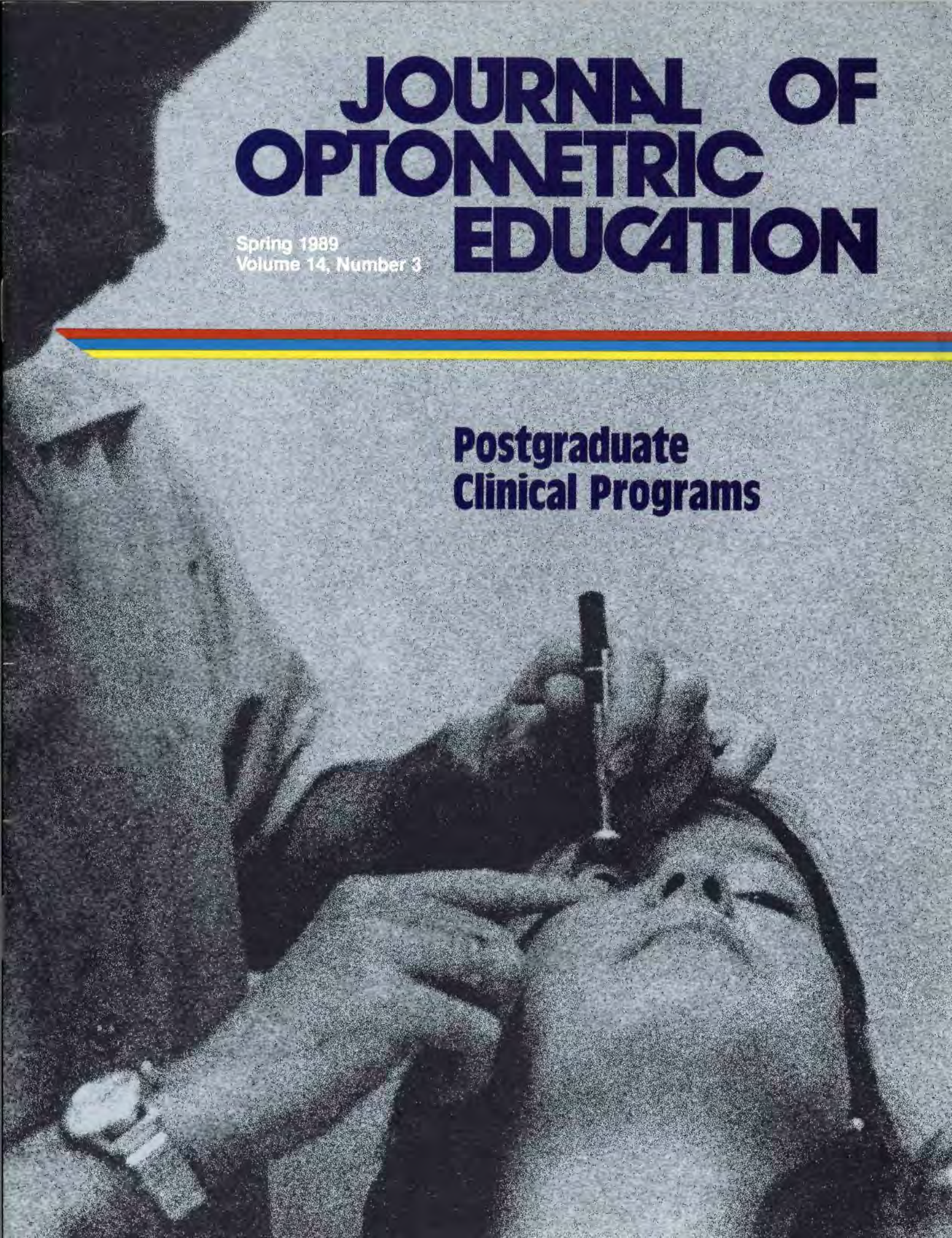


# JOURNAL OF OPTOMETRIC EDUCATION

Spring 1989  
Volume 14, Number 3

**Postgraduate  
Clinical Programs**





# Association of Schools and Colleges of Optometry

The Association of Schools and Colleges of Optometry (ASCO) represents the professional programs of optometric education in the United States, Canada and a number of foreign countries. ASCO is a non-profit, tax-exempt professional educational association with national headquarters in Rockville, MD.

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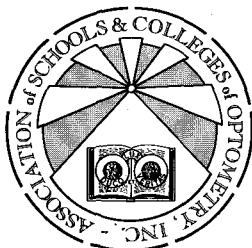
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## Postgraduate Clinical Education: At the Crossroads

The speed with which postgraduate clinical programs (residencies and fellowships) have proliferated since the first program was created in 1974 is remarkable, as is the level of education they now provide. In the absence of a national organization with clear authority over postgraduate clinical training, this achievement has been largely due to the efforts of individuals. Testimony to the integral role residencies have now assumed was provided in the May 1987 issue of the American Optometric Association's *Journal* which was devoted to the topic of postgraduate residencies in optometry.

Within the past four years, estimates of the number of postgraduate clinical positions have increased from 80 to 110 (Source: ASCO Residency Directories, 1984-1988). This figure suggests that 10 percent of our graduates may be pursuing a postgraduate clinical education. The most recent increase in residency positions stems from both the expansion of existing programs and the creation of new programs. Many of the new programs are in independent co-management groups, signifying that not only the number, but more importantly, the variety of programs offered to our graduates is increasing. The need for national coordination becomes more apparent as the number and the variety of postgraduate programs increase.

Two obstacles exist to coordinating postgraduate clinical programs on the national level. The first obstacle is resistance from some of the existing programs. This source of resistance appears to be tied to the issue of accreditation and program definition. If a move towards a central coordinating body is considered, the importance of accreditation is likely to increase and it will have significant impact on existing programs. A review of the literature would suggest that approximately seventy-five percent of residency programs are accredited. This estimate leaves a group of programs which have either chosen not to apply for accreditation, are in the process of applying, or have applied and have been rejected. Indeed, there are concerns that some of the unaccredited programs would not meet Council on Optometric Education (COE) standards. On the other hand, it also has been suggested that the existing accreditation standards may not be sensitive to the circumstances of some of these programs. At the root of this issue are the postgraduate clinical programs which do not fall into the COE definition of "Residency." These problems of recognition and definition for the accreditation process could result in a dramatic increase in the number of unaccredited programs. If such an increase should occur, it would heighten the existing lack of control by organized optometry over a significant part of optometric education. Therefore, any move towards coordinating postgraduate clinical education should reach out to all types of programs.

A second obstacle to a national organization of postgraduate clinical programs is the simple question of logistics. Should such an organization be under the auspices of an existing group or groups or should it be independent? Certainly, a number of optometric organizations have assumed partial responsibility for these programs in the context of specific issues.

Early in the evolution of residency programs, the Veterans Administration fulfilled much of the administrative role. It could do so because the clear majority of residencies were VA-based. More recently, the COE has played the most visible role in expressing a national policy through the definition and administration of accreditation guidelines. While the accreditation process is critical to the development of any national 'policy' affecting postgraduate clinical programs, COE could not serve any administrative or political role beyond the evaluation process.

The Association of Schools and Colleges of Optometry (ASCO) also has played a significant role. ASCO's involvements have included: 1) the Residency/Graduate Program Directory, 2) the formation of a joint committee with the Veterans Administration to discuss a profession-wide matching/clearinghouse applicant program, and 3) joint task force activity with the AOA to press the VA for an increase in its residency stipends and the number of positions to bring them into line with congressional mandates.

While these activities suggest ASCO could evolve into the parent organization for a central office for residency issues, there has certainly been no decision to this effect. It is critical that any formal decision creating a nationally based coalition or committee (regardless of which parent group is identified to assume responsibility) must include broad representation from all sectors of optometry.

Postgraduate clinical programs are a key component of our educational system, they are here to stay and they will continue to thrive. Their impact on both the education of optometrists and the evolution of the profession is apparent and will continue to grow. Postgraduate clinical programs also are undergoing dramatic change, and it is important for this process to be guided towards defined national goals.



David A. Heath, O.D.  
Editor

*Journal of Optometric Education*



# CIBA Vision®

"In spite of the many changes in the eye care profession today, it's the relationship between practitioner and patient that ensures safe and successful contact lens wear.

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B.J. Shannon, O.D., F.A.A.O.

Executive Director, Professional Services

CIBA Vision Corporation

# LETTERS TO THE EDITOR

## Dear Dr. Heath:

Your editorial, *Educational Research: Fact or Fantasy*, in the Fall '88 issue of JOE addresses a topic vital to the future well-being of optometric education. This is an era of rapid change in the profession as well as an era of accountability and assessment in education. Ongoing educational research in optometry, or at least published evidence of it, seems to be lagging behind what some other professions are doing.

It is a beginning but it is not sufficient to suggest that optometric faculty become involved in educational research. Most such faculty are either basic scientists or clinicians. Educational research differs from basic science or clinical research in a number of ways. Not only are its methods and techniques often different but the criteria for its validity also may differ from those of basic science research. In many ways it is more akin to social science research.

If one looks at the field of medical education, a field that seemingly produces a

copious variety of educational research, it appears that most of the effort comes from schools that have departments of medical education. Some of the best known medical education researchers are on campuses where there is also collaborative activity between the schools of education and medicine. A number of optometry schools are located on or near campuses with schools of education and opportunities may well abound for joint ventures.

As a member of the American Educational Research Association and, specifically, its Division I (Research in the Professions), I have observed the results of educational research efforts in the professions of medicine, dentistry, nursing, law, theology and allied health. We can certainly learn a lot from these other professions but we would gain much more by an optometric presence and participation in such a forum.

Michael H. Heiberger, O.D., M.A.  
Director of Planning and Evaluation  
SUNY State College of Optometry

**Editor's note:** The Journal of Optometric Education is pleased to be able to publish Dr. Heiberger's letter responding to our editorial "Educational Research: Fact or Fantasy." For those who have an interest in educational research and would like to get involved in an interdisciplinary forum as suggested by Dr. Heiberger, additional information may be obtained by writing to:

American Educational Research  
Association (AERA)  
1230 17th St. N.W.  
Washington, D.C. 20036  
(202) 223-9485

Division I:  
Chairperson, Dr. Lynn Curry  
(613) 235-7218

Dr. Curry is happy to receive inquiries and discuss Division I activities. Dues for the AERA are forty-five dollars a year which includes membership in one division and the receipt of several publications involving educational research.

I hope that several of our readers will take advantage of this information.

# ASCO NEWSMAKERS

## Haffner Named President at SUNY College of Optometry

Dr. Alden N. Haffner, who has nearly two decades of administrative experience at the State University of New York's Central Administration and at the SUNY College of Optometry, has been named president of the Manhattan institution.

In 1971, as director of the Optometric Center of New York, Dr. Haffner merged its clinics with other professional and support personnel to create the State College of Optometry under the program of the State University. He served as its first president from 1971 to 1978.

From 1978 to 1988 he served in various high level administrative positions in the University's Central Administration, including six years as vice chancellor for Research, Graduate Studies and Professional Programs.

He is a fellow of the American Academy of Optometry and the New York Academy of Optometry. Dr. Haffner is also the recipient of the Distinguished

Achievement Award from New York University's Graduate School of Public Administration.

Following the resignation of Edward R. Johnston as president of the College of Optometry in July of 1987, Dr. Haffner served as its acting president concurrent with his central staff responsibilities.

Active in civic and professional affairs, Dr. Haffner has degrees from Brooklyn College and the Pennsylvania College of Optometry, and M.P.A. and Ph.D. degrees from New York University.

Dr. Haffner's appointment followed a nationwide search and a unanimous recommendation by the College of Optometry College Council. □

## Nominations Requested

The Vision Care Section of the American Public Health Association invites nominations for the Distinguished Service Award and the Outstanding Scientific Paper/Project Award. The Distinguished

Service Award is presented to a person, institution, or group who has made an outstanding contribution or demonstrated continual high quality service in the area of public health vision care.

The Outstanding Paper/Project Award recognizes a person, institution, or group who has contributed significantly to the advancement of vision care in the field of public health. The contribution can be a paper, either previously published or suitable for publication, or a written description of a project.

Recipients of the awards will receive a commemorative plaque at the Annual Meeting of the Association in Chicago, October 22-26, 1989. Nominations are due by May 5, 1989 and should include a narrative statement of 250 words or less with each nomination. Additional information is available from and nominations should be sent to Dr. Les Caplan, Awards Committee Chair, University of Alabama at Birmingham, School of Optometry, Birmingham, AL 35294, 205-934-4748.



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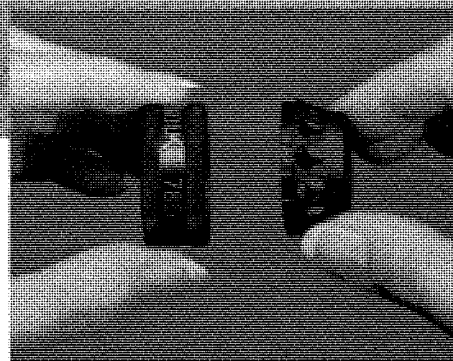
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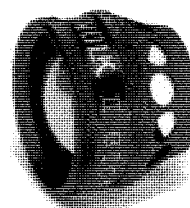
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### **CIBA Vision® Announces EasyWear<sup>SM</sup> Programmed Replacement System**

CIBA Vision® Corporation announced the introduction of the EasyWear<sup>SM</sup> Programmed Replacement System. The new system enables eye care practitioners to monitor the health of their contact lens patients' eyes more successfully.

"Practitioners know that the more they control their patients' contact lens wear, the healthier their patients' eyes will be. The EasyWear Programmed Replacement System gives practitioners more control," commented Jim Sturm, associate product manager at CIBA Vision.

