the American Academy of Nurse Practitioners (March 9, 2000).
[8] Nursing Net, Nurse Practitioners (visited Feb. 18, 2000) http://www.nursingnet.org/mknp.htm.

Most NPs graduating today come from masters programs. An intensive preceptorship under the direct supervision of a physician or an experienced nurse practitioner, as well as instruction in nursing theory, are key components to most NP programs.[9] The exact curricula required for the masters program is unclear and varies from school to school. However, the National Organization of Nurse Practitioner Faculties has developed guidelines for NP programs.[10] Most masters programs are geared towards a specific specialty (family, adult, pediatric), so the curriculums remain different.

Until recently, RN or BSN degrees were necessary prerequisites to qualify as an NP. However, some new programs offer a three-year program leading to a Masters of Science degree. This program allows people with a bachelor's degree in a non-nursing field to become advanced practice nurses such as NPs.[11]

LICENSURE

NPs are regulated by the states. The type of training and certification required is dictated by state licensure laws, and therefore varies from state to state. For example, Connecticut requires certification by a national certifying body or a masters degree in nursing and 30 hours of education in pharmacology. Florida requires completion of a formal post education program and a master's degree in a nursing clinical specialty. However, Florida law mandates that only Psychiatric Mental Health specialists can be certified as APNs.[12]

RELATIONSHIP WITH PHYSICIAN

NPs relationships with physicians vary from state to state. NPs in 22 states are allowed to practice independently.[13] Of the 22, some states require "supervision" of NPs; other states require "collaboration"; and still others require no collaboration at all. NPs generally work "in collaboration" with a physician. Unfortunately, this term varies greatly in its scope from state to state and is open to interpretation. Of issue is whether or not the state requires a written collaborative practice agreement or protocol for "collaboration" to occur and how this collaboration affects prescriptive rights. The National Council of State Boards of Nursing reports that most states allow NPs to establish independent practices but only under a protocol, collaboration, or referral plan with a physician. In general, however, "collaboration" as a concept is considered by most NPs to be less restrictive then "supervision" and therefore is more preferable.[14]

PRESCRIPTIVE AUTHORITY

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[9] *Id.*

[10] Report of the National Task Force on Quality Nurse Practitioner Education, *Criteria for Evaluation of Nurse Practitioner Programs* 1997.

[11] University of California San Francisco School of Nursing, *Masters Entry Program in Nursing* (last modified June 1999) http://wwwnurseweb.ucsf.edu/www/arease.htm.

[12] American Nurse Associations, *States Which Recognize Clinical Nurse Specialists in Advanced Practice* (data compiled Oct. 29, 1997 by Winifred Y. Carson, ANA Nurse Practice Counsel) http://www.ana.org/gova/cns.htm.

[13] Harold C. Sox, *Independent Primary Care Practice by Nurse Practitioners* (JAMA vol. 283 No. 1, Jan. 5, 2000) http://jama.ama-assn.org/issues/v283n1/full/jed90087.html.

[14] David E. Mittman, *"Supervision" vs "Collaboration"—Words With Different Meanings?* (visited Oct. 4, 1999) http://www.molecularmedicine.medscape.com/CGP/ClinReviews/1997/v07.n06/c07.../c0706.pp.htm.

All of the states allow NPs to prescribe drugs to some extent (but this varies from state to state).[15] The states differ on the schedule and amount an NP is allowed to prescribe. Of issue is whether the NP is independently prescribing or is prescribing in collaboration with a physician. According to the AANP, only 9 states (Washington, Wisconsin, Oregon, New Mexico, Alaska, Arizona, New Hampshire, Montana, and Maine) give NPs plenary prescriptive authority. All of the other states give NPs collaborative authority.[16] NPs are more limited when they are prescribing in collaboration with a physician and therefore desire to have more plenary prescriptive authority.

REIMBURSEMENT

The AANP states that multiple studies demonstrate the cost effectiveness and acceptance of NPs as primary healthcare providers.[17] To further support this notion of NPs as primary care providers, the Health Care Financing Administration has ruled that NPs are authorized to bill Medicare directly for services.[18] NPs under the rule receive their own provider numbers and get reimbursed at the lesser of 80% of the actual charge or 85% of the physician fee schedule. However, NPs are only eligible for reimbursement for Medicare Part B services, if the services provided would be reimbursable if provided by a physician and are within their scope of practice.[19] More notably, the rule requires state law standards for collaboration and in those states where NPs are allowed to practice independently, HCFA requires documentation to show how to deal with physicians on issues outside of an NP's expertise.[20] As for Medicaid, federal law mandates reimbursement for family and pediatric NPs. According to the AANP, 22 states currently provide reimbursement for Medicaid and recognize NPs as primary care providers.[21] Private insurers (HMOs) are also recognizing NPs as primary care providers and reimbursing them at rates equal to that of physicians.[22]

LEGISLATIVE AGENDA

In 1999, the word "nurse practitioner" was found in the subject heading of 66 pieces of state legislation. The same word was found 1,366 different drafts of legislation text that moved through state legislatures.[23]

One goal of the profession is to be recognized nationally as primary care providers and therefore be fully reimbursed by all types of insurance companies (Medicare, Medicaid, and private

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[15] American Academy of Nurse Practitioners, *Nurse Practitioner Prescriptive Authority* (visited Feb. 10, 2000) http://www.aanp.org/prescrip.htm.
[16] *Id.*
[17] American Academy of Nurse Practitioners, *The Nurse Practitioner in Managed Care Organizations* (visited Feb. 10, 2000) http://www.aanp.org/managedcare1.htm.
[18] The Nurse Practitioner, *Good News For NPs* (visited Oct. 4, 1999) http://www.nmc98.com/content/npj/9901/npjupd.htm.
[19] American Nurses Association, *Making Sense of the New Reimbursement Laws* (visited Oct. 5, 1999) http://www.ana.org/gova/medreqa/htm.
[20] American Academy of Nurse Practitioners, *Medicare Regulations* (visited Oct. 4, 1999) http://www.aanp.org/medicare.htm.
[21] American Academy of Nurse Practitioners, *Medicaid Regulations* (visited Oct. 4, 1999) http://www.aanp.org/mediaid.htm.
[22] Medscape, *Oxford Health Offers NPs Direct Reimbursement* (visited Oct. 4, 1999) http://medscape.com/CPG/ClinNews/1997/v01.n01/cn0101.02.html.
[23] Lexis-nexis 1999 State Legislation search.

insurers). Another stated goal is to increase the prescriptive power of NPs nationally. Another goal is to be able to practice independently of physicians throughout the United States.

PHYSICIAN ASSISTANTS

INTRODUCTION

A Physician Assistant (PA) is a licensed health professional who practices medicine with the supervision of a physician. In general, PAs can provide 80% of the services typically provided by a family physician. They perform physical exams, diagnose illnesses, develop and carry out treatment plans, order and interpret lab tests, suture wounds, and assist in surgery.[1]

The PA profession began in the mid-1960s when physicians and educators recognized that there was a shortage and an uneven distribution of primary care physicians. To expand the delivery of quality medical care, Dr. Eugene Stead of the Duke University Medical Center in North Carolina put together the first class of PAs in 1965. He selected Navy corpsmen who received considerable medical training during their military service and during the Vietnam War, but who had no comparable civilian employment. He based the curriculum of the PA program in part on his knowledge of the fast-track training of doctors during World War II.[2]

In the 30 years since the first PAs began practicing, the profession has shown remarkable growth. In 1998, there were more than 31,000 clinically practicing PAs in the United States, more than doubling the numbers from 1988. They are located in every medical and surgical specialty.[3]

EDUCATION

PAs are educated in accredited programs located at schools of medicine or allied health, universities, and teaching hospitals. Prerequisites for admission generally include two years of relevant college course work, plus patient care experience. PA education is usually 108 weeks (as compared with 153 weeks of medical school).

The first phase of the program consists of intensive classroom and laboratory study, providing students with an in-depth understanding of the medical sciences. Subjects include anatomy, pharmacology, physiology, clinical laboratory medicine and microbiology, pathophysiology, physical diagnosis, medical ethics, and behavioral sciences. The second phase consists of clinical rotations with physician preceptors. Programs include approximately 2000 hours of clinical rotations in various practice fields.[4]

According to the AMA, most PA students graduated with a bachelor's degree. Now, programs offer a certificate upon graduation, and a growing number of programs

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[1] College of West Virginia School of Health Sciences, *CWV--Physician Assistant Program FAQs* (last modified Dec. 8, 1998) http://www.cwv.net/nhs/frames/PAFAQ2.HTM.
[2] *Id.*
[3] American Academy of Physician Assistants, *Physician Assistants: State Laws and Regulations* pg. iv. (7th ed. AAPA 1998).
[4] *Id.* at iii.

award master's degrees upon completion.[5] The National Commission on Certification of PAs in conjunction with the National Board of Medical Examiners administers a national certifying examination to graduates of accredited PA programs. Only those individuals who pass the exam may use the title of "PA- certified" (PA-C). To maintain their national certification, PAs must log 100 hours of continuing medical education every 2 years. [6]

LICENSURE

State laws that regulate PA practice currently use three terms for the credential awarded by the state: licensure, certification, and registration. The AAPA advocates for the use of the term "licensure" for PAs because the rigorous method of regulation that licensure entails is already in place for PAs. The AAPA believes that use of the other terms to describe PA credentialing only confuse consumers, provider organizations, businesses, and the professions. According to the AAPA licensure creates credential parity.[7]

Regardless of the use of different terms to describe licensure, state laws govern the requirements for holding a license in the state. Each state has its own requirements but licensure usually mandates graduation from an accredited PA program and successful completion of a national certification examination. Practice requirements and the laws governing definitions, scope of practice, prescriptive authority, and requirements for physician collaboration are stated in the statutes and regulations of each state. Very recently, Mississippi joined all of the other states by enacting a PA practice law. Like the other states' PA laws, this law requires the State Board of Medical Licensure to license and regulate the practice of PAs.[8]

RELATIONSHIP WITH PHYSICIANS

The PA profession remains committed to the concept of the supervising physician-PA team. This is reflected in the AAPA's description of the professions:

> "PAs are health professionals licensed, or in the case of those employed by the federal government, credentialed, to practice medicine *with physician supervision.*"[9]

Also, the AAPA's policy on team practice states that the physician-PA team relationship is fundamental to the PA profession and enhances high-quality health care. The policy also emphasizes strengthening and preserving this relationship as the health care system changes.[10]

However, the definition of "supervision" varies from state to state. Some states require the physician to be directly present. Others require the supervising physician

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[5] *American Medical Association's Series on Nonphysician Clinicians: Resource Guide to Select Nonphysician Clinicians* 1999 pg. 107.

[6] North Carolina Academy of Physician Assistants, *History of Physician Assistants* (visited Feb. 18, 2000) <http:www.ncapa.org/history.htm>.

[7] American Academy of Physician Assistants, *Standardization of Regulatory Terms: Licensure for Physician Assistants* (last modified June 1999) http://www.aapa.org/gandp/license.html.

[8] Mississippi House Bill 846.

[9] American Academy of Physician Assistants. 1998-1999 Policy Manual. Alexandria, VA.

[10] *Id.*

to be either in the same facility or to be able to be reached by telephone. For example, Connecticut requires the supervising physician to be at the specific location the PA is practicing.[11] On the other hand, states like Illinois and Rhode Island do not require the physical presence of the supervising physician, but do require that there is easy availability of communication between the PA and the supervising physician.[12]

The Pew Commission also recommends preservation of the PA-physician relationship. The Commission believes that the traditional relationship between PAs and physicians, the hallmarks of which are frequent consultation, referral, and review of PA practice by the supervising physician, is one of the strengths of the PA profession.[13]

One issue in this area is what the ratio of PAs to Supervising Physicians should be. Some states require the ratio to be 2:1, while others permit an even larger ratio. The AAPA recommends state laws contain no reference to specific ratios of PAs to physicians. The AAPA believes the decision is best left to the supervising physician and should be customized to the nature of the practice, the complexity of the patient population, the experience of the physician assistant, and the supervisory style of the supervising physician.[14] Contrary, to the AAPA's position, however, most states do have language in their PA Practice Acts that specifically state the maximum number of PAs a physician is allowed to supervise.[15]

PRESCRIPTIVE AUTHORITY

PA ability to prescribe medication is dependent upon state law. Only three states (Indiana, Louisiana, and Ohio) do not allow PAs prescriptive authority.[16] All of the other 46 states have enacted laws or regulations that allow supervising physicians to delegate prescriptive authority to PAs. Nearly 85% of these states allow PAs to prescribe controlled medications. The AAPA believes that authorizing supervising physicians to delegate authority to prescribe controlled medications to PAs allows for more effective practice by the supervising physician/PA team.[17]

REIMBURSEMENT

According to the AAPA numerous independent studies have concluded that the quality of medical care provided by PAs is equivalent to that of physicians.[18] One thing to keep in mind is that PAs do not seek independent reimbursement. The policy

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[11] Connecticut Statutes
[12] Illinois and Rhode Island Statutes
[13] American Academy of Physician Assistants, *The Physician-PA Team* (last modified Dec. 1998) http://www.aapa.org/gandp/team.html.
[14] *Id.*
[15] AOA PA Prescriptive Authority Chart
[16] American Academy of Physician Assistants, Where Physician Assistants Are Authorized to Prescribe (last modified Feb. 11, 2000) http://www.aapa.org/gandp/rxchart.html.
[17] American Academy of Physician Assistants, Physician Assistants as Prescribers of Controlled Medications (last modified July 1999) http://www.aapa.org/gandp/control.html.
[18] American Academy of Physician Assistants, Third Party Reimbursement for Physician Assistants (visited Feb. 22, 2000) http://www.aapa.org/gandp/3rdparty.html.

of the AAPA is that reimbursement for services provided by PAs should be made to the practice. This policy further enhances the PA team theory to healthcare.[19] Therefore, the AAPA advocates for reimbursement of PAs as primary care providers.

Medicare recognizes PAs as primary care providers and pays for medical services provided by the PAs at 85 percent of the physician fee schedule. Assignment is mandatory and state law determines supervision and scope of practice. Currently 48 state Medicaid programs cover medical services provided by PAs. The rate of reimbursement is either the same or slightly lower than that of physicians. Private insurers generally cover medical services provided by PAs when they are included as part of the physician's bill or as part of the global fee for surgery.[20]

LEGISLATIVE AGENDA

In 1999, the word "physician assistant" was found in the subject heading of 1330 pieces of state legislation. The same word was found in 1541 different drafts of legislation text that moved through the state legislatures.[21]

As mentioned above the main goal for the profession is licensure. Specifically, the term "licensure" is needed to describe credentialed PAs.

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[19] American Academy of Physician Assistants, *Standardization of Regulatory Terms: Licensure for Physician Assistants* (last modified June 1999) http://www.aapa.org/gandp/license.html.
[20] American Academy of Physician Assistants, Third Party Reimbursement for Physician Assistants (visited Feb. 22, 2000) http://www.aapa.org/gandp/3rdparty.html.
[21] Lexis-nexis 1999 state legislation search.

OPTOMETRISTS

INTRODUCTION

Optometrists are independent primary health care providers who examine, diagnose, treat and manage diseases and disorders of the visual system, the eye and associated structures as well as diagnose related systemic conditions.[1] Optometrists are also known as O.D.'s or doctors of optometry and in one state (Arkansas) as an optometric physician.[2] They provide most of the primary vision care people need. Optometrists examine people's eyes to diagnose vision problems and eye diseases. They use instruments and observation to examine eye health and to test patients' visual acuity, depth and color perception, and their ability to focus and coordinate the eyes. They analyze test results and develop a treatment plan. Also, optometrists often provide pre- and post-operative care to cataract and other eye surgery patients.[3]

Optometrists held about 41,000 jobs in 1996. The number of jobs is greater than the number of practicing optometrists because some optometrists hold two or more jobs. For example, an optometrist may have a private practice, but also work in another practice, clinic, or vision care center. Employment of optometrists is expected to grow about as fast as the average (increase by 10 to 20 percent) for all occupations through the year 2006 in response to the vision care needs of a growing and aging population.[4]

EDUCATION

The Doctor of Optometry degree requires completion of a 4-year program at an accredited optometry school preceded by at least 3 years of pre-optometric study at an accredited college or university (most optometry students hold a bachelor's degree). In 1997, 17 U.S. schools and colleges of optometry held an accredited status with the Council on Optometric Education of the American Optometric Association.

Requirements for admission to schools of optometry include courses in English, mathematics, physics, chemistry, and biology. A few schools require or recommend courses in psychology, history, sociology, speech, or business. Applicants must take the Optometry Admissions Test, which measures academic ability and scientific comprehension. Most applicants take the test after their sophomore or junior year. Competition for admission is keen.

Optometry programs include classroom and laboratory study of health and visual sciences, as well as clinical training in the diagnosis and treatment of eye disorders. Included are courses in pharmacology, optics, vision science, biochemistry, and

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[1] American Optometric Association, *What is a Doctor of Optometry?* (1997) http://www.aoanet.org/mcc-what-is-od.html.

[2] Dr. Cooper et al, Medical College of Wisconsin *Non-physician Clinician Report.*

[3] Bureau of Labor Statistics, Occupational Outlook Handbook, *Optometrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos073.htm.

[4] *Id.*

systemic disease.

Optometrists wishing to teach or do research may study for a master's or Ph.D. degree in visual science, physiological optics, neurophysiology, public health, health administration, health information and communication, or health education.[5] One-year postgraduate clinical residency programs are available for optometrists who wish to specialize in family practice optometry, pediatric optometry, geriatric optometry, vision therapy, contact lenses, hospital based optometry, primary care optometry, or ocular disease.[6] Non-clinical residencies are also available. Residency training can take place in numerous locations including hospitals, eye care centers, or at in-house facilities depending on the type of residency.[7] Residencies are usually funded by the institution where the residency takes place. There are a handful of programs that offer training without compensation for graduates not selected for funded programs yet motivated to complete a residency.[8]

LICENSURE

All of the 50 states and the District of Columbia require that optometrists be licensed. The requirements for licensure are set by each individual state. In general, applicants for a license must have a Doctor of Optometry degree from an accredited optometry school and pass both a written and a clinical State board examination. In many states, applicants can substitute the examinations of the National Board of Examiners in Optometry for part or all of the written part of the state examination.[9] The examinations given by the National Board of Examiners in Optometry consist of 3 parts: basic science, clinical science, and patient care that are usually taken during an optometry student's academic career.[10] Licenses for practice are renewed every 1 to 3 years and in all states, continuing education credits are needed for renewal.[11]

RELATIONSHIP WITH PHYSICIANS

Optometrists practice autonomously within their own scope of practice. Their scope of practice is set by state law and therefore, varies from state to state. Optometrists refer patients to the proper physician when necessary. For example, they diagnose conditions due to systemic diseases such as diabetes and high blood pressure, and refer patients to other health practitioners when needed.[12]

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[5] *Id.*

[6] *Id.*

[7] Ohio State University, *College of Optometry* (modified Sep. 19,1999) http://www-afa.adm.ohio-state.edu/bulletin/14web/14info.html.

[8] Association of Schools and Colleges of Optometry, *Optometric Residencies: Commonly Asked Questions* (visited March 29, 1999) <htttp://home.opted.org/asco/resfaq.html>.

[9] Bureau of Labor Statistics, Occupational Outlook Handbook, *Optometrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos073.htm.

[10] National Board of Examiners in Optometry, *Description of Examinations* (visited March 29, 2000) http://www.optometry.org/general.htm.

[11] Bureau of Labor Statistics, Occupational Outlook Handbook, *Optometrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos073.htm.

[12] *Id.*

Not only do optometrists practice autonomously, but they also possess prescriptive privileges specific to eye ailments that do not require physician supervision. They use drugs for diagnosis of eye vision problems and prescribe drugs to treat some eye diseases. Optometrists can prescribe topical drugs for allergy, infection, and inflammation in all 50 states. They can also prescribe oral medications for those conditions in 20 states and medications to treat glaucoma in 40 states.[13] Broadly speaking, optometrists are allowed by laws in all 50 states to prescribe all non-controlled substances in all of the drug schedules.[14] For example, optometrists prescribe eyeglasses and contact lenses, and provide vision therapy and low vision rehabilitation. Optometrists are also able to prescribe controlled substances in 25 states, according to the American Optometric Association.[15]

REIMBURSEMENT

Optometrists consider themselves primary health care providers and therefore desire reimbursement from insurance companies for their services. The managed care industry is one of optometry's biggest supporters. This is because optometrists are seen as low cost alternatives to their more expensive, specialized counterparts of ophthalmologists.[16] Not surprisingly, optometrists are reimbursed by all types of insurance companies in all 50 states. Medicaid reimburses optometrists 100% for the services they provide. Also, Medicare reimburses optometrists at rates similar to that of physicians. Private insurance companies also reimburse optometrists for the services they provide.[17]

LEGISLATIVE AGENDA

In 1999, the word "optometry" was found in the subject heading of 127 pieces of state legislation. The same word was found in 2,932 different drafts of legislation text that moved through the state legislatures.[18]

One main goal of the profession is to expand its prescriptive privileges throughout the 50 states. Specifically, optometrists desire to increase their ability to prescribe glaucoma medication and controlled substances without physician supervision or collaboration. Optometrists also wish to perform invasive procedures such as laser surgery and other forms of surgery related to the eye without physician supervision or collaboration.

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[13] Pediatric News, *Optometrists Winning More Prescribing Privileges* (1998) http://gastroenterology.medscape.com/IMNG/PediatricNews/1998/v.32.n02/pn3202.10.02.html.
[14] Dr. Cooper et al, Medical College of Wisconsin *Non-physician Clinician Report.*
[15] Pediatric News, *Optometrists Winning More Prescribing Privileges* (1998) http://gastroenterology.medscape.com/IMNG/PediatricNews/1998/v.32.n02/pn3202.10.02.html
[16] *Id.*
[17] Dr. Cooper et al, Medical College of Wisconsin *Non-physician Clinician Report*
[18] 1999 Lexis-nexis state legislation search.

PHARMACISTS

INTRODUCTION

A pharmacist dispenses drugs prescribed by physicians and other health practitioners and provides information to patients about medications and their use. They advise physicians and other health care practitioners on the selection, dosages, interactions, and side effects of drugs.[1] In recent years, pharmacists have taken on the roles of auditors and counselors to improve patient compliance with medication regimes.[2]

The profession of pharmacy was founded in the art and science of compounding medications. In the 18th century, the practice of pharmacy began to separate from medicine. During this time doctors began prescribing medications to patients and pharmacists began compounding these prescriptions and producing them in mass quantities for general sale. In 1821, the Philadelphia College of Pharmacy and Science was founded as the first established U.S. school of pharmacy.[3] In the 1950s and 1960s the practice of compounding declined due to the creation of commercial drug manufacturers. During this time pharmacists who once compounded medication became dispensers of manufactured drugs.[4]

In 1996 there were approximately 172,000 pharmacists. [5] The employment of pharmacists is expected to grow as fast as average (approximately 13 percent) through the year 2006. Employment is expected to decrease in hospitals and grow in personal care facilities and home health care agencies.[6]

EDUCATION

Most pharmacy schools require students to complete two years of pre-pharmacy study before admission to a professional program. Pre-professional courses can be taken at any regionally accredited university, college, or junior college that offers a pre-pharmacy program. Courses in mathematics, biology, chemistry, and physics are generally required for pharmacy study.[7]

Historically there were two different pharmacy degrees: a BS in pharmacy (B.Pharm.), and doctor of pharmacy (Pharm.D.). In July 1992, a majority of the nation's schools and colleges of pharmacy voted to move toward awarding the doctor of pharmacy (Pharm.D.) degree as the only professional degree in pharmacy. In 2002, only Pharm.D. programs, which generally take six years to complete, will be accredited by the American Council on Pharmaceutical Education (ACPE). Many

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[1] Bureau of Labor Statistics, *Occupational Outlook Handbook* (modified Feb. 24, 1999) http://stat.bls.gov/oco/ocos079.htm.
[2] American Medical Association Series on NonPhysician Clinicians, 1999 pg. 143.
[3] Infoplease.com, *Pharmacy* (visited Feb. 29, 2000) http://www.infoplease.com/ce5/CE040567.html.
[4] Martin Avenue Pharmacy Inc., *The History of Pharmaceutical Compounding* (modified Dec. 8, 1999) http://www.martinavenue.com/history/historyofpc.htm.
[5] American Medical Association Series on NonPhysician Clinicians, 1999 pg. 144.
[6] Center for Health Careers, *Pharmacist Occupational Bulletin* (modified Sept. 9, 1999) http://chc.hcwp.org/pharmacy.htm.
[7] American Medical Association Series on NonPhysician Clinicians, 1999 pg. 144.

state boards of pharmacy, however, will accept either degree to take the licensing examination.

After graduating from pharmacy school, an increasing number of students today are seeking residency training in pharmacy practice. Over 400 pharmacy residency programs are offered in hospitals, community pharmacies, and specialized facilities. Residency programs typically last one to two years and may be taken in general pharmacy practice, clinical pharmacy practice, or other specialty areas depending upon personal interests and specific career requirements. Completion of a pharmacy residency is often required to practice in specific settings such as hospitals and academics.[8]

Graduate programs in pharmaceutical sciences are also available, including a master of science degree (M.S.) and doctor of philosophy degree (Ph.D.), however, an undergraduate degree in pharmacy is not a prerequisite for some of these programs. Students graduating with one of these advanced degrees generally practice in research areas and may not even qualify to be a licensed pharmacy practitioner.

LICENSURE

The requirements necessary to obtain a license to practice pharmacy vary from state to state. Generally, to be licensed, a pharmacist must graduate from an accredited college of pharmacy, participate in a residency program, and pass the North American Pharmacist Licensure Examination (NAPLEX).[9] Pharmacists who wish to obtain additional specialized knowledge and skills (beyond that required for licensure) in areas such as oncology pharmacy may complete a certification program. Unlike specialized training completed by other providers, however, a certificate awarded after completing this additional training is based on the provider's criteria, rather than an objective, independent measure of competence against national standards.[10]

RELATIONSHIP WITH PHYSICIANS

Since 1999 at least 16 states have enacted legislation that would allow a pharmacist and physician to enter into a collaborative practice agreement. The type of authority given to pharmacists within these agreements varies among the states and may include initiating or monitoring drug therapy regimens, ordering laboratory tests, or ordering procedures. According to the ASCP, many physicians oppose pharmacists' participation in drug therapy management on the basis that pharmacists do not have adequate training in patient care, diagnosis, and prescriptive authority.[11]

REIMBURSEMENT

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[8] American Association of Colleges of Pharmacy, *Pharmacy Education* (visited Feb. 29, 1999) http://www.aacp.org/main/PharmacyEducation.html.

[9] Pharmacy and You, *Pharmacists Licensure* (visited Feb. 29, 2000) http://www.pharmacyandyou.org/licensure/licensure.html.

[10] American Pharmaceutical Association, *The Pharmacy Specialty Certification Program* (visited Feb. 29, 1999) < http://www.aphanet.org/newprac/careerman/carmanfall97.html>.

[11] America's Senior Care Pharmacists, *Close to Home* (modified Aug. 12, 1998) http://www.ascp.com/oublic/pubs/tcp/1998/jul/close/shtml.

Currently pharmacists are not reimbursed for their services beyond drug dispensing. At this time the pharmacy gets reimbursed by payors and the pharmacists are paid a salary by the pharmacy. However, it is thought that the expanded ability of primary care offered by collaborative practice agreements alleviates significant health care problems such as escalating costs, insufficient access to medical care, and inconsistent quality of care.[12] Because drug benefits remain a therapeutic mainstay of managed care plans, continuing attention has been focused on payment to pharmacists based on performance beyond dispensing to include cognitive services such as: drug-related problems (adverse drug reaction avoidance and resolution, patient noncompliance, drug-therapy management) and for participation in disease-management programs (e.g., for diabetes, asthma, and cholesterol monitoring). In light of this, pharmacists are seeking compensation for the provision of such cognitive services.[13] The National Committee for Quality Assurance (NCQA) stated that if pharmacists are to be reimbursed for their efforts, further studies must be done to document how they benefit patients and other health care professionals. Payors and patients are now demanding increased accountability for the delivery of pharmaceutical care services. According to the NCQA, it remains to be seen if large-scale reimbursement for the delivery of pharmaceutical services will be one tangible result of such increased accountability.[14]

LEGISLATIVE AGENDA

Pharmacists are seeking expanded scope of practice in primarily two areas: collaborative practice agreements, and administering immunizations and vaccinations. Indeed, one of the goals of the profession is to advocate for collaborative practice agreements in all 50 states. At least 29 states including, Arizona, Arkansas, California, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oregon, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, and Wyoming have enacted legislation that allows pharmacists to enter into collaborative practice agreements with physicians. As previously mentioned, the type of authority permitted in these practice agreements ranges among the states. For example, some states only allow collaborative agreements between pharmacists and physicians in an institutional setting, while other states limit it to patients with a specific type of disease. Generally speaking, however, collaborative practice agreements allow pharmacists to initiate, modify, and/or discontinue a patient's medication regimen according to protocol outlined in the collaborative agreement.

Another active area in the state legislatures regarding pharmacists focuses on the administration of immunizations and vaccinations. Numerous states have enacted legislation that would allow pharmacists to administer immunizations and/or

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[12] Devora Mitrany and Renwyck Elder, *Collaborative Pharmacy Practice: An Idea Whose Time Has Come* (Nov./Dec. 1999) Journal of Managed Care Pharmacy Vol. 5 No. 6.
[13] Drug Benefits Trends, *Pharmaceutial Care Studies: A Review and Update* (1998) http://patient.medscape.com/SCP/DBT/1998/v10.n06/d3286.finc/d3286.finc-01.html.
[14] Drug Benefits Trends, *Pharmaceutial Care Studies: A Review and Update* (visited March, 3, 2000) http://patient.medscape.com/SCP/DBT/1998/v10.n06/d3286.finc/d3286.finc-01.html.

vaccinations. Some of these states require the pharmacist to complete additional educational courses before they can perform these tasks. In addition, several states limit pharmacists by only allowing them to perform these procedures on adults.

Finally, pharmacists have also advocated for reimbursement from Medicare, Medicaid, and private insurers for their services beyond dispensing medications, such as drug therapy and disease-management programs.

PHYSICAL THERAPISTS

INTRODUCTION

Physical therapists (PTs) provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. They restore, maintain, and promote overall fitness and health. Their patients include accident victims and individuals with disabling conditions such as low back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy. Some physical therapists treat a wide range of ailments; others specialize in areas such as pediatrics, geriatrics, orthopedics, sports medicine, neurology, and cardiopulmonary physical therapy.

Therapists examine patients' medical histories, then test and measure their strength, range of motion, balance, coordination, posture, muscle performance, respiration, and motor function. They also determine patients' ability to be independent and reintegrate into the community or workplace after injury or illness. PTs then develop treatment plans describing a treatment strategy, the purpose of this strategy, and anticipated outcome. Treatment often includes exercise for patients who have been immobilized and lack flexibility, strength, or endurance. They encourage patients to use their own muscles to further increase flexibility and range of motion before finally advancing to other exercises improving strength, balance, coordination, and endurance. Their goal is to improve how an individual functions at work and home.

Additionally, PTs use electrical stimulation, hot packs or cold compresses, and ultrasound to relieve pain and reduce swelling. They may use traction or deep-tissue massage to relieve pain. Therapists also teach patients to use assistive and adaptive devices such as crutches, prostheses, and wheelchairs. As treatment continues, physical therapists document progress, conduct periodic examinations, and modify treatments when necessary.[1]

The field of physical therapy was established in Britain in the latter part of the 19th century. Shortly thereafter American orthopedic surgeons began to train young women graduates of physical-education schools to care for patients in doctors' offices and in hospitals. The first school of physical therapy was established at Walter Reed Army Hospital, Washington, D.C., after the outbreak of World War I, and 14 additional schools were established soon afterward.

After World War II physical therapy became widely used in the care of patients. Among the reasons for the great increase in demand for physical-therapy services were the impressive results obtained in treating those injured in battle and industry during World War II and the Korean and Vietnam wars; the increase in chronic disability resulting from the larger number of older persons in the population; and the rapid development of

[1] Bureau of Labor Statistics, *Occupational Outlook Handbook* (April 19, 2000) http://stats.bls.gov/oco/ocos080.htm.

hospital and medical care programs.[2]

Physical therapists held about 120,000 jobs in 1998. According to the Bureau of Labor Statistics, employment of physical therapists is expected to grow faster than the average (increase by 36 % or more) for all occupations through 2008.[3]

EDUCATION

According to the American Physical Therapy Association, there were 189 accredited physical therapist programs in 1999. Of the accredited programs, 24 offered bachelor's degrees, 157 offered master's degrees, and 8 offered doctoral degrees. By 2002, all physical therapist programs seeking accreditation will be required to offer degrees at the master's degree level and above, in accordance with the Commission on Accreditation in Physical Therapy Education.

Competition for entrance into physical therapist educational programs is intense, so interested students need superior grades in high school and college, especially in science courses. Courses useful when applying to physical therapist educational programs include anatomy, biology, chemistry, social science, mathematics, and physics. Before granting admission, many professional education programs require experience as a volunteer in a physical therapy department of a hospital or clinic.

Physical therapist programs start with basic science courses such as biology, chemistry, and physics, and then introduce specialized courses such as biomechanics, neuroanatomy, human growth and development, manifestations of disease, examination techniques, and therapeutic procedures. Besides classroom and laboratory instruction, students receive supervised clinical experience in a variety of settings. Individuals who have a 4-year degree in another field and want to be a physical therapist should enroll in a master's or a doctoral level physical therapist educational program.[4]

LICENSURE

Licensure requires graduation from an accredited physical therapist professional program. Also, all 50 states require physical therapists to pass a licensure exam after graduation from one of the physical therapy schools. All three degrees, the bachelor's, the master's and the doctor's, are appropriate degrees for licensure in every state.[5]

RELATIONSHIP WITH PHYSICIANS

PTs work with a variety of health care professionals including physicians. Currently, 33 states permit physical therapy *treatment* without a physician referral. Also, 47 states and the District of Columbia allow *evaluation* by PTs without referral. This enables the PT to

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[2] Encarta Encyclopedia, *Physical Therapy* (Online Encyclopedia 2000) http://encarta.msn.com/find/Concise.asp?ti=06C43000.

[3] Bureau of Labor Statistics, *Occupational Outlook Handbook* (April 19, 2000) http://stats.bls.gov/oco/ocos080.htm.

[4] *Id.*

[5] American Physical Therapy Association, *The DPT Degree, Frequently Asked Questions*, (visited May 3, 2000) http://www.apta.org/Education/dpt_faq.

provide certain services such as health screenings or assessments, consumer education, and advocacy programs without physician referral. Four states (Alabama, Indiana, Ohio, and Virginia) currently require referrals for any PT service provided.[6]

REIMBURSEMENT

Medicare, state Medicaid programs, and private insurance companies all reimburse PTs for the services they provide. In fact, the U.S. Department of Health and Human Services recently stated that PTs are qualified and recognized to perform spinal manipulation therapy services under Medicare.[7] Furthermore, PTs argue that one of the most effective tools for cost control is direct access. They claim that states and insurance companies reimbursing under the direct access method will realize cost savings of approximately $1,200 per patient episode. Therefore, PTs are seeking reimbursement through direct access to their services by all types of carriers.[8]

LEGISLATIVE AGENDA

In 1999, derivatives of the term "physical therapist" were found in the subject heading of 84 pieces of state legislation. The same derivatives were found in 1,936 different drafts of legislation text that moved through the state legislatures.[9]

The main goal of the profession is to amend current statutes at the state level to permit direct access to PT services. Another goal of the profession is to continue to gain acceptance as providers of spinal manipulation.

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[6] American Physical Therapy Association, *States That Permit PT Treatment Without Referral* (visited May 2, 2000), http://www.apta.org/Advocacy/state/State3.

[7] American Physical Therapy Association, *HCFA Says Physical Therapists May Perform Manipulation* (Nov. 11, 1999) http://www.apta.org/Advocacy/national/National2.

[8] American Physical Therapy Association, *Direct Access to Physical Therapy Services* (visited May 2, 2000) http://www.apta.org/Advocacy/state/State2.

[9] Lexis-nexis 1999 state legislation search.

PODIATRISTS

INTRODUCTION

Podiatrists, who also refer to themselves as doctors of podiatric medicine or podiatric physicians, diagnose and treat disorders, diseases, and injuries of the foot and lower leg to keep these parts of the body working properly. Podiatrists treat corns, calluses, ingrown toenails, bunions, heel spurs, arch problems, ankle and foot injuries, deformities, infections, and foot complaints associated with diseases such as diabetes. To treat these problems, podiatrists prescribe drugs, order physical therapy, set fractures, perform surgery, and order x-rays and laboratory tests.[1]

The history of the profession began in the 1700s with a British man by the name of David Low who coined the term "chiropody" [chir = hand; pody = feet], which was the original name of podiatry. At the time the practice of podiatry involved the treatment of both hands and feet, and it was much less medically oriented than it is today. Common treatments included primarily corn and callus removal, nail care, and diabetic foot care. In 1961, the American Podiatric Medical Association (APMA) set up the Selden Commission to review podiatric medical education. The Selden Commission's final report had a significant impact on the future of podiatric medical education. The Commission recommended a 4-year education program comparable to other medical schools and it also catalyzed the change in terminology from Chiropody to Podiatry. Since then, podiatry has evolved from a palliative art to a medical and surgical specialty of the lower limb.[2]

Podiatrists held about 11,000 jobs in 1996. Today, there are approximately 14,000 podiatrists in the United States. Most podiatrists are solo practitioners, although more are entering partnerships and multi-specialty group practices. Other podiatrists are employed in hospitals, nursing homes, the U.S. Public Health Service, and the Department of Veterans Affairs. Employment of podiatrists is expected to grow about as fast as the average (increase 10 to 20 percent) for all occupations through the year 2006.[3]

EDUCATION

There are seven colleges of podiatric medicine in the United States. All of these schools receive accreditation from the Council on Podiatric Medical Education of the American Podiatric Medical Association and they all grant the degree of doctor of podiatric medicine (DPM).[4]

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[1] Bureau of Labor Statistics, *Podiatrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos075.htm.
[2] Micheal J. McKenzie, *Podiatry FAQ*, (Aug. 24, 1995) http://www.primenet.com/~karenwe/podiatry.txt.
[3] Bureau of Labor Statistics, *Podiatrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos075.htm.
[4] The American Podiatric Medical Association, *Podiatric Medicine: the Physician, the Profession, The Practice* (modified Feb 12, 2000) http://www.apma.org/podiat.html.

Candidates for admission to all seven colleges are required to complete a baccalaureate degree before admission. Candidates are also required to take the Medical College Admission Test (MCAT) as a prerequisite.[5]

The course of instruction leading to the DPM degree is four years in length. The first two years are devoted largely to classroom instruction and laboratory work in the basic medical sciences. During the third and fourth years, students concentrate on courses in the clinical sciences, gaining experience in the college clinics, community clinics, and accredited hospitals. Clinical courses include general diagnosis (history taking, physical examination, clinical laboratory procedures, and diagnostic radiology), therapeutics (pharmacology, physical medicine, orthotics, and prosthetics), surgery, anesthesia, and operative podiatric medicine.[6]

Most prospective podiatrists seek postdoctoral residency programs after graduation. These programs, designed to strengthen and refine the practitioner's podiatric medical primary care, orthopedic, surgical, and public health skills, are based in hospitals. These programs are at least one year in duration, and may extend to four years.[7]

LICENSURE

Podiatrists are licensed in all 50 states, the District of Columbia and Puerto Rico to treat the foot and its related or governing structures by medical, surgical or other means. State licensing requirements generally include graduation from one of the seven accredited colleges of podiatric medicine, passage of the National Board exams, postgraduate training (a residency) and written and oral examinations.

Satisfactory completion of Parts I and II of the National Board is one of the requirements for state licensure. Part I covers basic science areas and is generally taken at the conclusion of the second year of podiatry school. Part II covers clinical areas and is taken in the spring of the fourth year, prior to graduation. Most states will also require a written and/or oral examination prior to licensure.

Podiatrists may also become board certified in one of three specialty areas: orthopedics, primary medicine, or surgery. National podiatric specialty boards grant certification to qualified podiatrists who have completed the specified educational requirements and who successfully complete written and oral examinations.[8]

RELATIONSHIP WITH PHYSICIANS

Podiatrists usually work independent of physicians in their own offices. However, podiatrists only practice autonomously within their scope of practice. Some states like Missouri license podiatrists to treat the only the foot, while other states give an even

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[5] *Id.*
[6] *Id.*
[7] *Id.*
[8] American Association of Colleges of Podiatric Medicine, *Answers to Frequently Asked Questions* (Jan 11, 2000) http://www.aacpm.org/answers.htm.

more expansive scope of practice. For example, Idaho allows podiatrists to treat both the leg and the foot. Even broader, Alaska permits podiatrists to treat the foot, muscle and tendons of the leg governing the function of the foot, and the hand.[9] However, when podiatrists recognize overt symptoms of underlying diseases that are outside of their scope of practice, they refer patients to the appropriate physician. Often, the foot may be the first area to show signs of serious conditions such as arthritis, diabetes, and heart disease. For example, diabetics are prone to foot ulcers and infections due to poor circulation. Podiatrists consult with and refer patients to other health practitioners when they detect symptoms of these disorders.[10]

Not only do podiatrists practice independently of physicians, but they also have independent prescriptive authority in all of the 50 states. Specifically, podiatrists have privileges in prescribing all non-controlled substances in every schedule of drug.[11]

REIMBURSEMENT

Insurance companies recognize podiatrists as cost-effective alternatives to orthopedic surgeons. Therefore, podiatrists are being reimbursed by all types of insurance companies for the services they provide. Nearly all private and public health insurance plans provide coverage for the services of doctors of podiatric medicine. Even though third-party coverage of podiatrists' services generally includes the medical and surgical care of foot complaints, details of such coverage can and do vary among plans. Most Blue Shield plans, as well as those of commercial health insurance carriers, make provision in their contracts for the medical and surgical care of the feet, whether such care is rendered by physicians or podiatrists. Medicare reimburses podiatrists in all 50 states. Also, 43 state Medicaid programs currently reimburse podiatrists for their services.[12]

LEGISLATIVE AGENDA

In 1999, the word "podiatrist" was found in the subject heading of 65 pieces of legislation. The same word was found in 1485 different drafts of legislation text that moved through the state legislatures.[13]

The main goal of the profession is to increase their scope of practice to beyond that of the foot and move upward into areas of the leg and other governing structures of the foot. Some podiatrists are also advocating expanding scope of practice to the hand.

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[9] Micheal J. McKenzie, *Podiatry FAQ*, (Aug. 24, 1995) http://www.primenet.com/~karenwe/podiatry.txt

[10] Bureau of Labor Statistics, *Podiatrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos075.htm.

[11] Medical College of Wisconsin, Non-Physician Clinician study

[12] American Podiatric Medical Association, Podiatric Medicine: The Physician, The Profession, The Practice (modified Feb. 12, 2000) http://www.apma.org/podiat.html.

[13] Lexis-nexis state legislation search.

PSYCHOLOGISTS

INTRODUCTION

Psychologists study the human mind, behavior, and related physiological processes. They apply their knowledge to a wide range of endeavors, including health and human services, management, education, law, and sports. Research psychologists investigate the physical, cognitive, emotional, or social aspects of human behavior. Psychologists in applied fields provide mental health care in hospitals, clinics, schools, or private settings.[1]

Although the ancient Greeks speculated about the mind, the real origin of psychology began with Descartes and the Renaissance, when the mind began to attract the interests of scholars. However, psychology was not born as an independent discipline until 1879 when Wilhelm Wundt established the first psychological research laboratory in Leipzig, Germany. Wundt argued that psychology should be the scientific study of consciousness. This new discipline grew rapidly in North America in the late 19th century.[2]

From this background different schools of thought emerged including structuralism, functionalism, behaviorism, Gestalt psychology, psychoanalysis, and humanism. Clinical psychology also grew rapidly in the 1950s due to the demands of World War II. With this psychology became a profession as well as a science. This movement toward professionalization eventually spread to other areas in psychology.[3]

Contemporary psychology is a diversified science and profession that has grown rapidly in recent decades. In addition to practicing in a variety of different work settings, psychologists specialize in many different areas including clinical, cognitive, counseling, developmental, research, industrial-organizational, school, and social psychology.[4]

Psychologists held about 143,000 jobs in 1996. Employment of psychologists is expected to grow more slowly than the average (0 to 9%) for all occupations through the year 2006. According to the Bureau of Labor Statistics, job opportunities in health care should increase slightly in health care provider networks, such as health maintenance and preferred provider organizations, and in nursing homes and alcohol and drug abuse programs.[5]

EDUCATION

Students interested in pursuing a career in psychology may do so through a bachelor's, master's, or doctoral degree. Most colleges and universities offer a bachelor's degree in

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[1] Bureau of Labor Statistics, Occupational Outlook Handbook *Psychologists* (visited March 21, 2000) http://stats.bls.gov/oco/ocos056.htm.
[2] University of New Brunswick, *From Speculation to Science: How Psychology Developed* (visited March 21, 2000) <http://www.unb.ca/web/courses/fields/module/textbook/ch1pt6.html>.
[3] *Id.*
[4] *Id.*
[5] Bureau of Labor Statistics, Occupational Outlook Handbook *Psychologists* (visited March 21, 2000) http://stats.bls.gov/oco/ocos056.htm.

psychology. The bachelor's degree qualifies a person to assist psychologists and other professionals in community mental health centers, vocational rehabilitation offices, and correctional programs. However, without additional academic training, their opportunities in psychology are severely limited.[6]

Most graduate programs in psychology require students to take the Graduate Record Exam (GRE) for admission. Some schools may require taking both the GRE Aptitude (includes verbal, quantitative, and analytical sections) and the Advanced Test in Psychology, as well as the Millers Analogies Test (MAT). Some universities require an undergraduate major in psychology. Others prefer only course work in basic psychology with courses in the biological, physical, and social sciences, statistics, and mathematics.[7]

Most students need at least 2 years of full-time graduate study to earn a master's degree in psychology. Requirements usually include practical experience in an applied setting and a master's thesis based on an original research project. Persons with a master's degree in psychology often work as school or industrial-organizational psychologists. Others work as psychological assistants, under the supervision of doctoral-level psychologists, and conduct research or psychological evaluations.[8]

Both the PsyD and the PhD degree programs lead to the doctoral degree in psychology. A doctoral degree is generally required for employment as a licensed clinical or counseling psychologist. A doctoral degree usually requires 5 to 7 years of graduate study. The PhD degree culminates in a dissertation based on original research. Courses in quantitative research methods, which include the use of computer-based analysis, are an integral part of graduate study and are necessary to complete the dissertation. The PsyD may be based on practical work and examinations rather than a dissertation. In clinical or counseling psychology, the requirements for the doctoral degree generally include a year or more of internship. Psychologists with a PhD qualify for a wide range of teaching, research, clinical, and counseling positions in universities, elementary and secondary schools, private industry, and government. Psychologists with a PsyD generally work in clinical positions. [9]

LICENSURE

To practice psychology in a state an individual must be licensed as a psychologist according to the laws and regulations in effect in that particular state. In most states, licensure for the independent practice of psychology requires a doctoral degree in psychology. About half the states have a category of licensure for the supervised practice of psychology, which usually requires at least a master's degree in psychology. Also, all states require passage of the Examination for Professional Practice of Psychology (EPPP) for licensure. The passing score in each state is set by law or regulation in that

[6] *Id.*
[7] *Id.*
[8] *Id.*
[9] *Id.*

jurisdiction. Many states and provinces require a jurisprudence examination or an oral examination in addition to the EPPP.[10]

Not only do licensing laws vary by state but also by the type of position or specialty. For example, clinical and counseling psychologists generally require a doctorate in psychology, completion of an approved internship, and 1 to 2 years of professional experience. Most states certify those with master's degrees as school psychologists after completion of an internship. Some states require continuing education for license renewal.[11]

RELATIONSHIP WITH PHYSICIANS

Psychologists can practice independently or under the supervision of other professionals. However, most states require licensed psychologists to limit their practice to areas in which they have developed professional competence through training and experience. Those psychologists who practice independently usually are required to possess doctoral-level degrees. However, some states like Kentucky allow psychologists with master's degrees to practice independently in fields such as counseling and school psychology.[12]

Currently, none of the 50 states gives psychologist prescriptive privileges. However, the territory of Guam allows psychologists to administer, prescribe, and dispense drugs in collaborations with a physician.[13] Psychologists are advocating for similar prescriptive authority in the states. They argue that according to a study administered by the U.S. Department of Defense, if psychologists were given prescriptive authority then psychological medications would be administered more efficiently and cost effectively.[14] Two states, Louisiana and Georgia, are moving closer to securing prescriptive privileges for psychologists.[15] Similar bills are also on docket in Illinois and Alaska. The president of the APA believes that any rural state can gain the right to prescribe once they decide to do so.[16]

REIMBURSEMENT

Currently, Medicare reimburses psychologists at a 100% of the physician fee schedule for their services. Both Medicaid and private insurers also reimburse psychologists for the services they provide.[17]

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[10] Association of State and Provincial Psychology Board, *Licensure Requirements in General* (visited March 21, 2000) http://www.asppb.org/reqs.html.

[11] Bureau of Labor Statistics, Occupational Outlook Handbook *Psychologists* (visited March 21, 2000) http://stats.bls.gov/oco/ocos056.htm.

[12] Eastern Kentucky University, *Careers in Psychology that require Graduate Degrees* (modified Nov. 11, 1999) http://www.psychology.eku.edu/wilson/gradcareeer.htm.

[13] American Psychological Association, Monitor Online (October 1999) http://www.apa.org/monitor/oct99/cfl3.html.

[14] American Psychological Association, Monitor Online *DeLeon Elected APA President forYear 2000* (January 1999) , http://www.apa.org/monitor/jan99/pat.html.

[15] American Psychological Association, Monitor Online (September 1999) , http://www.apa.org/monitor/sep99/pr3.html

[16] American Psychological Association, Monitor Online *DeLeon Elected APA President forYear 2000* (January 1999) , http://www.apa.org/monitor/jan99/pat.html.

[17] Phone Conversation with American Psychological Association (March 29, 2000).

LEGISLATIVE AGENDA

In 1999, the word "psychologist" was found in the subject heading of 227 pieces of state legislation. The same word was found in 3291 different drafts of legislation text that moved through the state legislatures.[18]

The main goal of the profession, as mentioned above, is to obtain prescriptive privileges in the states.

[18] Lexis-nexis 1999 state legislation search.

ACUPUNCTURISTS

INTRODUCTION

Acupuncture is an ancient system of healing developed over thousands of years as part of the traditional medicine of China, Japan, and other Eastern countries. The earliest records of acupuncture date back over 2,000 years and today there are over 3,000,000 practitioners worldwide. A majority of these practitioners practice in the East but popularity of acupuncturists has also risen in the West over the last 50 years.

The practice of acupuncture is thought to have begun with the discovery that the stimulation of specific areas on the skin affects the functioning of certain organs of the body. It later evolved into a system of medicine that restores and maintains health by the insertion of fine needles into acupuncture points just beneath the body surface. These points are in very specific locations and lie on channels of energy. Moxibustion, the warming of acupuncture points through the use of smoldering herbs, is often used as a supplement and needles may also be stimulated using a small electric current.[1] The aim of acupuncture is to treat the whole patient and to restore the balance between the physical, emotional, and spiritual aspects of the individual.[2]

EDUCATION

Both physicians and non-physicians can train to be acupuncturists. Physicians and other medical professionals like chiropractors and podiatrists who are interested in acupuncture generally train for a short duration of time and receive certificates in acupuncture. Others who are interested in acupuncture can obtain more extensive training and receive either diplomas or masters degrees. According to the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) there are 35 accredited schools of acupuncture in the United States[3]. The prerequisites for entry into these degree programs vary from school to school. Some schools require a bachelor's degree for admission while others require only 2 years of undergraduate training or none at all.

Although the curriculum for the degree programs varies slightly from school to school, it generally entails training students in diagnostic, communication, and treatment skills required to practice acupuncture as independent practitioners.[4] Upon successful completion of the degree programs, students are eligible to sit for the national board examination, given by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM). After passing the board's exam, students can be eligible for licensure in most states in the practice of acupuncture.[5]

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[1] The Foundation for Traditional Chinese Medicine, *What is Acupuncture?* (1995) http://www.demon.co.uk/acupuncture/shat.html.
[2] The Foundation for Traditional Chinese Medicine, *Conditions that Acupuncture Treats* (1995) http://www.demon.co.uk/acupuncture/condi.html
[3] Natural Healers, *ACAOM Accredited Schools* (1999) http://www.naturalhealers.com/acaomacc.shtml.
[4] Med Service Systems, *Continuous Learning*, visited March 24, 2000) http://www.medserv.ca/continuouslearning.cfm.
[5] *Id.*

LICENSURE

Licensure for acupuncturists varies from state to state. Currently, 32 states require passage of the NCCAOM for licensure. However, California and Nevada give their own examinations, while Louisiana does not require students to take any examination at all.

The amount and type of training required for licensure also varies from state to state. For example, in Pennsylvania a physician must complete 200 hours of training to qualify as an acupuncturist. A non-physician acupuncturist must have two years of acupuncture training plus two years of college and must be supervised by a medical doctor registered as an acupuncture supervisor.

In New Jersey, non-physician acupuncturists must have a bachelor's degree and have completed a two-year course in acupuncture from a school approved by the Accreditation Commission for Acupuncture and Oriental Medicine. Medical doctors and dentists can practice acupuncture, but cannot call themselves acupuncturists if they haven't passed New Jersey's certification test.

Currently, 35 states and the District of Columbia license acupuncturists. The other 15 states do not license acupuncturists, but allow physicians and some other non-physicians to use acupuncture within their scope of practice.

RELATIONSHIP WITH PHYSICIANS

As mentioned above many physicians are licensed acupuncturists and acupuncture is within the scope of practice of physicians in 43 states. Some of these states require additional hours of training for physicians to practice acupuncture. Many non-physicians are also allowed to practice acupuncture. Connecticut, Maine, Michigan, Tennessee, and West Virginia allow nurse practitioners to practice acupuncture under physician supervision. Also, Arizona, Connecticut, Kansas, Maine, Michigan, Tennessee, and West Virginia allow physician assistants to practice acupuncture under the supervision of a physician. Chiropractors are also able to practice acupuncture in some states but sometimes are required to pass an examination and usually are required to have additional training to do so. Also, dentists in 10 states, podiatrists in 5 states, and naturopaths in 6 states are all currently allowed to perform acupuncture within their scopes of practice.[6] Additionally, licensed acupuncturists without previous medical degrees are allowed to practice independently and autonomously in 26 states.[7]

Acupuncturists also have a small amount of prescriptive privileges in 19 states. Specifically, they are allowed to prescribe herbal pharmacopoeia (herbal medicines)

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[6] American Academy of Medical Acupuncture, *Regulation of Practice of Acupuncture in the United States* (modified August 31, 1999) http://www.medcalacupuncture.org/licensure/html.

[7] Dr. Cooper, Medical College of Wisconsin *Non-physician Clinician Study.*

with no physician supervision. However, most of the states do not give acupuncturists any prescriptive privileges.[8]

REIMBURSEMENT

Although the popularity of acupuncture has grown in the healthcare industry, this popularity has shown very little impact upon the issue of reimbursement. Currently, neither Medicare nor state Medicaid programs reimburse acupuncturists for their services regardless if they are physicians or non-physicians. However, nine states (California, Florida, Maine, Montana, Nevada, New Mexico, Oregon, Utah, and Washington) have private insurance plans that reimburse acupuncturists for their services.[9] For example, California has the state's first ever acupuncture insurance plan called Acupuncture Plus that reimburses acupuncturists for their services.[10]

LEGISLATIVE AGENDA

In 1999, the word "acupuncture" was found in the subject heading of 72 pieces of state legislation. The same word was found in 646 different drafts of legislation text that moved through the state legislatures.[11]

One goal of the profession is to be reimbursed by all insurance companies including Medicaid, Medicare, and a broader base of private insurance companies. The placement of licensure mechanisms in all 50 states is another professional goal.

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[8] *Id.*
[9] *Id.*
[10] Acupuncture Plus, (visited March 21, 2000) http://www.acupunctureplus.com/./
[11] Lexis-nexis 1999 state legislation search.

CHIROPRACTORS

INTRODUCTION

Chiropractors, who also refer to themselves as doctors of chiropractic or chiropractic physicians, diagnose and treat patients whose health problems are associated with the body's muscular, nervous, and skeletal systems, especially the spine.[1]

Chiropractic was developed in 1895 by Daniel David Palmer in Davenport, Iowa which became the home of the first chiropractic school in the United States. Palmer premised his theory of chiropractic to state that many ailments were caused by vertebrate impinging upon the spinal nerves. Palmer called such interference "subluxations". Palmer stated that after manipulations or adjustments to correct proper vertebral alignment, normal brain and nerve transmission are restored and the body is able to resume its innate ability to recover from illness.[2]

Over the years, practitioners of chiropractic have evolved into two factions with two separate oraganizations: the "straight" chiropractors, who adhere strictly to Palmer's philosophy of only locating and eliminating subluxations; and the "mixer" chiropractors, who combine spinal adjustments with other adjunct therapies such as hot or cold treatments, nutrition counseling, and exercise recommendations. Today, the majority of practicing providers fall into the "mixer" category and frequently use new technologies in science to locate and eliminate subluxations.[3]

Chiropractors held about 44,000 jobs in 1996.[4] According to the American Chiropractic Association, there were between 55,000 to 70,000 chiropractors practicing in 1998.[5] Employment of chiropractors is expected to grow faster than the average (increase by 21%-35%) for all occupations through the year 2006 as consumer demand for alternative medicine grows.[6]

EDUCATION

The Council on Chiropractic Education, the accrediting agency for chiropractic education, currently accredits 16 colleges of chiropractic.[7] The prerequisites for entry vary from college to college. For example, the National College of Chiropractic requires a bachelor's degree upon entry while other colleges require completion of around 90

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[1] Bureau of Labor Statistics, *Occupational Handbook Chiropractors* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos071.htm.

[2] Health Central: General Health Encyclopedia, *Chiropractor-Doctor of Chiropractic Medicine Profession,* (visited March 7, 2000) http://www.healthcentral.com/mhc/top/002001.cfm.

[3] *Id.*

[4] Bureau of Labor Statistics, *Occupational Handbook Chiropractors* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos071.htm

[5] American Chiropractic Association, *About Chiropractic-Frequently Asked Questions*, (visited March 11, 2000) http://www.amerchiro.org/about_chiro/faq.html.

[6] Bureau of Labor Statistics, *Occupational Handbook Chiropractors* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos071.htm

[7] Medical College of Wisconsin, Non-Physician Clinician Summary

undergraduate semester hours upon entry.[8] Regardless of length, generally all colleges of chiropractic require minimum semester hours of the following courses before admission: Biology, chemistry (organic and inorganic), physics, English, psychology, and social science courses.[9]

A chiropractic program consists of four academic years of professional education averaging a total of 4,822 hours of course work. Several areas of study are emphasized during the course of chiropractic education including adjustive techniques/spinal analysis, principles/practices of chiropractic, physiologic therapeutics, and biomechanics.[10]

Upon completion, chiropractors generally must pass a three-part examination offered by the National Board of Chiropractic Examiners. This testing series covers basic sciences, clinical sciences, and clinical competency. A fourth segment (Part IV) has recently been introduced to assess practical skills. This fourth segment is being required by an increasing number of state licensing boards.[11]

Specialty training is available through U.S. chiropractic colleges for part-time postgraduate programs and full-time residency programs. Postgraduate education programs are available in family practice, applied chiropractic sciences, clinical neurology, orthopedics, sports injuries, pediatrics, nutrition, rehabilitation, and industrial consulting. Residency programs include radiology, orthopedics, family practice, and clinical sciences. A typical residency program is 2-3 years in duration and includes ambulatory care and inpatient clinical rotations at chiropractic and medical facilities, along with didactic and research experiences. Other less rigorous postgraduate training programs may take 1-3 years to complete on a part-time basis. Both the residency and postgraduate programs lead to eligibility to sit for competency examinations offered by specialty boards recognized by the American Chiropractic Association, the International Chiropractors' Association, and the American Board of Chiropractic Specialties. Specialty boards may confer "Diplomate" status in a given area of focus upon successful examination.[12]

LICENSURE

The practice of chiropractic is licensed and regulated in all 50 states in the United States. State licensing boards regulate, among other factors, the education, experience and moral character of candidates for licensure, and protect the public health, safety and welfare.

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[8] The National College of Chiropractic, *Admissions Requirements* (modified May 14, 1999) http://www.national.chiropractic.edu/janse/admission/requirements.html. *see also* Chirocareer Center, *Prerequisites* (visited March 10, 2000) http://chirocareer.freeservers.com/.

[9] The National College of Chiropractic, *Admissions Requirements* (modified May 14, 1999) http://www.national.chiropractic.edu/janse/admission/requirements.html.

[10] ChiroWeb, *Chiropractic Licensure and Education* (modified Feb. 24, 2000) http://www.chiroweb.com/find/licen.html.

[11] Federation of Chiropractic Licensing Boards, *Questions and Answers About Professional Regulation and the Chiropractic Profession* (visited March 14, 2000) http://www.fclb.org/prof-reg.asp.

[12] U. S. Government Report on Chiropractic, *Chapter III Chiropractic Training* (Dec. 1997) http://www.chiroweb.com/archives/ahcpr/chapter3.htm.

Some states require a minimum of two years in an accredited undergraduate program, which includes a prescribed science content. Eight states (Florida, Kansas, Maryland, Montana, North Carolina, Rhode Island, West Virginia and Wisconsin) require a bachelor's degree of candidates for licensure. A number of other boards (Idaho, Nebraska, South Dakota, Vermont and Washington) are also considering increasing their requirements to this level. All of the 50 states require graduation from an accredited chiropractic college for licensure. Additionally, most state boards require chiropractors to pass the three-part examination offered by the National Board of Chiropractic Examiners. The fourth part of the exam (discussed above) is being required by an increasing number of boards. Boards may also require special examinations to be successfully completed by practitioners relocating from another jurisdiction, or those under review for disciplinary or impairment reasons.[13]

RELATIONSHIP WITH PHYSICIANS

Chiropractors practice independently, within their scope of practice, from physicians. The scope of practice for chiropractors varies from state to state. For example states such as Michigan have very restrictive scopes of practice for chiropractors while other states like Oregon have expansive scopes of practice. Illinois allows chiropractors to have hospital privileges. When issues arise that are outside their scope, chiropractors refer patients to a physician. All states currently prohibit chiropractors from performing major surgery. Also, all 50 states do not grant any prescriptive authority to chiropractors.[14]

REIMBURSEMENT

Chiropractors believe that they are trained as primary care professionals and therefore seek status as primary care providers.[15] They believe it is within their scope to perform a physical exam, make a provisional differential diagnosis, and order appropriate investigations.[16] They also believe that they serve as cost-effective alternatives in the field of spinal manipulation. Therefore, chiropractors advocate for reimbursement from all types of payors.

Medicare reimburses chiropractors for their services. However, Medicaid currently reimburses chiropractors in only 26 states for their services. Additionally, private insurance companies in every state except Utah, Vermont, Oregon, Hawaii, and Idaho reimburse chiropractors for their services.[17] For example, Blue Cross/Blue Shield of Illinois regards chiropractors as primary care providers and reimburses them for their services.

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[13] Federation of Chiropractic Licensing Boards, *Questions and Answers About Professional Regulation and the Chiropractic Profession* (visited March 14, 2000) http://www.fclb.org/prof-reg.asp.
[14] Niagra Chiropractic Society On-line, *Chiropractic in the United States: Training, Practice, and Research* (July 14, 1999) http://www.ncschiropractic.com/ajcpr/part5.htm.
[15] Journal of American Chiropractic Association, A Pressing Need for More Research (April, 1999) http://www.americhiro.org/publications/more_research.html.
[16] Canadian Medical Association Journal, *Chiropractors Here to Stay* (Feb. 9, 1999) http://www.cma.ca/cmaj/vol-160/issue-3/0312a.htm.
[17] Medical College of Wisconsin, Non-Physician Clinician Summary

LEGISLATIVE AGENDA

In 1999, the word "chiropractor" was found in the subject heading of 220 pieces of state legislation. The same word was found in 2682 different drafts of legislation text that moved through the state legislatures.[18]

One of the goals of the profession is to increase their scope of practice and to be regarded as primary care providers. Chiropractors also seek to lift restrictions on their practice of spinal manipulation. Another goal is to be reimbursed by all insurance companies like Medicaid, Medicare, and private insurance companies.

[18] Lexis-nexis 1999 state legislation search.

HOMEOPATHS

INTRODUCTION

Homeopaths, who also refer to themselves as homeopathic physicians, are providers of an alternative system of medicine that is based on the concept that disease can be cured when a patient is treated with minute quantities of a substance that produces symptoms of the disease in a healthy person. Homeopathy focuses on healing the underlying cause of disease, not simply eliminating the symptoms caused by the disease.

The study of homeopathy was founded in 1796 by Samuel Hahnemann, a German physician and chemist who had become disillusioned with the conventional practice of medicine. Hahnemann based his innovative medical treatment on the healing power of a good diet, exercise, fresh air, and minimum doses of natural medications. This approach to medicine was a radical concept at the time.

Homeopathy is based on three principles: the law of similars, the single medicine, and the law of infinitesimals. According to the law of similars, frequently referred to as the phenomenon of "like cures like," a disease is cured by a medicine that creates symptoms in a healthy person similar to what the patient is experiencing. The principle of the single medicine is based on a belief that one remedy should cover all physical, mental, and emotional symptoms experienced by a patient to cure the whole person. This practice contrasts with conventional medicine, which usually uses separate medications for the treatment of each symptom. The law of infinitesimals was established by Hahnemann when he observed that large amounts of substances prescribed for treatments caused a wide range of negative side effects in patients. He determined through experiments that taking minute levels of a medication strengthens its potency and increases the length of its effectiveness.[1]

Homeopathy was introduced in the United States in 1825, and the American Institute of Homeopathy was founded in 1844. Its popularity peaked in the late 19th century when 15 percent of American physicians were homeopaths. With the rise of modern clinical medicine near the turn of the century, homeopathy lost its popularity. However, the growth of alternative medicine since the early 1980s has renewed interest in homeopathy in the United States and the United Kingdom.[2]

EDUCATION

In 1997, there were over 20 homeopathic training programs in the U.S.. Commonly, training programs in homeopathy are three or four-year post-graduate programs, usually consisting of extended weekend courses that meet every month or every other month. They include detailed instruction in homeopathic philosophy, casetaking, case analysis, materia medica, and repertory (materia medica refers to "materials of

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[1] Encarta Encyclopedia, *Homeopathy* (visited March 30, 2000) http://encarta.msn.com/index/conciseindex/25/025CF000.htm.

[2] *Id.*

medicines" used in homeopathy, and repertory refers to important texts/data bases that list the specific medicines that are known to cause a specific symptom in overdose and cure it in homeopathic doses).

Although clinical training is not a part of most homeopathic programs at present, a common part of the training is the observation of homeopathic casetaking on video. Students are required to take cases and provide analyses of them, with treatment plans, to their instructors.

Many practicing health professionals specialize in homeopathy. However, some students and practitioners of homeopathy are unlicensed in any health profession. While some homeopathic training programs require that students have one of the recognized health professional licenses, the majority of homeopathic training programs provide education to anyone who is interested. Courses that allow unlicensed practitioners to attend them generally require that students seek coursework in anatomy, physiology, and pathology at local colleges as prerequisites.

In addition to the above-mentioned training programs, there are a select number of correspondence courses in homeopathy. Two of the leading correspondence courses were developed in England. Both are two-year programs, one is 350-hours per year and the other is 1,000 hours per year.

There are also mail-order naturopathic programs in which homeopathy is a part; however, these programs are not highly respected, and graduates of these programs are not allowed to sit for licensing examinations for naturopaths in any state, nor are they able to obtain certification from leading homeopathic certification bodies.

The homeopathic certification that exists includes certification for MDs, DOs, DDSs, NDs, and for any other licensed health professional. Certification is also available for anyone who completes a program in a recognized school of homeopathy.[3]

LICENSURE

Three states, Arizona, Connecticut, and Nevada, have homeopathic licensing laws available for those homeopaths who are also licensed as physicians. Specifically, MDs and DOs practicing homeopathy in Arizona and Nevada and MDs practicing homeopathy in Connecticut must be licensed by the state homeopathic licensing board. Other states allow homeopathy within the scope of practice for certain other stated health professionals, such as acupuncturists, chiropractors, dentists, and nurse practitioners. But laws vary widely from state to state.[4]

RELATIONSHIP WITH PHYSICIANS

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[3] Dana Ullman, *The Education of Homeopaths*, (modified March 14, 1999) http://www.homeopathic.com/intro/education.htm.

[4] Referral Glossary, *Local Practitioners* (visited March 30, 2000) http://www.pathfinder.com/drweil/practitioner/glossary,0,2084,,00.html.

As mentioned above, many practicing health professionals specialize in homeopathy. The greatest number of health professionals who specialize in homeopathy in the Western world are physicians. In Europe where homeopathy is one of the leading alternative medicines, it has been estimated that over 30% of French physicians and 20% of German physicians prescribe homeopathic medicines and that over 40% of British physicians refer patients to homeopathic doctors.[5] Also, with the popularity of alternative medicine in the U.S. today, many American physicians are referring patients to homeopaths or prescribing homeopathic remedies.

Homeopaths without a prior medical degree are not allowed to prescribe medications. Generally, most homeopaths in the U.S. hold another medical degree, like a MD, DO, or DC, that allows them to diagnose and prescribe medications. However, with professions such as chiropractic and naturopathy, state laws govern whether these professionals who further specialize in homeopathy are able to prescribe.[6]

REIMBURSEMENT

Because there is concern regarding homeopathy's effectiveness, many insurance companies typically do not cover the services of homeopaths. Therefore, many patients are required to pay out of pocket for homeopathic services desired. However, in some states homeopathic services are covered and reimbursed. However, in most states where their services are covered, homeopaths are required to be osteopathic or allopathic physicians.[7]

LEGISLATIVE AGENDA

In 1999, the word "homeopath" was found in the subject heading of 7 pieces of state legislation. The same word was found in 279 different drafts of legislation text that moved through the state legislatures.[8]

One of the main goals of the profession is for homeopathy to be recognized as an effective form of medicine. Another goal is to receive reimbursement from insurance companies.

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[5] Dana Ullman, *The Education of Homeopaths*, (modified March 14, 1999) http://www.homeopathic.com/intro/education.htm.
[6] Natural Healers, *Homeopathy Q&A* (modified Jan. 5, 2000) http://www.naturalhealers.com/qa/homeopathy.html.
[7] Family Health, *Homeopathy, A Brief Introduction* (visited March 30, 1999) http://porh.cas.psu.edu/AlternativeHealth/intro10/html.
[8] 1999 Lexis-nexis state legislation search.

NATUROPATHS

INTRODUCTION

The practice of naturopathy was first used in the US in the very early 1900s. Dr. Benedict Lust of Germany is often credited with bringing the term to the US.[1] The profession is said to have experienced significant growth during the early years of the 20th century, only to be stunted with the advances made by modern medicine in and around World War II[2]. During the 1970s, the "back to nature" culture of the American Pacific Northwest fostered a growth in interest of naturopathy, which has been resurrected recently with America's interest in complimentary and alternative medicine (CAM).[3]

Naturopathy, sometimes referred to as naturopathic medicine, is based on the tenet that the body can naturally ward off disease when it is in sync with the mind and properly cared for.[4] Naturopaths generally practice a wide variety of alternative therapies such as manipulation and massage, herbal therapy, hydrotherapy, acupuncture, and traditional Oriental medicine. There are two opposing national organizations that represent naturopathic providers (see below); both have used the term "naturopathic medicine" in their literature. The American Association of Naturopathic Physicians (AANP) uses the term "physician" to describe its providers, however, the American Naturopathic Medicine Association (ANMA) generally uses the older, "naturopath."[5]

According to the AANP, there are currently 1500 licensed or licensable naturopaths currently in practice in the US, with another 1500 set to graduate from one of five naturopathic schools in the next four years.[6] In addition, there are other certificate and mail order programs whereby students (physicians or otherwise) can receive training in a number of areas of natural medicine. The ANMA lists 10 such schools in its literature.

EDUCATION

As stated there are major differences between the two national naturopathic organizations. The AANP views naturopaths as "primary care doctors of alternative medicine" and advocates for formal education and licensure. In contrast, ANMA does not believe that formal education is required for naturopaths, and advocates certification mechanisms instead.

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[1] Natural Health, *The History of True Naturopathy* (visited Jan 25, 2000) http://www.naturalhealth.org/history.html.

[2] American Association of Naturopathic Physicians, *What is Naturopathic Medicine? The History and Practice in North America* (visited Jan 25, 2000) http://naturopathic.org/Licensing/TraditionalNaturopathy.html.

[3] AMA Council on Scientific Affairs, Report 12 –Alternative Medicine

[4] *Id.*

[5] American Association of Naturopathic Physicians, *AANP Webmaster's FAQ* (modified Jan. 23, 2000) http://naturopathic.org/WebmasterFAQ.html.

[6] *More Stringent Standards Needed in Naturopathic Field: A Painful, But Valuable, Lesson,* Asheville Citizen-Times, Jan. 25, 2000, at A6.

The ANMA lists ten schools that offer courses in naturopathy. The ANMA advocates for the receipt of certification in courses offered. Certification here is granted by the institution upon completion of the coursework in a given area of study of naturopathy. The ANMA works with and provides recognition to correspondence schools offering mail order degrees in naturopathic medicine through its corporations (e.g., American Naturopathic Certification and Accreditation Board, Inc., ANCAB).[7] There is no state involvement with any sort of regulation of naturopaths who receive this certification.

Those naturopaths that do receive formal education do so at one of five Naturopathic Medical Colleges in the United States and Canada. The Council on Naturopathic Medical Education (CNME) currently accredits three of these.[8] While admissions requirements differ (not all require a bachelor's degree), certain prerequisite coursework must be completed before matriculating at any of these schools. Training at these four schools is a four-year program that includes pre-clinical and clinical coursework. Students study physiology, anatomy, biochemistry, microbiology, immunology, etc. before entering their last two years of clinical alternative medicine. Most of this training is received at outpatient clinics or demonstrations.