The EasyWear Programmed Replacement System works as follows: practitioners determine when patients should replace their lenses, after considering such factors as each patient's wearing schedule and history of lens deposits. Practitioners then set up a schedule for dispensing replacement lenses and determine the cleaning and disinfecting solutions appropriate for each patient on an as-needed basis.

According to Sturm, the key to the EasyWear<sup>SM</sup> Programmed Replacement System is control. CIBA Vision recommends that SOFTCON® EW (vifilcon A) lenses be dispensed quarterly, along with the AOSEPT® Disinfection/Neutralization System. The EasyWear Programmed Replacement System is flexible, however. Practitioners are free to choose other lenses and dispensing schedules to best manage their patients' contact lens care. The dispensing schedule set up by each practitioner encourages compliance in lens replacement and prescribed lens care. Patients will experience improved long-term comfort, visual acuity, and eye health.

Seeing patients more often helps practitioners with patient control and compliance. "It is discouraging for practitioners to fit a patient with contact lenses, only to have him or her come back a year later with complications due to deposit build-up or improper care," Sturm said.

The EasyWear<sup>SM</sup> Programmed Replacement System is designed to prevent problems that may arise from noncompliance. "It is a positive step and an eye care solution we know practitioners will appreciate," Sturm said. The EasyWear System will be supported by patient education programs promoting compliance.

### **Wesley-Jessen Announces Availability of Handling Tint Option for Durosoft 3 Spheres**

Wesley-Jessen has begun shipments of DuraSoft 3 LiteTint, a 55% water, flexible wear lens with a light visibility tint incorporated in the lens polymer.

"One of the most dynamic soft lens categories over the past three years has been visibility tints," said Doug Brown, group product manager. "During 1988 alone, this segment grew by over 50%."

"Patients like the ease of handling or ease of finding a dropped lens. And for practitioners, handling tints offers an opportunity to command a modest premium for the added convenience," said Brown.

"Within a few years, we expect that a majority of the soft lenses fitted will have a handling tint," he concluded.

Initially DuraSoft 3 LiteTint will be available in a 14.5mm diameter, in 8.3mm and 8.6mm base curves and in powers ranging from Plano to -6.00D (8.3 B.C) and -8.00 to +6.000 (8.6 B.C).

During the first quarter, W-J is extending special trial offers. Practitioners should contact a W-J sales representative, the W-J Order Department (1-800-248-2000) or a W-J authorized distributor for details.

### **Varilux Appoints Coordinator for Educational Programs**

Danne Ventura, FNAO, has been appointed to the position of coordinator of educational programs in support of professional services for Varilux Corporation.

Danne (DANN-e) brings a great deal of talent and experience to this position. She has obtained several awards and licenses at San Francisco bay area colleges and universities and comes to Varilux Corporation from a bay area private ophthalmology practice.

"This position complements the national support that Varilux contributes to schools," said Rodney Tahrán, O.D., director of professional services. Danne's responsibilities include providing technical support for schools, handling correspondence with student groups, coordinating material requests for schools, acting as the liaison with the Varilux sales team and providing professional services support at conventions."

This new position will help in the coordination of the 4th International Sympos-

ium on Presbyopia which takes place on June 5-10, 1989, at Marrakesh, Morocco. The Symposium is held every four years under the auspices of Essilor International. It is the only major event that provides periodic up-dating and exchange of information on presbyopia at the international level.

Irvin Borish, honorary president of the Symposium, and Bernard Maitenaz, developer of the original Varilux and now chairman of Essilor International, will head an international jury to determine the winner of the 1989 Essilor Award. This award is bestowed on the author of the most outstanding unpublished research paper submitted. The recipient will also receive a cash award of ff60,000 (about \$10,000).

Danne will assist Dr. Tahrán in the development of the Symposium and coordinate the entries submitted for the 1989 Essilor Award. Papers should be submitted no later than March 31, 1989.

Inquiries and submissions for the award categories should be addressed to Danne Ventura, FNAO, or Rodney L. Tahrán, O.D., Varilux Corporation, 322 Lakeside Drive, Foster City, California 94404.

### **New Lens Cleaner Available from Polymer**

Polymer Technology Corporation (PTC) announced the availability of a new LABORATORY LENS CLEANER for the removal of manufacturing residue and other oily substances from the surface of RGP lenses.

The new lens cleaner was developed by PTC exclusively for laboratory and practitioner use. "Most good soaps and cosmetics contain moisturizers such as lanolin, paraffin and palm oil which are designed to stay on the skin," according to Jonathan Jacobson, director of materials marketing. "These moisturizers can contaminate the surface of an RGP lens rendering it unwettable. The new LABORATORY LENS CLEANER ensures that the lens is free of such contaminants, enabling optimum attraction of tear film to the lens surface. Patient comfort and satisfaction is thereby enhanced."

Compatible with all silicone/acrylate and fluoro-silicone/acrylate contact lenses, the clear, colorless LABORATORY LENS CLEANER contains a mixture of water soluble surfactants. The practitioner can easily incorporate its use into standard



practice by taking the following steps.

- Verify the lens immediately upon receipt from the laboratory
- Clean with LABORATORY LENS CLEANER
- Rinse
- Soak lenses for 24 hours in BOSTON® Conditioning Solution prior to dispensing.

BOSTON LABORATORY LENS CLEANER is equally valuable during follow-up visits. Patients complaining of "hazy" or "filmy" lenses most likely are experiencing contamination by residue from personal care products. Routine cleaning of RGP lenses with the LABORATORY LENS CLEANER will result in noticeable and immediate patient satisfaction.

Additional information about the new cleaner can be obtained from Certified BOSTON manufacturers or Polymer Technology Corporation.

Polymer Technology Corporation is a wholly-owned subsidiary of Bausch & Lomb, Inc. □

#### **Introducing: The Allergan Advent™**

Allergan Optical reports that the two introductory fitting seminars in Los Angeles for the new ALLERGAN ADVENT™ Contact Lens (developed and manufactured by 3M) were well received and attended. These seminars were the first in a series of regional seminars that are continuing in 1989.

The seminar program covered both the clinical and the practical aspects of fitting the ALLERGAN ADVENT Contact Lens. Speakers addressed such issues as physiology, ease of fit, lens technology and patient education.

According to Orlando Rodrigues, senior product manager at Allergan Optical, the eye care practitioners who attended the seminars were excited by the clinical findings and the advantages offered by the ALLERGAN ADVENT Lens. "Practitioners now realize the impact this lens can have on their patients and practice," he said. "The ALLERGAN ADVENT not only provides patients with a comfortable lens, but most importantly, it provides virtually 'lens-free' corneal physiology."

Michael Larkin, O.D., a private practitioner in Los Alamitos, California, who attended one of the Los Angeles seminars, said, "Practitioners are always looking for contact lens materials like this that provide a high degree of oxygen to the cornea. I'm glad I was able to attend one of the seminars and have the chance to objectively evaluate the lens. The ALLERGAN ADVENT™ Lens is an exciting option for both practitioners and patients alike. I'm looking forward to including it in my practice."

The ALLERGAN ADVENT marks the entry of a new category in the contact lens arena—Flexible Fluoropolymer (FFP). Under development by 3M since the early 1980's, the lens' material combines flexibil-

ity, wettability, deposit resistance and a high degree of visual acuity with excellent oxygen permeability and transmissibility. It is cleared for marketing by the Federal Food and Drug Administration (FDA) for both daily and up to seven days overnight wear.

Allergan Optical, a leader in contact lenses and lens care products, is a division of Allergan, Inc., based in Irvine, California. □

#### **Renee J. Garofalo, O.D. Joins Wesley-Jessen Staff**

Renee J. Garofalo, O.D. has joined the staff of Wesley-Jessen as a clinical optometrist. Dr. Garofalo will practice patient care in W-J's contact lens clinic. She also will conduct research on new contact lens designs and technology.

A 1985 graduate of Illinois College of Optometry and Contact Lens Fellow at the University of Houston's College of Optometry in 1985-86, Dr. Garofalo was in private practice here from 1986-88.

Dr. Garofalo is an active member of Volunteer Optometric Services to Humanity (VOSH). Dr. Garofalo is also a member of the American Optometric Association, College of Vision Development, and Illinois Optometric Association. □

#### **Bausch & Lomb Names Kase Manager, Public Relations**

Bausch & Lomb has announced that Richard J. Kase has been named manager, public relations, for its professional products division. He will be responsible for coordinating the division's trade and consumer public relations activities.

In 1982, Mr. Kase joined the company's corporate communications & investor relations department as manager—organizational communications. Previously he held a variety of communications positions with Xerox Corporation.

He received a B.A. degree in English from the State University of New York at Albany. □

#### **Paragon Introduces Solvent for RGP Materials**

A new solvent specifically formulated for use with rigid gas permeable contact lens materials was introduced by Paragon Optical at the Contact Lens Manufacturers Association meeting. The new Fluoro-Solve Wax Solvent is used for removing residue of blocking wax, adhesive tape, cosmetics and skin oils from lens surfaces. This solvent is particularly effective with the new FluoroPerm® family of fluorosilicone acrylate lens materials, in addition to silicone acrylate materials.

According to Wayne Havey, Paragon's director of technical services, Fluoro-Solve is derived from citrus, making it safer for technicians and for use in the practitioner's office. In addition, Fluoro-Solve rinses off completely with soapy water and is less harmful to lens surfaces than petroleum-based solvents.

"Petroleum-based solvents are potential health hazards in a contact lens laboratory or practitioner's office," Havey said. "In addition to toxic fumes, petroleum solvents can irritate the skin. Fluoro-Solve eliminates these unnecessary problems and is more effective in removing wax and adhesive remnants from double stick tape used during lens adjustment." He added that aside from the health considerations, Fluoro-Solve is more gentle for lens surfaces than solvents derived from petroleum.

#### **Sola Optical Announces XLC Progressive Lens**

Now presbyopic contact-lens wearers will not have to abandon their contacts, or resort to the often unsuccessful alternatives of mono-vision and bifocal contacts.

Sola Optical, a leading manufacturer of spectacle lenses, has introduced its XLC progressive lens which works with a person's contacts, not instead of them. The lens is the company's XL design finished to plano in the distance. With the patient's reading prescription in the lower portion, the lens gradually and imperceptibly changes to a clear, no power lens for distance viewing through the contacts.

"Without acceptable alternatives, over 70% of all contact wearers abandon their lenses after age 40, which can also mean lost business for the contact-lens practitioner," said Mark Mattison-Shupnick, Sola's director of new products. "XLC is the best choice for most presbyopic contact wearers. Not only does it let them keep their contacts while enabling them to see clearly at all distances, but it meets the cosmetic needs of patients as fashion-conscious as contact-lens wearers."

The XLC comes with Perma-Gard™ scratch-resistant coating in add powers from +.75D to +3.00D. The lens fits all fashion frames.

XLC is now available across the U.S.

#### **Paragon Promotes Duane Tracy**

Paragon Optical announced the promotion of Duane Tracy to director of professional services.

Mr. Tracy, an industry veteran employed with Paragon for four years, will be responsible for directing clinical studies, monitoring FDA submissions, and professional relations activities including lecturing to professional ophthalmic groups.

"Duane's exceptional industry knowledge has been the basis for many of the decisions made by Paragon Optical over the last few years," said Don Ratkowski, President of Paragon Optical. "He was instrumental in the recent introduction of FluoroPerm® contact lenses, the first family of fluorosilicone acrylate materials," adds Ratkowski. "Through Duane's diligence, Paragon Optical received marketing clearance for FluoroPerm in record time."

Mr. Tracy, a licensed optician, was previously employed with Dow Corning Ophthalmics and Conforma Labs. □

# Vision Training Residency: An Outcome Study

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## Abstract

Thirty-six individuals who had completed the one-year residency in vision training at SUNY between 1975 and 1986 responded to a survey which included both demographic and opinion items. The results were tabulated and analyzed for longitudinal trends. Comparisons were made with data available from a general pool of optometric graduates. Among other things it was found that the respondents tended to remain in the geographic area where they received their residency training, were more likely to be on a school faculty, and achieved F.A.A.O. status more frequently than those who did not pursue a residency. The residency program received high marks from its alumni and nearly all were unanimous that the program had a significant positive impact on their careers.

**Key words:** Residencies, specialties, outcome studies, postgraduate study

## Introduction

The one-year residency program in vision training at the State University of New York College of Optometry (SUNY)

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was implemented in 1974 and was the first such year long residency in optometry.<sup>1</sup> The College and its predecessor, the Optometric Center of New York, had conducted a four-month summer residency in orthoptics and vision training, from 1963 to 1973, which is the first reported residency program at a school of optometry.<sup>2</sup>

By 1986, the year that the current study was undertaken, a total of 41 residents had completed the one-year program. A large amount of anecdotal information existed about what became of many of the former residents but no organized data collection had taken place.

A fundamental method for gauging the effectiveness of any program is an outcome study. To the extent that any program has as its objective the modification of the behavior of its participants, the outcome study provides one way of evaluating the program.

A survey was used to elicit demographic data and information on the practice location and professional activities of each of the graduates of the residency in vision training from the program's inception through the group that completed the program in 1986, an eleven-year period.

The study was designed to:

- 1) gather information on where and how graduates of the residency program are practicing optometry and what influence the residency experience had on their mode of practice,

- 2) determine if graduates of the SUNY residency program in vision training dif-

fered demographically or in mode of practice from the general pool of graduates and,

- 3) elicit suggestions on how the residency program could be improved.

With the absence of board certified specialties in optometry, residency programs cannot have preparation for a specialty board as an objective. Neither can attainment of certification in a specialty be used as a criterion for the evaluation of a residency program. This study does, however, look at the attainment of voluntary certification in areas related to vision training as one outcome measure of the effect of the program on the group that completed it. Another outcome measure is the percentage of their professional time that graduates of the residency program in vision training devote to vision training.

One of the objectives of the residency is to impart to the residents knowledge and skills necessary to develop their teaching ability. An expected outcome is that graduates of this program would engage in teaching, particularly at schools of optometry, to a greater degree than would their contemporaries.

In order to compare the graduates of the SUNY residency in vision training program to other graduates of the four-year professional program, a survey of the College's general alumni was undertaken about six months subsequent to the survey of the vision training residency graduates. That survey has been tabulated but not yet fully analyzed. The general survey was part of the College's stra-

tegic planning effort so that the survey items are somewhat different. There are several items, particularly demographic ones, that are comparable.

In addition, the report of the survey by the Association of Schools and Colleges of Optometry (ASCO) of 1979-81 graduates of U.S. schools of optometry,<sup>3</sup> is utilized to elicit data for comparative purposes. The ASCO survey, conducted under a contract with the federal government, concentrates on practice patterns with emphasis on geographic location rather than on specialty and on delays encountered by recent graduates in entering practice. These emphases limit the comparable data elements.

## Methods

An opinion survey was developed which contains six multiple choice items, seven graded response items and two fill-in items. A sheet requesting ten elements of demographic data also was included. This sheet contained space for additional comments as well as a statement assuring the respondent that all information would remain confidential and that no personally identifiable data would be released.

The survey was sent to all 41 graduates of SUNY's residency program in vision training. A directory of former vision

training residents is maintained by the director of residencies and is primarily used to assist residents and fourth-year professional students in locating practice opportunities.

The survey mailing also was used as an opportunity to update the mailing list. A separate reply card was sent with the survey asking each respondent to supply a current mailing address and to return the reply card separately from the survey to avoid compromising the anonymity of the survey data.

A second mailing to all individuals on the list was sent four weeks subsequent to the first mailing. It was not possible to determine who had already responded because the surveys were anonymous. Therefore, with the second mailing, we sent a cover letter asking those who had already responded to disregard the second request.

The quantitative data was tabulated and analyzed by the director of planning and evaluation and the supervisor of the residency in vision training. Written responses were reviewed by these individuals and tabulated according to frequency of response.

Selected cross tabulations were performed and individual data elements were compared to similar elements from other surveys.

## Results

The response rate, after one follow-up mailing, was 88% (36 of 41 former residents). This compares with a 44% response rate for the general alumni survey and a 72% response rate for the ASCO survey.

Three-fourths of the respondents are male (Table 1). The general alumni show the same breakdown by sex but in the ASCO survey, which is national in scope, 86% of the respondents are male.

The marital status for the residency group and for the general alumni are 72% married for the former group and 69% for the latter (Table 1). The 3% divorced rate for the residency group represents one person. Marital status is not surveyed in the ASCO study.

All of the respondents in the residency group practice in urban or suburban locations (Table 2). Several indicate more than one office, with one being in an urban location and one being in a suburban location. The general alumni survey shows that 9% of graduates are located in rural areas. The rest are distributed fairly evenly between urban and suburban.

The geographic distribution of the graduates of the residency program indicates a preponderance of individuals in

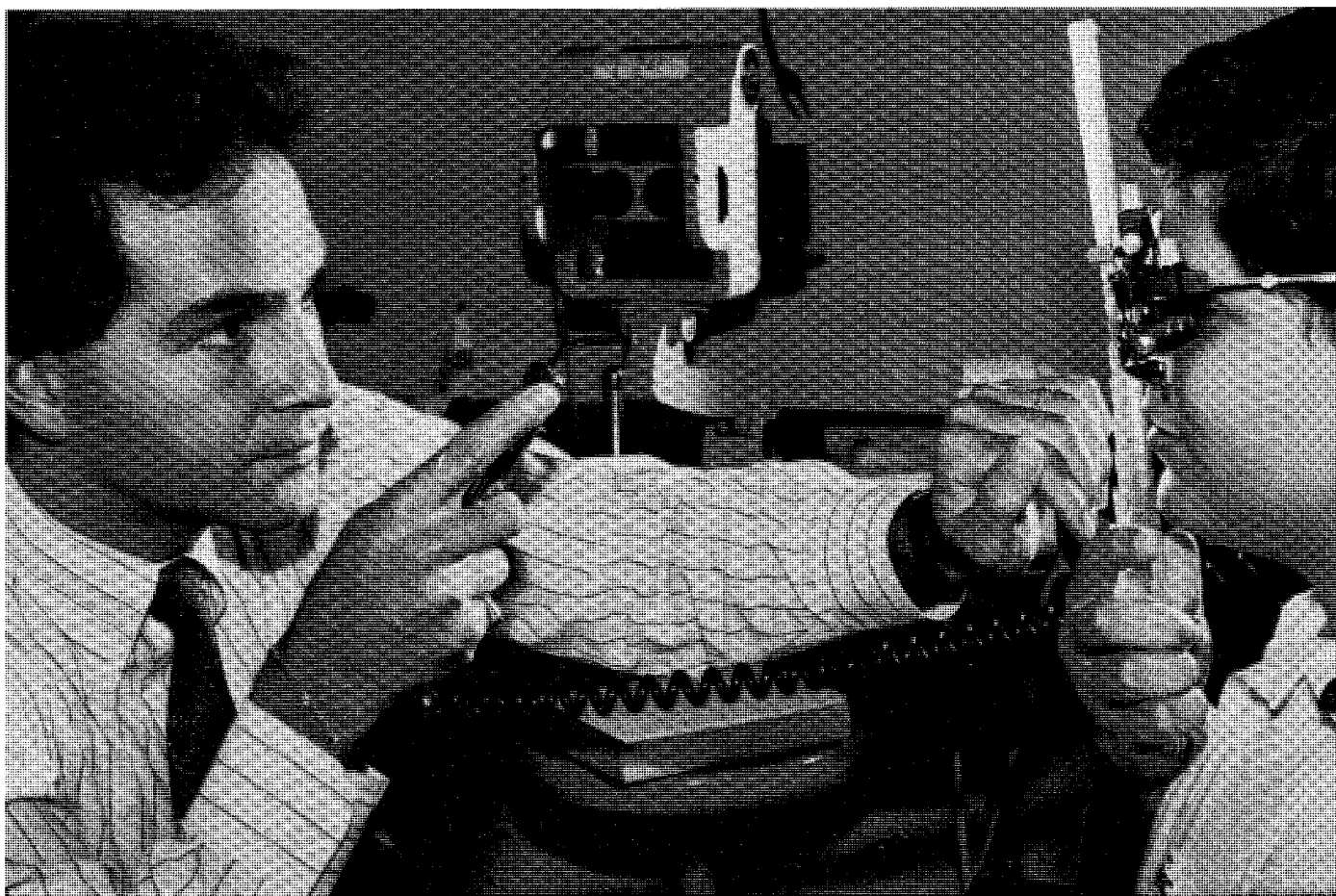




TABLE 1 Sex and Marital Status of Respondents: SUNY Residency and General Alumni and ASCO Survey			
	RESID	ALUMNI	ASCO
Respondents	36	195	2275
Response Rate	88%	44%	72%
<b>SEX:</b>			
Male	75%	74%	86%
Female	25%	26%	14%
<b>MARITAL:</b>			
Single	25%	30%	*
Married	72%	69%	*
Divorced	3%	1%	*
*No data available			

TABLE 2 Location of Practice: SUNY Residency and General Alumni		
	RESID*	ALUMNI
Urban	50%	47%
Suburban	56%	44%
Rural	0%	9%
*Some respondents indicated more than one practice location.		

practice in coastal states; twenty-seven on the East Coast and seven on the West Coast. Only two former residents practice in interior states and one practices in a foreign country (Table 3). One of the respondents indicates locations in two states.

The schools from which the residents graduated before entering the residency also show a "coastal phenomenon" (Table 4). Thirty of the thirty-six respondents attended an East or West Coast optometry school.

An analysis of the primary mode of practice of graduates of the residency program in comparison with the general alumni and those surveyed by ASCO indicates a smaller percentage of residency graduates in private solo practice as well as both professional and commercial employed positions (Table 5). The residency graduates are more likely to be associated with other optometrists or with schools of

TABLE 3 Location of Practice by Region and State of Graduates of SUNY Residency in Vision Training	
<b>EAST:</b>	
New York	15
New Jersey	8
Connecticut	1
Georgia	1
Maryland	1
Pennsylvania	1
<b>WEST:</b>	
California	5
Washington	2
<b>OTHER:</b>	
Colorado	1
Oklahoma	1
Israel	1

optometry than those in the other two groups. The ASCO group is limited to recent graduates so it is not surprising that a larger percentage are employed than in the two SUNY groups.

Those residents that graduated from the program in the earlier years (1975-80) are more likely to be in solo practice than are the more recent graduates. More of the graduates of 1981-86 report splitting their professional time between two modes of practice such as pri-

vate practice and an affiliation with a college of optometry or other employed setting.

All of the graduates of the residency program are involved in patient care for some percentage of their time (Table 6). Fifteen (42%) report that they teach in continuing education programs. Thirteen individuals (36%) report involvement in teaching at a college in other than continuing education. Thirteen (36%) are involved in research and fifteen (42%) are in administration for part of their time. Of those involved in teaching, ten of the thirteen individuals are involved for less than 25% of their time and the remaining three are involved from 25-49% of their time. Similarly, for those involved in research or administration, their involvement is for a relatively low percentage of their total time.

All of the graduates of the residency program are practicing vision training to some extent (Table 7). Most seem to be devoting a significant amount of their professional time to three areas of practice: primary care, vision training and contact lenses. Only ten of the respondents (28%) report spending more than 50% of their time practicing vision training. Several of the more recent graduates comment that they anticipate devoting more time to vision training as their practices grow.

Graduates of the residency program are three times as likely to be affiliated with a school of optometry than are the respondents to the general alumni survey (Table 8). One-third of the former residents are so affiliated. Four of the former residents report full-time status at colleges of optometry. This is three to four times the percentages reported by the general SUNY alumni and the ASCO group. All the former residents who are school-affiliated, however, appear to spend much more time in patient care than they do in research, administration or teaching (Table 6). Only three individuals spend more than 25% of their time in teaching and none spend more than 50% of their time in teaching activities.

Former residents who report school affiliations are more likely to be recent graduates. Nine of the twelve are from the classes of 1981-1985.

While the median adjusted gross annual income of the graduates of the residency program is in the \$40-49,000 range, one-third of the group report income above \$60,000 per year. The income breaks used in the survey of general alumni are not identical to those used for the former residents. These are displayed as overlapping categories (Table 9). It appears that the general alumni

slightly exceed the group of residency graduates in income. At the high end, 42% indicate incomes over \$50,000 per year compared with 39% in the residency group.

Graduates of the residency program attain fellowship in the College of Optometrists in Vision Development (COVD) and in the American Academy of Optometry (AAO) at a higher rate than do the general alumni (Table 10). Nearly twice as many former residents (22% vs 12%) join COVD and 33% (vs 22% for general alumni) achieve academy fellowship.

Graded response items are on a scale of 1 (strongly disagree) to 5 (strongly agree). A response of 0 indicates no opinion and is not used in calculating the mean response for each item.

There is a strongly favorable response (mean = 4.8) to the statement, "The vision training residency had a significant positive impact on my professional career."

The respondents also agree strongly that completion of the residency was an important factor in obtaining their next professional position (mean = 4.1) and that the residency program fulfilled the goals that they had when they entered (mean = 4.2).

There are also strong positive ratings for how well-qualified the faculty was (mean = 4.3) as well as for the faculty's teaching abilities (mean = 4.3).

A mean response of 3.7 was elicited by the statement that "... completion of a residency should be a prerequisite to certification in the specialty of vision training."

The statement, "A portion of what I learned in the Residency could have been learned in my undergraduate O.D. program," received a mean response of 3.6 with a range of 1.0 to 5.0. This is the widest range of any of the graded response items.

Respondents were asked to list the three best and the three worst things about the Vision Training Residency. There is wide agreement on a number of items in each category and these are reported without tabulation except that each of the comments is made by at least ten of the respondents.