Currently, there is only voluntary postgraduate training. Only a handful of hospitals in the United States offer residency programs to graduates of naturopathic medical schools. These include such residences as general medicine, natural childbirth, acupuncture, and homeopathy.[9] The federal government does not fund naturopathic residency programs. Individual naturopathic physicians are currently shouldering the expense.[10]

LICENSURE

Twelve states currently license naturopaths: Alaska, Arizona, Connecticut, Hawaii, Kansas, Maine, Montana, New Hampshire, Oregon, Utah, Vermont, and Washington. Every state with licensure mechanisms in place requires the applicant to graduate from a doctoral program in naturopathy.[11] These states also require successful completion of the Naturopathic Physician Licensing Examination (NPLEX), which consists of two main parts, a basic sciences section taken following the second year of schooling, and a clinical section taken after the fourth year. Not all states require both parts for licensure, however. In addition, there are add-on parts to the NPLEX that cover acupuncture, homeopathy, obstetrics, and minor surgery. Some states require these exams for naturopaths who wish to practice these additional therapies. At least one state, Utah, requires successful completion of a 12-month residency

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[7] American Association of Naturopathic Physicians, *AANP Webmaster's FAQ* (modified Jan. 23, 2000) http://naturopathic.org/WebmasterFAQ.html.

[8] *Id.*

[9] Alliance Legislative Handbook, Clinical Internships and Residencies (visited March 9, 2000) http://www.allinaceworkbook.com/education/ed5.htm.

[10] Naturopathy Online, *Frequently Asked Questions* (modified July 17, 1999) http://www.naturopathyonline.com/~suzanneec/faq.htm.

[11] American Association of Naturopathic Physicians, *AANP Webmaster's FAQ* (modified Jan. 23, 2000) http://naturopathic.org/WebmasterFAQ.html.

program for licensure.[12] However, residency programs are not the norm, and are set up on an individualized basis.[13]

The remaining states that do not license naturopaths allow them to practice to some extent. However, naturopaths are not allowed to practice in every state. For example, South Carolina and Tennessee specifically prohibit the practice of naturopathy.[14]

As previously mentioned, the ANMA is against any formalized educational requirements for the practice of naturopathy and further is against licensing for its practice.

RELATIONSHIP WITH PHYSICIAN

As relatively few Americans receive coverage for Naturopathic services through an insurer, most often visits to naturopaths are done without gatekeeper referral and expenses are paid out-of-pocket.

REIMBURSEMENT ISSUES

A 1999 study conducted by Landmark Healthcare, a national complimentary and alternative medicine company, found that only 2% of all HMOs cover naturopathic services for enrollees. According to the AANP, Hawaii, Arizona, and Connecticut mandate insurance parity for naturopaths, while Montana requires its coverage if a plan provides coverage for primary care. Washington State meanwhile requires the coverage of naturopathic services. Insurance coverage for naturopathic services is most often found in states with licensing mechanisms in place.[15]

LEGISLATIVE AGENDA

In 1999, the word "naturopath" was found in the subject heading of 57 pieces of state legislation. The same word was found in 393 different drafts of 1999 legislation text that moved through state legislatures.[16]

One goal of the profession is to receive reimbursement for services where naturopaths are licensed. Another goal is to expand rights for naturopathic physicians, which is usually focused in states where there are large naturopathic populations. However, there are still 38 states without licensing mechanisms for naturopaths, and the AANP has stated that it wishes to have licensing in place in all 50 states by 2008.[17]

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[12] The Alliance Legislative Workbook, Clinical Internships and Residencies (visited March 9, 2000) http://www.allianceworkbook.com/education/ed5.htm.

[13] The Alliance Legislative Workbook, *NPLEX: Your Naturopathic Doctor Is Tested* (visited Jan. 25, 2000) http://www.allianceworkbook.com/education/ed6.htm.

[14] American Medical Association, *New Kind of Doctor Seeks Wider Roles*, (Feb. 22, 1999) http://www.ama-assn.org/sci-pubs/amnews/pick_99/pick0222.htm.

[15] Landmark Healthcare, *The Landmark Report II on HMOs and Alternative Care: 1999 Nationwide HMO Study of Alternative Care* (visited Dec. 28, 1999) http://www.landmarkhealthcare.com/99tlrII.htm.

[16] Lexus-nexis 1999 State Legislative search.

[17] American Association of Naturopathic Physicians, *AANP Webmaster's FAQ* (modified Jan. 23, 2000) http://naturopathic.org/WebmasterFAQ.html.

MINNESOTA OPTOMETRIC ASSOCIATION

December 30, 2002

Dirk Colby, OD
Laurie Mickelson, Executive Director
Minnesota Board of Optometry
2829 University Ave. SE, Room 500
Minneapolis, MN 55414

Dear Dr. Colby and Ms. Mickelson,

Thank you for the invitation to meet with members of the Council of Health Boards Subcommittee. Unfortunately, I will not be able to join you on January 3rd. Despite that, I would like to take the opportunity to clarify some of the issues contained in the latest draft of the Minnesota Council of Health Boards review of the "Expanded Scope of Prescriptive Authority for Optometrists." I will begin by examining the questions posed at the end of the review.

First, this section seems to venture outside of the legislative framework given the Council. They move into the realm of subjective questions posed by an antagonist to a protagonist. I believe the members of the Council need to strongly consider a more objective role in the process. Despite this movement outside the role established under statute, the following information should clarify the issues and questions raised. I will take them in order.

1) Clarification of Education and Pharmacology.

First, the Legislature has established a process to license both Doctors of Optometry and Medical Doctors. As far as can be determined, the state does not license subspecialty physicians. Therefore, the information provided compared the education of optometrists to that of medical doctors, dentists, and podiatrists to the point of licensure. Perhaps we should use the same process to determine whether or not general practice physicians have as much education as rheumatologists in the treatment of arthritis. If they are found to have less, would it be in the interest of public safety to restrict the ability of non-rheumatologists to treat arthritis?

Let us further examine the statutory pharmacology requirements for Doctors of Optometry in Minnesota. Since 1982, Minnesota Statute 148.573 has required the following:

> (a) Successful completion of 60 classroom hours of study in general and clinical pharmacology as it relates to the practice of optometry, with particular emphasis on the use of topical ocular drugs for examination purposes. At least 30 of the 60 classroom hours shall be in ocular pharmacology and shall emphasize

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> the systemic effects of and reactions to topical ocular drugs, including the emergency management and referral of any adverse reactions that may occur. The course of study shall be approved by the board of optometry, and shall be offered by an institution which is accredited by a regional or professional accreditation organization recognized or approved by the Council on Post-secondary Education or the United States Department of Education or their successors. The course shall be completed prior to entering the examination required by this section;
>
> (b) Successful completion of an examination approved by the Board of Optometry on the subject of general and ocular pharmacology as it relates to optometry with particular emphasis on the use of topical ocular drugs, including emergency management and referral of any adverse reactions that may occur;

This requirement was put in place when optometrists were granted the authority to utilize topical preparations to dilate the eyes. An examination of these drops will result in the realization that these diagnostic pharmaceuticals have serious potential side effects. A point that the opposition in the early 1980s made clear to the legislature.

Additionally, in 1993 the following requirements were put into Minnesota Statute 148.575:

> (1) Successful completion of at least 60 hours of study in general and ocular pharmacology emphasizing drugs used for examination or treatment purposes, their systemic effects and management or referral of adverse reactions;
>
> (2) successful completion of at least 100 hours of study in the examination, diagnosis, and treatment of conditions of the human eye with topical legend drugs;
>
> (3) successful completion of two years of supervised clinical experience in differential diagnosis of eye disease or disorders as part of optometric training or one year of that experience and ten years of actual clinical experience as a licensed optometrist; and
>
> (4) successful completion of a nationally standardized examination approved by the board on the subject of treatment and management of ocular disease prepared, administered, and graded by the International Association of Boards of Examiners in Optometry or an equivalent national board examination.

These requirements were put into law when optometrists were granted the authority to treat eye conditions with pharmaceuticals. These requirements will remain in place for

all optometrists affected by the proposed legislation. In 1993, the Board of Optometry determined that every accredited college of optometry met the minimum requirements under Section 148.575 in 1988. Most of the colleges met the requirements long before that. Both of these sections of law are attached for confirmation and further review.

Further, attached are the curricula of a variety of colleges of optometry for review of their pharmacology requirements. In addition to the specific pharmacology courses, the appropriate use of medications to treat conditions of the eye is embedded into the clinical experience and courses on ocular disease diagnosis and treatment courses.

How much pharmacology is enough? It is likely that those individuals and organizations that have philosophical difficulty with this legislative proposal will create an arbitrary threshold that will never be enough. The history of all 50 states has been born out of the fact that optometrists have an appropriate level of pharmacology training. In fact, recent legislative history provided to the Council demonstrates that states who have granted similar authority to optometrists continue to remove drug class restrictions.

In support of their position, the American Osteopathic Association presented a monograph entitled *Non-Physician Clinician.* Below is a quote from their examination of optometric education:

> Optometry programs include classroom and laboratory study of health and visual sciences, as well as clinical training in the diagnosis and treatment of eye disorders. Included are courses in pharmacology, optics, vision science, biochemistry, and systemic disease.

The monograph continues to state:

> Broadly speaking, optometrists are allowed by laws in all 50 states to prescribe all non-controlled substances in all of the drug schedules. . . Optometrists are also able to prescribe controlled substances in 25 states.

That was written in the year 2000. Interestingly, the footnote for the sentence beginning with "Broadly speaking" is taken from a report from the Medical College of Wisconsin.

In opposition to legislation granting optometrists the authority to prescribe topical medications, information was distributed noting that topical medications are "powerful drugs which have serious systemic side effects." (See attached letter to Rep. Rodosovich from the Minnesota Academy of Family Physicians, Feb. 21, 1992).

Additionally, the following background was provided to the legislature (attached):

> Limiting the use of drugs to topical pharmaceuticals (those applied directly to the eye) does <u>not</u> decrease the risk to the patient. Eye drops are absorbed into the body's bloodstream as fast as if they were injected. Reay H. Brown, MD, of

> Emory University said, "With increased systemic absorption, topical ophthalmic medications can carry increased risks." (emphasis not added)

Both of these statements are correct. They demonstrate the fact that in order to utilize medications to treat conditions of the eye, any health care provider must have a full understanding of the contraindications of that medication, the systemic effects of the medication and a firm grounding in basic pharmacology. Optometrists in this state and around the nation have proven that the training is there.

2) Clarification of Scope of Practice.

The legislation specifically limits optometrist to treating the eye and adnexa. The following language comes from the proposed legislation:

> 3.20 Subdivision 1. [AUTHORITY TO PRESCRIBE OR ADMINISTER.] A
> 3.21 licensed optometrist who is board certified under section
> 3.22 148.575 may prescribe or administer ~~topical~~ legend drugs to aid
> 3.23 in the diagnosis, cure, mitigation, prevention, treatment, or
> 3.24 management of disease, deficiency, deformity, or abnormality of
> 3.25 the human eye and adnexa included in the curricula of accredited
> 3.26 schools or colleges of optometry.

The following language currently exists in the Medical Practice Act:

> A licensed physician or other health professional licensed under this chapter shall also report to the board any occurrence of any adverse reaction resulting from an optometrist's prescription, use, or administration of any topical legend drug. Any reports received by the board must be reported to the Board of Optometry. Minnesota Statute 147.111

The following language is contained in the legislative proposal and amends existing reporting requirements:

> 4.6 Sec. 7. Minnesota Statutes 2000, section 151.37,
> 4.7 subdivision 11, is amended to read:
> 4.8 Subd. 11. [COMPLAINT REPORTING.] The board of pharmacy
> 4.9 shall report on a quarterly basis to the board of optometry any
> 4.10 complaints received regarding the prescription or administration
> 4.11 of ~~topical~~ legend drugs under section 148.576.

In 2000, the Board of Optometry received statutory authority which grants it a wider and stronger range of options in regulating optometrists practicing outside the scope written into law.

There are more reporting requirements by the Boards of Medicine and Pharmacy of any problems with optometrists prescribing. Additionally, the check and balance of one licensed professional writing a prescription and another licensed professional filling the prescription provides another level of oversight to insure public safety. These mechanisms have been in effect since 1993.

The Podiatry Statutes state the following:

> Subd. 2. Podiatric medicine. "Podiatric medicine" means the diagnosis or medical, mechanical, or surgical treatment of the ailments of the human hand, foot, ankle, and the soft tissue of the lower leg distal to the tibial tuberosity, including amputation of the toe, but not including amputation of the foot, hand, or fingers, or the use of anesthetics other than local anesthetics, except as provided in section 153.26. Podiatric medicine includes the prescribing or recommending of appliances, devices, or shoes for the correction or relief of foot ailments. Podiatric medicine includes the prescribing or administering of any drugs or medications necessary or helpful to the practice of podiatry as defined by this subdivision, provided, however, that licensed podiatrists shall be restricted in their prescribing or administering of any drugs or medications by the limitations imposed on the scope of practice of podiatric medicine as defined in this chapter.

The limitations in the law relate to the use of anesthetics.

The Dental Practice Act defines dentistry as the following:

> 150A.05 Licensed dental practice.
>
> Subdivision 1. Practice of dentistry. A person shall be deemed to be practicing dentistry within the meaning of sections 150A.01 to 150A.12:
>
> (1) who uses a dental degree, or designation, or card, device, directory, sign, or other media whereby the person represents an ability to diagnose, treat, prescribe, or operate for any disease, pain, deformity, deficiency, injury, or physical condition of the human tooth, teeth, alveolar process, gums or jaw, or adjacent or associated structures;
>
> (2) who is a manager, proprietor, operator or conductor of a place where dental operations are performed;
>
> (3) who performs dental operations of any kind

gratuitously, or for a fee, gift, compensation or reward, paid or to be paid, to any person or agency;

(4) who uses a roentgen or X-ray machine for dental treatment, roentgenograms or for dental diagnostic purposes;

(5) who extracts a human tooth or teeth, or corrects or attempts to correct malpositions of the human teeth or jaws;

(6) who offers and undertakes, by any means or method, to diagnose, treat or remove stains or accretions from human teeth or jaws;

(7) who takes impressions of the human tooth, teeth, or jaws or performs any phase of any operation incident to the replacement of a part of a tooth, a tooth, teeth or associated tissues by means of a filling, a crown, a bridge, a denture or other appliance;

(8) who furnishes, supplies, constructs, reproduces, repairs, or offers to furnish, supply, construct, reproduce or repair prosthetic dentures or plates, bridges or other substitutes for natural teeth, to the user or prospective user thereof; or

(9) who performs any clinical operation included in the curricula of recognized dental schools and colleges.

The regulation of podiatrists and dentists is much broader than that being requested for optometrists. Additionally, there are more specific educational requirements and reporting mechanisms in place for optometrists.

Finally, optometrists, just like physicians, dentists, podiatrists, nurses, etc. practice to the level of their own expertise and comfort. Just because a physician is licensed to do surgery does not mean that they will do surgery. Similarly, just because optometrists are licensed to provide additional levels of treatment options, it does not mean that every optometrist will utilize every medication granted in this proposal. Optometrists in Minnesota and around the nation have proven that they are cautious in their practice methods. That will not change.

3) Clarification of Access

Currently, optometrists are diagnosing eye problems and disease every day. Every day they use their training and clinical judgement to determine the best treatment options for their patients. Part of that process is to determine what type of medication is best to treat the patient in front of them. If it is a topical medication, they write the prescription, if it

is a combination of topical and oral medication, they prescribe the topical medication and then either find a physician who will call in a prescription or send the patient on their way to another doctor with either a letter or description of the additional medication needed. In most cases, the patient is sent to their primary care physician, not an ophthalmologist. This process requires the patient to either make an appointment with their primary care physician or go to an urgent care setting. This takes more time and adds cost to the system for treatment that the optometrists determined was necessary. The same process takes place if the best treatment is a medication other than that currently allowed by law. These clinical decisions are being made every day in Minnesota.

If a physician had the same constraints placed upon them, there would be a significant uproar. The same constraints are not placed upon dentists or podiatrists. This limitation on treatment options places unnecessary duplication and cost to the health care system.

The Council Process

A final thought or observation on the Council of Health Plans process. It seems that the structure of the subcommittee has placed the representatives of the Board of Medical Practice in the role of antagonist and the representatives of the Board of Optometry in the role of protagonist. This seems inappropriate on both sides. I would also observe that this structure has moved the examination of this legislative proposal outside of the framework of the statute. It is replicating the role of the legislature instead of providing information to the legislative process. I would suggest that the Council seriously re-examine this process.

Thank you for your time.

Sincerely,

James A Meffert-Nelson
Executive Director

Cc: Randy Snyder
Joseph Willett, D.O.
Robert Leach, J.D.

Minnesota Statutes

Minnesota Statutes 2002 Display Document 1 of 3

Search Terms Summary Expand Down Load Prior Top Up Down Bottom Next

Chapter Title: PUBLIC HEALTH OCCUPATIONS
Section: 148.573

Text:

148.573 Prerequisites to drug use.

Subdivision 1. Certificate required. A licensed optometrist shall not purchase, possess or administer any topical ocular drugs unless, after August 1, 1982, the optometrist has obtained a certificate from the board of optometry certifying that the optometrist has complied with the following requirements:

(a) Successful completion of 60 classroom hours of study in general and clinical **pharmacology** as it relates to the practice of optometry, with particular emphasis on the use of topical ocular drugs for examination purposes. At least 30 of the 60 classroom hours shall be in ocular **pharmacology** and shall emphasize the systemic effects of and reactions to topical ocular drugs, including the emergency management and referral of any adverse reactions that may occur. The course of study shall be approved by the board of optometry, and shall be offered by an institution which is accredited by a regional or professional accreditation organization recognized or approved by the Council on Post-secondary Education or the United States Department of Education or their successors. The course shall be completed prior to entering the examination required by this section;

(b) Successful completion of an examination approved by the board of optometry on the subject of general and ocular **pharmacology** as it relates to optometry with particular emphasis on the use of topical ocular drugs, including emergency management and referral of any adverse reactions that may occur;

(c) Successful completion, after August 1, 1982, of a course in cardiopulmonary resuscitation offered or approved by the Red Cross, American Heart Association, an accredited hospital, or a comparable organization or institution; and

(d) Establishment, after August 1, 1982, of an emergency plan for the management and referral to appropriate medical services of patients who may experience adverse drug reactions resulting from the application of topical ocular drugs. The plan must be approved by the board of optometry and shall, at least, require the optometrist to:

Minnesota Statutes

Minnesota Statutes 2002 Display Document 2 of 3

Chapter Title: PUBLIC HEALTH OCCUPATIONS
Section: 148.575

Text:

148.575 Certificate required for use of topical legend drugs.

Subdivision 1. Certificate required for use of topical legend drugs. A licensed optometrist must be board certified to use topical legend drugs for therapy under section 148.576.

Subd. 2. Board certified defined. "Board certified" means that a licensed optometrist has been issued a certificate by the board of optometry certifying that the optometrist has complied with the following requirements for the use of topical legend drugs described in section 148.576:

(1) successful completion of at least 60 hours of study in general and ocular **pharmacology** emphasizing drugs used for examination or treatment purposes, their systemic effects and management or referral of adverse reactions;

(2) successful completion of at least 100 hours of study in the examination, diagnosis, and treatment of conditions of the human eye with topical legend drugs;

(3) successful completion of two years of supervised clinical experience in differential diagnosis of eye disease or disorders as part of optometric training or one year of that experience and ten years of actual clinical experience as a licensed optometrist; and

(4) successful completion of a nationally standardized examination approved by the board on the subject of treatment and management of ocular disease prepared, administered, and graded by the International Association of Boards of Examiners in Optometry or an equivalent national board examination.

Subd. 3. Display of certificate required. A certificate issued to a licensed optometrist by the board of optometry must be displayed in a prominent place in the licensed optometrist's office.

Subd. 4. Accreditation of courses. The board of optometry may approve courses of study in general or ocular **pharmacology** and examination, diagnosis, and treatment of

conditions of the human eye only if they are taught by an institution that meets the following criteria:

(1) the institution has facilities for both didactic and clinical instruction in **pharmacology** and ocular disease treatment;

(2) the institution certifies to the board of optometry that the course of instruction is comparable in content to courses of instruction required by other health-related licensing boards whose license holders or registrants are permitted to administer pharmaceutical agents in their professional practice for either diagnostic or therapeutic purposes or both; and

(3) the institution is accredited by a regional or professional accrediting organization recognized by the Council on Postsecondary Accreditation or the United States Department of Education, or their successors.

Subd. 5. Notice to board of pharmacy. The board of optometry shall notify the board of pharmacy of each licensed optometrist who meets the certification requirements in this section.

HIST: 1993 c 121 s 6

Professional Optometry Degree Program

Curriculum

Indiana University School of Optometry

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The professional optometry curriculum includes instruction in all of the clinical and practical phases of optometry as well as in the theoretical and fundamental aspects of vision science. It requires four years of professional courses, including a three-week summer assignment prior to the third year and rotations to external clinic settings during the final year. The university schedules two regular academic semesters and two summer sessions. Most optometry courses are scheduled for a full academic semester. Some, however, are scheduled for three, six, or eight weeks, and will be scheduled back-to-back with other courses that will be taken in the remaining weeks of the semester.

The current professional optometry curriculum was approved by the faculty of the School of Optometry on October 19, 1992; the requirements became effective during the first semester of the 1994-95 academic year. The school's Curriculum Committee strives to continuously review the curriculum and initiate needed enhancements.

Refer to the school's Bulletin for additional information.

1st year

First semester			Second semester		
V511	Human Gross Anatomy	4.0	V512	Ocular Anatomy	2.0
V514	Neuroanatomy	1.5	V516	Ocular Physiology	2.5
V515	Medical & Ocular Biochemistry	4.0	V522	Geometric Optics II	3.5
V517	Histology	3.0	V542	Systemic Physio-Pharmacology	4.0
V521	Geometric Optics I	3.5	V543	General Pathology	5.0
V540	Ocular Microbiology I	1.0	V551	Clinical Optometry I	2.0
V550	The Clinical Interview & Health History Taking	1.0	V553	Diagnostic Procedures I	3.5
V578	Public Health Policy & the Optometric Profession	2.0		*Total credit hours:*	22.5
	Total credit hours:	20.0			

2nd year

First semester

V631	Ophthalmic Optics I	3.0
V642	Systemic Physio-Pharmacology II	5.0
V652	Clinical Optometry II	2.0
V654	Diagnostic Procedures II	3.5
V663	Physiological Optics I: Visual Optics	3.5
V665	Physiological Optics III: Ocular Motility	2.5

Total credit hours: 19.5

Second semester

V632	Ophthalmic Optics II	2.5
V633	Contact Lenses I	3.0
V644	Ocular Disease I	3.0
V646	Ocular Pharmacology	3.0
V648	Neurophysiology of Vision	1.0
V656	Diagnostic Procedures III	2.0
V664	Physiological Optics II: Visual Function	3.0
V666	Physiological Optics IV: Binocular Function	2.0
V670	Epidemiology & Biostatistics for Optometry	1.0

Total credit hours: 20.5

Summer session

V680	Introduction to Clinic	2.5

Total credit hours: 2.5

3rd year

First semester

V745	Ocular Disease II	3.0
V748	Principles & Methods of Physical Assessment & Medicine	3.0
V752	Contact Lenses II	3.0
V755	Basic Visual Therapy	3.0

Second semester

V713	Ocular Microbiology II	2.0
V746	Ocular Disease III (Neuro-Optometry)	2.0
V749	Applied Ocular Therapeutics	3.0
V751	Low Vision & Rehabilitation	1.0

V756	Clinical Assessment I	2.0
V775	Legal & Professional Aspects of Optometry	2.0
V786	Optometry Clinic [1]	2.0
V787	Optometry Clinic [1]	2.0
	Total credit hours:	20.0

V753	Optometric Gerontology & Geriatrics	1.0
V757	Clinical Assessment II	1.0
V774	Socioeconomic Aspects of Optometry	2.0
V781	Pediatric Optometry	1.5
V782	Visual Perception & Learning Disabilities	1.5
V788	Optometry Clinic [1]	2.0
V789	Optometry Clinic [1]	2.0
	Total credit hours:	19.0

4th year[2]

V885	Optometry Clinic (Bloomington)	10.0
V887	Extension Clinic (Indianapolis)	10.0
V888	External Clinic	10.0
Fourth Clinical Assignment: V885, V887, V888		10.0
V889	Special Projects	2.0
	Total credit hours:	42.0

Electives

V569	Selected Studies	arr.
V758	Advanced Visual Therapy	2.0
V884	Optometry Clinic--Arranged	5.0

Clinical Improvement

V780	Clinical Skills Enhancement--3rd year	2.0
V880	Clinical Skills Enhancement--4th year	5.0

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[1] Elementary school vision-screening program assignments will be arranged. (Return)

[2] Students in the final year of the program will spend 12 weeks at each of their four clinic assignments (V885, V887, V888, and the Fourth Clinical Assignment). Three of these four assignments are at various external locations. (Return)

URL: http://www.opt.indiana.edu/programs/od/curricul.htm
Revised: June 21, 2001

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Comments: Web Administrator
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Professional Optometry Degree Program

Course Descriptions

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The number of credit hours given a course is indicated in parentheses following the course title. The abbreviation "P" refers to the course prerequisite(s). The abbreviation "C" refers to courses that are corequisite(s). Unless otherwise noted, the prerequisites for all courses include enrollment in the School of Optometry and permission of the instructor.

V511 Human Gross Anatomy **(4 cr.)** Regional study of anatomy using human specimens. Emphasizes head and neck, axilla, abdomen, and thorax.

V512 Ocular Anatomy (2 cr.) P: V511. A detailed study of the normal anatomy and embryology of the eye and its adnexa. The organization of the various components of the eye is studied at the light and electron microscopic level and this organization is related to the molecular structure where it is known.

V514 Neuroanatomy **(1.5 cr.)** P: V511. Functional anatomy of the human brain, with emphasis on the visual system.

V515 Medical and Ocular Biochemistry **(4 cr.)** Medical and biochemical principles that relate to understanding and treatment of disease. (sample syllabus)

V516 Ocular Physiology (2.5 cr.) C: V512. Vegetative physiology of the eye, with attention to the chemical constitution, intermediary metabolism, regulation of hydration and intraocular pressure, transparency of the ocular components, and retinal physiology.

V517 Histology (3 cr.) Microscopic anatomy of human cells, tissues, and organs. (sample syllabus)

V521 Geometric Optics I (3.5 cr.) Optics of lenses, prisms, and mirrors; properties of light.

V522 Geometric Optics II (3.5 cr.) P: V521. A continuation in the study of optics of lenses, prisms, and mirrors; properties of light.

V540 Ocular Microbiology I (1 cr.) Biology of viruses, bacteria, fungi, and other organisms that infect ocular tissues. Host response to infections and epidemiology will be presented.

V542 Systemic Physio-Pharmacology I (4 cr.) P: V515. Integrated pharmacology and physiology of organ systems, including cellular-level activity and intercellular communication.

V543 General Pathology **(5 cr.)** P: V511 and V517. General concepts in inflammation, immunology, neoplasia. Infectious, genetic, systemic diseases and diseases of organs and systems studied.

V550 The Clinical Interview and Health History Taking (1 cr.) Introduction to interview techniques, health history content, and medical record documentation as applies to the optometric setting. The course will include optometric and medical terminology, interview techniques for special populations, legal aspects of medical records, and differential diagnosis of visual symptoms. Requirements include completion of outside health history assignments.

V551 Clinical Optometry I (2 cr.) Introduction to visual examination techniques and evaluation of results as they relate to subjective symptoms, visual performance, and health. Study of the principles involved in the measurement and treatment of ametropia, oculomotor imbalances, and associated conditions.

V553 Diagnostic Procedures I **(3.5 cr.)** P: V521. C: V543 and V551. Vision examination techniques, theory and application of instrumentation, and ocular diagnostic procedures.

V569 Selected Studies (elective, cr. arr.) Items of current scientific interest. Consideration given to student's special interests. May include writing of abstracts and reviews of current vision science literature. May be repeated for credit with permission of instructor.

V578 Public Health Policy and the Optometric Profession **(2 cr.)** Introduction to the fundamentals and principles of public health and epidemiology; an overview of public and community health problems, planning, and care, with special attention to optometric and other visual aspects of variously identified segments of the community. Includes methods of epidemiological investigation and study design, plus considerations of quality, efficiency, economics, and regulation of vision and health care delivery and utilization.

V631 Ophthalmic Optics I (3 cr.) P: V521 and V522. Design and application of ophthalmic materials; study of the physical and optical characteristics of ophthalmic single vision and multifocal lens designs, ophthalmic prism, absorptive lenses, and the measurement and fitting of lenses and frames. Includes related laboratory exercises.

V632 Ophthalmic Optics II (2.5 cr.) P: V521 and V522. A continuation in the design and application of ophthalmic materials; study of the physical and

optical characteristics of ophthalmic single vision and multifocal lens designs, ophthalmic prism, absorptive lenses, and the measurement and fitting of lenses and frames. Includes related laboratory exercises.

V633 Contact Lenses I **(3 cr.)** Theory and practice of contact lenses. Includes contact lens terminology, ocular anatomy and physiology as it applies to contact lens wear, general principles of lens materials, lens design, contact lens optics, lens care systems, the prefitting examination, basic fitting principles, and aftercare problems as they apply to contact lens practice.

V642 Systemic Physio-Pharmacology II (5 cr.) P: V542. Integrated pharmacology and physiology of organ systems, including blood, immune, digestive, renal, respiratory, circulatory, and central nervous systems.

V644 Ocular Disease I (3 cr.) P: V543. A detailed discussion of the signs, symptoms, differential diagnosis, and management of ocular diseases of the anterior segment.

V646 Ocular Pharmacology (3 cr.) P: V642. Medications used in treatment of ocular disease. Ocular effects of systemic medications.

V643 Neurophysiology of Vision **(1 cr.)** Introduction to the functional organization of the visual system and the physiological basis of vision. This course treats the visual system as a biological image processor to reveal how the structure and function of the retina and brain determine visual performance and constrain the quality of vision. (sample syllabus)

V652 Clinical Optometry II (2 cr.) P: V551. Introduction to visual examination techniques and evaluation of results as they relate to subjective symptoms, visual performance, and health. Principles involved in the measurement and treatment of ametropia, oculomotor imbalances, and associated conditions are studied. (sample syllabus)

V654 Diagnostic Procedures II **(3.5 cr.)** P: V553, V543, V551. C: V642 and V652. Advanced diagnostic techniques stressing differential diagnosis, treatment, and appropriate interpretation. Emphasis on binocular vision examination techniques, theory, and application of instrumentation along with advanced disease detection.

V656 Diagnostic Procedures III (2 cr.) P: V553 and V654. C: V644 and V646. Advanced clinical analysis, procedures, and protocols for examinations of patients in the clinical setting, and comprehensive eye examinations with scheduled patients. Requirements include completion of outside practice examinations, clinical observations by arrangement, and the Clinical Competency Examination.

V663 Physiological Optics I: Visual Optics (3.5 cr.) P: V522. The eye as an optical instrument.

V664 Physiological Optics II: Visual Function (3 cr.) The basic aspects of monocular vision, including light and dark adaptation, color vision, and both spatial and temporal resolution. The science of measuring visual performance and its application to clinical optometry.

V665 Physiological Optics III: Ocular Motility (2.5 cr.) Characteristics, control, and deficits of the five somatic eye-movement systems (convergence, saccadic version, pursuit version, fixation maintenance, vestibular reflex) and the autonomic systems subserving accommodation and pupillary diameter and reflexes. (sample syllabus)

V666 Physiological Optics IV: Binocular Function (2 cr.) Binocular sensory mechanisms of vision. Summary of the geometry of 3-dimensional space and stereo vision, underlying neuroanatomy and physiology of binocular vision, prerequisites for normal stereopsis, and commonly encountered anomalies of binocular vision.

V670 Epidemiology and Biostatistics for Optometry (1 cr.) Introduction to Epidemiology and Biostatistics, principles of epidemiological inquiry and research design, and the application of statistical methods to clinical data.

V680 Introduction to Clinic (2.5 cr.) P: V551, V553, V631, V632, V633, V643, V644, V652, V654, V656, and a passing score on the Clinical Competency Examination in V656. Introduction to clinical practice in visual analysis, optometric procedures, case conference; discussion and patient care for three 40-hour weeks during the summer, or the equivalent by arrangement.

V713 Ocular Microbiology II (2 cr.) P: V540. Morphology, physiology, identification of the microflora of the anterior segment of the eye and adnexa. Culture and sensitivity testing procedures. Clinical manifestations of microorganisms of the eye and ocular adnexa.

V745 Ocular Disease II **(3 cr.)** P: V644. A detailed discussion of the signs, symptoms, differential diagnosis, and management of ocular diseases of the posterior segment.

V746 Ocular Disease III (Neuro-Optometry) (2 cr.) P: V745. A detailed discussion of the signs, symptoms, differential diagnosis, and management of neurological diseases affecting the eye.

V748 Principles and Methods of Physical Assessment and Medicine (3 cr.) P: V680 or comparable clinical experience. Comprehensive health history, physical examination with emphasis on HEENT and neurological screening, and their relationship to ocular health conditions and medical management; clinical chemistry and interpretation of clinical laboratory tests; criteria for referral to other providers; principles of CPR and emergency office procedures.

V749 Applied Ocular Therapeutics (3 cr.) P: V646, V754. The use, in clinical optometric practice, of legend drugs, lasers, and other therapeutic devices in the treatment and management of ocular disease.

V751 Low Vision and Rehabilitation (1 cr.) P: V652 and V654. Special examination procedures and patient management techniques for the visually impaired. Evaluations and prescriptions of optical, nonoptical, and electronic devices. Overview of rehabilitative services.

V752 Contact Lenses II **(3 cr.)** P: V633. Applications of contact lenses. This course covers the fitting and care of patients requiring specialty contact lenses and more difficult cases including, but not limited to, correcting astigmatism, tinted and cosmetic lenses, fitting the presbyopic patient, fitting infants and children, fitting keratoconic patients, fitting postsurgical and other distorted corneas, haptic lenses, cosmetic shells, and prosthetic eyes. (sample syllabus)

V753 Optometric Gerontology and Geriatrics (1 cr.) The purpose of the course is to impart knowledge and understanding fundamental to comprehensive and primary vision care of older adults. Discussions will include the functional consequences of vision and aging, interdisciplinary aspects of care and community resources.

V755 Basic Visual Therapy **(3 cr.)** Diagnosis, prognosis, and orthoptic treatment of anomalies of binocular vision, including the optical, motor, sensory, integrative, and perceptual systems.

V756 Clinical Assessment I (2 cr.) P: V680. C: V745. Introduction to clinical reasoning and formulation of differential diagnostic protocols for investigation of various visual problems.

V757 Clinical Assessment II (1 cr.) P: V756. A continuation in the clinical reasoning and formulation of differential diagnostic protocols for investigation of various visual problems.

V758 Advanced Visual Therapy (elective, 2 cr.) Advanced levels of topics dealt with in V755 Basic Visual Therapy.

V774 Socioeconomic Aspects of Optometry (2 cr.) Optometry education; prevalence of visual anomalies; care of the blind, near-blind, and low-income groups; vision cults and propaganda; optometric careers; practice management.

V775 Legal and Professional Aspects of Optometry (2 cr.) Legal, ethical, and professional concerns of optometric practice, including legal decision making, the regulatory role of government and administrative agencies, licensing procedures, professional liability and malpractice, ethical considerations and the legal rights of patients in optometric practice.

V780 Clinical Skills Enhancement--3rd year (2 cr.) Increased supervision provided by clinical faculty for students having difficulty in areas of clinical performance.

V781 Pediatric Optometry **(1.5 cr.)** P: V755. Specialized diagnosis and management strategies for the infant and child. Topics to include refractive and binocular vision anomalies, disease, and pharmacology.

V782 Visual Perception and Learning Disabilities **(1.5 cr.)** P: V755. Optometrist's role in assessment and management of visual perception, learning disabilities, and reading problems. Communication with parents, educators, and other professionals will be emphasized.

V786 Optometry Clinic (2 cr.) P: V680. Clinical practice in visual analysis, patient care, and optometric procedures. Case discussion and student evaluation on a daily basis. Patient care includes assisting patients with selection of suitable eye wear.

V787 Optometry Clinic (2 cr.) P: V786. A continuation of V786. Clinical practice in visual analysis, patient care, and optometric procedures. Case discussion and student evaluation on a daily basis. Patient care includes assisting patients with selection of suitable eye wear.

V788 Optometry Clinic (2 cr.) P: V787. Clinical practice in visual analysis, patient care, and optometric procedures. Case discussion and student evaluation on a daily basis, case presentation by student interns. Patient care includes assisting patients with selection of suitable eye wear.

V789 Optometry Clinic (2 cr.) P: V788. Continuation of V788. Clinical practice in visual analysis, patient care, and optometric procedures. Case discussion and student evaluation on a daily basis, case presentation by student interns. Patient care includes assisting patients with selection of suitable eye wear.

V880 Clinical Skills Enhancement--4th year (5 cr.) Increased supervision provided by clinical faculty for students having difficulty in areas of clinical performance.

V884 Optometry Clinic--Arranged (5 cr.) P: V680, V786, V787, V788, and V789, as well as completion of all lecture and laboratory courses through the third professional year of study. Advanced clinical optometric training with emphasis on optometric specialties such as contact lens care, ocular disease diagnosis/ management, binocular vision analysis/therapy, and pediatrics.

V885 Optometry Clinic (10 cr.)[1] P: V680, V786, V787, V788, and V789, as well as completion of all lecture and laboratory courses through the third professional year of study. Advanced clinical optometric training with emphasis on optometric specialties such as contact lens care, ocular disease

diagnosis/ management, binocular vision analysis/ therapy, and pediatrics.