The listing of "best" things about the residency includes:

1. Interaction with other residents and with faculty both at the College and in visits to their private offices.
2. Exposure to the clinical facility at SUNY and the patient care opportunities thus afforded.
3. Time to get more involved in re-

**TABLE 4**  
**Optometry Schools Attended by Graduates of SUNY Residency in Vision Training**

**EAST:**

New England College of Optometry	8
Pennsylvania College of Optometry	6
State University of New York	4

**WEST:**

Univ. of California, Berkeley	2
Pacific University	5
Southern Cal. College of Optometry	5

**OTHER:**

Ferris State University	1
Illinois College of Optometry	1
Univ. of Missouri/St. Louis	1

**TABLE 5**  
**Primary Mode of Practice of Respondents: SUNY Residency and General Alumni and ASCO Survey**

	RESID	ALUMNI	ASCO
Private Solo	25%	36%	35%
Private with O.D.	44%	31%	20%
Private with M.D.	0%	8%	4%
Employed—Professional	9%	13%	24%
Employed—Commercial	3%	6%	7%
College of Optometry	14%	2%	3%
HMO	6%		
Military	0%	3%	6%

**TABLE 6**  
**Percentage of Time Devoted to Various Professional Activities by Graduates of SUNY Residency in Vision Training**

Activity	90-100%	75-89%	50-74%	25-49%	1-24%	0%
Patient Care	18	10	5	1	2	0
Teaching	0	0	0	3	10	23
Research	0	0	0	1	12	23
Administration	0	0	1	3	11	21
Continuing Ed.	0	0	0	0	15	21



**TABLE 7**  
**Percentage of Time Devoted to Various Aspects of Patient Care by Graduates of SUNY Residency in Vision Training**

Area	90-100%	75-89%	50-74%	25-49%	1-24%	0%
Primary Care	1	2	19	5	5	4
Contact Lenses	0	0	3	7	17	9
Vision Training	3	1	6	9	17	0
Low Vision	0	0	0	0	4	32
Pathology	0	0	1	0	6	29

**TABLE 8**  
**Reported Optometry School Affiliations by Respondents: SUNY Residency and General Alumni and ASCO Survey**

	RESID	ALUMNI	ASCO
Full-time	11%	2%	3%
Part-time	22%	10%	*
None	67%	88%	*

\*Data not available

**TABLE 9**  
**Adjusted Gross Income of Graduates of SUNY Residency in Vision Training and General Alumni**

	RESIDENCY	ALUMNI
Less than \$20,000	1	3%
\$20,000- 29,000	4	11%
\$30,000- 39,000	7	22%
\$40,000- 49,000*	10	25%
\$50,000- 59,000	2	6%
\$60,000- 69,000	4	11%
Greater than \$70,000	8	22%

\*Median Range    \*\*\$50,000 and over

**TABLE 10**  
**Membership in Prestigious Societies of Graduates of SUNY Residency in Vision Training and General SUNY Alumni**

	RESID	ALUMNI
F.C.O.V.D.	22%	12%
F.A.A.O.	33%	22%
Diplomate (AAO)	3%	5%

search and in reading professional journals.

4. Discussion seminars about clinical cases and about vision training philosophies in general.

5. The freedom to get involved in specific areas of interest.

6. The experience gained in teaching.

The listing of "worst" things about the residency includes:

1. The relative lack of experience in working with learning disabled patients.

2. Paucity of experience in other areas of optometric care such as pathology and contact lenses.

3. The experience in supervision and teaching in the area of diagnostic evaluations could have been greater. There was more emphasis on involvement in therapy.

4. The financial hardship imposed by a year of residency.

## Discussion

The response rate of 88% with only one mail follow-up is remarkable when compared to the ASCO rate of 72% after an advance letter and three follow-ups and the general SUNY alumni survey with a 44% response rate. Because of the size and nature of the residency program, it is likely that former residents had more of an interest in maintaining contact with the College than did general alumni. The ASCO respondents were being surveyed by an agency that was not well known to them and this may have negatively affected the rate of return.

The SUNY professional and residency programs always enroll a larger number of women than the national average for professional and residency programs in optometry. No explanation is offered for this phenomenon but it appears to be continuing. For the years 1985 through 1987, women have outnumbered men in SUNY's entering professional classes. In 1987, 60% of the entering students were women.

The tendency for graduates of the residency program to practice more in urban and suburban areas is consistent with the finding that they tend to spend more time in vision training, a specialty area of practice. Specialists in most fields tend to be located in population centers.

The "coastal" phenomenon refers to the fact that 94% of the respondents practice in a coastal state. Three-quarters of the total group are on the East coast (almost all in the Northeast). More than half of those are in New York State. This suggests that the location of the residency plays a role in where the resident eventually locates his/her practice.



It is not surprising that graduates of the residency in vision training are more likely to be associated in practice with other O.D.'s than are members of the two groups with which they are compared. One of the predicted outcomes of residency training is that individuals with such training are more likely to be of value to existing optometric practices than individuals without such training.

The higher degree of involvement in associate practice for the graduates of the residency in vision training may well contribute to the apparent lower income of this group when compared to the general alumni. Graduates who enter associate practice, as opposed to employment in the private sector, tend to trade off current income for future equity in the practice. In addition, the former vision training residents are employed by schools of optometry and HMO's to a greater extent than are general alumni. This, too, may well contribute to the former group's relatively lower income.

It is clear that the residency program has not produced individuals who limit their clinical activity to the specialty of vision training. Rather, graduates of the residency in vision training tend to incorporate vision training into full scope practices and are more likely than general alumni to attain fellowship in the College of Optometrists in Vision Development (COVD) and in the American Academy of Optometry (AAO).

Graduates of the residency in vision training seem pleased with their residency experience and generally give the program high marks. Even though they have received intensive training in what some would regard as a specialty, there does not seem to be a significantly high feeling that the practice of this specialty should be limited to those who have this advanced training.

The fact that graduates of the residency program are more likely to be on the faculties of optometry schools is consistent with the program's objective of

preparing residents for teaching roles and exposing them to research experiences. While the number entering optometric education is satisfying, the relatively high turnover rate of faculty is of concern. Many respondents appear to have joined optometric faculties but not to have stayed. This may be related to lower income potential for educators as opposed to practitioners. □

## References

1. Bleything WB. The optometric residency: its bloom. *J Optom Educ* Summer 1979; 5: 16-21.
2. Heiberger MH. The development of residency programs in vision training. *Am J Optom Physiol Optics* 1970 November; 47:923-8.
3. *A Follow-Up Survey of Optometry Graduates to Determine Practice Patterns*. The Association of Schools and Colleges of Optometry, Final Report 1983. Health Resources Administration Contract No. HRA-232-81-0054.



# Evaluation of a Core Curriculum for Optometric Residents

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## Abstract

A core curriculum for three existing residency programs at Veterans Administration hospitals affiliated with SUNY College of Optometry was established in 1985-86. An evaluation of the program was conducted in each of the first two years. All residents and residency supervisors participated in a survey of core curriculum activities at the College and at its affiliated Veterans Administration Hospitals. The survey utilized graded response and open-ended items as well as interviews. The activities were generally rated well for content and effectiveness of presentation. A number of suggestions for program improvement were made and the formative nature of the evaluation enabled many of them to be implemented prior to the end of each program year.

**Key words:** Residencies, Veterans Administration, outcome studies, postgraduate study, curriculum evaluation

## Introduction

The SUNY College of Optometry has residency programs affiliated with three Veterans Administration (VA) hospitals in the New York City metropolitan area. Each program is one year in duration and

each has a somewhat different emphasis owing to the particular nature of each facility and its patient population. The facilities and their programs are:

**Northport VA Hospital** (two residents). This program is oriented toward the visual rehabilitation of patients with stroke, head trauma and diabetes in a multidisciplinary health care setting.

**Montrose VA Hospital** (one resident). This is a residency in hospital-based primary care optometry with an emphasis on the care of the neuropsychiatric patient and the visual effects of psychotropic medications.

**St. Albans VA Hospital** (one resident). This hospital-based program emphasizes primary care and the use of advanced diagnostic techniques to aid in the differential diagnosis and treatment of ocular pathology with an inner city, primarily geriatric, population.

All residents spend approximately 20 Fridays at the College of Optometry or at one of the VA sites participating in a core curriculum which consists of the following activities:

- Lectures by SUNY Optometry faculty and invited guest lecturers.
- Preparation of major presentations. The resident utilizes the College's library and research facilities and consults with faculty to prepare major presentations twice per year. These are made to the other VA residents, the Vision Training residents and faculty.
- Case presentations. Each resident prepares three case presentations during the year.

- Clinical grand rounds (at a VA Hospital).

The core curriculum began in the 1985-86 academic year and is now in its third year. The goals of the core curriculum are:

- To develop the residents' didactic and clinical teaching abilities.
- To impart knowledge to the residents in the various optometric specialty areas.
- To give the residents exposure to the unique patient populations at VA hospitals other than the one to which they are assigned.

In order to determine if the goals of the core curriculum were being achieved, the Director of Residencies requested that the College's Office of Planning and Evaluation conduct a program evaluation of the core curriculum. It was specifically determined that the evaluation would be of the program and would not be an evaluation of the residents or of the participating faculty.

The evaluation was designed as a formative evaluation whereby the process proceeds as the core curriculum is developed and implemented. This is the converse of a summative evaluation which is conducted at the conclusion of a program.

The summative evaluation is concerned with documenting program outcomes and gathering evidence relative to program accountability to demonstrate whether or not the objectives were accomplished. The formative evaluation, as was carried out for the core curriculum in this study, is primarily concerned with

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tracking changes in a program's implementation and giving feedback to the program director about bugs, flaws and successes as the program proceeds. With the formative evaluation, there is the potential for identifying problems and, in some cases, correcting them during the period of the residency. This can conceivably improve the program for the current participants and lend credibility to the evaluation process itself.

## Methodology

The evaluation of the core curriculum utilized a qualitative approach. While quantitative data was collected, the primary activity involved interaction with the residents during their Friday core curriculum experience.

The evaluator met with the program director to clarify issues, identify participants and formulate objectives. This process served to give the evaluator a better understanding of the program and the program director a better understanding of the evaluation process.

The evaluator and the program director met with the residents as a group to explain the purpose and procedure for the evaluation. A similar meeting was held with the faculty supervisors responsible for the residents at the individual VA sites.

In each of the first two years of the core curriculum, all residents completed two written surveys, one at mid-year and one at the end of the program in June. The survey asked the residents to describe, using a Likert-type graded response scale, the content and the overall effectiveness of each of the faculty presentations during the previous six months. In addition, the opinions of the residents were sought on the value, scope, time frame and content of all aspects of the core curriculum. A combination of multiple choice and open-ended responses was utilized.

The survey was administered on a group basis with the evaluator present. This arrangement made it possible to clarify ambiguous or unclear items. On the first of the surveys two factual errors, which occurred due to scheduling changes, were discovered.

The written surveys were supplemented by individual interviews conducted by the evaluator. Interviews with each resident took about 20 minutes. These interviews were partially structured but allowed for an adequate amount of unstructured open-ended response. In addition to repeating some of the information requested on the written survey, the interview was used to gather data

about the resident's reason for choosing the program, career plans, other demographic data and opinions concerning positive and negative aspects of the core curriculum.

Interviews of the chief faculty supervisor, usually by phone, were conducted for each VA site once each year. The information collected was used in conjunction with the responses gleaned from the residents' interviews.

The results were tabulated and the means for graded response questions as well as summarized comments from the open-ended questions were compiled. The tabulation indicated the number of respondents who made the same observation in the open-ended format.

The results of the evaluation of the first half of each year were reported to the

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***"The evaluation was designed as a formative evaluation whereby the process proceeds as the core curriculum is developed and implemented."***

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program director and then, at his request, to the VA supervisors at meetings where planning for the second half of the year was occurring. Thus the results had an immediate impact on the content and effectiveness of the core curriculum. Residents saw changes in the second half of the year that were the result of their participation in the evaluation at the conclusion of the first half of the year.

## Results

With only two exceptions (and these were in the first year of the core curriculum), the residents felt that having a core program of common experiences was a good idea that was well executed. (Table 1)

The content of the core curriculum, with regard to the scope of the material covered, was rated by the residents (Table 1). In both years the majority felt that the scope was satisfactory or should

be expanded with only one respondent indicating a need for more in-depth focus in particular areas. In individual interviews, several of the residents indicated that the quality of the lectures was more important than the array of topics presented.

The majority of the residents in both years felt that the time devoted to the core curriculum was appropriate with several suggesting increased time (Table 1). Only one resident felt that the time could have been better spent by remaining at the VA facility to which he was assigned. This occurred in the first term of the program. This observation did not surface, however, in the individual interviews with the residents.

The residents in both years felt that there was value in the experience of preparing major presentations (Table 1). Seven of the eight residents indicated that this was a "very valuable" experience.

Residents indicated a high level of interest in listening to the presentations of their colleagues (Table 1). In the first term of the program there was one resident who felt that the material was of interest but not usually well presented. By the second year the residents were unanimous in feeling that these were well-presented as well as of interest.

The objectives of the core curriculum appear to have been well explained (Table 2). To a lesser extent, the residents felt that the objectives were actually achieved. There was more satisfaction, in this regard, in the second year of the program.

The evaluation of the grand rounds experiences by the residents led to mixed ratings (Table 3). The evaluation process effected several changes in grand rounds scheduling. As a result of the evaluation of the first grand rounds at Northport VA Hospital, it was decided that there was not sufficient additional benefit in another grand rounds at Northport that year. As a result of this feedback and of the experience at the second grand rounds at Montrose, the program planners decided to cut back to one grand rounds per facility during the second year of the program. As with other parts of the evaluation, the open-ended comments played at least as great a part in the decision-making process as did the quantitative data.

The method of evaluating the individual lectures was changed for the second half of the 1985-86 year due to the results of the first half of that year. The residents all commented that it was difficult to rate lectures on an overall basis since, in many perceived cases, the effectiveness of the presentation was at a different level than the content. Beginning with the second



**TABLE 1**  
**Number of residents responding to each survey item by term for Veterans Administration Programs affiliated with SUNY**

	85-86		86-87	
	F	S	F	S
A core of common experiences was:				
(1) a good idea, well carried out	4	2	4	4
(2) a good idea, not well carried out	0	1	0	0
(3) not a good idea	0	0	0	0
(4) no opinion	0	1	0	0
The content of the core curriculum:				
(1) should focus more on one area	0	1	0	0
(2) should be expanded to more areas	1	2	2	1
(3) should remain the same	3	1	2	3
(4) no opinion	0	0	0	0
Time devoted to the core curriculum:				
(1) better spent at home station	1	0	0	0
(2) should be expanded	1	2	1	1
(3) should remain the same	2	1	3	3
(4) no opinion	0	1	0	0
Experience in preparing a major topic presentation was:				
(1) very valuable	3	3	4	4
(2) somewhat valuable	1	1	0	0
(3) not valuable	0	0	0	0
(4) no opinion	0	0	0	0
The presentations by the VA residents were:				
(1) always of interest, well-presented	2	3	4	4
(2) sometimes of interest	1	1	0	0
(3) rarely of interest	0	0	0	0
(4) always of interest but not well-presented	1	0	0	0

half of 1985-86, residents were asked to rate the lectures *both* according to content and to effectiveness of presentation. For the next three terms there was a high correlation ( $p = +0.80$ ), however, between the mean scoring for content and the mean scoring for effectiveness.

The Director of Residencies conveyed information on mean scores and comments about each lecture to the individual lecturers. Due to the nature of the availability of lecturers (see Discussion section), very few lectures were repeated the second year. Even when the same lecturers were scheduled, the topics were usually different than those presented in the prior year. On a scale of 1 (poor) to 5 (excellent), most ratings were above 3.

The individual interviews revealed that the residents preferred clinically-oriented lectures rather than literature surveys. The residents made critical comments concerning the physical facilities for the lectures and those deficiencies that could be easily corrected were corrected.

In addition to eliciting comments relative to the evaluation of various aspects of the core curriculum, the individual interviews were used to gather certain demographic information and career data about the residents.

The residents came from a variety of optometry schools but the majority were from schools in the Northeast. The breakdown was:

University of Alabama/Birmingham	1
University of California/Berkeley	1
New England College of Optometry	2
Pennsylvania College of Optometry	2
State University of New York	2

The residents applied to an average of two residency programs with the maximum being three. In all cases where more than one residency was applied for, the resident was accepted in at least one program other than SUNY's.

Each resident was asked about his/her intention to engage in teaching. Three of the eight residents indicated that they would be entering teaching positions at schools of optometry (two full-time and one part-time) in the year following their residency.

**TABLE 2**  
Means of residents' assessment of the explanation  
and achievement of the core curriculum objectives

	'85-'86		'86-'87	
	F	S	F	S
Explanation of objectives	4.25	4.25	4.75	4.75
Achievement of objectives	3.75	3.75	4.00	4.25

SCALE: 5 to 4=very well, 3 to 2=somewhat, 1=not at all, 0=no opinion

**TABLE 3**  
Residents' mean ratings of their grand rounds  
experience by facility and by term

	'85-'86		'86-'87	
	F	S	F	S
St. Albans	4.50	1.25	4.25	
Montrose	5.00	4.50	4.25	
Northport	3.50	*	**	
SUNY		4.33	***	

SCALE: 5 to 4=very well, 3 to 2=somewhat, 1=not at all, 0=no opinion

\*Not scheduled as a result of evaluation

\*\*Cancelled due to inclement weather

\*\*\*Not held due to scheduling problem

**TABLE 4**  
Residents' responses regarding the most positive and  
least positive aspects of the core curriculum by year

MOST POSITIVE	
1985-86	1986-87
Interaction with other VA residents	Interaction with other VA residents
Seminars	Quality of the lecture presentations
Giving presentations	Interaction with Vision Training residents
Interaction with Vision Training residents	Presentations by VA staff optometrists
LEAST POSITIVE	
1985-86	1986-87
Too much time spent on material related to vision training	Better provisions needed for cancelled lectures
Insufficient opportunity to take advantage of the clinical facilities at SUNY	Better facilities needed for lectures and resident presentations
Some lectures were not worthwhile	Some lectures were not worthwhile

In the interviews, the residents were asked to name the most positive aspects of the program and the least positive aspects. These comments were then summarized (Table 4).

One important point made by the residents in the first year of the program was that there was an issue as to how the time devoted to the core curriculum was spent rather than an issue of whether there was too much or too little time devoted to it.

There were a number of comments made pertaining to the need for better access to library and audiovisual facilities to enhance the presentations the residents were required to make. The residents also unanimously expressed the desire to expand core curriculum activities to include clinical assignments at the College for the purposes of exposure to the SUNY clinical population and for clinical teaching experience.

While the evaluation was directed toward the activities associated with the core curriculum, the evaluation elicited a number of comments related to the Veterans Administration residency programs in general (Table 5).

## Discussion

The evaluation was well received by the residents and the supervisors. The formative nature of the evaluation helped to enhance the residents' enthusiasm for the core curriculum because the evaluation process gave them a sense that their comments and ratings of the program were having an immediate impact on effecting program change.

The supervisors and the Director of Residencies welcomed the information elicited through the evaluation and utilized much of it in the ongoing planning of program activities. Only one of the supervisors from the VA hospitals attended the core curriculum on a regular basis. This made it difficult to get the opinions of most of the supervisors with regard to the core curriculum activities.

Lecturers who participated in the core curriculum did so on a voluntary basis. This functioned to limit the availability of lecturers to the program because of conflicts with other scheduled duties. For many members of the SUNY faculty the core curriculum provided an opportunity for didactic teaching experience not otherwise available. In essence, the core curriculum also provided a vehicle for faculty development. In view of this, the ratings of lecturers, both for the content as well as for the effectiveness of their presentations, were remarkably high.

The overwhelming opinion of the participants was that the core curriculum



**TABLE 5**

**General comments about the SUNY Veterans Administration residency programs**

Funding for residents' travel to professional meetings is needed.

In general, the VA residents feel like "second class citizens" when contrasted with the Vision Training residents who are direct employees of SUNY.

Salaries for the VA residency programs are poor and the residents get no fringe benefits.

should not be reduced in content or in time devoted to it. In fact, a number of the residents would opt to expand the program both in time and scope. Several comments were made which indicated that the residents would have liked to go beyond the stated objectives of the program to take more advantage of the clinical and other facilities at the SUNY College of Optometry.

Exposure of the Veterans Administration (VA) residents and the Vision Training (VT) residents to each other proved to be a mixed blessing. While each group gained a certain broadened perspective

about each other's programs, there was some feeling on the part of VA residents that there was too much vision training for what had been purported to be a hospital-based residency. Another potentially adverse effect was the feeling of "second class citizenship" by the VA residents as compared to the VT residents who had higher salaries and fringe benefits by virtue of their SUNY appointments.

One expected outcome of the program is that a significant number of the residents will eventually enter teaching positions at schools and colleges of optome-

try. It appears that a fairly high percentage of the residents (three of eight) plan full or part-time teaching careers. A companion study of the alumni of the SUNY Vision Training Residency indicates that a significantly higher percentage of students who complete residency programs enter teaching than do students who choose not to pursue a residency.

The expanding scope of the profession of optometry and the need for well qualified faculty at schools and colleges of optometry bode well for the continuation and expansion of residency programs in optometry. To the extent that these programs provide experiences appropriate to the development of teaching skills, successful completion of a residency may well become a basic credential for faculty appointment.

The evaluation of the core curriculum is now an ongoing activity of the program at SUNY. In addition, a prototype for an evaluation of individual optometric residency programs at VA hospitals is being developed. These activities help to provide ongoing assurance that the goals and objectives of these programs are being achieved. □

*Note: Copies of the written survey form and the oral survey summary sheet are available from the author at SUNY, State College of Optometry.*

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# Postgraduate Clinical Training at the New England College of Optometry

Douglas J. Hoffman, O.D.

## Abstract

*The schools and colleges of optometry are responsible for anticipating and analyzing the health care needs of society and the evolving role of the profession in response to those needs. Postgraduate clinical training has been identified as an increasingly necessary component of the optometric curriculum. Over the past decade, as a result of the expanding scope of optometric practice and the evolution of new health care delivery models, an awareness of and interest in residencies and other clinical postgraduate programs have increased steadily. The New England College of Optometry (NEWENCO) offers two separate but integrated programs: VA residencies and College-based fellowships. Both programs are based on a three-part curriculum consisting of clinical, instructional and educational training. The programs are united by an exchange process and two annual conferences and share many curriculum components. The curriculum stresses the integration of intensive clinical training, optometric education and scholarly activities. An evaluation system has been introduced to assist in performance and program assessment and modification.*

**Key Words:** accreditation, binocular vision, curriculum, evaluation grid, fellowship, geriatric, hospital-based, pediatrics, postgraduate, primary care, rehabilitation, residency.

## Introduction

Optometry's evolution as a primary care profession has been accompanied by the need for optometrists to acquire more advanced clinical skills and knowledge in order to assume responsibility for comprehensive patient care. Whereas a few decades ago, the optometrist was responsible only for the detection of ocular diseases and anomalies and the appropriate referral, today's provider assumes responsibility for the management of many of these disorders and is directly involved in the comprehensive care of these patients.

Today's optometrists are trained to care for individuals with binocular anomalies and strabismus, the learning disabled, infants and children, special needs groups and other sub-populations such as the multiply-disabled, legally blind, elderly and homebound. Some optometrists have sought advanced training in order to better serve the needs of those individuals.

Five decades ago, the standard program leading to the doctor of optometry degree was two years in length, and contained little training in the management of ocular disease or the unique care required by special populations. The vast majority of today's graduates must earn an undergraduate college degree before completing four years at an accredited school or college of optometry. The average NEWENCO student, for example, will examine several hundred patients prior to graduation. The depth and breadth of knowledge and experience which a graduating optometrist must possess greatly exceeds that of his counterpart of decades ago.

## Current Postgraduate Training Programs

Approximately eight percent of optometry school students will enter post-doctoral clinical programs after graduation.<sup>1,2</sup> These programs, which are primarily residencies based at VA hospitals or schools of optometry, offer new graduates an opportunity to receive intensive training within a controlled multi-disciplinary setting under the supervision of highly skilled clinical educators. The interest in these positions has increased steadily during this decade as their value to many new graduates and the profession has become evident.

Educators have realized that clinicians who receive postgraduate training have the tools and ability to transfer their knowledge to students, providers and patients.<sup>3</sup> They may not only serve as role models, but also contribute through lecturing and writing. Post-graduate clinical programs have therefore placed substantial emphasis on clinical instruction, writing, continuing education, publication and research, and are fertile training grounds for tomorrow's optometric faculty.

## Range of Programs

Currently, there are over 60 programs offering over 100 postgraduate clinical positions nationally.<sup>1</sup> Most programs are one year residencies which are periodically evaluated, accredited and monitored by the AOA's Council on Optometric Education (COE).

The accreditation process includes a self-study document, annual progress reports and periodic site visits. The process

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CURRICULUM TRACTS	FELLOWSHIPS	RESIDENCIES
• CLINICAL	45 - 50%	75 - 85%
• INSTRUCTIONAL	30 - 35%	05 - 10%
• EDUCATIONAL	15 - 25%	05 - 15%

**FIGURE 1**  
**Relative Time Allotment Within Curriculum Tracts**

is intended to stimulate through constructive self-criticism, a cohesive assessment of the program so that program administrators and faculty may build upon existing strengths and identify and address weaknesses.<sup>4,5</sup> Therefore, the process is as important as the formal accreditation itself, and levels of standardization and excellence are thereby achieved.

Due to differing curriculum structure, program objectives or other factors, some clinical programs do not involve a formal accreditation process.<sup>6</sup> Many programs will ultimately conform to the COE residency format and all may voluntarily apply the accreditation guidelines and a self-study approach in order to strengthen the learning experience for their participants.

Currently, 49 one year residencies are based at 33 Veterans Administration (VA) facilities affiliated with accredited schools and colleges of optometry.<sup>1,7</sup> Areas of concentration include Hospital-Based, Primary Care, Geriatric, Rehabilitative and Low Vision Optometry.

Non-VA programs based at schools of optometry or in other health care settings offer training in Primary Care and Family Practice, Pediatrics and Vision Therapy, Ocular Disease, Contact Lens Practice, Clinical Education and Geriatrics. In all, 14 schools administer some type of postgraduate clinical program.<sup>1</sup>

### NEWENCO Programs

It has become increasingly difficult for a student to receive sufficient exposure to the optometric specialties during the four year OD degree program. Postgraduate clinical training prepares the optometrist to enter any of the health care delivery settings, participate in optometric education, continuing education and health care planning, and contribute to the existing body of knowledge through research and clinical writing.

Garner has stated that curriculum design leads to the reliable evaluation of clinical competence.<sup>8</sup> He suggests the fol-

lowing steps: define clinical competence and the role of the optometrist, state educational objectives, and develop a relevant training program and valid assessment procedures. The New England College of Optometry has developed a variety of postgraduate programs. The Coordinator of Fellowships and Residencies, in conjunction with the program directors and participating faculty, has modified and integrated them in an effort to respond to the needs of graduates, the schools, the evolving health care climate and the expanding scope of the profession. Each program has stated goals and objectives. In 1986-87 the first phase of a standardized evaluation process, the performance questionnaire, was introduced. The second phase, a curriculum and performance grid, has been developed and implemented in 1988-89.

### Program Components

The NEWENCO system consists of VA residencies and College-based fellowships. The curricula for both types of programs include three tracts: clinical, instructional and educational. The clinical tract deals with direct patient care, while the instructional tract consists of clinical teaching, preceptorship and lab instruction. The educational tract includes assignments related to academic development, research projects and writing, continuing education, educational conferences and other scholarly activities. By design, residents and fellows participate in many of the same curriculum sections.

### Residencies and Fellowships

NEWENCO residencies are based at affiliated VA medical centers or clinics. Four programs are hospital-based, one is rehabilitative and one is primary care/rehabilitative. Currently there is a total of nine residency positions.<sup>1,9</sup> (A residency in advanced diagnostics and clinical care has been developed for implementation in 1989-90.) In addition to the delivery of

direct patient care, all residents serve as assistant clinical preceptors to fourth year optometric externs at their hospital clinics, and Boston-area residents act as assistant lab instructors at the College.