V887 Extension Clinic (10 cr.)[1] P: V680, V786, V787, V788, and V789, as well as completion of all lecture and laboratory courses through the third professional year of study. An intensive, hands-on patient care experience at a large urban optometry clinic in Indianapolis. Includes experience in primary care as well as specialty services.

V888 External Clinic (10 cr.)[1] P: V680, V786, V787, V788, and V789, as well as completion of all lecture and laboratory courses through the third professional year of study. An intensive, hands-on patient care experience at an affiliated external clinical site such as a military hospital, Veterans Administration medical facility, or referral eye center.

V889 Special Projects **(2 cr.)** Research and writing of a paper in a style suitable for publication in a scientific journal.

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[1] V885, V887, and V888 may be taken in nonsequential order.

URL: http://www.opt.indiana.edu/programs/od/courses.htm
Revised: October 22, 2002

IU Optometry home page: http://www.opt.indiana.edu/
Comments: Web Administrator
Original page design and coding: Terri Greene
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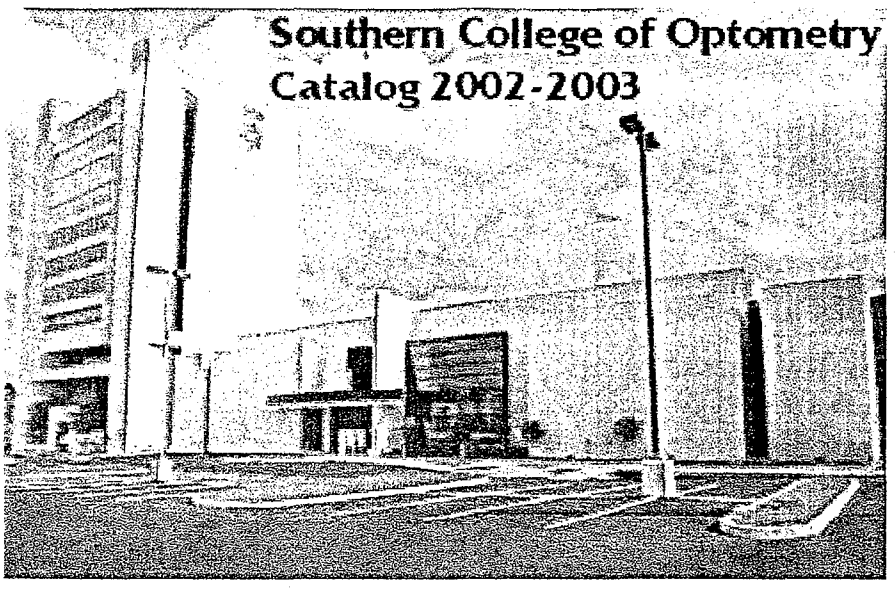

No person shall, on the basis of race, religion, gender, age, disability or national origin, be excluded from participation in, be denied the benefits of or be subjected to discrimination under any program or activity at Southern College of Optometry. The College is an Equal Opportunity Employer.

The College complies with the Tennessee College and University Security Information Act of 1989. Any current student, applicant for admission or employee of the College may obtain a copy of the College's most recent CUSIA report by contacting the Dean of Students.

This edition of the Southern College of Optometry catalog is effective for the academic year 2002-2003 and contains information current as of June 2002. Inasmuch as changes may be necessary from time to time, this catalog should not be construed as constituting a contract between the College and any person.

For information:

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Curriculum

First Professional Year

Course #	Course Title	Credit Hours	Lecture Hours	Lab/Clinic Hours
Fall Quarter				
BIO 110	Human Gross Anatomy	5	4	2
BIO 113	Histology	3	3	-
BIO 116	Optics of the Eye I	5	4	2
BIO 118	Monocular Sensory Processes	4	3	2
BIO 119	Biochemistry	2	2	-
OPT 111	Introduction to Optometry	1	1	-
	Total	*20*		
Winter Quarter				
BIO 120	Ocular Anatomy	5	4	2
BIO 125	Human Physiology I	2.5	2	1
BIO 126	Optics of the Eye II	4	3	2
BIO 128	Visual Perception	5	4	2
OPT 120	Optometric Theory and Methods I	4.5	3	3
	Total	*21*		
Spring Quarter				
BIO 134	Ocular Physiology	4	3	2
BIO 135	Human Physiology II	3.5	3	1
BIO 137	Optics of the Eye III	4	3	2
BIO 139	General Pathology	3	3	-
OPT 130	Optometric Theory and Methods II	4.5	3	3
OPT 131	Ethics and Optometry	1	0.5	1
	Total	*20*		

Second Professional Year

Course #	Course Title	Credit Hours	Lecture Hours	Lab/Clinic Hours
Fall Quarter				
BIO 211	General Pharmacology I	3	3	-
BIO 212	Binocular Vision and Ocular Motility	5	4	2
BIO 219	Organ System Pathology	4	4	-
OPT 210	Optometric Theory and Methods III	4.5	3	3

OPT 211	Ophthalmic Optics	4	3	2
CLN 213	Clinic Orientation I	1	-	2
	Total	*21.5*		
Winter Quarter				
BIO 221	General Pharmacology II	4	4	-
BIO 225	Neuroanatomy	4	3	2
OPT 220	Optometric Theory and Methods IV	4.5	3	3
OPT 221	Ophthalmic and Environmental Optics	4	3	2
OPT 223	Diagnosis and Treatment of Diseases of the Anterior Segment I	4	3	2
CLN 223	Clinic Orientation II	1	-	2
	Total	*21.5*		
Spring Quarter				
OPT 230	Patient Management	4.5	3	3
OPT 231	Special Topics in Ocular Pharmacology	2	2	-
OPT 233	Diagnosis and Treatment of Diseases of the Anterior Segment II	3	3	-
OPT 234	Pediatric Optometry	4	3	2
OPT 235	Contact Lenses I	4	3	2
OPT 238	Diagnosis and Treatment of Diseases of the Posterior Segment I	4	3	2
	Total	*21.5*		

Third Professional Year

Course #	Course Title	Credit Hours	Lecture Hours	Lab/Clinic Hours
Fall Quarter				
OPT 315	Contact Lenses II	4	3	2
OPT 316	Vision Therapy	4	3	2
OPT 318	Diagnosis and Treatment of Diseases of the Posterior Segment II	3	3	-
OPT 319	Diagnosis and Treatment of the Glaucomas	3	3	-
CLN 315	Clinical Internship I	3	-	12
	Total	*17*		
Winter Quarter				
OPT 320	Practice of Optometry I	3	3	-
OPT 321	Visual Rehabilitation	4	3	2
OPT 323	Public Health and Epidemiology in Eye Care	2	2	-
OPT 326	Strabismus and Amblyopia	4	3	2
OPT 328	Clinical Medicine and Physical Diagnosis	3	2	2
CLN 325	Clinical Internship II	3	-	12

	Total	*19*		
Spring Quarter				
OPT 330	Practice of Optometry II	3	3	-
OPT 333	Geriatric Optometry	1	1	-
OPT 334	Special Topics in Contemporary Eye Care	1	1	-
OPT 336	Legal Aspects of Optometry	2	2	-
OPT 337	Neuro-Eye Disease	3	3	-
CLN 336	Clinical Internship III	5.5	-	22
	Total	*15.5*		

Fourth Professional Year

Important: Fourth-year students are required to enroll in at least two ten-week externships in lieu of two of the quarter schedules listed. Externships (CLN 404, 414, 424, and 434) are each worth 12 quarter hours of credit. More information appears in the Course Descriptions (Clinic Department) section of this catalog.

Course #	Course Title	Credit Hours	Lecture Hours	Lab/Clinic Hours
Summer Quarter				
BIO 400	Research	3	-	-
	OR			
OPT 400*	Optometric Patient Care I	3	3	-
CLN 400	Adult Primary Care Optometry Service	3	-	12
CLN 401	Contact Lens Service	2	-	8
CLN 402	Pediatric Primary Care Service and Vision Therapy Service	2	-	8
CLN 403	Advanced Care, Ocular Disease Service	2	-	8
	Total	*12*		
Fall Quarter				
BIO 410	Research	3	-	-
	OR			
OPT 410*	Optometric Patient Care II	3	3	-
CLN 410	Adult Primary Care Optometry Service	3	-	12
CLN 411	Contact Lens Service	2	-	8
CLN 412	Pediatric Primary Care Service and Vision Therapy Service	2	-	8
CLN 413	Advanced Care, Ocular Disease Service	2	-	8
	Total	*12*		
Winter Quarter				
BIO 420	Research	3	-	-
	OR			
OPT 420*	Optometric Patient Care III	3	3	-

CLN 420	Adult Primary Care Optometry Service	3	-	12
CLN 421	Contact Lens Service	2	-	8
CLN 422	Pediatric Primary Care Service and Vision Therapy Service	2	-	8
CLN 423	Advanced Care, Ocular Disease Service	2	-	8
	Total	*12*		
Spring Quarter				
BIO 430	Research	3	-	-
	OR			
OPT 430*	Optometric Patient Care IV	3	3	-
CLN 430	Adult Primary Care Optometry Service	3	-	12
CLN 431	Contact Lens Service	2	-	8
CLN 432	Pediatric Primary Care Service and Vision Therapy Service	2	-	8
CLN 433	Advanced Care, Ocular Disease Service	2	-	8
	Total	*12*		

* The Optometric Patient Care (OPT 400, 410, 420, 430) sequence will offer four sections each quarter covering elective topics in optometry.

Course Descriptions

Courses numbered in the 100 series are for first professional year students, 200 for second professional year students, 300 for third professional year students, and 400 for fourth professional year students. The four-year program provides more than 4000 clock hours of instruction in the sciences and clinical optometry and carries a minimum of 225 quarter hours of credit.

For administrative purposes, the curriculum is organized into three departments: Biomedical Sciences, Optometry, and Clinic. The Biomedical Sciences Department is inter-disciplinary, offering sequences in anatomy, physiology and physiological optics. The Optometry Department offers diversified instruction in all phases of optometric theory and practice. The Clinical Program provides extensive experience in all facets of primary care optometry.

BIOMEDICAL SCIENCES

BIO 110 Human Gross Anatomy
(5 quarter hours)
Four hours of lecture and two hours of laboratory per week. Gross structure of the human body with emphasis on the head, neck, thorax, and abdomen.

BIO 113 Histology
(3 quarter hours)
Three hours of lecture per week. Microscopic structure of human tissues and organs. Histogenesis of selected tissues.

BIO 116 Optics of The Eye 1
(5 quarter hours)
Four hours of lecture and two hours of laboratory per week. Refracting surfaces, thin and thick lenses, and mirrors. Spherical ametropia and its correction. The use of catadioptric images to determine the various axes, angles, and landmarks of the eye. Incidence, distribution, etiology, development, and course of ametropia.

BIO 118 Monocular Sensory Processes
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Interaction of light with the eye to include transmission characteristics of the ocular media, light and dark adaption, and color vision. Clinical assessment of color vision.

BIO 119 Biochemistry
(2 quarter hours)
Two hours of lecture per week. Structure and function of intermediary metabolism and molecular biology. Special consideration given to ocular tissues.

BIO 120 Ocular Anatomy
(5 quarter hours)
Four hours of lecture and two hours of laboratory per week. Gross microscopic anatomy of the eye and adnexa. Embryological development of these structures.
Prerequisites: BIO 110, 113.

BIO 125 Human Physiology I
(2.5 quarter hours)
Two hours of lecture per week and two hours of laboratory on alternate weeks. Introduction to physiology with an emphasis on cellular physiology. Functions of cellular organelles, membrane transport, synaptic transmission, and properties of muscle cells.

Prerequisites: BIO 110, 113, 119.

BIO 126 Optics of The Eye II
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Spherocylindrical lenses and their clinical application to the specification and correction of astigmatism. Induced prism and Prentice's rule. Magnification and retinal image size. Optical aspects of accommodation, presbyopia, aphakia, and pseudoaphakia.
Prerequisite: BIO 116.

BIO 128 Visual Perception
(5 quarter hours)
Four hours of lecture and two hours of laboratory per week. Spatial and temporal characteristics of the visual system as determined by psychophysical and neurophysiological experimentation. Psychophysical methodology, contrast sensitivity, spatial resolution, hyperacuity, temporal sensitivity, motion sensitivity, and electrophysiology of the visual system. The effects of development, aging, and disease on visual function. Basic research methodology.
Prerequisite: BIO 118.

BIO 134 Ocular Physiology
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Physiology of the eye to include tear production and drainage, aqueous humor circulation, and corneal structure and transparency. Physiology of the crystalline lens, vitreous, and choroid. Vegetative physiology of the retina.
Prerequisites: BIO 120, 125.

BIO 135 Human Physiology II
(3.5 quarter hours)
Three hours of lecture per week and two hours of laboratory on alternate weeks. Physiology of the major organ systems to include the circulatory, respiratory, renal, digestive, nervous, endocrine, and reproductive systems.
Prerequisite: BIO 125.

BIO 137 Optics of The Eye III
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Aberrations and apertures. Optical instruments including telescopes and microscopes. Photometry. Topics in physical optics to include interference, diffraction, polarization, and lasers. Entoptic phenomena and the Siles-Crawford effect. The role of the pupil as it affects depth of field, aberrations, and accommodation.
Prerequisite: BIO 126.

BIO 139 General Pathology
(3 quarter hours)
Three hours of lecture per week. Tissue response to disease and injury. Inflammation and repair, immunology and immunopathology, and cellular disease.
Prerequisite: BIO 125.

BIO 211 General Pharmacology I
(3 quarter hours)
Three hours of lecture per week. The basic principles of pharmacology including drug absorption, distribution, metabolism, excretion, dosage, and routes of administration. Anesthetics and anti-inflammatory and chemotherapeutic agents.
Prerequisite: BIO 139.

BIO 212 Binocular Vision and Ocular Motility
(5 quarter hours)

Four hours of lecture and one two hour laboratory per week. (I) Psychophysic and physiology data of binocular vision and stereopsis to include retinal disparity, the horopter, physiological diplopia, and fusion. Sensory adaptation to abnormal binocular conditions. (II) Innervation
and actions of the extraocular muscles. Types of eye movements and their control mechanisms. Accommodation, pupillary reflexes, and their control mechanisms.
Prerequisites : BIO 120, 128.

BIO 219 Organ System Pathology
(4 quarter hours)
Four hours of lecture per week.
Diseases of the organ systems to include mechanisms, clinical manifestations, and diagnosis. Ocular manifestations of systemic disease.
Prerequisite: BIO 139.

BIO 221 General Pharmacology II
(4 quarter hours)
Four hours of lecture per week. A continuation of BIO 211 to include drugs affecting the endocrine, autonomic nervous, central nervous, cardiovascular, respiratory, gastrointestinal, and genitourinary systems. Toxicology and drug interactions. Ocular side effects of systemic medications.
Prerequisite: BIO 135.

BIO 225 Neuroanatomy
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Function and structure of the human central nervous system. Emphasis placed on the functional neuroanatomy of sensory and motor systems. Imaging of the central nervous system.
Prerequisite: BIO 135.

BIO 400, 410, 420, 430 Research
(3 quarter hours each)
In lieu of one quarter of OPT 400-430, senior students may enroll in one quarter of Research (BIO 400-430). Students will write a research proposal, conduct the research and write a report of their investigation at a level appropriate for publication in a professional journal. Submission for publication of outstanding papers will be encouraged. A list of faculty supervisors, along with their research interests, will be made available to students who select this course.
Prerequisites: Successful completion of all prior BIO courses.

OPTOMETRY

OPT 111 Introduction to Optometry
(1 quarter hour)
One hour of lecture per week. An overview of the profession of optometry. History and current status of the profession. Professional organizations.

OPT 120 Optometric Theory and Methods I
(4.5 quarter hours)
Three hours of lecture and three hours of laboratory per week. Introduction to optometric theory and optometric examination. Strategy of the examination and sequencing of the
various tests and procedures. Medical record notation. Primary emphasis on chair skills to include case history, visual acuity, stereopsis, color vision, Amsler grid, extraocular muscles, cover test, accommodation, convergence, confrontation fields, and papillary reflexes. Lectures emphasizing the theory of these procedures and interpretation of their results to arrive at a preliminary diagnosis, and laboratories emphasizing clinical techniques.
Prerequisites: BIO 116, 118.

OPT 130 Optometric Theory and Methods II

(4.5 quarter hours)
Three hours of lecture and three hours of laboratory per week. A continuation of OPT 120 with an emphasis on the etiology, diagnosis, and management of refractive errors. The theoretical basis of the various tests used to diagnose refractive errors. Lensometry, keratometry, retinoscopy, and monocular and binocular subjective refractive techniques emphasized in the laboratory.
Prerequisites: BIO 126, 128, OPT 120.

OPT 131 Ethics and Optometry
(1 quarter hour)
One hour of lecture and two hours of discussion on alternate weeks. Lectures will introduce ethical theory and the nature and scope of ethical discourse as a context for decision making. Group discussions will focus on the application of ethical theory to issues raised by clinical practice, optometric theories, biomedical research, and technology.

OPT 210 Optometric Theory and Methods III
(4.5 quarter hours)
Three hours of lecture and three hours of laboratory per week. A continuation of OPT 130 with an emphasis on binocular refractive procedures, phorometry, and near point testing. Lectures emphasizing the theory of these procedures and the interpretation of their results to arrive at a diagnosis, and laboratories emphasizing clinical techniques. Symptomology, diagnosis, and treatment of vision anomalies and the prognoses for these anomalies.
Prerequisite: BIO 130.

OPT 211 Ophthalmic Optics
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Optical and physical properties of single vision and multifocal ophthalmic lenses. Fabrication of prescription eyewear. Instrumentation used to measure lens parameters.
Prerequisites: BIO 136, OPT 130.

OPT 220 Optometric Theory and Methods IV
(4.5 quarter hours)
Three hours of lecture and three hours of laboratory per week. A continuation of OPT 210 with an emphasis on the examination and evaluation of the ocular tissues, adnexa and visual pathways. An introduction and overview of the major categories of ocular disease, including vascular, infectious, degenerative, allergic, neurological and others. The underlying pathophysiological processes and the effect on ocular tissues and their functions. Tonometry, gonioscopy, funduscopy, and visual field testing. Clinical procedures learned in the first three courses of this sequence will be practiced in the laboratory along with those learned in the current quarter.
Prerequisites: BIO 134, 139, 211, 219, OPT 210.

OPT 221 Ophthalmic and Environmental Optics
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Absorptive lenses, lens coatings, radiation protection, and sunglasses. Impact resistance and government standards for ophthalmic lenses. Customization of ophthalmic prescriptions for occupational needs.
Visual ergonomics. Illumination and lighting standards.
Prerequisite: OPT 211.

OPT 223 Diagnosis and Treatment of Diseases of the Anterior Segment I
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Diagnosis, management, and treatment of diseases, disorders, and injuries of the ocular adnexa and anterior segment of the eye. Pharmacological agents used to treat these conditions. Ocular microbiology. Laboratories to emphasize clinical procedures including cultures, punctual occlusion, punctual dilation and irrigation, foreign body removal, patching, and ocular injections.

Prerequisites: BIO 134, 139, 211, 219, OPT 210.

OPT 230 Patient Management
(4.5 quarter hours)
Three hours of lecture and three hours of laboratory per week. The diagnosis and treatment of common ocular and visual anomalies. The analysis of symptoms, signs, and examination results to arrive at a diagnosis and treatment plan. Analysis of patient records using the SOAP format will be emphasized in lectures. In alternate laboratory periods, comprehensive exams performed on classmates. During the remaining laboratory periods, examination procedures in the clinic under the supervision of interns and staff doctors.
Prerequisite: OPT 220.

OPT 231 Special Topics in Ocular Pharmacology
(2 quarter hours)
Two hours of lecture per week. Administration of ocular pharmaceutical agents. Topical medications that have their primary effects on the autonomic nervous system, including mydriatics, cycloplegics, and miotics. Topical anesthetics.
Prerequisites: BIO 221, 225, OPT 223.

OPT 233 Diagnosis and Treatment of Diseases of the Anterior Segment II
(3 quarter hours)
Three hours of lecture per week. A continuation of OPT 223.
Prerequisite: OPT 223.

OPT 234 Pediatric Optometry
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Diagnosis, management, and treatment of refractive conditions, binocular disorders, and eye diseases common in infants and children. Schema of normal growth and development with an emphasis on expected vision development from birth throughout childhood. Strategies and procedures for treatment (or environmental manipulation) intended to maximize visual potential.
Prerequisites: BIO 212, OPT 220.

OPT 235 Contact Lenses I
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Physiological considerations in the fitting of contact lenses. Design of rigid and non-rigid contact lenses. Contact lens fabrication, modification, and care. Fitting of contact lenses to emphasize spherical lenses. Management of contact lens patients.
Prerequisite: OPT 220.

OPT 238 - Diagnosis and Treatment of Diseases of the Posterior Segment I
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. Diagnosis and treatment of diseases, disorders, and injuries of the vitreous, choroid, retina, and optic nerve head. Pharmacological agents that are used to treat these conditions. Labs emphasizing electrodiagnostics, fluorescein angiography (including venous injections), photography, ultrasonography, advanced visual field testing, and advanced visual function testing.
Prerequisites: BIO 128, OPT 220.

OPT 315 Contact Lenses II
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. A continuation of OPT 235. The design and fitting of rigid and nonrigid toric contact lenses. Strategies used to fit specialized contact lenses includ-ing those used for keratoconics and infants. Therapeutic applications of contact lenses.
Prerequisite: BIO 225.

OPT 316 Vision Therapy
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. The treatment of disorders of binocular vision and visual perception by means of motor and sensory therapy. The development of therapy regimens for these visual anomalies and prognoses for their resolution.
Prerequisites: BIO 212, OPT 210.

OPT 318 Diagnoses and Treatment of Diseases of the Posterior Segment II
(3 quarter hours)
Three hours of lecture per week. A continuation of OPT 238.
Prerequisite: OPT 238.

OPT 319 Diagnosis and Treatment of the Glaucomas
(3 quarter hours)
Three hours of lecture per week. Diagnosis, management, and treatment of the various glaucomas including primary open angle, angle closure, infantile, and secondary glaucoma. Pharmacological agents used to treat the glaucomas.
Prerequisites: BIO 225, OPT 231, 233, 238.

OPT 320 Practice of Optometry I
(3 quarter hours)
Three hours of lecture per week. Professional and economic aspects of the practice of optometry. Selection of a practice location, purchase of an existing practice, partnerships, and professional corporations. Practice as an employee or independent contractor, and other practice modalities. Equipping an office, personnel and office management, record and recall systems, taxes, insurance, third party reimbursement, and issues related to managed care. Professionalism. Basic finance and estate management. Professional referrals and relationships with other health care providers.
Prerequisite: OPT 131.

OPT 321 Visual Rehabilitation
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. The etiology and epidemiology of low vision. Optical and non-optical devices used in the management of low vision. Examination and treatment of patients with reduced vision. Interdisciplinary rehabilitation sources and counseling.
Prerequisites: OPT 221,233,318.

OPT 323 Public Health and Epidemiology in Eye Care
(2 quarter hours)
Two hours of lecture per week. Concepts of epidemiology and public health will be presented, especially as they relate to eye care. The issues discussed include study design, screening and testing measures, health care delivery and adminstration, and public policy.

OPT 326 Strabismus and Amblyopia
(4 quarter hours)
Three hours of lecture and two hours of laboratory per week. The diagnosis, management, and treatment of strabismus and amblyopia. The prognoses for the resolution of these conditions.
Prerequisites: OPT 234, 316.

OPT 328 Clinical Medicine and Physical Diagnosis
(3 quarter hours)
Two hours of lecture and two hours of laboratory per week. Practical aspects of physical diagnosis to include neurological evaluation, cardiovascular evaluation, clinical laboratory testing, and examination of the head and neck. Assessment of the cranial nerves. CPR, first aid, and medical emergencies.
Prerequisite: BIO 219.

OPT 330 Practice of Optometry II

(3 quarter hours)
Three hours of lecture per week. A continuation of OPT 320.
Prerequisite: OPT 320.

OPT 333 Geriatric Optometry
(1 quarter hour)
One hour of lecture per week. Diagnosis and treatment of selected refractive conditions, eye diseases, and visual anomalies common in elderly patients. Provision of eye care in out-of-office settings such as nursing homes. Psychosocial and economic factors associated with aging.
Prerequisite: OPT 230.

OPT 334 Special Topics in Contemporary Eye Care
(1 quarter hour)
One hour of lecture per week. Selected topics in contemporary clinical eye care including refractive surgery and lasers.

OPT 336 Legal Aspects of Optometry
(2 quarter hours)
Two hours of lecture per week. The legal obligations and responsibilities of the optometrist as a health care practitioner. Record-keeping, informed consent, malpractice, evaluation of visual disability, licensure, and other clinic-legal aspects of practice.
Prerequisite: OPT 320.

OPT 337 Neuro-Eye Disease
(3 quarter hours)
Three hours of lecture per week. Diagnosis, management, and treatment of neurological disorders that effect the adnexa, eye, and visual system. Basic aspects of ophthalmic neurology. Major psychiatric disorders.
Prerequisites: BIO 120, 212, 225, OPT 120.

***OPT 400 Optometric Patient Care I**
(3 quarter hours)
Three-hour seminar per week. Analysis of actual clinical cases stressing physiologically based differential diagnoses and therapy to effectively resolve patient vision problems.
Prerequisites: All 300-level OPT courses.

***OPT 410 Optometric Patient Care II**
(3 quarter hours)
Three-hour seminar per week. A continuation of OPT 400.
Prerequisites: All 300-level OPT courses.

***OPT 420 Optometric Patient Care III**
(3 quarter hours)
Three-hour seminar per week. Topics included are those listed for courses
OPT 400.
Prerequisites: All 300-level OPT courses.

***OPT 430 Optometric Patient Care IV**
(3 quarter hours)
Three-hour seminar per week. A continuation of OPT 420.
Prerequisites: All 300-level OPT courses.

*BIO 400-430 Research may be taken in lieu of any one of these courses.

CLINIC
Eligibility requirements for entering the fourth-year clinic course sequence, including externships, are

explained in the current edition of the Student Handbook.

CLN 213 Clinic Orientation I
(1 quarter hour)
One session per week (minimum 2 hours). Introduction to clinic internship. Observing and assisting doctors and student interns in patient care. Participation in vision screenings. Refinement of selected clinical techniques with emphasis on proper communication. Students perform procedures and have discussions with simulated patients while being videotaped. Instructor critiques are provided. Other assignments may include written communications and/or oral presentations.
Prerequisite: OPT 130.

CLN 223 Clinic Orientation II
(1 quarter hour)
Two hours of clinic per week. A continuation of CLN 213.
Prerequisite: BIO 213.

CLN 315 Clinical Internship I
(3 quarter hours)
Twelve hours of clinic per week. Weekly assignments will include participation with doctors of optometry or other physicians in comprehensive direct patient care, utilizing a full range of management modalities. Other assignments may include Grand Rounds, case review sessions, participation in patient care at external clinics or providing dispensary services.
Prerequisites: All first and second year courses and satisfactory completion of pre-clinical competency evaluation.

CLN 325 Clinical Internship II
(3 quarter hours)
Twelve hours of clinic per week. Weekly assignments will include participation with doctors of optometry or other physicians in comprehensive direct patient care, utilizing a full range of management modalities. Other assignments may include Grand Rounds, case review sessions, participation in patient care at external clinics or providing dispensary services.
Prerequisite: CLN 315.

CLN 336 Clinical Internship III
(5.5 quarter hours)
Twenty-two hours of clinic per week. Weekly assignments will include participation with doctors of optometry or other physicians in comprehensive direct patient care, utilizing a full range of management modalities. Portions of the assignments will emphasize management of eye and visual conditions with appropriate application of various designs and types of contact lenses; portions will emphasize management of conditions especially prevalent in children; portions will emphasize treatment and management of acute onset ocular diseases or chronic conditions which may assist non-optometric physicians in the management of patients utilizing laser or other in-office surgical procedures. Additional assignments will include the application of vision therapy, Case Conferences, Grand Rounds, advanced procedure laboratories, participation in patient care at external clinics or providing dispensary services.
Prerequisites: CLN 325, OPT 322, 326, 328, 320, 321, 319, 316, 315

CLN 400, 410, 420, 430 Adult Primary Care Optometry Service
(3 quarter hours per course)
Twelve hours of clinic per week. One or more assignment per week will be in the Adult Primary Care Optometric Service, participating with doctors of optometry or other physicians in comprehensive direct patient care, utilizing a full range of management modalities. Other assignments may include Grand Rounds, advanced procedure laboratories, Case Conferences, participation in patient care at external clinics or providing dispensary services.
Prerequisite: CLN 320. Note – See Fourth-year Externships and Clinics at the end of this section.

CLN 401, 411, 421, 431 Contact Lens Service
(2 quarter hours per course)
One eight-hour clinic per week. The clinic assignment will be the Advanced Care, Contact Lens Service. Activities will include participation with doctors of optometry or other physicians in comprehensive direct patient care, utilizing a full range of management modalities, but emphasizing management of eye and visual conditions with appropriate application of various designs and types of contact lenses.
Prerequisites: CLN 331. Note – See Fourth-year Externships and Clinics at the end of this section.

CLN 402, 412, 422 and 432 Pediatric Primary Care Service and Vision Therapy Service
(2 quarter hours per course)
Eight hours of Clinic per week. One clinic assignment will be in the Pediatric Primary Care Service. Activities will include participation with doctors of optometry in comprehensive direct care of younger patients, utilizing a full range of management modalities, but emphasizing management of conditions especially prevalent in children. Additional assignments will include the application of vision therapy as appropriate for treatment of patients of any age.
Prerequisites: CLN 332. NOTE: – See Fourth-year Externships and Clinics at the end of the Section.

CLN 403, 413, 423, 433 Advanced Care, Ocular Disease Service
(2 quarter hours per course)
Eight hours of clinical activity per week. Clinic sessions will consist of assisting staff doctors of optometry and other physicians in the diagnosis, treatment and management of ocular diseases with emphasis on acute onset conditions and on chronic conditions which may involve intensive long-term management. Students also may be assigned to assist physicians in the management of patients utilizing laser or other in-office surgical procedures.
Prerequisite: CLN 333. NOTE — See Fourth-year Externships and Clinics at the end of this section.

CLN 404, 414, 424, 434 Clinical Externship
(12 quarter hours per course)
Full quarter externship taken in lieu of the regular schedule for the quarter.
NOTE— See Fourth-year Externships and Clinics at the end of this section.

Fourth-Year Externships
Fourth-year students are required to enroll in four quarters of clinical instruction to graduate, in which two quarters are to be enrolled in the SCO externship program. The externship program is designed to broaden and supplement their experience in evaluating, diagnosing, and treating conditions of the eye and visual system. The externship program provides a wide range of geographical locations in institutional and private practice settings. In all cases the extern serves under the direct supervision of optometrists who hold adjunct faculty appointments with the College. Externships are usually scheduled either for the summer-fall or the winter-spring quarters. Not more than one quarter may be spent at one site.

Non-Physician Clinician

Monograph Series

May 2000

Prepared by
Division of State Government Affairs
American Osteopathic Association

EXECUTIVE SUMMARY

INTRODUCTION

There are many people nationwide who lack the healthcare they need and desire. Accordingly, there is growing support for the notion that public health is best served by the broadest access to healthcare possible. There are persistent efforts to promote the use of providers other than physicians to supply the population with this access. These providers are also known as non-physician clinicians (NPCs). They include, but are not limited to, nurse practitioners (NPs), physician assistants (PAs), anesthesiologist assistants (AAs), certified registered nurse anesthetists (CRNAs), optometrists, pharmacists, podiatrists, psychologists, chiropractors, homeopaths, and naturopaths.

These NPCs occupy different niches within the healthcare framework. Midlevel medical professionals such as NPs, PAs, AAs, and CRNAs are meant to work under the supervision of or in collaboration with physicians. Others such as optometrists, pharmacists, podiatrists, physical therapists, and psychologists are non-physician traditional professionals who practice independently within specialty areas. The alternative medicine providers like the acupuncturists, homeopaths, chiropractors, and naturopaths are practitioners who follow and independently practice alternative therapies.

Besides the need for increased availability of healthcare, there is growing support for some of these professions because of the increased popularity of alternative medicine in the United States. This strengthened support, coupled with the need for access to healthcare, has led to growth in both the number of NPCs and in their practice parameters. NPCs have already made significant strides in the recent past in expanding areas such as scopes of practice and reimbursement, and will continue to petition the states for more privileges in the future.

SCOPE OF PRACTICE

For each profession, the scope of practice is dependent upon state law and therefore varies from state to state. Generally speaking, NPCs have substantially increased their scopes of practice in the last decade. Today, NPCs are doing everything from prescribing medications to performing surgery.

The mid-level medical professionals have significantly expanded their scopes of practice in the last decade. NPs are currently allowed to practice independently in 22 states. Of the 22, some states require physician supervision, while others require collaboration, and still other states require no form of physician oversight whatsoever. Besides this autonomy of practice, NPs are allowed to prescribe drugs to some extent in every state, whether they are acting in collaboration with a physician or independently prescribing.

PAs have also seen an expansion in their scope of practice. PAs practice under the supervision of a physician who is either directly present or immediately available.

Under this PA-supervising physician team, PAs are granted much autonomy and are allowed to prescribe drugs in 46 states.

AAs work under the direct supervision of an anesthesiologist to develop and implement anesthesia care plans. However, to date only five states have statutes or regulations that specifically address AAs. In one of these states (Georgia) AAs are licensed under the PA practice act and are considered a category of PAs. Some other states which do not explicitly license AAs or specifically qualify them as PAs may include AA practice in the laws governing PAs. Alternatively, in other states, AAs are unregulated and practice under an anesthesiologist's delegated authority. AA scope of practice varies from state to state.

CRNAs have also seen their scope of practice expanded. Among other tasks, today CRNAs are generally allowed to administer most types of anesthesia, including general, regional, selected local and conscious sedation. The most important recent development related to CRNA practice has been the implementation of a new federal CRNA rule. Under the rule, which was finalized in November 2001, the current federal physician supervision requirement would be maintained, unless the governor of a state exercises the option of exemption from this requirement. The governor must certify that specific criteria have been met before the "opt-out" can be approved. It is too soon to say how many states will "opt-out" of the federal supervision requirement and allow their CRNAs to practice independently.

The non-physician traditional professions have also experienced a growth in their respective scopes of practice. Optometrists practice autonomously within their scope of practice and possess various prescriptive privileges specific to eye ailments in all 50 states. One state even permits optometrists to perform some forms of laser eye surgery.

Podiatrists are licensed in all 50 states to treat the foot and its related structures by medical or surgical means. Some states even allow them to treat the hand. Podiatrists usually work independent of physicians and they possess independent prescriptive privileges in all of the 50 states.

Pharmacists dispense medications prescribed by authorized providers. Collaborative practice agreements between pharmacists and physicians expand the pharmacist's authority to initiate and modify prescriptions. Currently 27 states allow for these collaborative practice agreements. However, states vary on the amount of prescriptive authority granted to pharmacists within these agreements.

Psychologists can practice independently or under the supervision of other professionals. Psychologists currently do not possess any prescriptive authority in any state. However, some states are moving close to securing prescriptive privileges for psychologists.

The alternative professions are experiencing the least growth among all of the NPCs in their scopes of practice. This is probably due to apprehensiveness towards their therapies as well as intrinsic problems with establishing licensing mechanisms. However, they are advocating strongly for more expansive practice rights. Chiropractors practice independently within their scopes of practice from physicians and are not allowed to prescribe in any of the 50 states. Naturopaths are currently licensed in only 11 states, have little to no relationship with physicians, and have few prescriptive privileges. Homeopaths are only licensed in 3 states. However, most homeopaths in the U.S. hold another medical degree, such as an M.D. or a D.O., that allows them to diagnose and prescribe medications.

REIMBURSEMENT

Many NPCs are considered low cost alternatives to physicians. Therefore, often insurance companies are beginning to view some NPCs as cost-effective providers of primary care and reimbursing them at rates equal to that of physicians. However, a number of NPCs are not reimbursed by insurance companies for their services, or they are reimbursed by only a few insurance companies. Therefore, reimbursement is one of the main goals on the professional agendas of many of the NPCs.

CONCLUSION

As mentioned above, the soaring cost of healthcare has led to the increased need for a low cost means to access the healthcare system. NPCs have benefited from this public demand and often times found themselves the focus of discussions on how to address this concern. Many NPCs are considered primary care providers and low cost alternatives to physicians.

As primary care providers, many of the NPCs perform functions and duties similar to that of physicians. For example, some diagnose conditions, some prescribe medications, some perform surgery, some practice independently, and most get reimbursed by insurance companies at rates similar to that of physicians. Not surprisingly, because of this great overlap of job functions, many NPCs are referring to themselves as "physicians." For example, in some states podiatrists are known as podiatric physicians, chiropractors are known as chiropractic physicians, homeopaths are known as a homeopathic physicians, and in one state an optometrist is known as an optometric physician. Therefore, as the various niches within the healthcare framework start to blend, the professional titles are being used interchangeably.

Regardless of the nomenclature used, NPCs are considered a major part of today's healthcare industry. As they continue to lobby state legislatures for increases in practice rights, prescriptive privileges, and reimbursement, a number of concerns arise. These concerns include, first and foremost, questions related to protecting patient safety, such as what is considered adequate education and training for practice. Further, as more NPCs look to act independent of physicians, questions of professional autonomy resonate throughout the healthcare arena. These and other concerns are important in any evaluation of the growth of these professions.

NOTE

In the "Legislative Agenda" sections of each non-physician clinician report that follows, you will find reference to the number of times the profession being profiled is identified in the *subject heading* of legislation and in *legislative drafts*.

Subject heading statistics reflect the number of bills whose titles refer to the profession by name. A search by subject heading is done to identify bills whose focus is most likely a single group and unlikely to include other non-germane provisions. Whereas, a search of legislative drafts is much broader and includes bills particular to the profession as well as legislation that simply covers existing language citing the profession.

A thorough legislative search of any non-physician clinician profession would not be complete if one used only subject headings of bills. All too often at the state level, bills do not have accurate or specific subject headings giving enough detail to make a determination as to whether the bill pertains to an expanded scope of practice.

OPTOMETRISTS

INTRODUCTION

Optometrists are independent primary health care providers who examine, diagnose, treat and manage diseases and disorders of the visual system, the eye and associated structures as well as diagnose related systemic conditions.[1] Optometrists are also known as O.D.'s or doctors of optometry and in one state (Arkansas) as an optometric physician.[2] They provide most of the primary vision care people need. Optometrists examine people's eyes to diagnose vision problems and eye diseases. They use instruments and observation to examine eye health and to test patients' visual acuity, depth and color perception, and their ability to focus and coordinate the eyes. They analyze test results and develop a treatment plan. Also, optometrists often provide pre- and post-operative care to cataract and other eye surgery patients.[3]

Optometrists held about 41,000 jobs in 1996. The number of jobs is greater than the number of practicing optometrists because some optometrists hold two or more jobs. For example, an optometrist may have a private practice, but also work in another practice, clinic, or vision care center. Employment of optometrists is expected to grow about as fast as the average (increase by 10 to 20 percent) for all occupations through the year 2006 in response to the vision care needs of a growing and aging population.[4]

EDUCATION

The Doctor of Optometry degree requires completion of a 4-year program at an accredited optometry school preceded by at least 3 years of pre-optometric study at an accredited college or university (most optometry students hold a bachelor's degree). In 1997, 17 U.S. schools and colleges of optometry held an accredited status with the Council on Optometric Education of the American Optometric Association.

Requirements for admission to schools of optometry include courses in English, mathematics, physics, chemistry, and biology. A few schools require or recommend courses in psychology, history, sociology, speech, or business. Applicants must take the Optometry Admissions Test, which measures academic ability and scientific comprehension. Most applicants take the test after their sophomore or junior year. Competition for admission is keen.

Optometry programs include classroom and laboratory study of health and visual sciences, as well as clinical training in the diagnosis and treatment of eye disorders. Included are courses in pharmacology, optics, vision science, biochemistry, and

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[1] American Optometric Association, *What is a Doctor of Optometry?* (1997) http://www.aoanet.org/mcc-what-is-od.html.

[2] Dr. Cooper et al, Medical College of Wisconsin *Non-physician Clinician Report.*

[3] Bureau of Labor Statistics, Occupational Outlook Handbook, *Optometrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos073.htm.

[4] *Id.*

systemic disease.

Optometrists wishing to teach or do research may study for a master's or Ph.D. degree in visual science, physiological optics, neurophysiology, public health, health administration, health information and communication, or health education.[5] One-year postgraduate clinical residency programs are available for optometrists who wish to specialize in family practice optometry, pediatric optometry, geriatric optometry, vision therapy, contact lenses, hospital based optometry, primary care optometry, or ocular disease.[6] Non-clinical residencies are also available. Residency training can take place in numerous locations including hospitals, eye care centers, or at in-house facilities depending on the type of residency.[7] Residencies are usually funded by the institution where the residency takes place. There are a handful of programs that offer training without compensation for graduates not selected for funded programs yet motivated to complete a residency.[8]

LICENSURE

All of the 50 states and the District of Columbia require that optometrists be licensed. The requirements for licensure are set by each individual state. In general, applicants for a license must have a Doctor of Optometry degree from an accredited optometry school and pass both a written and a clinical State board examination. In many states, applicants can substitute the examinations of the National Board of Examiners in Optometry for part or all of the written part of the state examination.[9] The examinations given by the National Board of Examiners in Optometry consist of 3 parts: basic science, clinical science, and patient care that are usually taken during an optometry student's academic career.[10] Licenses for practice are renewed every 1 to 3 years and in all states, continuing education credits are needed for renewal.[11]

RELATIONSHIP WITH PHYSICIANS

Optometrists practice autonomously within their own scope of practice. Their scope of practice is set by state law and therefore, varies from state to state. Optometrists refer patients to the proper physician when necessary. For example, they diagnose conditions due to systemic diseases such as diabetes and high blood pressure, and refer patients to other health practitioners when needed.[12]

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[5] *Id.*

[6] *Id.*

[7] Ohio State University, *College of Optometry* (modified Sep. 19,1999) http://www-afa.adm.ohio-state.edu/bulletin/14web/14info.html.

[8] Association of Schools and Colleges of Optometry, *Optometric Residencies: Commonly Asked Questions* (visited March 29, 1999) <htttp://home.opted.org/asco/resfaq.html>.

[9] Bureau of Labor Statistics, Occupational Outlook Handbook, *Optometrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos073.htm.

[10] National Board of Examiners in Optometry, *Description of Examinations* (visited March 29, 2000) http://www.optometry.org/general.htm.

[11] Bureau of Labor Statistics, Occupational Outlook Handbook, *Optometrists* (modified Feb. 24, 1999) http://stats.bls.gov/oco/ocos073.htm.

[12] *Id.*

Not only do optometrists practice autonomously, but they also possess prescriptive privileges specific to eye ailments that do not require physician supervision. They use drugs for diagnosis of eye vision problems and prescribe drugs to treat some eye diseases. Optometrists can prescribe topical drugs for allergy, infection, and inflammation in all 50 states. They can also prescribe oral medications for those conditions in 20 states and medications to treat glaucoma in 40 states.[13] Broadly speaking, optometrists are allowed by laws in all 50 states to prescribe all non-controlled substances in all of the drug schedules.[14] For example, optometrists prescribe eyeglasses and contact lenses, and provide vision therapy and low vision rehabilitation. Optometrists are also able to prescribe controlled substances in 25 states, according to the American Optometric Association.[15]

REIMBURSEMENT

Optometrists consider themselves primary health care providers and therefore desire reimbursement from insurance companies for their services. The managed care industry is one of optometry's biggest supporters. This is because optometrists are seen as low cost alternatives to their more expensive, specialized counterparts of ophthalmologists.[16] Not surprisingly, optometrists are reimbursed by all types of insurance companies in all 50 states. Medicaid reimburses optometrists 100% for the services they provide. Also, Medicare reimburses optometrists at rates similar to that of physicians. Private insurance companies also reimburse optometrists for the services they provide.[17]

LEGISLATIVE AGENDA

In 1999, the word "optometry" was found in the subject heading of 127 pieces of state legislation. The same word was found in 2,932 different drafts of legislation text that moved through the state legislatures.[18]

One main goal of the profession is to expand its prescriptive privileges throughout the 50 states. Specifically, optometrists desire to increase their ability to prescribe glaucoma medication and controlled substances without physician supervision or collaboration. Optometrists also wish to perform invasive procedures such as laser surgery and other forms of surgery related to the eye without physician supervision or collaboration.

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[13] Pediatric News, *Optometrists Winning More Prescribing Privileges* (1998) http://gastroenterology.medscape.com/IMNG/PediatricNews/1998/v.32.n02/pn3202.10.02.html.
[14] Dr. Cooper et al, Medical College of Wisconsin *Non-physician Clinician Report.*
[15] Pediatric News, *Optometrists Winning More Prescribing Privileges* (1998) http://gastroenterology.medscape.com/IMNG/PediatricNews/1998/v.32.n02/pn3202.10.02.html
[16] *Id.*
[17] Dr. Cooper et al, Medical College of Wisconsin *Non-physician Clinician Report*
[18] 1999 Lexis-nexis state legislation search.

Minnesota Academy Family Physician

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February 21, 1992

Representative Peter Rodosovich
Room 445
State Office Bldg
St Paul MN 55155

Dear Representative Rodosovich:

I want to express to you the opposition of the Minnesota Academy of Family Physicians (MAFP) regarding proposed legislation allowing expanded prescribing authority to optometrists.

First, let me say that we believe optometrists are very valuable providers in the overall health care delivery system. Many of our family physicians have very good working relationships with optometrists and respect the expertise they have in many aspects of care of the eye.

One of our concerns with the proposed legislation is related to the systemic affects of many of the drugs optometrists are requesting authority to prescribe. Many topically applied eye drops are powerful drugs which have serious systematic side effects. Also, the interaction of all prescribed drugs need to be fully understood for individuals who may already be on medications.

As President of the MAFP and representing our 2,200 members, I ask you to oppose the expansion of optometric prescribing rights because of the concerns of reduced quality of care to patients.

Sincerely,

Robert H. Bösl, M.D.
President

RHB/kr

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Expanding the optometric scope of practice law to include treatment of eye disease will increase the risk to the public.

- Increased risk of expanded optometric practice is demonstrated by the 400 percent increase in malpractice claims against optometrists as reported by the Review of Optometry in its May 1984 issue. The magazine also reported a more than ninefold increase for serious claims such as failure to diagnose.

- The Office of Technology Assessment (OTA) said, "Cautious medical practice suggests we should be aware of the potential risks in giving optometrists an expanded role...Moving away from the traditional model of care runs the risk of reducing the quality of care patients receive."

- Limiting the use of drugs to topical pharmaceuticals (those applied directly to the eye) does not decrease the risk to the patient. Eye drops are absorbed into the body's bloodstream as fast as if they were injected. Reay H. Brown, MD of Emory University said, "With increased systematic absorption, topical ophthalmic medications can carry increased risks."

- A New Jersey citizen was awarded more than $1 million in a malpractice suit against an optometrist in 1900. The optometrist wrote various prescriptions, but failed to detect his glaucoma. The plaintiff had been a patient since 1980 and complained of vision problems in her right eye two years before the award of the claim in October, 1990. Early diagnosis by an ophthalmologist would have prevented permanent vision damage.

- The public does not know the difference between optometrists, with limited training, and ophthalmologists who have a complete medical background. Donna Gordon is the mother of a little girl who at the age of four developed cancer in both eyes and now is blind, a condition missed by the optometrist caring for her daughter. Mrs. Gordon told an Arizona legislative committee, "People out there don't know the difference between an ophthalmologist and an optometrist...If anybody had told me that something was wrong, I would have done something about it...Several experts have told me this didn't have to happen. Please let the public know the difference. Think what will happen to all these people."

First Professional Year

Fall Quarter 1.1

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 114	Human Anatomy and General Embryology	4	2	5.0
BHS 116	Human Physiology and Pathology	3	0	3.0
BHS 120.1	Geometric and Theoretical Optics I	4	0	4.0
BHS 140.1	Sensory Aspects of Vision I	3	2	4.0
BHS 150.1	Biochemistry I	4	0	4.0
CLE 162.1	Introduction to Optometric Procedures	1	0	1.0
	Totals	19	4	21.0

Winter Quarter 1.2

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 106	Histology and Embryology	4	2	5.0
BHS 107	Applied Ocular Anatomy	5	2	6.0
BHS 120.2	Geometric and Theoretical Optics II	4	0	4.0
BHS 150.2	Biochemistry II	4	0	4.0
CLE 162.2	Optometry 1.1	2	2	3.0
	Totals	19	6	22.0

Spring Quarter 1.3

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 111	Neuroanatomy and Neurophysiology	4	2	5.0
BHS 116.2	Human Physiology and Pathology	3	0	3.0
BHS 140.2	Sensory Aspects of Vision II	4	2	5.0
CLE 162.3	Optometry 1.2	2	2	3.0
CLE 170	Ophthalmic Optics I	2	0	2.5
	Totals	15	6	18.5

Course Descriptions

BHS 114 Human Anatomy and General Embryology
4 hours of lecture, 2 hours of laboratory per week

back

A detailed study of human anatomy and general embryology is presented, with emphasis placed on thorax, abdomen, pelvis and a regional study of head and neck. Clinical relevance of gross anatomical relationships is included whenever possible. Laboratory sessions include detailed study of the human skull and demonstration of body systems on prosected cadavers. (5 credits)

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BHS 116 Human Physiology
3 hours of lecture per week
back
This is a comprehensive course in general and systemic human physiology. Topics are presented in order to promote the understanding of physiologic principles that form the basis for normal bodily functions. The interaction between organ systems and their relationship to health and disease are also stressed. (3 credits)

BHS 120.1 Geometric and Theoretical Optics I
4 hours of lecture per week
back
This course deals with all facets of geometric and theoretical optics. Topics include the basic study of refraction at plane and curved surfaces, thin lenses, prisms, thin lens systems and single refracting surfaces. (4 credits)

BHS 140.1 Sensory Aspects of Vision I
3 hours of lecture, 2 hours of laboratory per week
back
This course presents instruction in the nature of light as a stimulus in vision; photometry; energy reception and detection; absorption processes; retinal photo-chemistry; excitation and transduction; physiological processing of information; threshold phenomena and psychophysics. Laboratory sessions include discussions of clinical implication of these processes where applicable. (4 credits)

BHS 150.1 Biochemistry I
4 hours of lectures per week
back
An introduction to biochemistry with particular emphasis on clinical applications. Topics in the first course in this two-course sequence will include cellular biology, structure reactions and functions of proteins and enzymes, elementary bioenergetics, and the metabolism of carbohydrates and lipids (4 credits)

CLE 162.1 Introduction to Optometric Procedures
1 hour of lecture per week
back
This course introduces the components of a primary care eye examination. The initial focus of this course centers on how these components relate to the investigation of patient complaints in a problem oriented approach. The latter portion of this course focuses on patient interviewing through the case history concentrating on 1) components of the case history; 2) recording a case history; 3) patient interviewing techniques; and 4) ethical and clinical-legal considerations pertaining to the case history. Concepts introduced in this course will be further developed in subsequent clinical education courses and patient care experiences. (1 credit)

BHS 106 Histology and Embryology
4 hours of lecture, 2 hours of laboratory/demonstration per week
back
This course presents the developmental, genetic, and histological aspects of cells and tissue relationships in human organ systems. The accompanying laboratory is devoted to the study of tissue microstructure. This course serves as a prerequisite for concurrent and/or subsequent intensive investigations in Human Anatomy and Physiology, Ocular Anatomy and Physiology, and general and ocular pathology. (5 credits)

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BHS 107
back
Applied Ocular Anatomy
5 hours of lecture, 2 hours of laboratory per week
This course describes the gross and microscopic anatomy of the eye, its accessory organs and the extraocular muscles and their attachments. Emphasis is placed on the laminar structure of the globe and its constituent elements including the cornea-sclera, uveal tract, retina and lens and upon the functional anatomy of the vitreous, anterior angle, and blood supply. The course is concluded with a description of the embryological development of these components. The laboratory is devoted to the use of the biomicroscope to observe elements of ocular anatomy as they are seen in clinical perspectives; it also includes illustrative demonstrations and models. (6 credits)

BHS 120.2
back
Geometric and Theoretical Optics II
4 hours of lecture per week
This course is the second in the BHS 120 sequence. (4 credits)

BHS 150.2
back
Biochemistry II
4 hours of lecture per week
This is a continuation of the material presented in Biochemistry I. The topics include amino acid metabolism, molecular biology and the biochemistry of specialized tissues. (4 credits)

CLE 162.2
back
Optometry 1.1
2 hours of lecture and 2 hours of laboratory per week
Fundamental clinical techniques used in the examination of the eye are included in this follow-up course to CLE 162.1. The techniques of visual acuity measurement and entrance testing will be introduced as well as the skills of lensometry and retinoscopy. In addition to emphasizing the proper performance of techniques, this course will emphasize the integration of these skills into a comprehensive general eye examination. (3 credits)

BHS 111
back
Neuroanatomy and Neurophysiology
4 hours of lecture, 2 hours of laboratory per week
This course develops an appreciation for the basic principles of structure, function and organization of the human nervous system. Topics include organization of central nervous system, cerebral spinal fluid and meninges, histology of neurons and glia, neural development, degeneration and regeneration, and basic principles of neurophysiology such as ionic mechanisms of membrane potential and action potential as well as synaptic transmission. This course also presents functional neuroanatomy. Structure and function of sensory systems and motor systems are included. Analyses of the visual system are emphasized. Case histories of representative neurological disorders are also presented. Laboratory examines the internal anatomy of the brain stem. (5 credits)

BHS 116.2
back
Human Physiology and Pathology
3 hours of lecture per week
This is a comprehensive course in general and systemic human physiology. Topics are presented in order to promote the understanding of physiologic principles that form the basis for normal bodily functions. The interaction between organ systems and their relationship to health and disease are also stressed. (3 credits)

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BHS 140.2 Sensory Aspects of Vision II
4 hours of lecture, 2 hours of laboratory per week
back
This course discusses visual sensitivity changes in dark and light adaptation, adaptation theories, spatial phenomena and visual acuity, modulation transfer function, contrast sensitivity, temporal sensitivity and other temporal phenomena. (5 credits)

CLE 162.3 Optometry 1.2
2 hours of lecture and 2 hours of laboratory per week
back
The first year concludes with a procedures course that introduces the fundamental aspects of a refractive sequence. The components of a refractive analysis, in addition to the previously introduced skill of retinoscopy, include keratometry, monocular subjective refraction, accommodation balance, and red-green balance. These new techniques will once again be integrated into a comprehensive sequence comprising a general eye examination. (3 credits)

CLE 170 Ophthalmic Optics I
2 hours of lecture per week
back
This is the first in a series of courses presenting the theory and application of ophthalmic optics. Cylindrical lenses, prescription writing, lens power measurement, optics of instruments, and magnification are considered from an application viewpoint. The mathematical concepts supporting these topics are presented. (2.5 credits)

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Curriculum Year 2

Second Professional Year

Fall Quarter 2.1

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 212	Ocular Physiology	4	2	5.0
BHS 244	Binocular Vision and Ocular Motility	4	2	5.0
BHS 254.1	General Pharmacology	3	0	3.0
CLE 262.1	Optometry 2.1	3	2	4.0
CLE 270.1	Ophthalmic Optics II	3.5	2	4.5
	Totals	17.5	8	21.5

Winter Quarter 2.2

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 245	Color Vision and Developmental Neurobiology	4	2	4.5
BHS 246	Visual Perception	2	0	2.0
BHS 248	Perspectives on Behavioral Disorders	1	0	1.0
BHS 290	Evidenced Based Health Care	1	0	1.0
BHS 254.2	General Pharmacology II	3	0	3.0
CLE 262.2	Optometry 2.2	2.5	2	4.0
CLE 270.2	Ophthalmic Optics III	3	2	4.0
	Totals	16.5	6	19.5

Spring Quarter 2.3

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 222	Theoretical and Physical Optic	2	0	2.0
BHS 255	Immunology	1	0	1.0
BHS 256	Ocular Pharmacology and Therapeutics	3	0	3.0
BHS 263.1	Ocular Disease I	2	0	2.0
BHS 263.2	Ocular Disease II	3	0	3.0
CLE 262.3	Optometry Seminar	2	3	3.5
BHS 290	Evidenced Based Health Care	1	0	1.0
CLE 294	Health Promotion	1	0	1.0
	Totals	15	3	16.5

Course Descriptions

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BHS 212 Ocular Physiology
4 hours of lecture, 2 hours of laboratory per week
back
This course considers various functional aspects of the human eye. Topics include ametropia; the physiology of the eyelids; lacrimal apparatus; cornea; lens; ocular fluid dynamics; intraocular pressure; circulation; neuromuscular mechanisms of accommodation; and the pupil and single-unit studies of the retina, lateral geniculate body and striate cortex. Laboratory experiments are used to illustrate basic ocular physiological concepts. (5 credits)

BHS 244 Binocular Vision and Ocular Motility
4 hours of lecture, 2 hours of laboratory per week
back
Studies of binocularity, including discussion of the horopter, stereopsis and fusion, rivalry and aniseikonia are presented. The physiology of the extraocular muscles and their relationships to strabismus is also discussed. Laboratory sessions are designed to simplify basic concepts of binocular vision and ocular motility including their clinical evaluation. (5 credits)

BHS 254.1 General Pharmacology I
3 hours of lecture per week
back
This course presents the principles and practice of the science of pharmacology. Quantitative and qualitative aspects of basic pharmaco-dynamics and drug/patient related variables will be introduced followed by the pharmacology of the individual agents in each drug classification. Topics include autonomic nervous system agents, cardiovascular drugs, renal pharmacology, gastrointestinal drugs, and respiratory pharmacology. (3 credits)

CLE 262.1 Optometry 2.1
3 hours of lecture and 3 hours of laboratory per week
back
In this segment of the optometry sequence, the first during the second professional year, emphasis is placed on the assessment of binocular function and accommodation. This course continues to connect visual function with refractive error, but explores further the concept of visual function as it relates to visual efficiency. Elements of abnormal binocular and accommodative function will be introduced, to be elaborated upon in subsequent course work. (4.0 credits)

CLE 270.1 Ophthalmic Optics II
3.5 hours of lecture and 2 hours of laboratory per week
back
In the second portion of the course sequence, consideration is given to the optics of ophthalmic lenses and the eye. Mathematical concepts regarding lens thickness, prism power, decentration, lens characteristics, and multi-focal power are discussed. The effect of lens shape on optical quality and aberrations is reviewed. The laboratory portion of the course develops the students' skills in providing prescription ophthalmic lenses and frames in an accurate and appropriate manner. (4.5 credits)

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BHS 245
back
Color Vision and Developmental Neurobiology
4 hours of lecture, 2 hours of laboratory per week
This course presents the physiological and psychological basis of color vision and discusses color specification systems, color mixing, color deficiencies and color vision testing. The course then covers the development of visual pathways and functions. Particular emphasis is placed on the effect of abnormal visual input to development. Both basic data and clinical implications are discussed. (4.5 credits)

BHS 246
back
Visual Perception
2 hours of lecture per week
This course integrates concepts of basic visual science in order to understand complex visual processes. Topics include the constancy of our visual processes, our visual world, size and distance perception, form perception, achromatic color perception and the perception of motion. Demonstrations will be used frequently to illustrate how the brain extracts and processes information. (2 credits)

BHS 248
back
Perspectives on Behavioral Disorders
1 hour of lecture per week
This course focuses on the training necessary to recognize and deal with psychological issues presented by patients. The course will also be concerned with student's reactions to patients. (1 credit)

BHS 290
back
Evidenced Based Health Care
1 hour of lecture per week
This course will build on the students' ability to use the literature in evaluating and planning treatment for clinical cases that they will encounter as optometrists. Additionally, it will increase their ability to use the relevant literature in planning research projects, by analyzing research design and the effectiveness of a chosen treatment paradigm. (1 credit)

BHS 254.2
back
General Pharmacology II
3 hours of lecture per week
This course is a continuation of BHS 254.1 and will cover the systemic pharmacology of specific agents in each of the major drug classes, including: anti-inflammatory agents, chemotherapeutic agents, neuropharmacologic agents, anesthetics, hormones and hormone antagonists, and the pharmacology of pain. The course will also cover basic principles of toxicology and the toxicology of common poisons. (3 credits)

CLE 262.2
back
Optometry 2.2
2.5 hours of lecture and 2 hours of laboratory per week
This course includes the topics of biomicroscopy/anterior segment evaluation, tonometry, gonioscopy, binocular indirect ophthalmoscopy, and Goldmann three-mirror fundus evaluation. These elements comprise the essential components of an ocular health evaluation. Further discussion in lectures and laboratories completes the integration of clinical skills into a complete primary care eye examination. (4 credits)

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CLE 270.2

back

Ophthalmic Optics III
3 hours of lecture and 2 hours of laboratory per week
In the final course in this series concepts regarding the correction of anisometropias, contact lens optics, and low vision optics are included in this segment of the course sequence. In addition, protection from radiation injury, lens reflection, and specialty lenses are discussed. The laboratory provides a setting for practical application of procedures and techniques readily encountered in patient care. (4 credits)

BHS 222

back

Theoretical and Physical Optics
2 hours of lecture per week
This course presents the theory and mathematical concepts of optical systems. Discussion focuses upon the physical characteristics of electromagnetic radiation and on the portion of electromagnetic radiation designated as visible light. Within the course the topics of interference, diffraction, dispersion, polarization, laser and holography will be presented. Historical background, and significant achievements in the development of physical optics will be presented. (2 credits)

BHS 255

back

Immunology
1 hour of lecture per week
This course provides students with the fundamentals of human immunology and introduces new and relevant concepts emanating from recent and ongoing research. Specific issues relevant to ocular anomalies will be emphasized. (1 credit)

BHS 256

back

Ocular Pharmacology and Therapeutics
3 hours of lecture per week
This course sequence presents the clinical pharmacology of the ocular diagnostic and therapeutic agents. Specific topics include: clinical pharmacokinetics of the eye, use of autonomic agents for the production of miosis, mydriasis, cycloplegia, local anesthetics, dyes, and over-the-counter preparations. The pharmacology of the ocular anti-inflammatory and anti-infective agents as well as drugs used in the treatment of glaucoma will also be presented. (3 credits)

BHS 263.1

back

Ocular Disease I
2 hours of lecture per week
The series of courses dealing with ocular disease, of which this is the first, explore the anatomical, physiological, histological and pathological bases of the disease process. Topics covered in this course include diseases and abnormalities of the lids, dystrophies and degenerations of the cornea; scleritis and episcleritis; diseases of the lens with particular emphasis on cataracts. (2 credits)

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BHS 263.2

Ocular Disease II
3 hours of lecture per week
This course covers the pathophysiology, epidemiology, diagnosis and treatment aspects of the glaucoma's. In addition, the topics of visual fields and automated perimetry are included. All forms of glaucoma are covered including Primary, Secondary and Developmental. Emphasis is placed on the decision making process in initiating treatment for primary open angle glaucoma. Glaucoma medications are discussed from a clinical perspective. Laser and surgical approaches are also covered. The principles of visual fields and automated perimetry are reviewed with a concentration on the interpretation and analysis of results. The application of automated perimetry in the management of glaucoma is emphasized. (3 credits)

back

CLE 262.3

Optometry Seminar
2 hours of lecture and 3 hours of laboratory per week
The previous courses in the Optometry sequence focused upon acquiring skills necessary to perform a problem oriented primary care eye examination. This concluding course in the series is a seminar concentrating on introducing management concepts for basic problems related to problems of refractive error, visual efficiency, and ocular health. Case based presentations will predominate in the lecture portion of the course while students continue to integrate their technical skills into a comprehensive eye examination and prepare for direct patient care experiences. (3.5 credits)

back

BHS 290

Evidenced Based Health Care
1 hour of lecture per week
This course will build on the students' ability to use the literature in evaluating and planning treatment for clinical cases that they will encounter as optometrists. Additionally, it will increase their ability to use the relevant literature in planning research projects, by analyzing research design and the effectiveness of a chosen treatment paradigm. (1 credit)

back

CLE 294

Health Promotion
1 hour of lecture per week
Topics that will be covered in this course include preventive health care, health promotion and health education. This course is an introduction of the optometry student to different avenues they may use during their professional lives to effectively educate their parents and the public on health issues and become involved in their communities (1 credit)

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Third Professional Year

Summer Quarter 3.1

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 363.1	Ocular Disease III	3	0	3.0
BHS 356	Ocular Pharmacology	4	0	3.0
CLE 364	Advanced Topics in Communication	2	0	2.0
CLE 365.1	Contact Lenses I	5	4	6.0
CLE 380	Patient Care	0	12	6.0
CLE 294	Health Promotion	1	0	1.0
	Totals	15	16	21.0

Fall Quarter 3.2

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 360.1	Clinical Medicine	2	0	2.0
BHS 363.2	Ocular Disease III	3	0	3.0
CLE 365.2	Contact Lenses II	1	1	1.5
CLE 376.1	Strabismus and Amblyopia I	3	3	4.5
CLE 380.2	Patient Care	0	12	6.0
	Totals	9	16	17

Winter Quarter 3.3

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 360.2	Clinical Medicine II	2	0	2.0
BHS 363.3	Ocular Disease IV	4	0	4.0
BHS 363.4	General and Ocular Emergencies	1	0	1.0
CLE 375	Binocular Vision Disorders	2	3	3.5
CLE 367	Low Vision	2	2	3.0
CLE 380.3	Patient Care	0	12	6.0
	Totals	11	17	19.5

Spring Quarter 3.4

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
BHS 361	Physical Diagnosis	1	2	2.0
BHS 364	Neuro-Ophthalmic Disorders	2	0	2.0
CLE 376.2	Strabismus and Amblyopia II	3	0	3.0
CLE 377	Vision Care of Special Populations	2	0	2.0
CLE 378	Vision and Learning	2	2	3.0
CLE 380.4	Patient Care	0	12	6.0
CLE 391	The Business of Optometry	2	0	2.0
	Totals	12	16	20.0

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Course Descriptions

BHS363.1 back
Ocular Disease III
2 hours of lecture per week
This course is the third in the BHS 263 sequence. (2 credits)

BHS 356 back
Ocular Pharmacology and Therapeutics
3 hours of lecture per week
This course is a continuation of BHS 256 and will cover the specific therapeutic regiments for the treatment of glaucoma, ocular infection and inflammation, and selected ocular diseases. The principles of drug administration, evaluation of the therapeutic response, and ocular and systemic adverse reactions will also be presented. (3 credits)

CLE 364 back
Advanced Topics in Communication
2 hours of lecture per week
This course provides a survey of concepts and pragmatic application techniques over an array of essential professional communication topics. Areas of study include interpersonal skills, multi-cultural awareness, professional ethics, public speaking, and influencing strategies. Skills introduced within the Optometry sequence will be further developed in this course as students are encouraged to relate course material to their initial direct patient care experiences. (2 credits)

CLE 365.1 back
Contact Lenses I
5 hours of lecture and 4 hours of laboratory per week
This course addresses all aspects of the application of routine contact lenses in modern clinical practice. Students learn how to assess candidates for contact lens wear, selection of appropriate material, contact lens design, application of lenses and follow-up care. Laboratory emphasizes contact lens designs, modifications, actual patient applications and trouble shooting. (6 credits)

CLE 380 back
Patient Care
12 hours of contact per week
Patient care assignments involve the student in direct patient care in the Illinois Eye Institute's Primary Eye Care Service. Under the supervision of attending faculty, students participate in the delivery of primary eye care for the Illinois Eye Institute's patient population. Activities include patient evaluation and management of ocular disease, binocular anomalies and refractive error, as well as provision of contact lens services. Rotations in the Eyewear Center and the Community Screening program are also included. This experience is designed to enable students to refine their diagnostic, therapeutic and communication skills, through interaction with a diverse patient population. (6 credits per quarter)

CLE 294 back
Health Promotion
1 hour of lecture per week
Topics that will be covered in this course include preventive health care, health promotion and health education. This course is an introduction of the optometry student to different avenues they may use during their professional lives to effectively educate their parents and the public on health issues and become involved in their communities (1 credit)

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BHS 360.1 Clinical Medicine
2 hours of lecture per week
back
This course will provide students with a basic understanding of the more prevalent systemic disorders and their clinical presentations. Nomenclature, pathophysiology, and basic clinical signs and symptoms will be presented along with current diagnostic and therapeutic approaches. Special attention will be given to the counseling and education of those patients choosing to discuss or solicit advise from the optometric primary care provider. (2 credits)

BHS 363.2 Ocular Disease III
3 hours of lecture per week
back
The topics covered in this section of the ocular disease sequence will be pre and post operative cataract care, anterior segment infections, ocular allergic disease, uveitis and other immune disorders. The major emphasis will be upon the clinical presentation, evaluation, and management of these conditions. Pathophysiology of these diseases will also be included. (3 credits)

CLE 365.2 Contact Lenses II
1 hour of lecture and 1 hour of laboratory per week
back
Using a unique video format, this course extends the material introduced in Contact Lenses I to advanced topics in contact lens fitting. Lectures and discussion groups are used to encourage students to develop suitable contact lens recommendations for more complicated problems associated with contact lens fitting. Prescribing methodology, expectations of ocular adaptation, and complication management relating to complex contact lenses will be discussed. This course builds upon the basic knowledge from Contact Lenses I and proceeds to more complex refractive conditions for which contact lenses are recommended. (1.5 credits)

CLE 376.1 Strabismus and Amblyopia I
3 hours of lecture and 3 hours of laboratory per week
back
While Binocular Vision Disorders focuses on the management of non-strabismic disorders, this course emphasizes the detection, measurement, classification, and etiology of strabismus and amblyopia. An organized approach to a comprehensive evaluation is presented and includes the assessment of associated anomalies such as eccentric fixation, suppression, anomalous correspondence and nonconcomitancy. The laboratory portion of the course is designed to familiarize students with testing procedures and includes diagnostic examination of patients manifesting such conditions. (4.5 credits)

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CLE 380.2

back

Patient Care
12 hours of contact per week
Patient care assignments involve the student in direct patient care in the Illinois Eye Institute's Primary Eye Care Service. Under the supervision of attending faculty, students participate in the delivery of primary eye care for the Illinois Eye Institute's patient population. Activities include patient evaluation and management of ocular disease, binocular anomalies and refractive error, as well as provision of contact lens services. Rotations in the Eyewear Center and the Community Screening program are also included. This experience is designed to enable students to refine their diagnostic, therapeutic and communication skills, through interaction with a diverse patient population. (6 credits per quarter)

BHS 360.2

back

Clinical Medicine II
2 hours of lecture per week
This course is the second in the BHS 360 sequence. (2 credits)

BHS 363.3

back

Ocular Disease IV
4 hours of lecture per week
This course in the ocular disease sequence presents ocular diseases related to the retina. The topics include: Retinal vascular disorders; diabetic and hypertensive retinopathies; venous occlusive retinal disease; inflammatory retinal disease; common macular disorders including age-related maculopathy; peripheral retinal diseases and degenerations; ocular oncology; phakomatoses; inherited retinal diseases and developmental vitreo-retinal disorders; and proliferative retinopathies. The detailed pathophysiology of selected conditions will be covered, but the major emphasis will be on clinical presentations, evaluations, and the management of the various conditions. (4 credits)

BHS 363.4

back

General and Ocular Emergencies
1 hour of lecture per week
This course will cover current diagnostic and management strategies for commonly encountered emergency situations. The ocular portion will discuss the range of events from minor trauma to sudden vision loss. The general medical presentations will cover thoroughly the treatment and management of syncope, seizure, etc. (1 credit)

CLE 375

back

Binocular Vision Disorders
2 hours of lecture and 3 hours of laboratory per week
This course extends the management concepts introduced during the Optometry sequence to cover treatment strategies and patient management for non-strabismic binocular disorders. A problem-oriented approach is used to present treatment procedures for oculomotor, accommodative, sensory, and vergence problems. The laboratory includes clinical techniques for the treatment of these visual efficiency disorders. (3.5 credits)

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CLE 367

back

Low Vision
2 hours of lecture and 2 hours of laboratory per week
This course presents the psychological, physiological, and physical aspects of vision loss. Principles of rehabilitation are introduced while the optics of low vision aids and the low vision examination techniques are emphasized. Low Vision advocates an interdisciplinary approach to low vision management. Laboratory provides additional reinforcement through practical experience with aids and further discussions of practical applications of low vision techniques. (3 credits)

CLE 380.3

back

Patient Care
12 hours of contact per week
Patient care assignments involve the student in direct patient care in the Illinois Eye Institute's Primary Eye Care Service. Under the supervision of attending faculty, students participate in the delivery of primary eye care for the Illinois Eye Institute's patient population. Activities include patient evaluation and management of ocular disease, binocular anomalies and refractive error, as well as provision of contact lens services. Rotations in the Eyewear Center and the Community Screening program are also included. This experience is designed to enable students to refine their diagnostic, therapeutic and communication skills, through interaction with a diverse patient population. (6 credits per quarter)

BHS 361

back

Physical Diagnosis
1 hour of lecture, 2 hours of laboratory per week
In current optometric practice, it is necessary for the clinician to be able to assess the patient's vital signs and general physical condition. This course is a practicum of clinical tests designed to supplement the ocular diagnostic regimen. (2 credits)

BHS 364

back

Neuro-Ophthalmic Disorders
20 hours of lecture per quarter
This course provides a clinical approach to patients presenting with the visual manifestations of neurologic disorders. The course emphasizes diagnostic strategies, examination techniques and patient management. (2 credits)

CLE 376.2

back

Strabismus and Amblyopia II
3 hours of lecture per week
Building upon the detection principles introduced in Strabismus and Amblyopia I, this course presents the theoretical and clinical considerations in the management of strabismus and/or amblyopia. The rationale and methods for using lenses, prisms, occlusion, pleoptics, orthoptics, drugs and surgery for the management of these problems will be discussed. Associated anomalies are included in terms of their significance and management. The criteria for determining the prognosis and specific strategies for the treatment of these problems are included. Case analysis and therapeutic programs for individual patients are studied. (3 credits)

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CLE 377

back

Vision Care of Special Populations
2 hours of lecture per week
This course presents the visual development of infants and other noncommunicative patients. Additionally, a discussion of the development of other sensory systems is included. This course focuses on the modification of the traditional optometric assessment and management strategies as they apply to this patient population. Attention will be given to the importance of optometric interaction with other health care disciplines in the care of these populations. (2 credits)

CLE 378

back

Vision and Learning
2 hours of lecture and 2 hours of laboratory per week
Vision and Learning discusses abnormal visual-perceptual development, as well as the concepts of learning disabilities, dyslexia, perceptual-motor problems and reading disabilities. Tests for visual perceptual-motor skills and the rationale and criteria for their evaluation are described. The lectures discuss the various modes of treatment as well as the role of the other disciplines. The laboratory consists of demonstrations, test administration, and scoring. (3 credits)

CLE 380.4

back

Patient Care
12 hours of contact per week
Patient care assignments involve the student in direct patient care in the Illinois Eye Institute's Primary Eye Care Service. Under the supervision of attending faculty, students participate in the delivery of primary eye care for the Illinois Eye Institute's patient population. Activities include patient evaluation and management of ocular disease, binocular anomalies and refractive error, as well as provision of contact lens services. Rotations in the Eyewear Center and the Community Screening program are also included. This experience is designed to enable students to refine their diagnostic, therapeutic and communication skills, through interaction with a diverse patient population. (6 credits per quarter)

CLE 391

back

The Business of Optometry
2 hours of lecture per week
This unique course within the clinical education curriculum is designed to introduce students to the business side of the practice of Optometry. It is somewhat of a "how to" course to help students plan for the future. Experts from the fields of management, finance, and law will join practicing Optometrists in presenting information that will help students develop a strategy for their professional future. (2 credits)

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Fourth Professional Year

Summer 4.1, Fall 4.2, Winter 4.3, and Spring 4.4 Quarters

Course Number	Course Name	Lecture Hours	Lab Hours	Credit Hours
CLE 403	Independent Study	0	6	3.0
CLE 462	Clinical Rounds	0	1	.5
CLE 480	Patient Care	0	32	16.0
	or			
CLE 485	Patient Care Externship	0	40	20
	Totals	0	39/46	19.5/23

Course Descriptions

CLE 403 — Independent Study
back
This course provides an exercise in the critical review and analysis of professional literature. Using the facilities of the ICO library and in particular its formal computerized search system, the student will research a specific topic, analyze information retrieved and develop a critical written summary. (3 credits)

CLE 462 — Clinical Rounds
10 hours of lecture per quarter
back
This course presents advanced topics of clinical importance in a seminar format. The course is designed to be an arena for discussion of topics in the areas of clinical optometry, public health, ocular disease, practice management, and community health care. Presentations are made by faculty, residents, visiting lecturers, and other professionals. It is adjunct to CLE 480 Patient Care (0.5 credit per quarter)

CLE 480 — Patient Care
32-40 hours of contact per week
back
The fourth year patient care sequence builds upon the previous Primary Eye Care experience by incorporating advanced diagnostic and therapeutic techniques. Students obtain experience in all aspects of optometric care, including advanced ophthalmic care, pediatric optometry and binocular vision, low vision rehabilitation and cornea and contact lenses, during rotations at the Illinois Eye Institute and the College's 85 affiliated clinical sites located throughout the United States and in Australia. (16-20 credits per quarter)

CLE 485 — Patient Care Externship
32-40 hours of contact per week
back
The fourth year patient care sequence builds upon the previous Primary Eye Care experience by incorporating advanced diagnostic and therapeutic techniques. Students obtain experience in all aspects of optometric care, including advanced

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ophthalmic care, pediatric optometry and binocular vision, low vision rehabilitation and cornea and contact lenses, during rotations at the Illinois Eye Institute and the College's 85 affiliated clinical sites located throughout the United States and in Australia. (16-20 credits per quarter)

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Council on Optometric Practitioner Education (COPE)
Course Detail

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New Ophthalmic Medications for Optometric Practice

This course considers the indications, contraindications, side effects, and clinical uses of new ophthalmic steroids, antihistamines and antiglaucoma medications. Practical applications are emphasized.