There are three fellowships: primary care, optometric education and pediatrics/binocular vision. Fellowships are College-based and include rotations through multi-disciplinary urban health centers and VA clinics as well as the College's pediatric, primary care and contact lens clinics. The curriculum places strong emphasis on optometric education including lab instruction in optometry theory and methods, binocular vision, contact lens practice, and ocular disease. All fellows serve as preceptors in primary care clinic at the second year level. Several faculty participate in each fellow's program as supervisors, instructors or advisors.

The residency and fellowship programs contain both clear differences and distinct similarities. Fellowships include greater instructional responsibilities and do not adhere to a common residency formula of 75 to 85% direct patient care (Fig. 1).<sup>9,10</sup> Conversely, the fellowship instructional component is 30 to 35% of the curriculum, rather than the 5 to 10% instruction which residencies offer.<sup>1,10</sup>

All fellows and residents undergo an initial orientation process, participate in two combined conferences annually, assist in the training of fourth year optometric externs and complete a clinical research project or journal caliber paper. As their skills, experience and knowledge increase, many serve as instructors in accredited continuing education courses and workshops.

### Curriculum Overlap

A priority of the training process is the emphasis on shared activities by fellows and residents in order to broaden their experience.<sup>11</sup> This blending of activities

occurs not only among residents in different programs but also between fellows and residents. This aspect of the curriculum has resulted in more comradery and the sharing of experiences, knowledge and information while emphasizing a team approach.

Residents are required to visit other VA program sites during the year. This process increases the resident's awareness of different settings, the range of services which optometrists provide and variations in environmental dynamics. In another exchange process, fellows rotate through VA clinics, and residents provide care in the College's Low Vision and Contact Lens Services or at affiliated urban health centers. Some residents serve in College-based lab courses as assistant instructors. Fellows also visit the residency sites, and many residents attend sessions at affiliated urban clinics. Fellows often participate in residents' grand rounds.

### Combined Conference Series

A valuable component of the curriculum is the Combined Conference Series. This series consists of two conferences during the year which are attended by all fellows, residents and program directors. The conferences are designed to unify the participants, establish communication channels and embrace many of the goals for the year.

The initial conference is held in July after the individual program orientations have been completed. The agenda consists of presentations by noted educators who address topics such as article writing, clinical research, ophthalmic photography, ocular disease and low vision. Goals and projects for the year are introduced and discussed. Completion deadlines are set.

A luncheon with the College president and dean enhances the informal and familial atmosphere. Residents, fellows and program directors begin to develop a rapport which will result in the establishment of ongoing relationships.

The agenda of the second conference the following spring is focused on the residents and fellows, and reinforces their role as educators. Each is responsible for a continuing education-caliber presentation. This activity is an effort to encourage them to incorporate the knowledge and expertise obtained from each of the three curriculum tracts which comprise their programs (see below). The meeting concludes with group discussions of the year's goals and accomplishments, and yields valuable recommendations.

### Curriculum Tracts

The development of the curriculum and performance grid (Fig. 2) has improved and facilitated program planning. The format allows fast and accurate retrieval of information, comparison among programs and easy identification of areas requiring revision, inclusion or deletion. The evaluation column is for both evaluation of the resident's (fellow's) performance in each curriculum section by the supervisor, and the evaluation of the quality of that section by the resident (fellow) as it pertains to his program goals.

The three tracts are Clinical, Educational and Instructional, each consisting of nine or ten sections. It can be noted from observation of the grid that a specific program does not necessarily incorporate all sections of the tract, only those which guide the fellow or resident toward his goals. The portion of time allotted to the fellow or resident within each tract varies both within a given range (Fig. 1), and from one academic quarter to another as a function of curriculum sequencing.

### Clinical Tract

The Clinical Tract is introduced immediately via the July orientation programs. Clinical activities include delivery of primary, secondary and tertiary care, contact lens practice, co-management with general or specialized ophthalmology, participation in non-ophthalmic medical clinics, ward visits and emergency care.

Delivery of care by residents occurs primarily within the hospital setting: in the optometry section, in ophthalmology clinic or on the wards. Conversely, Primary Care fellows provide care within urban health center settings which offer exposure to a full spectrum of patient types, ages and conditions. We have attempted to identify and extract the strengths of each setting and broaden the scope of experience for fellows and residents by a clinical exchange process. Some fellows participate in the delivery of care at a local VA hospital for several months while a designated resident provides services at an urban health center.

The Binocular Vision fellow provides primary and secondary care services to infants and children and special needs populations at the College. The fellow also rotates through a clinic for handicapped children and an urban neighborhood health center and receives training in a pediatric ophthalmology clinic and a pediatric contact lens practice.

### Instructional Tract

The second largest area of concentration is in clinical instruction. Introduction to the Instructional Tract varies for each program. At the beginning of July, fellows are assigned to the Optometric Education Seminar series and receive a thorough overview of the areas in which they will provide instruction as well as instructional guidelines. During the summer quarter, they are paired with a faculty preceptor in order to receive training in clinical instruction. Participation in the Continuing Education (CE) program typically begins in the fall quarter. Most fellows and residents also give guest lectures to the students.

The curriculum grid for the Instructional Tract indicates that the Primary Care Fellows instruct students in each of the four years of the OD program: They serve as assistant clinical preceptors of 2nd through 4th year clinicians, and assistant lab instructors in 1st, 2nd and 3rd year labs.

The Binocular Vision/Pediatrics fellow serves as an assistant clinical preceptor in primary care at the 2nd year level, and in Binocular Vision and Pediatrics Clinic at the 4th year level. The fellow also serves as an assistant lab instructor in the Binocular Anomalies, Vision Training and Strabismus courses.

All residents serve as assistant clinical preceptors to 3rd and 4th year optometric externs within their VA clinics. Boston area VA residents participate in the NEWENCO curriculum both as third and fourth year assistant clinical preceptors and as assistant lab instructors within the Contact Lens and Ocular Disease courses.

### Educational Tract

The Educational Tract is an integral part of the developmental process. Whereas the Clinical Tract is the vehicle by which the resident and fellow serve the patient, and the Instructional Tract trains the resident and fellow to guide and educate the student, the Educational Tract encourages the self-motivated and self-paced acquisition of further knowledge, and ultimately supports the forum from which to educate and instruct the profession and the public.

Emphasis is placed on clinical research and publication, as well as presentations and participation at peer-level forums such as grand rounds, continuing education conferences and the AAO Annual Meeting. Some components of the Educational Tract are introduced imme-



diately, such as journal review, clinical seminars, grand rounds, and library privileges, while others, such as advisor panels and the methods and timetables for research projects, are part of the first combined conference. As the fellows and residents acquire confidence and experi-

ence, other activities such as guest lectures are integrated into their programs.

All VA programs hold periodic grand rounds to which affiliated residents and fellows are invited. A wide range of guest speakers, residents, fellows and staff have participated in these sessions.

## Curriculum Sequencing

The design and the effectiveness of the curriculum have been greatly assisted by meticulous attention to the progressive sequencing of assignments. The curriculum sequences have been influenced by the rate of development of each fellow

EVALUATION	FELLOWSHIPS		RESIDENCIES		CURRICULUM SECTIONS	
	PEDIATRICS AND BINOCULAR VISION (1)	PRIMARY CARE AND OPTOMETRIC EDUCATION (3)	LOW VISION (1)	HOSPITAL BASED PRIMARY CARE/REHABILITATIVE (8)		
	*	*	*	*	ORIENTATION PROGRAM	CLINICAL TRACT
	*	*	*	*	PRIMARY CARE	
	*	*	*	*	SECONDARY AND TERTIARY CARE	
	*	*	*	*	TPAs	
	*	*	*	*	CONTACT LENS CLINIC	
	*	*	*	*	OPHTHALMOLOGY CLINICS	
	*	*	*	*	IN-PATIENT CARE	
	*	*	*	*	MEDICAL CLINICS	
	*	*	*	*	REHABILITATIVE SERVICES	
	*	*	*	*	EMERGENCIES	
	*	*		*	SECOND YEAR CLINIC	INSTRUCTIONAL TRACT
	*	*		*	THIRD YEAR CLINIC	
	*	*	*	*	FOURTH YEAR CLINIC	
	*	*		*	OPTOMETRIC METHODS LAB	
	*	*		*	CONTACT LENSES LAB	
	*	*		*	OCULAR DISEASE LAB	
	*	*		*	BINOCULAR VISION LAB	
	*	*	*	*	IN-SERVICE PROGRAMS	
	*	*	*	*	GRAND ROUNDS	
	*	*	*	*	CONTINUING EDUCATION	
	*	*		*	OPTOMETRIC EDUCATION SEMINARS	EDUCATIONAL TRACT
	*	*	*	*	CLINICAL RESEARCH AND PUBLICATION	
	*	*	*	*	GRAND ROUNDS	
	*	*	*	*	JOURNAL REVIEW	
	*	*		*	VDV STUDY	
	*	*	*	*	COMBINED CONFERENCES	
	*	*	*	*	AAO ANNUAL MEETING	
	*	*	*	*	CONTINUING EDUCATION	
	*	*	*	*	PROGRAM ROTATION	
	*	*	*	*	LIBRARY PRIVILEGES	

FIGURE 2  
Curriculum and Performance Grid

and resident, the undergraduate curriculum and by specific program goals.

Fellows and residents increase their clinical knowledge and experience through direct patient care early in the program, prior to assuming the role of assistant clinical preceptor for 3rd and 4th year clinicians. They then serve as assistant lab instructors in Optometric Theory and Methods, then Contact Lenses prior to the Ocular Disease course. Their skill and self-confidence levels have been appropriately developed for the designated instructional task.

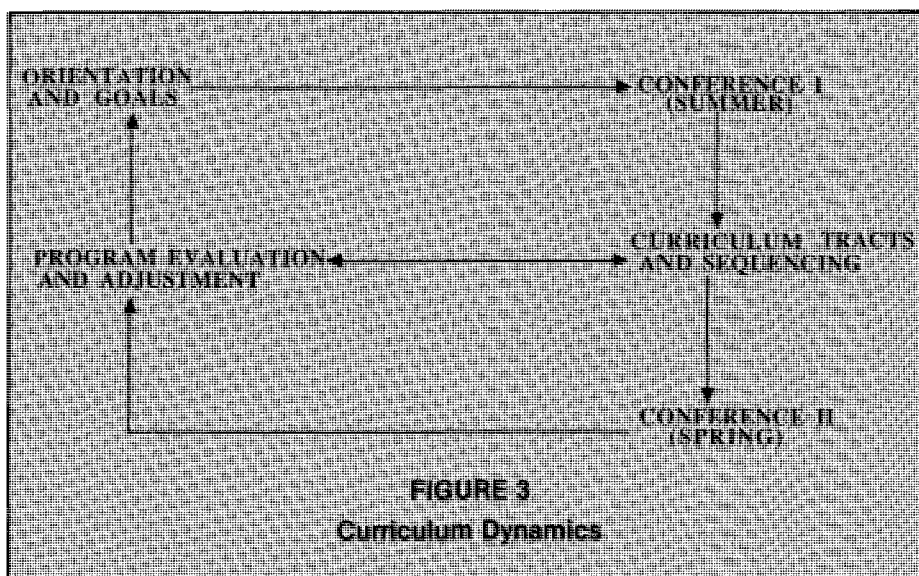
Within the Educational Tract, the residents and fellows have participated in grand rounds, continuing education and guest lectures before the spring quarter when they are required to conduct the second Combined Conference and complete a publishable clinical paper or research project.

## Evaluation Process

The evaluation process takes into account the expected rate of development and increasing levels of responsibility. This review of performance and growth of the residents and fellows as well as the relevance and value of the curriculum sections, encourages an overview of the activities of the preceding months and provides a valuable perspective to the participants.

In 1986-87 two standardized residency evaluation questionnaires were introduced. Questionnaire I is used for evaluation of the resident's performance and is completed by the program director, while Questionnaire II involves an assessment of the program director's performance and is completed by the resident. These questionnaires have been used semi-annually and require direct consultation between and review by the resident and program director. Some program directors have designed their own evaluation forms and use the NEWENCO questionnaires as a supplement.

The 1988-89 academic year marked the addition of the curriculum and performance grid (Fig. 2) to the NEWENCO evaluation process (Appendix). The implementation of the grid will result in standardized, quantitative assessment of performance and curriculum tract components. This evaluation tool is based on the development and application of performance and purpose descriptors. The descriptors reflect the final goals of each program. Grading choices for performance are (E) Expected, (A) Above Expected, (U) Unacceptable and (NA) Not Applicable.



Evaluations of residents and fellows are conducted at the 3, 6 and 12 month intervals. Since it is assumed that performance will improve steadily throughout the year, the EXPECTED levels are higher at each evaluation interval. A subcommittee of program directors postulated that the resident's (fellow's) performance should be at the expected level at least 70% of the time at the 3 month evaluation interval, 80% of the time at the 6 month interval and 90% of the time at year's end. Each clinic's record audit system is used to assist in this process when possible.

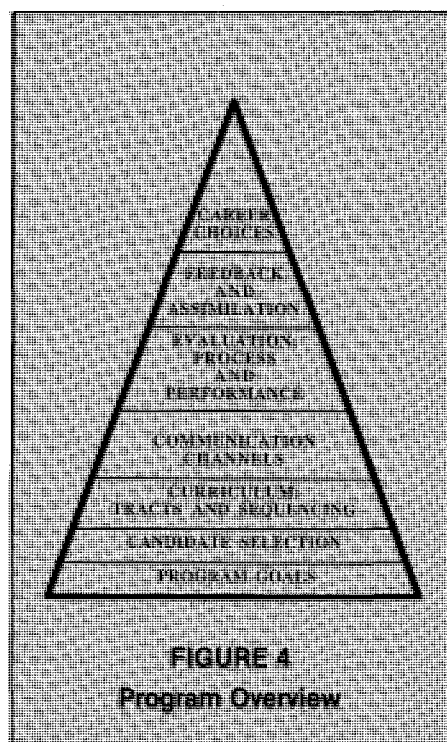
Tabulation and review of the scores by the program director, participating faculty and program coordinator will indicate when a resident (fellow) is not performing competently and which area is unacceptable. Remediation will be initiated.