COPE ID: **3445-PH** Category: **Pharmacology**
Course Expiration Date: **8/1/2002** Total Hours: **2.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				2.0 Hour(s)		

Instructor:

Jimmy Bartlett, OD
UAB School of Optometry
1716 University Blvd.
Birmingham, AL 35294-0010
Tel: (205) 934-3036

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **Yes**
Institution: **NOVA**
Exam Type: **Mail Home**

The following Administrators will/have feature(d) this course at a meeting/conference:

American Vision Conferences
Suite 100
8586 East Arapahoe Road
Englewood, CO 80112
Tel: (303) 771-4221

Eye Sight 20/20
216 Main St.
Oxford, MA 01540
Tel: (508) 626-0709

International Vision Expo

This course has appeared (or is due to) at the following meetings/conferences:

Aran Eye Associates Fifth Annual Key West Retreat
7/30/1999 - 7/31/1999
Key West, FL

The Snow Vision Conference
1/15/2000 - 1/20/2000
Steamboat Springs, CO

Grand Cayman 2000
5/11/2000 - 5/16/2000
Grand Cayman
CAYMAN ISLANDS

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

Pharmaceutical Management of Ocular Pain

This course presents an overview of opioid and nonopioid medications for acute and chronic ocular pain. Differences among the various agents in current clinical use, including efficacy, dosing regimens, adverse effects and contraindications will be emphasized.

COPE ID: **1126-PH** Category: **Pharmacology**
Course Expiration Date: **4/1/2000** Total Hours: **1.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				1.0 Hour(s)		

Instructor:

Siret Jaanus, PhD
65 Central Park West
#16A
New York, NY 10023-6050
Tel: (212) 780-5176

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

SUNY State College of Optometry
33 West 42nd Street
New York, NY 10036-8003
Tel: (212) 780-5001
Email: mplatarote@sunyopt.edu

Click on Administrator name to see all meetings

This course has appeared (or is due to) at the following meetings/conferences:

International Vision Expo West 1998
9/24/1998 - 9/27/1998
Los Angeles, CA

SUNY Spring Program
3/12/2000 - 3/12/2000
New York, NY

Click on meeting to see a list of all courses presented at this meeting

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

The Pharmacology of Ocular Allergies - What's Old, What's New

Topical and systemic drugs currently available for clinical use will be discussed. Emphasis will be placed on drug selection, dosages, side effects and contraindications as well as precautions.

COPE ID: **7036-AS**
Course Expiration Date: **4/1/2005**
Format: **Live**
URL:

Category: **Trt/Mngmnt Anterior Segment**
Total Hours: **2.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				2.0 Hour(s)		

Instructor:

Siret Jaanus, PhD
65 Central Park West
#16A
New York, NY 10023-6050
Tel: (212) 780-5176

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **Yes**
Institution: **SUNY**
Exam Type: **Mail Home**

The following Administrators will/have feature(d) this course at a meeting/conference:

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

International Vision Expo East 2002
3/14/2002 - 3/17/2002
New York, NY

Click on meeting to see a list of all courses presented at this meeting

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Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE)
Course Detail

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Therapeutics Update I: Antibiotics

This course discusses the latest clinical reserch and applications of antibiotic agents for the treatment of ocular disease. The lecture discusses the clinical pharmacologic principles and current treatment protocols for the most useful topically or orally administered antibiotics. The discussion includes clinical efficacy, drug sensitivities, potential adverse effects, and patient follow-up issues. Numerous grand rounds case examples illustrate the therapeutic principles, controversies and clinical pearls related to ocular antibiotic therapy.

COPE ID: **4302-PH** Category: **Pharmacology**
Course Expiration Date: **4/1/2003** Total Hours: **1.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				1.0 Hour(s)		

Instructor:

Gary Oliver, OD
946 Hunt Drive
Yardley, PA 19067
Tel: (610) 940-3937
Email:
geoliver@worldnet.att.net

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

New England Council of Optometrists
101 Tremont Street, #401
Boston, MA 02108
Tel: (617) 542-1233

This course has appeared (or is due to) at the following meetings/conferences:

NECO 2000
5/5/2000 - 5/7/2000
Providence, RI

International Vision Expo West 2001
9/20/2001 - 9/23/2001
Las Vegas, NV

International Vision Expo East 2002

Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE)
Course Detail

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My Top Twenty Ocular Medications (or TPA's)

Discuss the use of the most appropriate medication for specific ocular conditions.

COPE ID: **1053-PH** Category: **Pharmacology**
Course Expiration Date: **12/1/2000** Total Hours: **2.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				2.0 Hour(s)		

Instructor:

Bobby Christensen, OD
6912 E. Reno, Suite 101
Midwest City, OK 73110
Tel: (405) 732-2277

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **Yes**
Institution: **SUNY**
Exam Type: **Mail Home**

The following Administrators will/have feature(d) this course at a meeting/conference:

American Vision Conferences
Suite 100
8586 East Arapahoe Road
Englewood, CO 80112
Tel: (303) 771-4221

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

Maryland Optometric Assn.
720 Light Street
Baltimore, MD 21230
Tel: (410) 752-3318
Email: moa@assnhqtrs.com

This course has appeared (or is due to) at the following meetings/conferences:

See and Ski Killington 1998
1/24/1998 - 1/25/1998
Sherburne, VT

International Vision Expo East 1998
3/26/1998 - 3/29/1998
New York, NY

MWCO Congress 1998
4/23/1998 - 4/23/1998
Las Vegas, NV

Dynamic Summer

Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE) Course Detail

Go to next Course | Back to Listing | New Course Search

Systemic Medications in Optometry

A thorough discussion of systemic medications used to Tx eye disease. Drug selection, dosage, side-effects, and adverse effects will be discussed.

COPE ID: **3543-PH** Category: **Pharmacology**
Course Expiration Date: **8/1/2002** Total Hours: **2.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				2.0 Hour(s)		

Instructor:

Bruce Onofrey, OD
8647 Rio Grande Blvd. N.W.
Albuquerque, NM 87114
Tel: (505) 275-4226

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

Mountain West Council of Optometry
2832 Danbury Ln.
#1322
Olympia, WA 98512
Tel: (888)376-6926
Email:
tracy@abelmanagment.com

US Army Center for HP & PM
Attn: MCHB-TS-CVR
Gunpowder, MD 21010
Tel: (410) 436-1007

This course has appeared (or is due to) at the following meetings/conferences:

Systemic Medications in Optometry
8/4/1999 - 8/4/1999
Tampa, FL

Medical Service Corps (MSC) Symposium
5/20/2001 - 5/24/2001
Bad Kissingen
GERMANY

International Vision Expo East 2002
3/14/2002 - 3/17/2002

Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

Practicing Full Scope Optometry: Challenging Cases from Private Practice

With the therapeutic privileges now available to Optometrists, it is our responsibility and opportunity to manage ocular disease in all practice settings. This course will present case studies "from the trenches". Emphasis will be placed on diagnostic protocol, decision-making; and treatment options will be detailed. Billing and reimbursement will also be covered. The nature of this course will encourage audience participation.

COPE ID: **6000-GO** Category: **General Optometry**
Course Expiration Date: **4/1/2004** Total Hours: **2.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				2.0 Hour(s)		

Instructor:

Eric Schmidt, OD
409 E. Broad Street
Elizabethtown, NC
28337
Tel: (910) 645-4268

Click on Instructor name to see all courses by this instructor

Post-course testing information:

CEE: **Yes**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Eye Quest, Inc.
1617 5th Avenue
P.O. Box 406
Beaver Falls, PA 15010
Tel: (800) 677-2115

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

American Optometric

This course has appeared (or is due to) at the following meetings/conferences:

AOA 104th Annual Congress Boston 2001
6/27/2001 - 7/1/2001
Boston , MA

International Vision Expo East 2002
3/14/2002 - 3/17/2002
New York, NY

Eyequest 2002
5/16/2002 - 5/19/2002
Rosemont, IL

Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE)
Course Detail

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Practical Pharmacology

A discussion of the relevant concepts of ocular pharmacology to the practice or optometry. Drug indications, contraindication, side-effects and dosages are covered in detail.

COPE ID: **5436-PH** Category: **Pharmacology**
Course Expiration Date: **12/1/2003** Total Hours: **2.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				2.0 Hour(s)		

Instructor:

Bruce Onofrey, OD
8647 Rio Grande Blvd.
N.W.
Albuquerque, NM 87114
Tel: (505) 275-4226

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **Yes**
Institution: **UAB**
Exam Type: **Mail Home**

The following Administrators will/have feature(d) this course at a meeting/conference:

Eye Quest, Inc.
1617 5th Avenue
P.O. Box 406
Beaver Falls, PA 15010
Tel: (800) 677-2115

International Vision Expo
383 Main Avenue
Norwalk, CT 06851
Tel: (203) 840-5502

SECO International
4661 North Shallowford Road
Atlanta, GA 30338
Tel: (770) 451-8206

This course has appeared (or is due to) at the following meetings/conferences:

SECO 2001
2/21/2001 - 2/25/2001
Atlanta, GA

International Vision Expo East 2002
3/14/2002 - 3/17/2002
New York, NY

Suncoast Seminar 2002
5/4/2002 - 5/5/2002
Clearwater , FL

Eyequest 2002
5/16/2002 - 5/19/2002
Rosemont, IL

Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

Pharmaceutical Update

A comprehensive discussion of the latest develpment in ocular pharmaceutical agents and ophthalmic procedures for the primary eye care practitioner. New drugs and new indications for existing drugs are covered in detail. Recent clinical research in disease managment will also be covered.

COPE ID: **5278-PH** Category: **Pharmacology**
Course Expiration Date: **12/1/2003** Total Hours: **4.0**
Format: **Live**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				4.0 Hour(s)		

Instructor:

Bruce Onofrey, OD
8647 Rio Grande Blvd. N.W.
Albuquerque, NM 87114
Tel: (505) 275-4226

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Minnesota Assn. of Optom. & Opticians
12910 34th Ave. N.
Suite 101
Minneapolis, MN 55441
Tel: (612) 362-4353
Fax: 0-
Email: slklsandy@aol.com

Southwest Council of Optometry
P.O. Box 1869
Alma, AR 72921
Tel: (501) 632-2360

This course has appeared (or is due to) at the following meetings/conferences:

Southwest Council of Optometry Education Congress
3/16/2001 - 3/18/2001
Dallas, TX

MAOO 2001 Continuing Education Seminar
10/26/2001 - 10/28/2001
Minneapolis, MN

MAOO 2002 Continuing Education

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

Allergy Grand Rounds: Which Treatment is Most Appropriate?

Allergic eye disease is sometimes the most challenging condition to manage given the many agents available. Knowledge of different durg classes and their effects, consideration of subtle differences in clinical presentation and patientes lifestyle considerations all help to determine our choice of treatment. This case illustrates four cases, the treatment options available and the pros and cons of each.

COPE ID: **7237-PH**
Course Expiration Date: **4/1/2005**
Format: **Internet/Online**
URL:

Category: **Pharmacology**
Total Hours: **2.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
			2.0 Hour(s)			

Instructor:

Elizabeth Peake, OD
3051 N.W. Montara Loop
Portland, OR 97229
Tel: (503) 384-0648

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Review of Optometry's American Vision Conferences
100 Ave. of the Americas
9th Floor
New York, NY 10013
Tel: (212) 274-7160
Email:
amdematteo@jobson.com

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Allergy Grand Rounds: Which Treatment is Most Appropriate?
4/1/2002 - 4/30/2003
http://www.revoptom.com

Click on meeting to see a list of all courses presented at this meeting

Go to next Course | Back to Listing | New Course Search | COPE Home Page

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Council on Optometric Practitioner Education (COPE)
Course Detail

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Allergic Grand Rounds: Which Treatment is Most Appropriate?

Allergic eye disease is sometimes the most challenging condition to manage given the many agents available. Knowledge of different durg classes and their effects, consideration of subtle differences in clinical presentation and patientes lifestyle considerations all help to determine our choice of treatment. This case illustrates four cases, the treatment options available and the pros and cons of each.

COPE ID: **7238-PH** Category: **Pharmacology**
Course Expiration Date: **4/1/2005** Total Hours: **2.0**
Format: **Written**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
2.0 Hour(s)						

Instructor:

Elizabeth Peake, OD
3051 N.W. Montara Loop
Portland, OR 97229
Tel: (503) 384-0648

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Review of Optometry's American Vision Conferences
100 Ave. of the Americas
9th Floor
New York, NY 10013
Tel: (212) 274-7160
Email:
amdematteo@jobson.com

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Allergy Grand Rounds: Which Treatment is Most Appropriate?
4/1/2002 - 4/30/2003
Magazine/Print

Click on meeting to see a list of all courses presented at this meeting

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Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

Glaucoma Medications

A review of the medications currently available in the treatment of glaucoma and the authors use in the management of this condition.

COPE ID: **5617-GL** Category: **Glaucoma**
Course Expiration Date: **12/1/2003** Total Hours: **2.0**
Format: **Written**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
2.0 Hour(s)						

Instructor:

Murray Fingeret, OD
183 Lakeview Drive
Hewlett, NY 11557
Tel: (516) 569-3511
Email:
murrayf@optonline.net

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

SUNY State College of Optometry
33 West 42nd Street
New York, NY 10036-8003
Tel: (212) 780-5001
Email:
mplatarote@sunyopt.edu

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

SUNY Correspondence C.E. 2001
12/1/2000 - 12/1/2003
Written Articles

Click on meeting to see a list of all courses presented at this meeting

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Council on Optometric Practitioner Education (COPE)
Course Detail

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Guide to Glaucoma Management

This course discusses the definition of glaucoma and its treatment options, the safety and efficacy of medications available as well as the current and future surgical procedures.

COPE ID: **7113-GL**
Course Expiration Date: **4/1/2005**
Format: **Internet/Online**
URL:

Category: **Glaucoma**
Total Hours: **4.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
			4.0 Hour(s)			

Instructor:

David Epstein, MD
Duke University Eye Center
Box 3802 Erwin Road
Room 218 Wadsworth Bldg.
Durham, NC 27710
Tel: 0-

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Review of Optometry's American Vision Conferences
100 Ave. of the Americas
9th Floor
New York, NY 10013
Tel: (212) 274-7160
Email: amdematteo@jobson.com

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Guide to Glaucoma Managment
3/1/2002 - 3/1/2003
http://www.revoptom.com

Click on meeting to see a list of all courses presented at this meeting

Council on Optometric Practitioner Education (COPE)
Course Detail

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It's All About Pressure: The New Topical Glaucoma Meds

This one hour online course provides general information about newer glaucoma agents and discusses clinical trials evaluating efficacy of these medications as well as potential side effects.

COPE ID: **6713-GL** Category: **Glaucoma**
Course Expiration Date: **12/1/2004** Total Hours: **1.0**
Format: **Internet/Online**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				1.0 Hour(s)		

Instructor:

Kathy Williams, OD
TLC Northwest Eye
10330 Meridian Ave. N.
Suite 370
Seattle, WA 91833
Tel: (206) 528-6000
Email:
kwilliams@tlcnweye.com

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Boucher Communications Inc.
1300 Virgina Dr.
Suite 400
Fort Washington, PA 19034
Tel: (215) 643-8123
Email:
bauderca@bouches.com

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Vision Care Online
12/1/2001 - 12/1/2004
http://www.optometric.com/

Click on meeting to see a list of all courses presented at this meeting

Council on Optometric Practitioner Education (COPE)
Course Detail

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New Horizons in Glaucoma: Clinical Grand Rounds Written

This course reviews two case histories in which therapeutic flexibility prompted regimen changes that brought about favorable outcomes. Included is a discussion of four main classes of glaucoma medications.

COPE ID: **6990-GL** Category: **Glaucoma**
Course Expiration Date: **4/1/2005** Total Hours: **2.0**
Format: **Written**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
2.0 Hour(s)						

Instructor:

Murray Fingeret, OD
183 Lakeview Drive
Hewlett, NY 11557
Tel: (516) 569-3511
Email:
murrayf@optonline.net

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Jobson Publishing, LLC
100 Avenue of the Americas
New York, NY 10013
Tel: (212) 274-7160
Email:
amematteo@jobson.com

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

New Horizons in Glaucoma : Clinical Grand Rounds
2/1/2002 - 2/28/2003
Correspondance CE

Click on meeting to see a list of all courses presented at this meeting

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Council on Optometric Practitioner Education (COPE)
Course Detail

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Decision Making in Systemic Therapy

Although most ocular conditions can be adequately managed with topical pharmacentical agents, sytemic agents can optimize patient care by hastening the patients recovery or increase comfort during the healing process.

COPE ID: **5326-SD**
Course Expiration Date: **12/1/2003**
Format: **Internet/Online**
URL:
http://nellie.pacificu.edu/ce/index.html

Category: **Systemic/Ocular Disease**
Total Hours: **3.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
			3.0 Hour(s)			

Instructor:

Robert Rosenow, OD
Pacific Univ. College of Optometry
2043 College Way
Forest Grove, OR 97116
Tel: (503) 359-2974

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Pacific Univ. College of Optometry
2043 College Way
Forest Grove, OR 97116
Tel: (503) 359-2144
Email:
fletches@pacificu.edu

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Decision Making in Systemic Therapy
12/1/2000 - 12/1/2003
Internet-based

Click on meeting to see a list of all courses presented at this meeting

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Council on Optometric Practitioner Education (COPE)
Course Detail

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Update on Selected Infections

Use of antiviral, antibacterial, antifungal, antiparasitic agents as well as contact lenses for severe ocular diseases such as herpes keratitis, Stevens-Johnson syndrome, and cicatricial pemphigoid.

COPE ID: **5494-SD**
Course Expiration Date: **12/1/2003**
Format: **Written**
URL:
Category: **Systemic/Ocular Disease**
Total Hours: **2.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
2.0 Hour(s)						

Instructor:

Jerold Gordon, MD
Pennsylvania College of Optometry
8360 Old York Rd.
Elkins Park, PA 19027-1598
Tel: (215) 780-1382

Click on Instructor name to see all courses by this Instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Pennsylvania College of Optometry
8360 Old York Rd.
Elkins Park, PA 19027-1598
Tel: (215) 780-1382
Email: melissa@pco.edu

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Audio Digest Ophthalmology
10/1/2000 - 10/1/2003
Audio Cassettes

Audio - Digest Ophthalmology 2000
1/1/2000 - 1/1/2003
Audio Cassettes

Click on meeting to see a list of all courses presented at this meeting

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Administrator Qualification
Course Qualification
FAQ's
Committee Members
Participating Boards
COPE Qualified Administrators
COPE Glossary
Downloads
State CE Requirements

Council on Optometric Practitioner Education (COPE)
Course Detail

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Pharmaceutical Treatment of Allergic Eye Disease

The arsenal of pharmaceutical agents used in the treatment of these allergic eye diseases has grown over the last few years. Following is a discussion of the pharmaceutical treatments currently available for use in allergic eye diseases, as well as an overview of the immunopathology of allergic eye disease as it relates to its treatment options.

COPE ID: **5619-AS** Category: **Trt/Mngmnt Anterior Segment**
Course Expiration Date:, **12/1/2003**
Format: **Written** Total Hours: **2.0**
URL:

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
2.0 Hour(s)						

Instructor:

Diane Adamczyk, OD
SUNY State College of Optometry
33 West 42nd Street
New York, NY 10036-8003
Tel: (212) 780-5027

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

SUNY State College of Optometry
33 West 42nd Street
New York, NY 10036-8003
Tel: (212) 780-5001
Email: mplatarote@sunyopt.edu

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

SUNY Correspondence C.E. 2001
12/1/2000 - 12/1/2003
Written Articles

Click on meeting to see a list of all courses presented at this meeting

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

New Concepts in Retinal Vascular Occlusive Disease

An in depth discussion of retinal vascular occlusions including, CRVO, BRVO, CRAO, BRAO and a discussion of the clinical presentation, management issues, new treatment modalities, and prognosis of each will take place.

COPE ID: **6176-PS**
Course Expiration Date: **8/1/2004**
Format: **Live**
URL:

Category: **Trt/Mngmt Posterior Segment**
Total Hours: **1.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
				1.0 Hour(s)		

Instructor:

Sundeep Dev, MD
7760 France Ave. South
Suite 310
Minneapolis, MN 55435
Tel: (952) 929-1131
Email:
sundeepdev@aol.com

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Minnesota Assn. of Optom. & Opticians
12910 34th Ave. N.
Suite 101
Minneapolis, MN 55441
Tel: (612) 362-4353
Fax: 0-
Email:
slklsandy@aol.com

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

MAOO 2001 Continuing Education Seminar
10/26/2001 - 10/28/2001
Minneapolis, MN

MAOO 2002 Continuing Education Program
10/25/2027 - 10/25/2027
Minneapolis, MN

Click on meeting to see a list of all courses

Council on Optometric Practitioner Education (COPE)
Course Detail

Go to next Course | Back to Listing | New Course Search

External Disease

Therapeutic treatment of chronic dry-eye disease, managing contact lens intolerance, managing infectious KCJ, new ocular allergy RX.

COPE ID: **4378-SD**
Course Expiration Date: **12/1/2003**
Format: **Written**
URL:

Category: **Systemic/Ocular Disease**
Total Hours: **2.0**

Allocation of Course Hours by Presentation Type:

Correspondence	Grand Rounds	Interactive/ Workshop	Internet/ Online	Lecture	Panel	Symposia/Scientific Lectures
2.0 Hour(s)						

Instructor:

Henry Perry, MD
2000 North Village Avenue
Rockville Centre, NY 11570
Tel: (516) 766-2519

Click on instructor name to see all courses by this instructor

Post-course testing information:

CEE: **No**
Institution: **(none)**
Exam Type: **(none)**

The following Administrators will/have feature(d) this course at a meeting/conference:

Pennsylvania College of Optometry
8360 Old York Rd.
Elkins Park, PA 19027-1598
Tel: (215) 780-1382
Email: melissa@pco.edu

Click on Administrator name to see all meetings organized by this Administrator

This course has appeared (or is due to) at the following meetings/conferences:

Audio Digest Ophthalmology
1/1/2000 - 12/31/2000
Audio Cassettes

Audio - Digest Ophthalmology 2000
1/1/2000 - 1/1/2003
Audio Cassettes

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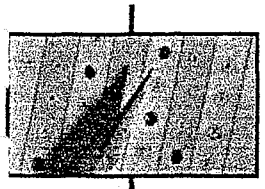
National Board of Examiners in Optometry



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Part I - Basic Science

Part I consists of 435 multiple-choice items administered across three 3.75-hour sessions. Basic Science assesses a candidate's fundamental knowledge and understanding of the scientific principles upon which optometric practice is based so that subsequent mastery of clinical content, both systemic and ocular, can occur. Although the Basic Science examination contains some items that assess the candidates' ability to recall knowledge and other items that assess candidates' ability to apply knowledge, Basic Science has a greater emphasis on factual ***recall*** than the other two examination parts.

The Basic Science examination is targeted for students who have ***completed*** their second professional year in a school or college of optometry accredited by the Accreditation Council on Optometric Education (ACOE) of the American Optometric Association.

In addition, this test assesses those basic science areas that relate to the safe and effective treatment of ocular diseases as well as providing a basis for lifelong learning in optometry. Basic Science is composed of four major subject areas, which parallel four of the Clinical Science subject areas. The subject areas and their relative emphases are shown below.

Each section is linked to a PDF file. To ensure your ability to read these PDF files, please download the latest version of the Adobe Acrobat Reader® by clicking here!

A. Human Biology - 195 Items (45%)	Number of Items*
1. Gross Anatomy	8-12
2. Histology	14-22
3. Neuroscience	19-27
4. General Biochemistry	21-31
5. General Physiology	20-28
6. General Microbiology	11-17**
7. General Immunology	10-16**
8. General Pharmacology	30-46**
9. General Pathology	23-35

B. Ocular/Visual Biology - 90 Items (21%)	Number of Items*
1. Anatomy of the Eye, Ocular Adnexa and Visual Pathway	26-34
2. Ocular and Visual Pathway Development	8-12
3. Ocular Physiology/Neurophysiology	29-37
4. Ocular Pharmacology	13-21**

C. Theoretical, Ophthalmic, and Physiological Optics 125 Items (29%)	Number of Items*
1. Geometrical Optics	15-19
2. Physical Optics	5-7
3. Ophthalmic Optics	16-20
4. Visual Optics	21-27
5. Visual Perception	37-45
6. Ocular Motility	16-22

D. Psychology - 25 Items (6%)	Number of Items*
1. Psychophysical Methodology	3-7
2. Human Development	18-22

TOTAL	435

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Part II - Clinical Science

Part II consists of 435 multiple-choice items administered across three 3.75-hour sessions. Clinical Science assesses a candidate's application of the knowledge of Basic Science to the prevention, diagnosis, treatment and management of clinical conditions that relate to optometric practice. In comparison with the Basic Science examination, Clinical Science places much greater emphasis on the candidates' ability to ***apply*** knowledge.

The Clinical Science examination includes a scoring component on the Treatment and Management of Ocular Disease (TMOD®) exam. This embedded component consists of 90 of the 180 items in the section on Ocular Disease/Trauma. The resultant score is equivalent to that of the stand-alone TMOD® examination. **Candidates who pass the TMOD® component of the Part II (Clinical Science) examination also receive a TMOD® certificate.**

The Clinical Science examination is targeted for students near the middle of their final professional year in a ACOE accredited school or college of optometry. Clinical Science is composed of six major subject areas, four of which parallel the four Basic Science subject areas. The subject areas and their relative emphases are shown below.

Each section is linked to a PDF file. To ensure your ability to read these PDF files, please download the latest version of the Adobe Acrobat Reader® by clicking here!

A. Systemic Conditions - 70 Items (16%)	**Number of Items****
1. General Health	5-9
2. Neurological System	3-5
3. Musculoskeletal System	1-3
4. Skin and Hair	1-3
5. Head and Neck	2-6
6. Hematopoietic System	2-4
7. Immunologic System	3-7
8. Cardiovascular System	4-10
9. Renal and Urogenital System	3-7
10. Gastrointestinal System	2-4

11. Liver and Biliary Tract	1-3
12. Endocrine/Metabolic System	5-9
13. Reproductive System	1-3
14. Respiratory System	4-10
15. Nutrition	1-3
16. Mental Illness and Behavioral Disorders	1-3
17. Infectious Diseases	3-5
18. Congenital/Hereditary Conditions	1-3

B. Ocular Disease/Trauma - 180 Items (41%)* **	**Number of Items****
1. Orbit, Adnexa, Lacrimal System	22-34
2. Cornea/External Disease	42-60
3. Glaucoma	20-30
4. Lens/Cataract	5-11
5. Uveitis, Sclera/Episclera	18-28
6. Retina/Vitreous	19-29
7. Neuro-Ophthalmic Disorders	16-26

C. Refractive/Oculomotor/Sensory Integrative Conditions 125 Items (29%)	**Number of Items****
1. Anomalies of Refraction: Ametropia	21-27
2. Anomalies of Refraction: Presbyopia	8-10
3. Anomalies of Refraction: Aphakia, Pseudophakia, and Aniseikonia	5-9
4. Low Vision	10-14
5. Sensory Anomalies of Binocular Vision/Strabismus	16-20
6. Anomalies of Eye Movement	10-14
7. Anomalies of Accommodation and Accommodative Vergence	10-14
8. Refractive Correction Applications	28-34

D. Perceptual Conditions - 33 Items (8%)	**Number of Items****
1. Anomalies of Child Development	10-14
2. Anomalies of the Aging Adult	10-14
3. Anomalies Secondary to Acquired Neurological Impairment	4-8

4. Anomalies of Color Vision (Inherited, Acquired)	2-4

E. Public Health - 15 Items (3%)	Number of Items **
1. Epidemiology	4-7
2. Biostatistics and Measurement	2-3
3. Environmental Vision	1-3
4. Health Care Policy and Administration	4-6

F. Legal and Ethical Issues - 12 Items (3%)	Number of Items **
1. Licensure and Governmental Regulation of Optometry	1-2
2. Standards of Professional Ethics	1-2
3. Patient Records	2-4
4. Confidentiality of Patient Information	1-2
5. Professional Liability	2-4
6. Visual Disability	1-2

TOTAL	435

* On Clinical Science items, it is assumed that normative values for the following should be known by the candidate:

- Serum glucose: fasting and random
- Total cholesterol and HDL cholesterol
- Westergren sedimentation rate
- Vital signs (i.e., blood pressure, pulse rate, respiratory rate, body temperature)

When data for any of the above are presented in a Clinical Science item, the data will be presented without any normative values in parentheses. However, when laboratory data other than those mentioned above are presented in a Clinical Science item, the data will be accompanied by normative values in parentheses.

** The number of items indicates that actual number for each of the six major subject areas, and a range for each content area within a subject. The range specifies the minimum and maximum number of items in each content area that will be administered on the test. The percentage of items indicates the actual percentage for each of the six major subject areas, rounded to the nearest integer.

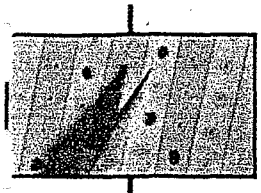
*** Candidates will receive a subscore that is equivalent to a performance score on the stand-alone Treatment and Management of Ocular disease (TMOD®) examination

required by over 40 states for therapeutic privileges. This subscore is based on 90 treatment/management items embedded within the Ocular Disease/Trauma section.

There is no need for a candidate who passes the TMOD® exam embedded in Clinical Science to take the stand-alone TMOD® examination unless specifically required by the state board(s) of the state(s) to which the candidate plans to apply for licensure.

The content of the equivalent embedded and stand-alone TMOD® tests includes the use of both topical and oral medications for the treatment of ocular diseases, and requires knowledge of the interaction between ocular and systemic systems.

National Board of Examiners in Optometry



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Part III - Patient Care

Part III assesses a candidate's ability to examine actual patients, evaluate actual clinical data, and render patient care decisions, unlike the Basic Science and Clinical Science examinations, which assess cognitive skill (i.e., knowledge). This multifaceted examination consists of two administratively distinct sections and formats: a 5-station Clinical Skills performance (i.e., practical) test, and a written test in Patient Assessment and Management (PAM).

In the Clinical Skills section, the candidate examines a patient at each of 5 stations in the performance of 18 clinical skills. Although this section measures primarily psychomotor skills, it contains an assessment of affective (i.e., clinical habits and attitudes) and communication skills, as well as some interpretation of clinical findings. This test section is administered in one 3.50 hour session; however, because of the limited number of candidates who may be examined per session, multiple sessions are scheduled.

For the Clinical Skills section, the **only** acceptable reasons for rescheduling are conflicts with religious observances or with dates of a state board examination. Such rescheduling is dependent upon available openings. Candidates should send in their special request for the Clinical Skills exam along with their application. Candidates should mail or fax any special requests to the NBEO office. The National Board will try to meet these special requests, but cannot promise that the request can be met.

The National Board reserves the right to add or cancel a test center at any time. Should a center be canceled, registrants at the center will be reassigned to the nearest available center.

The Patient Assessment and Management (PAM) section consists of 40 abridged patient scenarios, each of which includes 3-4 multiple-choice items. Each multiple-choice item, which may contain as many as ten options, focuses on assessment and management of patient data. Candidates will be required to render a diagnosis as well as, interpretation and correlation of clinical data, treatment, follow-up, prognosis, and patient education. The Clinical Skills section accounts for 65% of the Part III score, while the PAM section accounts for 35%.

Student candidates are permitted to take Part III (both sections) just before they graduate from a ACOE accredited institution. However, an individual candidate's official score report containing Part III scores will not be released until the National Board has received official notification that the candidate has graduated. Also, no official score reports containing Part III scores will be released to any candidate until the dates for Release of Score Reports.

If the National Board has not received written notification of a candidate's graduation from his/her school or college by March 1st of the year following the test administration, the candidate's Part III scores will be nullified. Candidates are required to take both sections (i.e., Clinical Skills and PAM) in one administration (i.e., spring or summer). However, candidates who have previously passed Part III may retake either individual section alone at their own discretion if they wish to improve a prior score.

Each section is linked to a PDF file. To ensure your ability to read these PDF files, please download the latest version of the Adobe Acrobat Reader® by clicking here!

A. Clinical Skills - Practical Exam with 5 Stations and 18 skills (65%)

Station 1:

1. Case History/Patient Communication
2. Near Cover Test Evaluation
3. Pupil Testing
4. Blood Pressure Measurement

Station 2:

5. Biomicroscopy
6. Goldmann Applanation Tonometry
7. Gonioscopy
8. Collagen Implant Insertion and Removal Station

Station 3:

9. Retinoscopy
10. Distance Subjective Refraction
11. Accommodation Testing
12. Heterophoria and Vergence Testing at Near

Station 4:

13. Patient Communication/Education and Prescription Writing in Ocular Disease Management
14. Ophthalmic Materials Evaluation

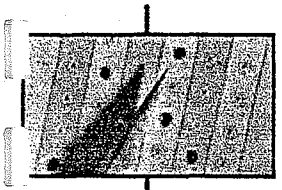
Station 5:

15. Binocular Indirect Ophthalmoscopy
16. Non-Contact Fundus Lens Evaluation
17. Soft Contact Lens Insertion, Evaluation, and Removal
18. Rigid Gas Permeable Contact Lens Insertion, Evaluation, and Removal

B. Patient Assessment and Management Exam (PAM) - 40 Patient Scenarios (35%)

1. Ocular Disease/Trauma - Diagnosis, Data Interpretation, Clinical Correlation
2. Ocular Disease/Trauma - Treatment, Pathophysiology/Etiology, Follow-up, Prognosis
3. Refractive/Functional Conditions - Diagnosis, Data Interpretation, Clinical Correlation
4. Refractive/Functional Conditions - Treatment, Pathophysiology/Etiology, Follow-up, Prognosis

National Board of Examiners in Optometry



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TMOD®

Treatment and Management of Ocular Disease

The Treatment and Management of Ocular Disease (TMOD®) examination is endorsed by the Association of Regulatory Boards of Optometry (ARBO). This 150-item, multiple-choice examination primarily assesses knowledge regarding the appropriate use of medications to treat and manage eye diseases as defined by the broadest scope of current optometric practice statutes. The specific test items relate to ocular conditions for which expanded responsibilities allow optometric therapeutic management. The majority of questions on the TMOD® examination are presented in a "case scenario" format. The candidate is given a patient's signs and/or symptoms along with any pertinent clinical data and patient history information, and is asked to make a treatment/management decision regarding the patient. The candidate must form a diagnosis to determine the patient's proper treatment/management; however, items on the TMOD® examination do not require the candidate to state a diagnosis.

The TMOD® examination focuses primarily on the administration of prescription drugs. However, some items include the use of over-the-counter medications, and other items involve non-pharmacologic interventions. In addition, some items may test the candidate's knowledge of whether additional diagnostic data are needed before initiating treatment. These additional considerations are part of optometrists' responsibilities where the scope of practice has been expanded. An understanding of systemic conditions that have a clinical correlation to ocular signs and symptoms and an understanding of systemic conditions/medications that may contraindicate certain ocular therapies are integral to the therapeutic management of ocular disease. Therefore, up to 30% of the items on the TMOD® examination may include systemic considerations to reflect these clinical interrelationships. However, items on the TMOD® examination do not test directly the pathophysiology or treatment of specific systemic diseases.

The TMOD® test is composed of two sets of categorical breakdowns. The first breakdown consists of seven major content areas of the eye and adnexa. The second breakdown represents five areas of clinical application. Each test item is classified within a content area and a clinical application category. For each content area and clinical application category, there are numbers in parentheses that indicate the range of items (minimum and maximum) that will appear on the examination. These ranges are included to inform candidates of the relative emphasis placed on each area. The percentage indicated is for the number represented by the midpoint of the range.

The National Board is aware that some practitioners, as well as some student clinicians, may be more familiar with the trade names of drugs than with the generic names. For this reason, on both the TMOD® examination and the Part II (Clinical Science) examination, the National Board has a long-standing policy of providing both the generic and the trade names for those generic drugs that have commonly used trade names (e.g., acetazolamide as a generic name and Diamox as the commonly used trade name). However, to avoid having to print both the generic and the trade names of such drugs each time they are referenced on an examination, the National Board has developed a list of generic names and corresponding trade name equivalents for those drugs that have commonly used trade names. The candidate is referred to the table Generic Drugs and Trade Name Equivalents for a listing of these drugs. This list also is reprinted on the inside front covers of the TMOD® and Clinical Science test booklets.

It is important to note that many generic drugs appearing on the TMOD® and Clinical Science examinations are not included in the Generic Drugs and Trade Name Equivalents listing, because these drugs are generally referred to only by their generic names. Examples of such drugs include erythromycin, homatropine, and prednisone.

It should also be noted that, because this web site was updated prior to the completion of the selection process for the 2002 examinations, it is possible that a drug with a commonly used trade name may appear on the exam although it does not appear on the drug list in this guide. If this situation should occur, the drug list that appears in the test booklet will be updated to include any such drugs.

Special Note to TMOD® Candidates

Candidates for the TMOD® exam should be aware that the National Board neither endorses nor has any affiliation with any agency, company, educational institution, or individual educator offering continuing education or other courses that claim to prepare candidates for the TMOD® exam. Although the National Board recognizes the effectiveness of books and other materials for studying, the Board does not endorse any specific book or other study aid in preparing for the test.

Student Candidates for Part II (Clinical Science)

The Part II (Clinical Science) examination includes a sublets equivalent to the Treatment and Management of Ocular Disease (TMOD®) examination. The TMOD® subtest contains 90 items embedded within the Ocular Disease/Trauma Section of Part II (Clinical Science). A candidate who passes the TMOD® subtest embedded within Clinical Science does not need to take the stand-alone TMOD® examination unless specifically required by the state board(s) of the state(s) to which the

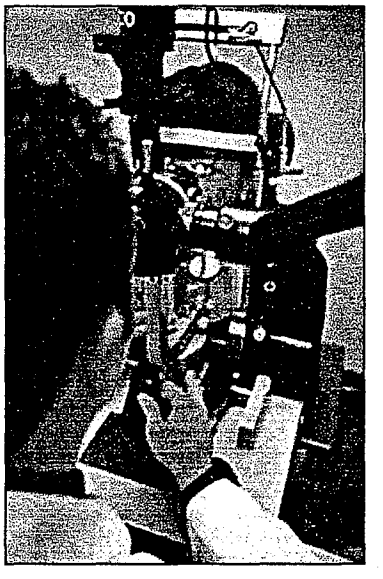
candidate plans to apply for licensure. Candidates who pass Part II (Clinical Science) but do not receive a scaled score at or above 75 on the TMOD® subtest will be eligible to take the TMOD® stand-alone examination at a later date. Candidates who fail Part II (Clinical Science) must repeat the entire Part to achieve a passing status for the Part. Candidates who fail Part II (Clinical Science) but who attain a scaled score at or above 75 on the TMOD® subtest will retain a passing score for the TMOD® examination.

TMOD® Content Outline					
Content Area	**# of Items**	**% of Questions**	**Clinical Application**	**# of Items**	**% of Questions**
1. Orbit, Adnexa, Lacrimal System	27-39	22	A. Selection of treatment/management, including systemic considerations	80-100	60
2. Cornea/External Disease	46-60	35	B. Dose, form, schedule, and duration of treatment	5-15	7
3. Glaucoma	22-32	18	C. Contraindications and side effects of medication, including systemic considerations	15-25	13
4. Lens/Cataract	5-11	5			
5. Uveitis, Sclera/Episclera	12-22	11	D. Follow-up and prognosis, including reassessment of diagnosis after initiating treatment	15-25	13
6. Retina/Vitreous	4-10	5	E. Treatment and management of ocular emergencies and urgencies	5-15	7
7. Neuro-Ophthalmic Disorders	3-7	3			

The UCBSO Curriculum: Professional Courses

Note: Semesters and units are in parentheses after the course title.

Optometry



Optometry 10 . The Eye and Vision in a Changing Environment. (Fall, 2; Spring, 2)
Enrollment limited to 150; open to all majors. Two hours of lecture per week. Course covers introduction to the basis of common sight-reducing visual disorders with major public health implications for society (e.g., myopial cataract), diabetic and hypertensive eye disorders, developmental disorders (e.g., "lazy eye"), and environmentally induced diseases and disorders (solar eye burns, cataract). Major approaches to the prevention, diagnosis and treatment of common disorders will be addressed in terms of the biological and optical sciences underlying the treatment or prevention. Such approaches include protection from, and action of, radiation on the eye (e.g., ultraviolet and microwave), common pharmacological actions on the eye, laser treatments, tissue damage and repair, allergic and immune responses, optical distortions and optical errors and their correction. A review of the major developments in the prevention and treatment of eye disease and the impact of these treatments on society and health care delivery will be covered.

Optometry 39A-39Z: Freshman/Sophomore Seminar. (2-4)

Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and semester to semester. No prerequisites. One hour of lecture per unit. May be repeated for credit when topic changes.

Optometry 100A. Clinical Examination of the Visual System. (Fall; 5)
Two hours of lecture and six hours of laboratory per week. Fundamentals of the optometric examination. Case history, visual acuities, objective and subjective methods of determining refractive status. Basic examination of anterior ocular structures and the ocular fundus; perimetry.

Optometry 100B. Clinical Examination of the Visual System. (Spring; 5)
Two hours of lecture and six hours of laboratory per week. Prerequisites: 100A. Classification and epidemiology of refractive errors, evaluation of accommodative and binocular status. Tonometry, advanced techniques of examining the posterior pole, evaluation of visual pathway function.

Optometry 100C. Clinical Examination of the Visual System. (Fall; 4)
Two hours of lecture and six hours of laboratory per week. Prerequisites: 100B. Case analysis of refractive, accommodative, and binocular anomalies. Pediatric examination techniques. Advanced methods of examining the peripheral ocular fundus; anterior chamber angle evaluation.

Optometry 100D. Clinical Examination of the Visual System. (Spring; 4)
Two hours of lecture and six hours of laboratory per week. Prerequisites: 100C. Modification of the exam sequence for specific patient needs. Evaluation and management of tear film disorders; analysis of vision with cataract. Patient management and professional communications; legal and ethical issues; managed care and optometry.

Optometry 122A. Optics of Ophthalmic Lenses. (Fall; 4)
Three hours of lecture and two hours of laboratory per week.

Prerequisites: Vision Science 101 and Vision Science 102. Optical and physical characteristics of ophthalmic lenses, to include spheric and aspheric surface of single and multifocal lens designs, and ophthalmic prisms. Lens power measurement methods, lens thickness power relationships and considerations in designing prescription eyewear. Characteristics of absorptive lenses, ophthalmic coatings, lens materials, and their role in ocular protection.

Optometry 122B. Ophthalmic Optics and Environmental Vision. (Spring; 2)
Two hours of lecture per week. Prerequisites: Optometry 122A. Ophthalmic lens aberrations and minimization. Ophthalmic lens design relating to anisometropia, aniseikonia, and high refractive errors. Optics of the eye, contact lens optics, and optical principles of low vision aids. Environmental vision and related ophthalmic standards.

Optometry 126. Systemic Disease. (Fall; 5)
Four hours of lecture and two hours of discussion per week. Prerequisites: Vision Science 106B. This course series consists of the pathophysiology, pharmacotherapy, and clinical management of systemic and ocular diseases through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized.

Optometry 136. Ocular Manifestations of Systemic Disease. (Spring; 5)
Four hours of lecture and two hours of discussion per week. Prerequisites: 126. This course series consists of the pathophysiology, pharmacotherapy, and clinical management of systemic and ocular disease through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease

and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized.

Optometry 140. Diagnosis and Treatment of Sensory/Motor Anomalities. (Spring; 3)
Two and one-half hours of lecture per week and eight two-hour laboratories per semester. Prerequisites: Vision Science 117 and 118. Diagnosis and treatment of heterophoria, accommodative, vergence and oculomotor anomalies including sensory anomalies and amblyopia. Rationale and methods for treatment with lenses, prism, occlusion, and vision training. Design and implementation of treatment programs.

Optometry 141. Advanced Management and Rehabilitation of Sensory/Motor Anomalies. (Fall; 3)
Two and one-half hours of lecture and eight 2-hour laboratories per week. Prerequisite: Optometry 140. Advanced diagnosis, prognosis, and treatment of strabismus, neurologic oculomotor disorders, amblyopia, and other associated sensory anomalies. Assessment and management of developmental and acquired visual perceptual disorders in relationship to learning disabilities. Design and implementation of treatment programs.

Optometry 146. Diagnosis and Treatment of Anterior Segment Ocular Disease. (Fall; 4)
Prerequisite: Optometry 136. This course series consists of the pathophysiology, pharmacotherapy, and clinical management of systemic and ocular disease through a combination of lectures and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized.

Optometry 151. Low Vision. (Fall; 2.5)
Two and one-half hours of lecture per week. Epidemiology and etiology of low vision. Optical principles of low vision aids. Optometric examination and treatment of the low vision patient.

Interdisciplinary rehabilitation resources, counseling, and referral.

Optometry 156. Diagnosis and Treatment of Posterior Segment Ocular Disease. (Spring; 4)
Four hours of lecture per week. Prerequisites: Optometry 146. This course series consists of the pathophysiology, pharmacotherapy, and clinical management of systemic and ocular diseases through a combination of lecture and problem-based learning approaches. Disease processes will be emphasized and include cellular injury and repair, inflammation, infection, degeneration, and neoplasia. Neurologic, cardiovascular, endocrine, pulmonary, and congenital disease and their relative ocular manifestations will be presented. The basic principles of pharmacology will be followed by overviews of drugs used to treat diseases of each system. The role of the optometrist in the health care system will be emphasized.

Optometry 160A. Contact Lenses: Examination of the Contact Lens Patient. (Spring; 3)
Two hours of lecture and one 2-hour laboratory per week. Prerequisite: Optometry 100C. The physiological basis for fitting contact lenses. Effects of a contact lens on the tears, lids, and cornea. Examination procedures and instrumentation used in monitoring the ocular response to contact lenses. Contact lens inspection, care, and handling.

Optometry 160B. Contact Lenses: Principles and Practice. (Spring; 2)
Two hours of clinical preceptorship and one hour of independent study per week. Prerequisite: Optometry 160A. Must be taken on a passed/not passed basis. Continuation of 160A. Evaluation and fitting of contact lenses to the human eye, clinical implications.

Optometry 170. Ethics and the Practice of Optometry. (Spring; 2)
Two hours of lecture per week. Prerequisites: Optometry 100D. Ethical and legal aspects affecting the practice of optometry. Practice options, practice administration, financial aspects, and maintenance of an optometric practice. Epidemiological trends and health care implications.

Optometry 190A-190B. Optometry Research Project. (Fall, 1; Spring, 1)

One 1-hour lecture and one hour of discussion per week. Credit and grade to be awarded upon completion of the sequence. Must be taken on a passed/not passed basis. Elements of a research proposal. Fundamentals of scientific inquiry. Experimental design and analysis of data.

Optometry 191A-191B. Optometry Research Project.(Fall, 1; Spring, 2)
One 1-hour discussion per week. Must be taken on a passed/not passed basis. Credit and grade to be awarded on completion of the sequence. Prerequisites: Optometry 190A-190B. Thesis research for optometry students. Presentation of research results.

Optometry 198. Group Studies. (Fall; 2)
Two 1-hour lectures per week. Must be taken on a passed/not passed basis. Prerequisite: Optometry 430A. Advanced topics in specialty areas.

Optometry 430A. Optometry Clinics. (Summer; 8)
Minimum of 28 hours of clinic per week. Prerequisite: Optometry 100D. Clinical sessions include lectures, seminars, and clinical practice in examination techniques and interpretation of clinical data. Must be taken on a passed/not passed basis.

Optometry 430B-430C. Optometry Clinic. (Fall, 9; Spring, 9)
Credit and grade to be awarded upon completion of the sequence. One 1-hour lecture and a minimum of 10 clinic hours per week. Must be taken on a passed/not passed basis. Prerequisite: Optometry 430A. Introduction to patient care, including examination of patients, prescribing of optometric therapy, management of emergency procedures, vision screening, and field trips.

Optometry 435. Advanced Procedures in Ocular Disease Diagnosis. (Spring; 1)
One 2-hour laboratory per week. Prerequisites: Optometry 100D, Optometry 146. Instrumentation, techniques, and principles for examination, diagnosis, and treatment of ocular disease. Introduction to optometric informatics related to ocular disease.

Optometry 440A. Advanced Optometry Clinic. (Summer; 6)
Minimum of 14 hours of clinic per week. Prerequisite: Optometry 430C. Optometric examination of patients in the clinic performed independently by student clinicians under supervision of the clinic

staff. Must be taken on a passed/not passed basis.

Optometry 440B-440C. Advanced Optometry Clinic. (Fall, 9; Spring, 9)
Minimum of 18 hours of clinic per week. Credit and grade to be awarded upon completion of the sequence. Must be taken on a passed/not passed basis. Prerequisites: Optometry 440A (offered Summer Session only). Optometric examination of patients in the clinic performed independently by student clinicians under supervision of the clinic staff.

Optometry 441A. Specialty Clinics. (Summer; 6)
Minimum of 14 hours of clinic per week. Prerequisite: Optometry 430C. Examination, diagnosis, prognosis, treatment, and/or management of patients in the specialty clinics. Must be taken on a passed/not passed basis.

Optometry 441B-441C. Specialty Clinics. (Fall, 7; Spring, 7)
Minimum of 15 to 20 hours of clinic per week. Credit and grade to be awarded upon completion of the sequence. Must be taken on a passed/not passed basis. Prerequisites: Optometry 440A and Optometry 441A. Examination, diagnosis, prognosis, treatment, and/or management of patients in specialty clinics; ocular disease, contact lenses, binocular vision, ophthalmic optics, and environmental and occupational vision.

Optometry 450A-450B. Grand Rounds and Seminar. (Fall, 2; Spring, 2)
Two hours of discussion per week. Must be taken on a passed/not passed basis. Prerequisite: Optometry 430C. Presentation of clinical cases demonstrating basic and advanced optometric care, including diagnosis, treatment, and patient management.

Optometry 452. Current Concepts in Ocular Disease. (Spring; 1)
One 1-hour seminar per week. Prerequisites: Optometry 440B and Optometry 441B. Recent advances in the detection, diagnosis, and management of ocular disease.

Optometry 499. Supervised Independent Study. (Fall and Spring; 1-4)
Must be taken on a passed/not passed basis. Prerequisite: Consent of instructor. Independent study.

Vision Science

Vision Science 39. Freshman/Sophomore Seminar. (Fall, Spring, and Summer; 2-4)
May be repeated for credit when topic changes. Prerequisites: Priority given to freshmen and sophomores. Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester. No prerequisites. Enrollment limits are set by the faculty, but the suggested limit is 25.

Vision Science 101. Geometrical Optics. (Fall; 4)
Three hours of lecture, one 2-hour laboratory, and one 1-hour discussion per week. Geometrical methods applied to the optics of lenses, mirrors, and prisms. Thin lens eye models, magnification, astigmatism, prism properties of lenses, thick lenses.

Vision Science 102. Optical System and Physical Optics. (Spring; 4)
Three hours of lecture, one 2-hour laboratory, and one 1-hour discussion per week. Prerequisite: Vision Science 101. Principles of optical systems, principles and clinical applications of apertures and stops, aberrations and optical instruments. Optics of the eye. Selected topics in physical optics, diffraction, interference, polarization.

Vision Science 104. Visual Perception and Sensitivity. (Fall; 4.5)
Three and one-half hours of lecture and one 2-hour laboratory per week. Psychophysical basis for clinical tests in acuity, perimetry, and color vision. The visual stimulus and photometry. Visual receptors. Psychophysical method and visual threshold. Light sensitivity. Contrast sensitivity. Light and dark adaptation. Temporal and spatial properties of visual function. Color vision and abnormalities. Changes with age and disease. Visual illusion. Basis for advanced diagnostic procedures.,

Vision Science 106A. Anatomy and Physiology of the Eye

and Visual System. (Fall; 4.5)
Three and one-half hours of lecture and one 2-hour laboratory per week. Structure and function of the tissues of the eye, ocular appendages and the central visual pathways. Basic concepts of physiological, neurological, embryological, and immunological processes as they relate to the eye and vision. Foster an appreciation of the pathophysiology of various disease processes. Convey the importance of anatomy and physiology in the medical approach to ocular disease processes.

Vision Science 106B. Anatomy and Physiology of the Eye and Visual System. (2)
Three and one-half hours of lecture per week for 7.5 weeks and four 2-hour laboratories. Prerequisite: Vision Science 106A. Continuation of Vision Science 106A.

Vision Science 106C. Anatomy and Physiology of the Eye and Visual System. (2)
Four hours of seminar per week for 7.5 weeks. Prerequisites: Vision Science 106A, Vision Science 106B (must be taken concurrently). Problem-based learning approach using clinical case examples. Continuation of Vision Science 106A and 106B.

Vision Science 115. Infant Vision. (Fall; 2)
Two hours of lecture per week. Prerequisites: Vision Science 106B. Development of the eye and the visual system. Normal development of the eye, retina, and central visual pathways. Effects of visual deprivation. Assessment of optical and visual function in human infants. Refraction and refractive error in infants and children. Development of visuomotor function, spatial vision, color vision, binocular vision, and depth perception.

Vision Science 117. Oculomotor Functions and Neurology. (Spring; 2)
One and one-half hours of lecture per week and five 2-hour laboratories. Prerequisites: Vision Science 102. Neuroanatomical pathways for the control of eye position and movement; gaze holding, image stabilization, and tracking eye movement systems; oculomotor signs of disorders of the central nervous system (palsies, nystagmus, ophthalmoplegia, cogwheel pursuits, saccadic dysmetria); the near visual-motor response and the synergistic coupling of accommodation and convergence; binocular misalignment (heterophoria and fixation disparity); and

presbyopia.

Vision Science 118. Binocular Vision and Space Perception. (Spring; 2)
Two hours of lecture per week and five 3-hour laboratories. Prerequisites: Vision Science 101 and Vision Science 102. Perception of space, direction, and distance. Binocular retinal correspondence, horopters, differential magnification effects, and anomalies of binocular vision development. Sensory vision, local stereopsis, static and dynamic stereopsis, binocular depth cues.

Vision Science 136. Cell Biology of the Eye and Mechanisms of Ocular Disease. (3)
Two 1-1/2-hour lectures per week. Prerequisites: Molecular and Cell Biology 130 or consent of instructor. Structure, function, regulation of ocular epithelia/neural retina in the normal and diseased state. Cell/molecular analysis of signal transduction cascades that determine lens transparency (cataract); aqueous humor inflow, outflow (glaucoma); cell adhesion, vitreous-retina (retinal detachments); photoreceptor degeneration (retinitis pigmentosa).

Vision Science 198. Group Studies for Advanced Undergraduates. (Fall and Spring; 1-4)
Supervised group study. Must be taken on a passed/not passed basis. Prerequisites: Upper division status and consent of instructor.

Vision Science 199. Supervised Independent Study and Research. (Fall and Spring; 1-4)
Course may be repeated for credit. Must be taken on a passed/not passed basis. Prerequisites: Upper division status and consent of instructor, the student's major adviser and the departmental chair. Supervised independent study and research.

Graduate Courses in Vision Science

A series of six introductory vision science courses (VS 212A-212F; see below) is offered over a one-year period (three courses every semester). These courses serve two functions: (a) to provide students with a basic understanding of vision science, and (b) to prepare students for advanced vision science courses.

201A-201B. Seminar in Vision Science. (Fall, 2; Spring, 2)
One 2-hour seminar per week. Prerequisite: Consent of instructor. Graduate seminar in vision science. Can be repeated for credit.

202. Visual Evoked Potentials. (Fall; 3)
Four hours of seminar per week. Prerequisite: Graduate standing in vision science or consent of the instructor. Basis of visual evoked potentials including application to visual development and deprivation, objective testing, functional anatomy of the visual brain, instrumentation, and future developments. Contributions from positron emission tomography.

204. Optical Image Formation in the Eye. (Fall; 3)
Two 1-hour lectures and two 2-hour labs per week. Prerequisite: Graduate standing in vision science or consent of instructor. Lectures and laboratory demonstrations. Measurement of optical properties of simple and compound eyes. Image quality and resolution. Optometric instrumentation.

206. The Oculomotor System. (Spring; 3)
Two 1-hour lectures and two 2-hour labs per week. Prerequisite: Consent of instructor. Lectures and laboratory demonstrations on mechanical, physiological, servo-analytical, and behavioral aspects of pupil, accommodation, and monocular and binocular eye movement responses.

207. Simulation of Visual Systems. (Fall; 3)
Two hours of lecture and six hours of laboratory per week. Prerequisite: Graduate standing or permission of instructor. Analysis of eye movement and sensory visual systems from a control and systems approach is made available to non-engineers, using computer simulation techniques and biologist-oriented display programs.

210. Instrumentation and Methodology in Vision Research. (Fall; 2)
One hour of lecture and four hours of lab per week. Prerequisite: Graduate standing or permission of instructor. Basic concepts of radiometry, photometry, and colorimetry. Optical bench systems, video and oscilloscope stimulus generation and calibration. Neurophysiological and biophysical techniques for measurement of eye movements, pupil, accommodation, ERG, EOG, VEP,

single unit activity. Psychophysical methodology, signal detection, computer control of stimuli, data acquisition and processing. Clinical assessment of ocular components; eye examination/function. Clinical trials. Offered every other year. Must be taken on a satisfactory/unsatisfactory basis.

212A. Optics and Dioptrics of the Eye. (Fall; 2)
Two 11/2-hour lectures per week for five weeks plus library assignment. Prerequisite: Consent of instructor. Introduction for graduate students to basic principles of classic and modern geometric (thick lens systems, mirrors, prisms, apertures and stops) and physical optics (interference, diffraction and polarization) with emphasis on dioptrics of the human eye (including schematic eyes, aberrations and entoptic phenomena).

212B. Visual Neurophysiology and Development. (Fall; 2)
Two 11/2-hour lectures per week for five weeks plus library assignment. Prerequisite: Consent of instructor. Introduction for graduate students. Visual pathways will be considered from retina to lateral geniculate to visual cortex. Basic organization at each stage will be covered. Primary focus will be studies of receptive field characteristics and associated visual function. Development and plasticity of the same visual pathways will also be explored from controlled rearing procedures and studies of abnormal visual exposure.

212C. Spatial Vision and Machine Vision. (Fall; 2)
Two 11/2-hour lectures per week for five weeks plus library assignment. Prerequisite: Consent of instructor. Introduction for graduate students to human spatial vision. Contrast sensitivity, visual acuity and spatial localization. Machine vision analogues and models of visual processing of spatial information.

212D. Anatomy and Vegetative Physiology of the Eye. (Spring; 2)
Two 11/2-hour lectures per week for five weeks. Prerequisite: Consent of instructor. Introduction for graduate students to a general survey of the orbit, anterior and posterior segment of the eye, extraocular muscles, and neuroanatomy of the eye. Vegetative physiology of the cornea and tear film, aqueous humor, crystalline lens, vitreous humor, epithelial tissue (iris, ciliary body and retina), and photochemistry.

212E. Color Vision and Visual Sensitivity. (Spring; 2)
Two 1-1/2-hour lectures per week for five weeks. Prerequisite: Consent of instructor. Introduction for graduate students to sensory aspects of light and color vision including psycho-physical methods, spectral response of the eye, mechanisms of sensitivity control, dark adaptation, color discrimination, mechanisms of normal and defective color vision.

212F. Eye Movements, Motion Perception and Binocular Vision. (Spring; 2)
Two 1-1/2-hour lectures per week for five weeks. Prerequisite: Consent of instructor. Introduction for graduate students to human eye movements, motion perception and motor and sensory aspects of binocular vision including pursuit, vergence and saccadic eye movements, associated lenticular accommodation, stereopsis and binocular space perception. Perception of real and apparent motion.

216. Color Vision. (Spring; 2)
Two hours of lecture per week. Prerequisite: Vision Science 112 or consent of instructor. Selected topics from color vision mechanisms, specification, and discrimination, psychophysics and neurophysiology of color processing. Color and brightness perception. Stiles two-color increment threshold measures, interaction of color and form, color vision anomalies.

218. Spatial Aspects of Vision. (Spring; 2)
Two hours of lecture per week. Prerequisite: Vision Science 111 or consent of instructor. Selected topics from spatial perception: visual direction, egocentric and oculocentric localization. Pattern vision: feature detector and spatial frequency filter models, local and global frequency analysis, visual acuity and relation to contrast sensitivity. Spatial aspects of color vision.

220. Binocular Vision. (Spring; 2)
Two hours of lecture per week. Prerequisite: Vision Science 118 or consent of instructor. Selected topics from stereopsis and binocular depth perception. Development of binocular vision, binocular interactions, binocular disparity, binocular space perception, and anomalies of binocular vision.

222. Application of Vision Psychophysics to Clinical Disorders. (Spring; 3)

Two hours of lecture and two hours of laboratory or discussion per week. Prerequisite: Consent of instructor. Selected topics from: Non-invasive techniques in the study of retinal and choroidal disorders, cataract, corneal disease, glaucoma, strabismus, amblyopia, and various degrees of visual impairment; study of basic laboratory procedures which may be applied to allow identification of site(s) of anomaly in the visual pathways, enhance sensitivity in disease detection, and contribute to an understanding of the prognosis for eye disease. Offered every other year.

230. Ethics in Scientific Research. (Fall and Spring, 2)
Ten 3-hour seminars per semester. This seminar will examine a range of ethical issues that arise in the process of doing science. Beginning with the philosophical and social foundations, we will consider the pathogenesis of fraud, statistics and deception, the ethics of authorship and publication, research with human subjects, the use of animals, the definition(s) of misconduct and the difference between misconduct and questionable research practices, the relationship between industry and science, and, finally, the responsibilities and obligations of the scientist in society.

240. Biological and Perceptual Development. (Spring; 3)
Three hours of lecture per week. Survey of biology of development of the nervous system and of perceptual development, particularly vision.

252. Neurobiology of Visual Development. (Spring; 2)
Two hours of seminar per week. Prerequisite: Consent of instructor. Reading and critical discussion of neurobiological studies of developing mammalian visual systems. Evaluation of the role of innate and environmental factors in specifying the development of central visual pathways.

260. Vegetative Physiology of the Eye. (Spring; 3)
Four hours of lecture per week. Prerequisites: Graduate standing and a course in calculus. Detailed analysis of the vegetative functions of the eye. Mass and heat transfer in the cornea, sclera, lens, and vitreous body. The formation of aqueous humor and the relation of intraocular pressure to the rates of formation and drainage.

280. Computer Vision. (Fall; 3)
Three hours of lecture per week. Prerequisites: Knowledge of linear algebra and calculus. Mathematics 1A-1B, 50A-50B or equivalent. Paradigms for computational vision. Relation to human visual perception. Mathematical techniques for representing and reasoning, with curves, surfaces and volumes. Illumination and reflectance models. Color perception. Image segmentation and aggregation. Methods for bottom-up three-dimensional shape recovery: Line drawing analysis, stereo, shading, motion, texture. Use of object models for prediction and recognition.

298. Group Studies, Seminars, or Group Research. (Fall and Spring, 1-6)
One to four hours of lecture per week. Group studies of selected topics. Advanced studies in various subjects through special seminars on topics to be selected each year, informal groups studying special problems, group participation in experimental problems and analysis.

299. Research in Vision Science. (Fall and Spring, 1-12)
Hours per week vary. Prerequisite: Consent of instructor. Research.

300. Teaching Methods in Vision Science. (2)
Two hours of class every other week. Course may be repeated for credit. Prerequisites: Graduate standing in vision science. Instruction in teaching methods and materials, in vision science and optometry, observation of classes in session; practice teaching in classrooms and laboratory. Can be taken more than once for credit.

601. Individual Study for Master's Students. (Fall and Spring, 1-6)
Prerequisite: Consent of instructor. Individual study for the comprehensive requirements in consultation with the adviser in vision science. Units may not be used to meet either unit or residence requirements for a master's degree. Must be taken on a satisfactory/unsatisfactory basis.

602. Individual Study for Doctoral Students. (Fall and Spring, 1-6)
Prerequisite: Consent of instructor. Individual study in

consultation with the adviser in vision science; intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the PhD. May not be used for unit or residence requirements. Must be taken on a satisfactory/unsatisfactory basis.

Some Related Courses

Molecular and Cell Biology 164. Sensory and Integrative Neurobiology. (Spring; 3)
Two 1-1/2-hour lectures per week. Prerequisite: MCB 100, 160 or equivalent. Transduction, coding and information-processing in sensory systems. Correlation of findings from neurophysiology, psychophysics, and perception.

Molecular and Cell Biology 262. Integrative Neurobiology. (Spring; 3)
Two 1-1/2-hour lectures and one 1-hour discussion per week. Prerequisite: MCB 260. In-depth consideration of current research questions central to the understanding of the organization of nervous systems, and of the behavior mediated by these systems. When appropriate these questions are illustrated with examples drawn from both the vertebrate and invertebrate literature. Circuit, networks, or system analogs and analysis will be emphasized where these approaches lend clarity. Sensorimotor integration is discussed in small systems or neurons to more complex ensembles, including mammalian cortex and cerebellum.

Molecular and Cell Biology 264. Neural Networks and Biological Computation. (Fall; 3)
Three hours of lecture per week. Prerequisites: Consent of instructor, MCB 160, Math 50A-50B. Survey of work on neural nets including that of Pitts and McCulloch (binary nets), Rosenblatt (perceptrons), Minsky and Papert (perceptrons), the Parallel Distributed Processing group, Kohonen, Grossberg, Hopfield and others. The biology and psychophysics of the human visual system will also be described. Many examples of applications of neural nets to vision and to other problems of biology and physics will be given.

Molecular and Cell Biology 290. Graduate Seminar. (Fall, 1; Spring, 1)
Course may be repeated for credit. One 1-hour seminar per week. Prerequisite: Graduate standing in the department or consent of instructor. Graduate student presentations on selected research topics in molecular and cell biology. Several sections offered each semester, covering different topics. Concurrent enrollment in more than one section is permitted. List of topics to be announced in advance of each semester.

Psychology 210A. Graduate Survey of Biological Psychology. (Fall; 4)
Two 2-hour lectures per week. Prerequisite: Consent of instructor. Covers basic neural and sensory processes.

Psychology 220E. Proseminar: Perception. (3)
One 3-hour lecture per week. Principal theoretical constructs and experimental procedures in visual and auditory perception. Topics will include psychophysics, perception of color, space, shape, and motion, pattern recognition, and perceptual attention.

Psychology 290. Seminar.
Course may be repeated for credit. Two hours of seminar per week.

290E. Perception. (2)

Courses in the Optometric Residency Program

Optometry 230A-230B. Graduate General Clinical Practice. (2-6)
General optometric practice for four hours per week per credit hour, including optometric examination, dispensing, consultation, and subsequent vision care of patients, performed independently by optometric residents. May be repeated for credit.

Optometry 231A-231B. Graduate Specialty Clinics. (2-8)
Clinical examination of patients in designated specialty clinics. More than one clinical specialty may be taken simultaneously. Four hours per week per credit hour. May be repeated for credit.

Optometry 281A-281B. Graduate Clinical Rounds. (1-3) Presentation and discussion of the diagnosis, etiology, prognosis, and treatment of selected clinical cases. Offered only on a satisfactory/unsatisfactory basis, and may be repeated for credit.

Optometry 292A-292B. Graduate Optometry Seminar. (1-3) Graduate seminars on selected topics in clinical optometry. Offered only on a satisfactory/unsatisfactory basis, and may be repeated for credit. Optometry 298A-298B. Independent or Group Studies. (1-6) Directed studies on a selected topic(s) within optometry. May be repeated for credit.

Optometry 299A-299B. Graduate Optometry Research. (2-4) Directed research on a selected topic within clinical optometry. May be repeated for credit.

Interdepartmental Studies Courses

IDS 114A-114B. Advances in Aging: Alzheimer's Disease; Biological and Social Dimensions. (2;2)
One 2-hour lecture per week in the evening. Prerequisites: High school biology and chemistry. This interdisciplinary course will single out specific topics in aging of great current interest (fall, Alzheimer's disease; spring, strategies for intervention) and present lectures on all aspects of each topic (biomedical, health, socioeconomic, legal and ethical). Invited speakers with special expertise in these areas will participate. Sponsoring departments: Optometry, Social Welfare, Public Health, and Molecular and Cell Biology.

I DS 119. Multidisciplinary Studies and Field Experience in Aging. (2)
One 2-hour seminar per week for seven weeks and six hours of field work. Prerequisites: Upper division or graduate student and consent of instructor. Study of adults 70 years and over. Students will visit older patients from local geriatric clinic and confer with clinic staff. One hour weekly seminar consists of lecture by faculty on aging from specific discipline. Other hour is devoted to case presentation by student on a patient's condition. Course grade based on student participation and final paper demonstrating understanding of interdisciplinary nature of aging and caring for older people. Sponsoring departments: Optometry, Social

PACIFIC UNIVERSITY COLLEGE OF OPTOMETRY

Doctor of Optometry Degree Program
2002-2003 Curriculum

FIRST PROFESSIONAL YEAR

OPT #	Fall Semester:	Credits	OPT #	Spring Semester:	Credits
501	Geometric Optics with Lab	4.0	502	Physical Optics with Lab	3.0
516	Clinical Experience I	0.5	503	Visual Optics and Ocular Motility with Lab	4.0
531	Ocular Anatomy, Physiology and Biochemistry with Lab	4.5	517	Clinical Experience II	0.5
535	[redacted]	3.0	532	Anatomy of the Visual System with Lab	3.0
536	[redacted]	3.0	533	[redacted]	3.0
546	Clinical Procedures: Non-refractive Diagnostic Tests with Lab	3.0			
562	Behavioral Optometric Science with Lab	4.0			
			534	Laboratory Procedures for Assessment of Ocular Disease	1.0
			537	[redacted]	4.0
			547	Clinical Procedures: Binocular Testing and Optics with Lab	2.0
	Total Semester Credits	22.0		Total Semester Credits	20.5
				Total First Year Credits	42.5

SECOND PROFESSIONAL YEAR

OPT #	Fall Semester:	Credits	OPT #	Spring Semester:	Credits
601	Ophthalmic Optics	3.0	617	Optometric Case Analysis	4.0
602	Sensory-Motor Interactions in Vision with Lab	4.0	618	Theory and Practice of Spherical Rigid and Soft Contact Lenses with Lab	3.0
616	Theory and Methods of Refraction	3.0			
620	Clinical Experience III	0.5	621	Clinical Experience IV	0.5
631	Diagnosis and Treatment of Anterior Segment Diseases	2.0	633	Diagnosis and Treatment of Posterior Segment Diseases	3.0
632	Detection, Assessment and Treatment of Anterior Segment Diseases	1.0	634	Detection, Assessment and Treatment of Posterior Segment Diseases	1.0
637	[redacted]	2.0	638	[redacted]	2.0
646	Clinical Procedures: Refractive Error Measurement with Lab	2.0	648	Clinical Procedures: Presbyopia and Ocular Health with Lab	4.0
647	Ophthalmic Dispensing Procedures with Lab	2.0	662	Visual Information Processing and Perception with Seminar	4.0
661	Physiological, Psychological and Cognitive Changes During the Lifespan	2.0			
	Total Semester Credits	21.5		Total Semester Credits	21.5
				Total Second Year Credits	43.0

THIRD PROFESSIONAL YEAR

OPT#	Summer Semester:	Credits	OPT#	Fall Semester:	Credits	OPT#	Spring Semester:	Credits
715	Patient Care: First Session	1.0	718	Advanced Optometric Case Analysis	4.0	723	Patient Care: Third Session	2.0
716	Theory and Practice of Specialty Contact Lenses with Lab	4.0	720	with Lab	4.0	725	Assessment and Mgt of Strabismus and Amblyopia with Lab	4.0
721	Clinical Experience V	0.5		Vision Therapy for Binocular and				
726	Normal and Abnormal Visual Perception	2.0	722	Oculomotor Dysfunction with Lab	2.0	727	Evaluation and Mgt of Patients with Perceptual Problems with Lab	3.0
761	Public Health Optometry	2.0	724	Patient Care: Second Session	2.0			
763	Environmental, Occupational and Recreational Vision	2.0	728	Pediatric and Developmental Optometry	2.0	735	Applied Ocular Therapeutics	1.0
791	Optometric Thesis: Orientation and Planning	1.0	733	Assessment and Mgt of the Partially Sighted Patient	2.0	762	Communication in Optometric Practice with Lab	2.0
	Electives*			Assessment and Mgt of Ocular Disease Patients		764	Optometric Economics and Practice	4.0
				Electives*			Electives*	
	Total Semester Credits	12.5		Total Semester Credits	16.0		Total Semester Credits	16.0
	* = Students are required to complete at least 4 credit hours of electives during third year.						Total Third Year Credits (Including Electives)	48.5

FOURTH PROFESSIONAL YEAR

OPT #	Preceptorships:	Credits	OPT #	Internal Clinic Rotation (12 total credits):	Credits
814	Primary Patient Care: Preceptorship Session 1	11.0	817	Primary Patient Care: Internal Clinic Rotation	5.0
			818	Vision Therapy Patient Care	2.0
815	Primary Patient Care: Preceptorship Session 2	11.0	819	Low Vision Patient Care	1.0
			820	Contact Lens Patient Care	1.0
816	Primary Patient Care: Preceptorship Session 3	11.0	821	Clinical Rounds	1.0

COURSE LIST

Click a course number to view it's description.