Evaluation of the curriculum sections by the residents and fellows also takes place at 3, 6 and 12 months. Curriculum activities which receive low scores will receive a careful reassessment by the program director, faculty and coordinator.

The curriculum and evaluation grid is a major part of the evaluation process for the 1988-89 academic year. The results will be reviewed and the value of this tool will be discussed by the coordinator, program directors, fellows and residents. Subsequent revisions will be based on evaluation findings and feedback and may involve modifications of the curriculum or the evaluation process itself.

## Conclusion

An attempt has been made to present to educators and prospective participants in postgraduate clinical programs the NEWENCO model for organization, planning and evaluation which facilitates



assessment, improvement and revision (Fig. 3). Our profession is in the midst of a dramatic growth and evolution, necessitating educators to examine and modify their programs in a dynamic way which accounts for not only present but future needs of the public and the health care disciplines.<sup>12</sup> Knowledge of the changing ratios of optometrists entering various practice settings is instructive in this regard. Surveys which build upon the information obtained from studies such as the one recently conducted by Oshinskie may be valuable tools for curriculum planning and program modification in the future.<sup>13</sup>

For many years, ophthalmology residents have been required to successfully

complete three years of training in order to become eligible for the American Board of Ophthalmology's certification examination.<sup>14</sup> As optometric educators consider required residencies as a possible component of post-graduate certification in the future, greater emphasis must be placed on curriculum standardization and development utilizing a strong, reliable evaluation process.

If the curriculum contents have been comprehensive and the sequences optimal with regard to both program and individual objectives, then residents and fellows will achieve their goals as they approach the year's end. A continuation of momentum will lead them toward the pursuit of career goals compatible with the training which they have received and interests they have acquired (Fig. 4). □

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## References

1. Association of Schools and Colleges of Optometry, Residency/Graduate Program Directory. Rockville, MD, October 1987.
2. Amos JF. Residency programs: the value added. J Optom Educ 1986; 12:55-6.
3. Poorman DH. A current analysis of optometric residency programs. J Am Optom Assoc 1985; 56:494-97.
4. Accreditation Manual: Optometric Residency Programs. Council on Optometric Education, American Optometric Association, 1985.
5. Self-study guide: Optometric Residency Programs. Council on Optometric Education, American Optometric Association, 1985.
6. Amos JF. A brief history of optometric residency education. J Am Optom Assoc 1987; 58:374-5.
7. Myers KJ. VA residencies. J Am Optom Assoc 1987; 58:366-71.
8. Garner L. Educational objectives in clinical optometry. Aust J Optom 1981; 64:77-8.
9. Maino JH, Messer TI, Messer DH. Veterans Administration residency programs: an overview. J Am Optom Assoc 1987; 58:378-80.
10. Koch DJ, Newcomb RD. Characteristics of optometric residencies in the Veterans Administration. J Optom Educ 1986; 12:12-15.
11. Norden LC. A geriatric optometric residency. J Am Optom Assoc 1988; 59:320-22.
12. A faculty workshop on clinical instruction in clinical education. J Optom Educ 1980; 5:16-17.
13. Oshinskie LJ. VA residency training: a survey of the 203 trained since 1975. J Am Optom Assoc 1987; 58:390-9.
14. An update on the accreditation of graduate education in ophthalmology. The Residency Review Committee for Ophthalmology. Arch Ophthalmol 1987; 105:1189-94.

## Appendix

### NEWENCO Evaluation Materials

- 1—EVALUATION QUESTIONNAIRES I and II
- 2—FACULTY/FELLOW 2ND YEAR CLINIC EVALUATIONS
- 3—CURRICULUM AND PERFORMANCE GRIDS:
  - A. EVALUATION BY PROGRAM DIRECTORS AND FACULTY
  - B. EVALUATION BY FELLOWS AND RESIDENTS

**1 AND 2 AS WELL AS EVALUATION AND PROCEDURAL INSTRUCTIONS AND PERFORMANCE AND CURRICULUM DESCRIPTORS ARE AVAILABLE FROM THE AUTHOR UPON REQUEST.**

#### 3A. EVALUATION BY PROGRAM DIRECTORS AND FACULTY:

##### FELLOWS' AND RESIDENTS' EXPECTED PERFORMANCE

INTERVAL	CRITERIA* (BASED ON RECORD AUDIT)	(AUDIT NOT POSSIBLE)
3 MONTHS	70% ACCURACY (+/-5%)	3
6 MONTHS	80% ACCURACY (+/-5%)	4
12 MONTHS	90% ACCURACY (+/-5%)	5

\*PERCENTAGE OF TIMES THE EXPECTED PERFORMANCE LEVEL IS MET—SEE DESCRIPTORS.

##### GRADING LEVELS\*\*

**(A) ABOVE EXPECTED**—Performance is determined to be one interval above the EXPECTED level.

**(E) EXPECTED**—SEE EXPECTED DESCRIPTORS and CRITERIA.

**(U) UNACCEPTABLE**—Performance falls below the EXPECTED level.

**(NA) NOT APPLICABLE**

##### GRADING SCALE: 1 2 3 4 5 NA\*\*

**1:** Description is not at all accurate regarding the assignment or activity.

**5:** Description is totally accurate regarding the assignment or activity.

**NA:** Not Applicable.

\*\*FOR EACH CURRICULUM ACTIVITY, ENTER GRADE IN CORRESPONDING BOX IN EVALUATION COLUMN.

#### 3B. FELLOW AND RESIDENT EVALUATION OF CURRICULUM SECTIONS

##### CURRICULUM EVALUATION\*

INTERVAL	ACCEPTABLE SCORE
3 MONTHS	3 OR ABOVE
6 MONTHS	3 OR ABOVE
12 MONTHS	3 OR ABOVE

\*ENTER SCORE IN APPROPRIATE BOX IN EVALUATION COLUMN.



# Spectacle Calculations Program

Jay M. Rumsey, O.D.

## Abstract

*A software program is described which may be used to help students develop better retinoscopy and refractive techniques. The program has been used to create standardized refractive errors for clinical laboratory and state board examinations. The results of the program have added a powerful tool to the student's preparation for clinical practice. A more consistent method to produce refractive errors for clinical testing and state board examinations is another benefit.*

## Introduction

In preparation for the Objective Structured Clinical Examinations (OSCE) at the University of Houston College of Optometry (UHCO), the student has several methods with which to prepare for static retinoscopy. The first method involves the use of schematic eyes and allows the student to use the trial lens set to create various refractive conditions. The major disadvantages of this method include: (1) the static conditions that do not directly simulate the patient's conditions, (2) the dependency on accurately finding the neutral setting of the eye prior to inducing the lens changes, and (3) the difficulty in setting up the situation behind a phoropter in a stable environment.

The second method of preparation for the OSCE is to use fellow students as subjects. This is an effective method as it eliminates the disadvantages of using the schematic eye. It has its own drawbacks,

however, in that the students soon learn each other's refractive errors and the excitement of finding the same refractive error each time soon wears thin. A comment often made by the experienced clinicians was that practicing the basic procedures of retinoscopy and subjective refraction on each other had been of limited value in their optometric education. It was frequently reported that they had quickly become familiar with their classmates' refractive error and, as a result, objectivity during the practice sessions was difficult to maintain.

## Background Information

It was concluded that the student needed more practice with unknown refractive errors. Since the number of students available for a practice session is determined by availability of clinical space and by student scheduling, it was decided that a method of temporarily changing the student's refractive errors was needed. The problem of changing and/or creating refractive errors was not difficult. All that is involved is for a student (serving as a patient) to wear one of several pairs of spectacles obtained from the college dispensary. The final refractive error induced by a given pair of glasses was dependent upon the original refractive error in combination with the testing spectacle prescription. By using spectacles with various prescriptions to induce the new refractive errors, each student could then be a patient with an inherent refractive status plus as many induced refractive errors as there are spectacles available.

Initially the student's success in diagnostic testing was determined by (1) com-

paring the retinoscopy and subjective results, (2) comparing the visual acuity through the retinoscopy and subjective results, and (3) having a faculty member recheck the results. Due to the increased amount of time spent by the faculty rechecking the results instead of teaching, observing, and improving student techniques, a method allowing the student to check his/her progress was developed. In the beginning this self-check was achieved using a hand calculator. This method evolved into a computer program which will allow students to be matched with large numbers of test spectacles, resulting in an almost infinite number of refractive combinations.

## Methods

The Turbo Pascal (version 4.0) language program which performs the spectacle calculations is too long for inclusion here. A copy of the nine page program is available for \$5.00 (diskette and postage) by writing to the author at the University of Houston College of Optometry.

The theory behind the program calculations is as follows: The patient's refractive correction producing the best visual acuity is converted to the patient's refractive error. The resulting refractive error may be any condition of ametropia or emmetropia. Introduction of the test spectacles into the system causes additional refractive errors. Algebraic, trigonometric, and optical calculations are made using the patient refractive errors and test spectacle errors to produce a resulting total refractive error for the combined system. Finally, the compensating prescription is calculated from the total refractive error values. This is the value the clinician

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attempts to obtain from the retinoscopy procedure.

The calculations use polar coordinate notation and work regardless of whether the correcting Rx or the test spectacles are entered in plus or minus cylinder form. The final correction compensation is displayed in minus cylinder form.

## Discussion

The computer program determines the final correction when a patient's refractive error is combined with a known spectacle prescription, determining what the final results should be for the refractive portion of the practice clinical sessions. The faculty and students have found close correlation between the calculated resultant "corrections" and the actual results obtained by "over-refraction" through the phoropter with the test spectacle prescription in place. Vertex distance and lens reflections have minimal effect on the final results except in very high myopic or aphakic test spectacles. Many challenging refractive errors can be obtained using test glasses between the values of  $\pm 6.00$  sphere or sphere-cylinder combinations. Lens reflection

problems can be reduced by using an antireflective coating on the test prescription glasses.

This innovation in optometric education provides the student with almost immediate feedback with respect to the accuracy of the diagnostic skills involving retinoscopy and subjective refraction techniques. It also provides an objective quantitative method of evaluation of a student's progress.

The primary use of this program (SPEC.EXE), developed using the Pascal language for the IBM or compatible computers, is for practice refraction. It also is used to simulate different refractive conditions for the pre-clinic checkout procedure. The second year students must pass specific behavioral objectives prior to entering the general clinic. One of the objectives is to demonstrate the ability to find the correct refractive condition of a patient. In order that the patient difficulty level be similar for all students, the SPEC program can predetermine the final refractive compensation given the patient's own refractive condition along with the available test spectacle prescriptions.

A large variety of refractive errors with which to practice retinoscopy and subjective refractive techniques is now available to students. Before this method was developed, a student in a laboratory with 25 other students had 25 subjects on whom to practice diagnostic skills. With 15 different pairs of spectacles for inducing refractive errors, a student now has another 375 induced errors for practice. This number can be increased further by using additional pairs of test spectacles.

As a side benefit, the program can be used to manufacture similar refractive conditions for state board examinations. The use of test spectacles over the natural refractive conditions of the patient can be adjusted to achieve similar refractive errors for all the board participants to demonstrate a level of competence for this portion of the examination.

## SPEC.EXE Program Operations

Reading the test spectacle information from a wordprocessor file is the method used to generate the final refractive findings. Each input format is expected to be on one line (right and left eye order) with the values separated by spaces. Do not leave any parts out of the Sphere Cylinder Axis entries. Multiple entries are allowed. See the format in Figure 1.

An example test prescription file is shown in Figure 2.

It is possible to enter patient refractive information as keyboard entries, one at a time. This method is used when only a few entries need to be calculated.

In all examples, the correction prescription output values are given to two decimal accuracy. Rounding off or rounding up to the nearest 0.25 diopter is not performed by the program to allow the examiner to decide the level of accuracy desired. The tolerance levels may be expanded or contracted with clinician experience.

It also is possible to get patient information from a previously defined refraction file. This is the preferred method because numerous entries can be defined and errors of data entry can be minimized. Input from the file is expected to be in the following format (See Figure 3).

Multiple entries are allowed so long as they follow the above format. Example of patient information shown in Figure 4.

Output from the program can be directed to the screen, printer, or file. The screen display scrolls down the screen at a fast rate. It is possible to halt the display by pressing the control and "S" keys (CTRL-S) in unison. The scrolling display can then be restarted by pressing the key

OD			OS			(Entry comments are allowed)
Sph	Cyl	Axis	Sph	Cyl	Axis	

**FIGURE 1**

0.00	0.00	180	0.00	0.00	180	Test specs #1 (plano)
-1.00	0.00	180	-2.50	0.00	180	Test specs #2 (myope)
0.00	-1.00	180	0.00	1.00	180	Test specs #3 (astigmat)
-1.00	-1.00	180	-2.50	-1.00	180	Test specs #4
0.00	-1.00	60	0.00	-2.00	30	
-2.00	-2.00	45	-2.50	0.50	180	
3	-2.5	5	3.50	-3.00	175	

**FIGURE 2**

Patient Name		(Comments are allowed on these lines only)
OD Correction		
OS Correction		

**FIGURE 3**

Patient A		(myopic Rx with comments, below without)
-2.00 0.00 000		
-2.00		
Patient B		(myopic astigmat Rx) (note: no comments behind name)
-5.50 -2.00 010		
-5.75 -2.25 170		

**FIGURE 4**

Patient A									
PATIENT RX SPHERE CYLINDER AXIS OD: -2.00 OS: -2.00									
SPECTACLE RX SPHERE CYLINDER AXIS					CORRECTION RX SPHERE CYLINDER AXIS				
1	OD:	0.00			1	OD:	-2.00		
	OS:	0.00				OS:	-2.00		
2	OD:	-1.00			2	OD:	-1.00		
	OS:	-2.50				OS:	0.50		
3	OD:	0.00	-1.00	180	3	OD:	-1.00	-1.00	90
	OS:	0.00	1.00	180		OS:	-2.00	-1.00	180
4	OD:	-1.00	-1.00	180	4	OD:	0.00	-1.00	90
	OS:	-2.50	-1.00	180		OS:	1.50	-1.00	90
5	OD:	0.00	-1.00	80	5	OD:	-1.00	-1.00	180
	OS:	0.00	-2.00	30		OS:	-0.00	-2.00	120
6	OD:	-2.00	-2.00	45	6	OD:	2.00	-2.00	135
	OS:	-2.50	0.50	180		OS:	0.50	-0.50	180
7	OD:	3.00	-2.50	5	7	OD:	-2.50	-2.50	95
	OS:	3.50	-3.00	175		OS:	-2.50	-3.00	85
Patient B									
PATIENT RX SPHERE CYLINDER AXIS OD: -5.50 -2.00 10 OS: -5.75 -2.25 170									
SPECTACLE RX SPHERE CYLINDER AXIS					CORRECTION RX SPHERE CYLINDER AXIS				
1	OD:	0.00			1	OD:	-5.50	-2.00	10
	OS:	0.00				OS:	-5.75	-2.25	170
2	OD:	-1.00			2	OD:	-4.50	-2.00	10
	OS:	-2.50				OS:	-3.25	-2.25	170
3	OD:	0.00	-1.00	180	3	OD:	-5.44	-1.11	19
	OS:	0.00	1.00	180		OS:	-5.77	-3.21	173
4	OD:	-1.00	-1.00	180	4	OD:	-4.44	-1.11	19
	OS:	-2.50	-1.00	180		OS:	-3.20	-1.35	163
5	OD:	0.00	-1.00	60	5	OD:	-4.81	-2.39	178
	OS:	0.00	-2.00	30		OS:	-4.51	-2.74	147
6	OD:	-2.00	-2.00	45	6	OD:	-2.35	-2.29	162
	OS:	-2.50	0.50	180		OS:	-3.28	-2.73	172
7	OD:	3.00	-2.50	5	7	OD:	-7.93	-0.63	78
	OS:	3.50	-3.00	175		OS:	-8.44	-0.88	98

FIGURE 5

combination again. This may be repeated as often as necessary while viewing the output display.

The output may be directed to the printer directly. If the file option is selected, it can be printed at a later time. The file option saves the printed output to a disk. This file may be further manipulated using any true ASCII editor or word-processor that can read and write with this character set.

Example of output from data above is shown in Figure 5.

## Conclusions

A method and program have been presented which began as an informal way to aid students in learning retinoscopy and subjective refractive techniques. In its current status the method has evolved into a powerful and important part of the student's preparation for clinical practice. Numerous refractive errors can be made available upon which the student can practice, from the most simple to the most complex. The program can be used to make a similar level

of difficulty when practical testing is used to promote or retain a student. It is also possible to achieve similar levels of difficulty during state board testing.

## Acknowledgments

I would like to thank Dr. Sam Quintero and Dr. D. Perrigin, associate professors at the University of Houston College of Optometry, for their comments during the preparation of this paper and use of the program in their respective courses and areas of control.



# New Optometry Schools: The ASCO Perspective

*For some time news has been circulating about two new schools of optometry slated to open in the state of Florida, one at the Southeastern University of the Health Sciences in North Miami Beach and the other, a branch campus of the Illinois College of Optometry, in St. Petersburg. As the association representing the 16 existing schools and colleges of optometry in the United States and Puerto Rico, the Association of Schools and Colleges of Optometry has received numerous inquiries about our position regarding the creation of these schools and the opening of new optometry schools and colleges in general. ASCO's stance on this issue was adopted in 1974, and reaffirmed in 1976; it is reprinted below.*

In December 1988, representatives of ASCO member institutions met informally with representatives of the two developing Florida optometry schools for an information exchange designed to keep the Association informed of the goals and status of these two enterprises. It is evident that neither of these emerging institutions meets the first, and perhaps the most basic condition that ASCO views as important to the development of new schools: location in a health science center of a state university. It also is evident that some individuals within ASCO and within the profession of optometry question the appropriateness of any new

optometry school opening its doors at this time. This view is based primarily upon their perceived demand for new optometric practitioners and their assessment of the availability of qualified applicants and faculty.

Irrespective of individual views, it appears that both schools may become a reality. ASCO will do what it can to encourage any new schools to conform to the criteria which appear below in the interest of the continuing development of excellence in optometric education for the benefit of the profession and the public.

## Statement on New Schools and Colleges of Optometry\*

This statement is prepared to present the conditions the Association of Schools and Colleges of Optometry holds are important to the development of new schools.

1. Under appropriate conditions, the most advantageous location for a new school or college of optometry is in the academic health center of a state university.

2. Optometry should have separate status as a professional school or college, administratively on the same level as medicine and dentistry, within the health center.

3. There should be strong central administrative support for the school or college of optometry and commitment to interdisciplinary development and interaction.

4. There should be shared basic health science programs for students of the health professions where appropriate.

5. There should be the opportunity for development of optometric clinical services in the various patient care facilities of the center.

6. There should be the opportunity to develop interdisciplinary research programs of mutual interest.

7. There should be a commitment to graduate and con-

tinuing education for the further development of practicing optometrists and future educators.

8. The size of the entering class of professional students should be approximately 60 students.

9. The school should be located in a community of at least 200,000 population to provide an adequate clinical base for the program.

10. The school should, where possible, be a regional resource for the development of optometric manpower and vision care referral service.

11. There should be a commitment of both adequate capital funds and operating support to provide for the orderly development of a program of excellence in optometric education.

12. There should be an established faculty-student ratio of not less than one faculty member per five students.

*\*Adopted unanimously by the Board of Directors of the Association of Schools and Colleges of Optometry, Washington, D.C., September 12, 1974. Reaffirmed 3/6/76.*

**Pathology and Pharmacology of the Eye**, J.I. Rodgin, O.D., Professional Press, 1983, 399pp., contains study questions and discussion, \$45.00.

The medical management of ocular disease is rapidly becoming an integral part of optometric practice. As more clinical emphasis is placed on ophthalmic pathology, we witness an increase in optometric publications devoted to eye disease.

This text is a question-and-answer compendium covering the differential diagnosis of ophthalmic pathology and pharmacologic therapeutics. It is divided into two major components: Part 1 being entirely questions and Part 2 being questions and answers with a brief summary and rationale given for the correct as well as incorrect responses. Topics covered include: ocular emergencies and injuries; pathology of the anterior segment, lens, vitreous, retina, choroid and optic nerve; ocular manifestations of systemic disease; genetic disorders; neuro-ophthalmic disorders; glaucoma; ocular microbiology and ocular pharmacology.

As is true with many publications of this type, the major drawback is the presentation of outdated material. Although many adequate references are cited, there are fundamental problems with some of the differential diagnostic features and pathophysiologic mechanisms covered based upon present knowledge. This shortcoming becomes particularly evident in the area of ocular therapeutics where current philosophies contradict various treatment protocols presented in the text. In addition, many tests, procedures and therapeutic regimens currently used in contemporary clinical practice are not adequately covered or are completely omitted from the book.

Nonetheless, Dr. Rodgin has provided readers with a good, general overview of many ocular pathologies and their treatments. Material is presented in a well-ordered and comprehensive fashion. Readers are able to test their knowledge of a particular disease or treatment plan while being provided with a thumbnail

sketch of the topic in question. This format is particularly useful as a limited review for the national and state board examinations.

In summary, the book serves its purpose as a study guide of ocular pathology for the optometry student, resident, fellow and practitioner. However, an updated edition would be welcomed to more effectively address state of the art diagnoses and therapeutics.

*Guest Reviewer:*

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**Primary Care of the Anterior Segment**, Louis J. Catania, O.D., Appleton and Lange, E. Norwalk, CT, 1988, 393 pp., hardbound, illus., 100 color plates, \$75.00.

*Primary Care of the Anterior Segment* is a textbook devoted to the diagnosis and management of external eye disease and uveitis. It covers in turn: lids, adnexa, conjunctiva, sclera, episclera, cornea, anterior chamber, iris, ciliary body, uvea, related systemic conditions, and contact lens related problems.

The discussion of each eye problem is organized in outline according to the well recognized "SOAP" format. That is, each condition is presented with a concise list of subjective and objective findings followed by assessment and management plan. Included in the plan comments are treatment options as well as additional tests, referrals, follow-up criteria and patient education.

Complementing the textual material are ample, well-drawn and shaded, line illustrations that clearly show the desired teaching point. Many of the "SOAP" presentations are also referenced to the 100 color plates at the end of the book.

To further aid the reader, numerous tables present related or similar eye conditions in checklist format for diagnostic and management comparison. Each chapter also is concluded by a short series of self-assessment questions.

Overall, *Primary Care of the Anterior*

*Segment* is an important contribution to the eye care literature. Its organization and format make it ideal for rapid reference at the time of the patient visit. The thorough nature of the coverage with the outstanding cross referencing to material in other sections make this text an excellent educational tool. Finally, this book is well organized for a school course in anterior segment eye disease and should be required reading.

**Contact Lens Perspectives**, Richard M. Hill, Fairchild Publications, New York, 1988, 112 pp., hardbound, \$22.50.

*Contact Lens Perspectives* is a collection of short two to three page "chapters," each dealing with a topic related to contact lenses and written with Dr. Hill's usual wit and wisdom. The chapters are divided into three major topic areas: The Tears, The Cornea and The Lens.

The book is written on a level suitable for a broad audience with some chapters appropriate for beginning students, some for experienced clinicians and some for basic researchers but always with an attempt to make clinically relevant points. It also contains a number of excellent charts and graphs which illustrate the text.

Because of their brevity, the chapters do not attempt to address all aspects of each subject and often pose more questions than answers, encouraging the reader to think. Each chapter is well referenced to facilitate further exploration of the various topics by the reader. Dr. Hill provides a particularly good discussion of lens permeability, transmissibility, and corneal oxygen demand.

*Contact Lens Perspectives* is an entertaining and thought-provoking review of many major contact lens topics. Although not suitable as a basic contact lens text, it might be considered as a supplemental text or as a review for the contact lens practitioner.

*Guest Reviewer:*

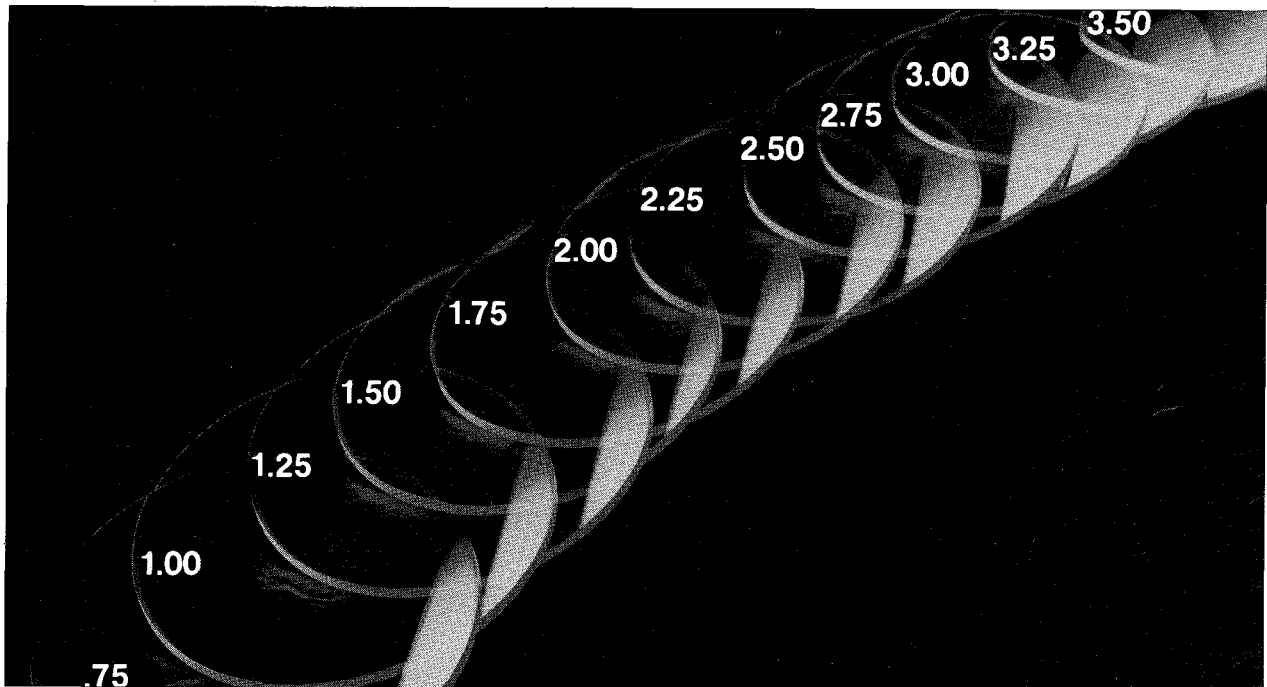
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