First Year	Second Year	Third Year	Fourth Year	O.D. Electives	M.S. Courses
OPT501	OPT601	OPT715	OPT815	OPT729	OPT901
OPT502	OPT602	OPT716	OPT816	OPT740	OPT916
OPT503	OPT616	OPT718	OPT817	OPT741	OPT917
OPT516	OPT617	OPT720	OPT818	OPT743	OPT918
OPT517	OPT618	OPT721	OPT819	OPT744	OPT919
OPT531	OPT620	OPT722	OPT820	OPT745	OPT920
OPT532	OPT621	OPT723	OPT821	OPT746	OPT931
OPT533	OPT631	OPT724	OPT822	OPT748	OPT932
OPT534	OPT632	OPT725	OPT832	OPT749	OPT962
OPT535	OPT633	OPT726	OPT892	OPT750	OPT991
OPT536	OPT634	OPT727		OPT751	OPT995
OPT537	OPT637	OPT728		OPT752	OPT996
OPT546	OPT638	OPT733		OPT757	
OPT547	OPT646	OPT735		OPT765	OPT920
OPT562	OPT647	OPT761		OPT766	
	OPT648	OPT762		OPT767	M.S. Sample Electives
	OPT661	OPT763			
	OPT662	OPT764			
		OPT791			

COURSE DESCRIPTIONS

Opt 501 Geometric Optics with Laboratory

Principles of geometric optics, including the propagation of light, reflection and refraction, prisms, thin lenses, thick lenses and lens combinations, lens design, mirrors, aberrations, stops and pupils, optical systems. Laboratory designed to supplement the lecture material. 4 hours.

Opt 502 Physical Optics with Laboratory

Principles of wave optics including interference and diffraction, thin films, Fourier optics, holography, light scattering, polarization, photometry, quantum optics, spectroscopy, and lasers. Laboratory designed

to supplement the lecture material. 3 hours.

Opt 503 Visual Optics and Ocular Motility with Laboratory

Optics of the uncorrected and corrected eye, visual acuity, ocular motility and an introduction to binocular vision. 4 hours.

Opt 516 Clinical Experience I

Orientation to the optometric profession. Observation and participation in clinics with fourth year students and faculty. 0.5 hour.

Opt 517 Clinical Experience II

Orientation to different modes of optometric practice. Observation and participation in clinics with fourth year students and faculty. 0.5 hour.

Opt 531 Ocular Anatomy, Physiology, and Biochemistry with Laboratory

Anatomy, histology, physiology, biochemistry, and photochemistry of the structures of eyelid and lacrimal system. Basic elements of biochemistry. supplement the lecture. 4.5 hours.

Opt 532 Anatomy of the Visual System with Laboratory

Development of the eye, anatomy and physiology of the orbit, and extraocular muscles. Ocular circulation and sensory, motor, and autonomic innervation of the visual system, visual pathways and visual field defects. 3 hours.

Opt 533 Microbiology, Genetics and Immunology; Pharmacology of Anti-infective Drugs; Diseases of the Lid and Lacrimal System

Principles of microbiology, immunology, and genetics, and their application to ocular diseases. Pharmacology of anti-infective drugs and their use in treatment of ocular diseases. Epidemiology, symptoms, signs, diagnosis, and management of diseases and trauma of the eyelids and lacrimal system. 3 hours.

Opt 534 Laboratory Procedures for Assessment of Ocular Disease

A discussion/laboratory seminar designed to provide an understanding of how laboratory procedures can be used to assess ocular disease. 1 hour.

Opt 535 Functional Neuroanatomy and Neurobiology

Gross and microscopic anatomy of the brain and spinal cord. Vasculature, blood-brain barriers, and cerebrospinal fluid. Principles of signaling. Central control mechanisms. Neurology of the oculo-rotary muscles. Vestibular and cerebellar functions. Neuropathology and its effect on visual fields. Neuropharmacology. 3 hours.

Opt 536 Pharmacological Principles and Autonomic Agents

Pharmacokinetics, pharmacodynamics, routes of drug administration, drug interactions, and drug toxicity. Drugs affecting the autonomic nervous system. Drugs used in the treatment of glaucoma; prescription writing. 3 hours

Opt 537 Etiology, Diagnosis and Management of Systemic Diseases with Laboratory; Pharmacology of Systemic Medications I

Etiology, diagnosis, and management (including pharmaceutical) of diseases of the cardiovascular, endocrine, immune, gastrointestinal, pulmonary, hepatic, and hematologic systems. Pharmacology of systemic medications. 4 hours.

Opt 546 Clinical Procedures: Non-refractive Diagnostic Tests with Laboratory

Clinical optometric instrumentation and skills including visual acuity measurement, external ocular examination, basic biomicroscopy, direct ophthalmoscopy, and basic visual field assessment. 3 hours.

Opt 547 Clinical Procedures: Binocular Testing and Optics with Laboratory

Clinical optometric instrumentation and skills including entrance tests, lensometry and lens measure, retinoscopy and stereoscope card skills. 2 hours.

Opt 562 Behavioral Optometric Science with Laboratory

Basic concepts of behavioral vision care, evolution of prescription criteria, visual adaptive processes, psychophysical bases of optometric evaluation, attention and vision, techniques of optometric research. Epidemiology of relevant ocular and visual anomalies.

4 hours.

Opt 601 Ophthalmic Optics

Principles of the design and function of single vision and multifocal ophthalmic lenses including cylinders and prisms. Frame nomenclature, lens aberrations, magnification, standards, protective lenses, as well as lens systems and instruments used in optometric examinations. 3 hours.

Opt 602 Sensory-Motor Interactions in Vision with Laboratory

Studies of monocular and binocular accommodation, convergence, and pupillomotor relationships; graphic representation of monocular and binocular visual functions; motor and sensory fusion; binocular visual space, visual fields; basis of aniseikonia and stereoscopic depth perception. Biomechanical models of vision. 4 hours.

Opt 616 Theory and Methods of Refraction

The distribution of refractive status through the life span; signs, symptoms, clinical significance, and management of refractive anomalies; principles underlying routine objective and subjective clinical measurement of refractive status, accommodation, and convergence. Epidemiology of relevant ocular and visual anomalies. 3 hours.

Opt 617 Optometric Case Analysis

Basic methods for analyzing data from and prescribing for non-diseased binocular patients; basic considerations in the management of vertical imbalances and presbyopia; the underlying assumptions and use of the physiological optics model of analysis and functional analysis; the role of formalized analysis systems within the broad framework of examination/diagnosis/treatment/prognosis. Epidemiology of relevant ocular and visual anomalies. 4 hours.

Opt 618 Theory and Practice of Spherical Rigid and Soft Contact Lenses with Laboratory

Principles of rigid and soft contact lens optics, patient evaluation, lens selection, lens fitting, care systems, and basic follow-up for spherical contact lenses used to correct refractive errors. Laboratory designed to supplement the lecture material. 3 hours.

Opt 620 Clinical Experience III

Case history and clinical thinking skills. Participation in screenings and clinical participation and observation in clinics with third year students and faculty. 0.5 hour.

Opt 621 Clinical Experience IV

Case history and clinical thinking skills. Participation in screenings and clinical participation and observation in clinics with third year students and faculty. 0.5 hour.

Opt 631 Diagnosis and Treatment of Anterior Segment Diseases

Epidemiology, symptoms, signs, diagnosis, treatment, and management of diseases of, and trauma to, the conjunctiva, cornea, iris, ciliary body, sclera, and episclera. 2 hours.

Opt 632 Detection, Assessment and Treatment of Anterior Segment Diseases

A discussion/laboratory seminar designed to teach techniques for the detection, assessment, and treatment of anterior segment disease. 1 hour.

Opt 633 Diagnosis and Treatment of Posterior Segment Diseases

Epidemiology, symptoms, signs, diagnosis, treatment, and management of diseases of, and trauma to, the choroid, retina, and visual pathway, including glaucoma and visual field anomalies. 3 hours.

Opt 634 Detection, Assessment and Treatment of Posterior Segment Diseases

A discussion/laboratory seminar designed to teach techniques for detection, assessment, and treatment of posterior segment diseases. 1 hour.

Opt 637 Etiology, Diagnosis and Management of Systemic Diseases; Pharmacology of Systemic Medications II

Etiology, diagnosis, and management (including pharmaceutical) of diseases of the cardiovascular, endocrine, immune, gastrointestinal, pulmonary, hepatic, and hematologic systems. Pharmacology of systemic medications. 2 hours.

Opt 638 Etiology, Diagnosis and Management of Systemic Diseases with Laboratory; Pharmacology of Systemic Medications III

Etiology, diagnosis, and management (including pharmaceutical) of diseases of the cardiovascular, endocrine, immune, gastrointestinal, pulmonary, hepatic, and hematologic systems. Pharmacology of systemic medications. Procedures for evaluating head, neck, ear, nose, throat, musculoskeletal, pulmonary, neurologic, and cardiovascular systems; venipuncture, subcutaneous injection, and intramuscular injection. 2 hours.

Opt 646 Clinical Procedures: Refractive Error Measurement with Laboratory

Skills required for clinical optometry including keratometry, human eye retinoscopy, and the analytical examination. 2 hours.

Opt 647 Ophthalmic Dispensing Procedures with Laboratory

Frame/lens terminology, frame styling, frame/lens parameter selection, frame material properties; discussion of frame adjustment and alignment, lens mounting and insertion, and frame repair. 2 hours.

Opt 648 Clinical Procedures: Phorometry and Ocular Health with Laboratory

Skills required in clinical optometry, including tonometry, gonioscopy, binocular indirect ophthalmoscopy, binocular refraction, and color vision. 4 hours.

Opt 661 Physiological, Psychological and Cognitive Changes During the Lifespan

Study of development and aging with implications for vision. Neurological, behavioral, perceptual, and physical aspects of development from conception to old age (including developmental disabilities). Gerontology. Epidemiology of relevant ocular and visual anomalies. 2 hours.

Opt 662 Visual Information Processing and Perception with Seminar

Analysis of the anatomy and electrophysiology of single neurons in the visual system and how these neurons code and transmit visual information. Human detection, acuity, pattern, color, and binocular vision and their electrophysiological correlates are studied by considering single neuron mechanisms. 4 hours.

Opt 715 Patient Care: First Session

Supervised clinical practice including the examination, diagnosis, analysis, and care of selected patients in Pacific University affiliated clinics. 1 hour.

Opt 716 Theory and Practice of Specialty Contact Lenses with Laboratory

Principles of fitting rigid and soft contact lenses for the correction of astigmatism, presbyopia, and irregular corneal shapes; practice management aspects of contact lenses. 4 hours.

Opt 718 Advanced Optometric Case Analysis with Laboratory

Various models of interpreting clinical data. Normal and abnormal visual performances including statistical interpretations of optometric data. Distance, nearpoint, and prism lens prescription procedures. Reinforcement of material by presentation of patient case reports in laboratory. 4 hours.

Opt 720 Vision Therapy for Binocular and Oculomotor Dysfunction with Laboratory

Principles and methods of modifying visual performance through improvement of eye movements, accommodation and convergence abilities, and unification. Hand-eye-body performance, and form and space perceptions are studied. Types of cases requiring vision therapy are considered with emphasis on remediation of general binocular dysfunction. 4 hours.

Opt 721 Clinical Experience V

Clinical thinking skills, optometric case discussions, participation in screenings and clinical patient care. 0.5 hour

Opt 722 Patient Care: Second Session

Supervised clinical practice including the examination, diagnosis, analysis, and care of selected patients

in Pacific University affiliated clinics. Lectures review current cases emphasizing problem-solving methods in the delivery of patient care. 2 hours.

Opt 723 Patient Care: Third Session

Supervised clinical practice including the examination, diagnosis, analysis, and care of selected patients in Pacific University affiliated clinics. Lectures review current cases emphasizing problem-solving methods in the delivery of patient care. 2 hours.

Opt 724 Pediatric and Developmental Optometry

Vision as part of the total development of the human being; the interrelationships between visual abilities and other modalities and functions. Normal development of ocular and visual function from birth to adult. Age-appropriate tests for evaluating the vision of children. Epidemiology of relevant ocular and visual anomalies, and prescribing guidelines for modifying and enhancing visual performance of children. 2 hours

Opt 725 Assessment and Management of Strabismus and Amblyopia with Laboratory

Clinical management of strabismus and amblyopia with emphasis on primary care. Differential diagnosis, prognosis, and evaluation of therapeutic procedures. Vision therapy techniques, lenses, prisms, and co-management for strabismic and amblyopic patients. Epidemiology of relevant ocular and visual anomalies. 4 hours.

Opt 726 Normal and Abnormal Visual Perception

Normal and abnormal visual perception including figure-ground, directionality, visual memory, and eye movement-related phenomena. Effects of attention and physiology on perception. Perceptual problems associated with dyslexia, specific reading disabilities, stroke and traumatic brain injury. Normal and abnormal sensory system interactions. 2 hours.

Opt 727 Evaluation and Management of Patients with Perceptual Problems with Laboratory

Observation and participation in evaluations and therapy appropriate for patients having perceptual problems associated with learning disabilities, traumatic brain injury, stroke and developmental abnormalities. Procedures for guiding and modifying visual performance and co-management strategies. Development of treatment plans. Evaluation of community resources available to patients with perceptual problems. 3 hours.

Opt 728 Assessment and Management of the Partially-Sighted Patient

Clinical management of visual problems of the partially-sighted patient. Examination and treatment of the low vision patient. Prescription of conventional spectacles, telescopic and microscopic spectacles, television readers, special magnifying devices, and non-optical devices. 2 hours.

Opt 733 Assessment and Management of Ocular Disease Patients

Indications, techniques, and interpretation of the procedures used in disease detection, assessment, and management. Emphasis is on management of the entire patient rather than just the patient's specific disease. 2 hours.

Opt 735 Applied Ocular Therapeutics

The use of medications in the treatment of ocular disease, including adnexal, anterior segment, and

posterior segment disorders. Emphasis is placed on the clinical thinking process for determining the most appropriate management of a particular disease, emphasizing the therapeutic drug or drugs for effective treatment. 1 hour.

Opt 761 Public Health Optometry

Public health philosophy and concepts. Biostatistics/epidemiology. Health economics and planning. Social aspects of health and federal/state role in health care. Contemporary health care developments. The evolving role of optometry in community health. 2 hours.

Opt 762 Communication in Optometric Practice with Laboratory

Theory and practice of doctor-to-patient communication. Patient interviewing, effective interview behavior, patient management, and accurate history taking. Verbal, nonverbal, and written communication. Student participation in peer and self-evaluation, observation of professional interviews using video and audio tape recordings. 2 hours.

Opt 763 Environmental, Occupational, and Recreational Vision

The interface between human and the environment with emphasis on optometric concerns. Industrial, occupational, and recreational demands on vision; methods of evaluation. Radiation and selective absorption. Illumination. Eye hazards, blindness, and compensation. Motorist, pilot and VDT operator vision. Vision ergonomics and protective equipment. 2 hours.

Opt 764 Optometric Economics and Practice

Management and legal aspects of optometric practice. Modes of practice, practice development. Locating and establishing a practice. Formation and operation of partnerships and associations; multidisciplinary practices; health maintenance organizations. Ethics, professionalism, and professional responsibilities to the public. Organizations within the profession and current trends. 4 hours.

Opt 791 Optometric Thesis: Orientation and Planning

The first course of a two course sequence involving a creative, disciplined study of a topic or phenomenon related to optometry. Requirements include the development of a formal proposal which may describe an experimental or non-experimental study. Didactic presentations relative to research design are an integral part of the course. 1 hour.

Opt 815 Primary Patient Care: Preceptorship Rotation #1

Supervised clinical practice in affiliated hospital settings, health care centers, public and private vision clinics. General and/or specialized health care services unique to each site. 15 hours.

Opt 816 Primary Patient Care: Preceptorship Rotation #2

Supervised clinical practice in affiliated hospital settings, health care centers, public and private vision clinics. General and/or specialized health care services unique to each site. 15 hours.

Opt 817 Primary Patient Care: Internal Clinic Rotation

Supervised primary care clinical practice in Pacific University affiliated clinics. Clinical case conferences offering discussion and review of current cases are included. 7 hours.

Opt 818 Vision Therapy Patient Care

Supervised clinical management of patients requiring vision therapy in Pacific University affiliated clinics. 3 hours.

Opt 819 Low Vision Patient Care

Supervised clinical management of patients requiring low vision care and devices in Pacific University affiliated clinics. 1 hour.

Opt 820 Contact Lens Patient Care

Supervised clinical management of patients wearing or desiring to wear contact lenses in Pacific University affiliated clinics. 1 hour.

Opt 821 Clinical Rounds

A lecture/seminar course utilizing cases to illustrate evaluation and management of refractive, binocular, accommodative, disease, and visual information processing problems. 1 hour.

Opt 822 Pediatric Patient Care

Supervised optometric clinical management of infants, toddlers and preschool aged children in Pacific University affiliated clinics. 1 hour.

Opt 832 Ocular Disease and Special Testing Patient Care

Supervised clinical management of patients with ocular disease in Pacific University affiliated clinics. 1 hour.

Opt 892 Optometric Thesis: Completion

A continuation of Opt 791. Requirements include the completion of a thesis proposal approved by a faculty advisor. (Fall Semester Only) 1 hour.

Elective Courses: Doctor of Optometry (O.D.) Degree Curriculum:

Opt 729 Assessment and Management of the Partially Sighted Patient, Seminar

This elective will provide hands-on experience with the devices and assessment techniques discussed in Opt 728 Assessment and Management of the Partially Sighted Patient. 1 hour.

Opt 740 Seminar in Contact lenses

Identification, etiology and remediation of contact lens problems as complications of corneal physiology, refractive implications, and materials and solutions used; literature review of specific contact lens topics; student preparation and delivery of a lecture on some phase of contact lens practice; evaluation of contact lens articles in the published literature. 2 hours.

Opt 741 Geriatric Optometry

Special needs of the geriatric population. Ocular and systemic aging changes, pharmacological needs, and mentation and independence issues of the aged person as seen in office and in custodial institutions. Emphasis on diagnosis and interaction with primary care physicians, social workers, and occupational therapists. 1 hour.

Opt 743 Neurorehabilitative Optometry

Principal aspects of neurological conditions. Discussions on the pathophysiology of neurological impairment; examination techniques, including neurological assessment; ocular and systemic health; treatment options. Strategies for team management including obtaining hospital privileges and co-managing patients with other health care professionals. 2 hours.

Opt 744 Vision Problems That Relate to Learning Difficulties with Laboratory

Role of vision in relation to educational, psychological, and speech and hearing performance. Diagnosis, remediation and management of learning disability patients with emphasis on reading problems. Interrelationship between achievement level, IQ, personality test results and optometric findings such as eye movements, perception and visual processing, refractive status and accommodative-convergence function. Observation of instruction of children with learning disorders. Comparison of visual and classroom performance. 3 hours.

Opt 745 Laser Management of Ocular Disease

Use of lasers in managing anterior and posterior ocular conditions. Laser treatment of patients with open or closed angle glaucoma, retinal conditions, refractive anomalies, and capsulotomies. Management of possible complications and legal considerations. Includes demonstrations and hands-on practice. 1 hour.

Opt 746 Sports and Recreational Vision

Theory, diagnosis, and remediation of sports vision problems. Static and dynamic visual acuity, accommodation, pursuit and saccadic eye movements, binocularity, and gross and fine visual-motor coordination and specific sports. Sports vision research theory. The role and scope of the sports vision consultant. Laboratories involve the clinical diagnosis and treatment of sports vision problems. 2 hours.

Opt 748 Hospital Based Optometry

Obtaining hospital privileges, credentialing, quality assurance, and accreditation. Ordering, interpreting, and charting radiology, laboratory and fluorescein angiography results. Ethical dilemmas in the multidisciplinary setting. Charting, verbal communication, and written communication with various health care providers. 2 hours.

Opt 749 Refractive Surgery

Surgical and laser treatments of refractive error including historical and state of the art techniques. Patient selection factors and protocols for co-management. Diagnosis, treatment, and management of postoperative complications. The role of optometry in the invasive correction of refractive error. 1 hour.

Opt 750 Orthokeratology

Historical development of orthokeratology. Anatomical, physiological, and refractive characteristics of the cornea and their assessment. Patient selection for orthokeratology and various methods of treatment. 2 hours.

Opt 751 Current Topics Impacting Optometry

New scientific discoveries and current trends in research impacting patient care. Current clinical and professional issues. New and different approaches to health care. New diagnostic and treatment approaches. Topics drawn from current journals. May be taken more than once during the year. 1 hour.

Opt 752 Basic Spanish for Optometry

Spanish language essential for conducting an optometric examination. 1 hour.

Opt 757 Ophthalmic Imaging

Techniques associated with capturing ophthalmic images. Use of non-mydriatic fundus cameras, traditional fundus cameras, and anterior segment slit lamp cameras. Video, film and digital image capture techniques; the use of computer enhancement/modification of images. 1 hour.

Opt 765 Seminar in Multidisciplinary Service

Role visual factors play in learning disability diagnosis and remediation. Drawing upon the disciplines of education, psychology, speech pathology and optometry, experience is gained in diagnosis, therapy, and case management within a multidisciplinary setting. 1 hour

Opt 766 Business Principles for Optometric Practice

The goal of this course is to provide interested students, particularly those without prior business background, with foundational knowledge in important areas of business prior to their enrollment in Opt 764 Optometric Economics and Practice. 1 hour.

Opt 767 Glaucoma: Evidence Based Diagnosis and Management

This elective is designed to assist students in finding key current research, evaluating it, and applying the information to patient care in the area of glaucoma. This course will encourage students to study the literature to understand the current rationales for diagnosing and managing this disease. 2 hours.

Course Descriptions: Masters of Science (M.S.) in Clinical Optometry Degree Program

Opt 901 Seminar in New Ophthalmic Instrumentation and Materials

Review of current literature on new ophthalmic instrumentation and materials. Students will read current issues of selected journals and present reports of relevant articles. Special topics will be assigned for more extensive student reports. Presentations on instrumentation and materials will be given by faculty members and invited guests. 1 hour

Opt 916 Seminar in Functional Vision and Pediatrics

Review of current literature on functional vision and pediatrics. Students will read current issues of selected journals and present reports of relevant articles. Special topics will be assigned for more extensive student reports. Presentations on functional vision and pediatrics will be given by faculty members and invited guests. 1 hour

Opt 917 Seminar in Visual-Motor Function

Review of current literature on visual-motor function. Students will read current issues of selected journals and present reports of relevant articles. Special topics will be assigned for more extensive student reports. Presentations on visual-motor function will be given by faculty members and invited guests. 1 hour.

Opt 918 Seminar in Contact Lenses

Review of current literature on contact lenses. Students will read current issues of selected journals and present reports of relevant articles. Special topics will be assigned for more extensive student reports. Presentations on contact lenses will be given by faculty members and invited guests. 1 hour

Opt 919 Seminar in Environmental Vision

Review of current literature on environmental vision. Students will read current issues of selected journals and present reports of relevant articles. Special topics will be assigned for more extensive student reports. Presentations on environmental vision will be given by faculty members and invited guests. 1 hour

Opt 931 Seminar in Visual System Structure, Function, and Biochemistry

Review of current literature on the structure, function, and biochemistry of the visual system. Students will read and present reports of relevant articles from current issues of selected journals. Special topics will be assigned for more extensive student reports. Presentations will be given by invited guests. 1 hour

Opt 932 Seminar in Ophthalmic/Systemic Disease

Review of current literature on disease etiology, diagnosis, and management. Students will read current issues of selected journals and present reports of relevant articles. Special topics will be assigned for more extensive student reports. Presentations on disease etiology, diagnosis, and management will be given by faculty members and invited guests. 1 hour

Opt 962 Seminar in Presentation Methods in the Health Professions

Methods used to teach and present information. Setting long and short term goals, designing lesson plans, presentation techniques and styles, examinations, and innovative teaching methods, including the use of audiovisual and computer technology. 1 hour

Opt 991 Research and Data Analysis Methods

Research design strategies and data analysis procedures. Use of computerized data recording, analysis, and reporting procedures will be stressed. Methods for preparing material for publication or oral presentation will be covered. 4 hours

Opt 995 Thesis Research

Conducting a research project with the guidance and cooperation of a faculty thesis committee. Following completion of the project to the satisfaction of the faculty committee, an oral presentation is made to the faculty and a written report is prepared for submission to the University library. May be repeated three times for credit. *2 hours

Additional information on Opt 995: Project topics will be suggested by faculty members or may be originated by students themselves. Following discussions with potential faculty thesis committee members, an oral and written presentation describing the project is made to the College of Optometry Research and Awards Committee for review and comment (see section entitled "Academic Procedures"). Project topics may include case studies, literature reviews, clinical trials, development of new procedures or techniques, instrument evaluations, etc. The written report must be approved and signed by all members of the faculty committee; it may be in the form of a formal thesis or it may be a major paper (or papers) suitable for publication in an optometric/vision journal (or book). Presentation of the project at local and national meetings is strongly encouraged.

Opt 996 Special Study

Intended as an alternative or in addition to Opt 995 Thesis Research. Involves conducting a complete literature review or participating in a series of smaller projects/experiences on a special topic of the student's choice and taking a comprehensive written and/or oral examination on the topic. Students should confer with their advisor before selecting this option and must have their special topic approved by the advisor. May be repeated three times for credit. The examination will be given in the final term of Opt 996. *2 hours

Residency Option

Students who desire to combine a residency with their Masters program will participate in a clinical experience (Opt 920) two days per week for five academic semesters.

Opt 920 Clinic Experience

Participation in delivery of clinical services. May be repeated five times for credit. Must be taken five times to qualify for Residency certification. 3 hours (two days per week)

Interest Area and Elective Courses: Masters of Science (M.S.) in Clinical Optometry Degree Program

Some courses are given by departments or divisions outside the College of Optometry and are subject to their scheduling. Some optometry courses are given on an as needed basis. With advisor approval, students may select an interest area and elective courses other than those listed below. Students can choose from the several hundred advanced courses offered by the various departments and divisions of Pacific University.

Sample Elective Courses: Masters of Science (M.S.) in Clinical Optometry Degree Program

BA 300G Management Principles

This course provides an understanding of the duties and responsibilities of managers. Basic management knowledge, attitudes, skills and managerial processes are stressed. 3 hours

BA 320G Human Resource Management

Functions of a personnel program in a business organization. Contributions of research in the social sciences to personnel administration. Operation and techniques of a personnel department including job evaluation, psychological testing, employment counseling, wage administration, and other personnel programs. 3 hours

Opt 963 International Optometry

Review of the comparative education base of optometry in various nations and the relation to scope of practice and practice modes. Examination of barriers to growth of the profession and an exploration of strategies to promote orderly progress. 3 hours

Opt 935 Prescribing Lens Corrections for Problem Patients

Methods for analyzing patient findings to produce an optimum lens prescription. Balancing accommodation and convergence with lenses. Use of horizontal and vertical prism. Use of computerized analysis procedures. 3 hours

Phil 307G Ethics, Medicine and Health Care

A study of ethical issues that arise and occur within medical and health care contexts and professions. 4 hours

Opt 964 Teaching Experience

Participate in the teaching of a course or laboratory. Arranged with individual faculty members. 2 hours

Opt 956 Independent Study

Coursework not covered by regular courses and arranged as independent study with an instructor. An independent study contract is required to register. Credit hours are assigned by the instructor.

*Opt 995 Thesis Research and Opt 996 Special Study are graded in the following manner: A grade of "X" will be submitted by the appropriate faculty member as the student progresses through the sequence. Once the thesis is completed (Opt 995) or examination is completed (Opt 996) final grades are submitted. All "X" grades will then be changed by the Registrar to coincide with the final grade submitted by the thesis advisor or examination advisor.

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Direct comments or questions to optwebmaster@pacificu.edu

MAGINNIS AND ASSOCIATES

PROFESSIONAL INSURANCE ADMINISTRATORS

February 17, 1999

RECEIVED

NOV 2 7 2002

Honorable Larry Emerton
15 Medford Farms
Goffstown, NH 03045

Dear Mr. Emerton:

Maginnis & Associates has been writing Professional Liability Insurance coverage for Optometrists nationwide for over ten years. Maginnis and the major insurance carriers underwriting this coverage are aware of the increasing use of topical and oral pharmaceutical drugs by Optometrists on a state by state basis. Similarly, we are aware of the corresponding expansion of scope of practice to the treatment of Glaucoma on a state by state basis.

During this time, we have seen no direct correlation between topical or oral pharmaceutical drug usage and the frequency or severity of Professional Liability claims against Optometrists, nor any premium differential between topical/non-topical, oral or non-oral pharmaceutical drug states. Neither have we seen any direct correlation between the extent of such authority and the frequency or severity of Professional Liability claims against Optometrists, nor any premium differential based upon the extent of such authority in various states.

Our current insurance company of record is Chicago Insurance Company, a member of The Fireman's Fund Insurance Group. Chicago Insurance Company and our major competitors do not charge a premium differential for topical/non-topical, or oral/non-oral pharmaceutical usage by Optometrists, nor do they charge any premium differential for differing levels of authority or treatment by Optometrists. As these companies review their rate structure on a regular and frequent basis, and because claims and premiums are so closely related to incidents of harm or injury to patients, we take this as a strong indication that neither the use of therapeutic drugs, nor the extent of prescriptive drug/treatment authority by Optometrists has had any material affect on the Professional Liability exposure.

However, factors which do appear to impact the frequency and severity of professional liability insurance claims and settlements against Optometrists appear related more to socio-economic factors which differ geographically by location of professional practice. Areas of higher population density appear to produce more significant litigation and higher settlements than other areas. For this reason, industry leaders in Optometrists' Professional Liability Insurance, including ourselves, have found it necessary to utilize geographically based territorial distinctions in rate which are not based upon scope of practice variations.

SUMMARY – LEGEND DRUG PRESCRIPTIVE AUTHORITY FOR OPTOMETRISTS

STATE	Medications Used To Treat **ALLERGIES**	Medications Used To Treat **INFECTIONS**	Medications Used To Treat **GLAUCOMA**	Medications Used To Treat **INFLAMMATION**	Medications Used To Treat **PAIN** (oral)
Alabama	T-O	T-O	T-O	T-O	O
Arkansas	T-O	T-O	T-O	T-O	O
Idaho	T-O	T-O	T-O	T-O	O
Iowa	T-O	T-O	T-O	T-O	O
Kentucky	T-O	T-O	T-O	T-O	O
Missouri	T-O	T-O	T-O	T-O	O
Montana	T-O	T-O	T-O	T-O	O
North Carolina	T-O	T-O	T-O	T-O	O
Oklahoma	T-O	T-O	T-O	T-O	O
Oregon	T-O	T-O	T-O	T-O	O
Tennessee	T-O	T-O	T-O	T-O	O
Wisconsin	T-O	T-O	T-O	T-O	O
Colorado	T-O	T-O	T-O	T-O*	O
Connecticut	T-O	T-O	T-O	T-O	O
Kansas	T-O	T-O	T-O	T-O	O
North Dakota	T-O	T-O	T-O	T-O	O
Utah	T-O	T-O	T-O	T-O	O
West Virginia	T-O	T-O	T-O	T-O	O
District of Columbia	T-O	T-O	T-O	T-O*	O
Nebraska	T-O	T-O	T	T-O*	O
Nevada	T-O*	T-O	T-O	T	O
New Mexico	T-O	T-O	T-O	T-O*	O
South Carolina	T-O	T-O	T-O	T	O
Wyoming	T-O	T-O	T-O	T-O*	O
Arizona	T-O	T-O	T	T-O*	O
California	T-O	T-O	T	T-O*	O
Maine	T-O	T-O	T	T-O*	O
New Hampshire	T-O	T-O	T-O	T-O*	O
Texas	T-O	T-O	T-O	T-O*	O
Delaware	T-O	T-O	T-O	T	O**
Indiana	T-O	T-O	T-O	T-O*	O**
Louisiana	T-O	T-O	T	T	
Ohio	T-O	T-O	T-O	T	
Georgia	T	T	T	T	O
Illinois	T	T	T	T	O**
South Dakota	T	T	T	T	O
Virginia	T	T	T-O	T	O
Alaska	T	T	T	T	
Michigan	T	T	T	T	
Minnesota	T	T	T	T	
Mississippi	T	T	T	T	
New Jersey	T	T	T	T	
Washington	T	T	T	T	
Florida	T	T	T	T	
New York	T	T	T	T	
Rhode Island	T	T	T	T	
Hawaii	T	T		T	
Massachusetts	T	T		T	
Vermont	T	T		T	
Maryland	T	T-O	T	T*	
Pennsylvania	T	T-O		T*	O

KEY:
- T Topical Legend Drugs
- O Oral Legend Drugs
- * No Steroids
- ** No Controlled Substances (narcotics)

GLAUCOMA Tx = 46 states + DC + Guam
ORAL Rx AUTHORITY = 38 states + DC + Guam
CONTROLLED SUBSTANCE Rx AUTHORITY = 32 states + DC + Guam
INJECTABLES AUTHORITY = 22 states + DC

The information contained in this chart represents a summary, as of August 20, 2002, of the state optometry statutes/board regulations. In some states situations for legend drug prescriptive authority may vary. The letter "T" or "O" in many instances represents every legend drug available under a specific heading. For more complete information, please contact Sherry L. Cooper, State Legislative Analyst, at the American Optometric Association St. Louis office 314-991-4100/800-365-2219, Ext. 266 or SLCooper@AOA.org.

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California	T-O	T-O	T	T-O*	O
Colorado	T-O	T-O	T-O	T-O*	O
Connecticut	T-O	T-O	T-O	T-O	O
Delaware	T-O	T-O	T-O	T	O**
D.C.	T-O	T-O	T-O	T-O*	O
Florida	T	T	T	T	
Georgia	T	T	T	T	O
Guam	T-O	T-O	T-O	T-O	O
Hawaii	T	T		T	
Idaho	T-O	T-O	T-O	T-O	O
Illinois	T	T	T	T	O**
Indiana	T-O	T-O	T-O	T-O*	O**
Iowa	T-O	T-O	T-O	T-O	O
Kansas	T-O	T-O	T-O	T-O	O
Kentucky	T-O	T-O	T-O	T-O	O
Louisiana	T-O	T-O	T	T	
Maine	T-O	T-O	T	T-O*	O
Maryland	T	T-O	T	T*	
Massachusetts	T	T		T	
Michigan	T	T	T	T	
Minnesota	T	T	T	T	
Mississippi	T	T	T	T	
Missouri	T-O	T-O	T-O	T-O	O
Montana	T-O	T-O	T-O	T-O	O
Nebraska	T-O	T-O	T	T-O*	O
Nevada	T-O*	T-O	T-O	T	O
New Hampshire	T-O	T-O	T-O	T-O*	O
New Jersey	T	T	T	T	
New Mexico	T-O	T-O	T-O	T-O*	O
New York	T	T	T	T	
North Carolina	T-O	T-O	T-O	T-O	O
North Dakota	T-O	T-O	T-O	T-O	O
Ohio	T-O	T-O	T-O	T	
Oklahoma	T-O	T-O	T-O	T-O	O
Oregon	T-O	T-O	T-O	T-O	O
Pennsylvania	T	T-O		T*	O
Rhode Island	T	T	T	T	
South Carolina	T-O	T-O	T-O	T	O
South Dakota	T	T	T	T	O
Tennessee	T-O	T-O	T-O	T-O	O
Texas	T-O	T-O	T-O	T-O*	O
Utah	T-O	T-O	T-O	T-O	O
Vermont	T	T		T	
Virginia	T	T	T-O	T	O
Washington	T	T	T	T	
West Virginia	T-O	T-O	T-O	T-O	O
Wisconsin	T-O	T-O	T-O	T-O	O
Wyoming	T-O	T-O	T-O	T-O*	O

KEY:
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