

Profile: The
Development of
Optometry in
Hong Kong

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Association of Schools and Colleges of Optometry

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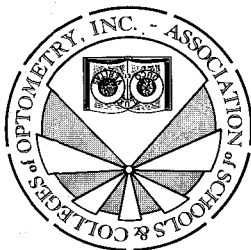
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Note: Credit for the cover photo on the Fall 1988 issue was mistakenly omitted. The photo was courtesy of Mr. Ron Davidoff, Instructional Media Director of the Pennsylvania College of Optometry.

Cover Photo: Lotus. Detail of a Chinese painting by Qi Baishi (1863-1957), dated 1939, courtesy of the Arthur M. Sackler Gallery, Smithsonian Institution, Washington, D.C.

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The Challenge of Change

The following commentary is the Commencement Address delivered by George Collins, M.D., to the 1988 graduating class of the State University of New York College of Optometry. Dr. Collins is Secretary/Treasurer of the American Medical Association and a Trustee of the State University of New York. The Journal of Optometric Education is pleased to publish Dr. Collins' Commencement Address which so ably discusses many of the social, political and ethical challenges facing health care providers.

I offer my greetings and my sincerest congratulations to all of the members of the graduating class of 1988 of the State University of New York College of Optometry.

I am pleased to be here and feel privileged to take part in this very important occasion for three different, but equally pertinent, reasons. First, as a trustee of the State University of New York. Second, as a fellow health care practitioner, a physician. And third, perhaps most important of all, as a person who might one day require your professional services for myself or my family.

In just a few minutes, you will receive your diplomas. You will participate in the most formal single rite of passage into your new professional life. Before you take that step, I want to share with you some of my thoughts about the world you will be entering.

I have been a part of that world for quite a few years and I hope that I can say a few things that might make your acceptance of it and its acceptance of you just a little bit smoother. For one thing, you will be much more than an optometrist. That would be enough. But that achievement is only part of the story. Equally as important, equally as burdensome in some respects but equally as glorious in others, you will be one part of the larger, all encompassing health care community. I very carefully avoided saying anything like, "You will be a cog in the wheel of medical and health care." Because that would be totally inappropriate. You are not a cog. A cog implies mass production and sameness and lack of imagination and lack of individuality. You are quite the opposite—a true professional with your own unique challenges and obligations and talents.

You have been told all of your lives that as a human being, as a man or woman, you are unique. I now want to add to that truth the theory that you will also be a unique optometrist. It's a fact: There has never been another optometrist exactly like you. In your approach to problems, in your solutions to them, in your relationships with patients, in your relationships with


colleagues and others, you are yourself. And no one else is exactly like you. But, nonetheless, you are also part of the whole world of patient care and you cannot separate yourself from it. Everything you do will affect that total world. And it might come as something of a shock once you are actually in practice that anything that happens to that world will affect you directly.

In the last decade particularly, the health care field has undergone tremendous changes. We have seen the emergence of corporate management systems. We see more and more professionals accepting salaried positions as employees at least partly because of the prohibitive cost of establishing an independent practice in today's economy. We have seen a population growing older every day with the elderly taking an unprecedented position in their numbers and influence. We have seen medical and scientific technology that would astound H.G. Wells or Jules Verne. We are in the middle of the AIDS crisis by which, apparently, no one in our society will remain entirely untouched. And perhaps most important, we have seen constantly increasing health care costs.

Today, after years of growing and expanding insurance programs, which virtually eliminated the problem of cost from medical and health care, we are seeing people who cannot afford health care because they have no insurance. It was because of such crisis conditions in the 1960s that the government launched its health care programs and private business and industry immediately followed suit. Now the crisis is growing again as both private and government insurance programs are being cut back and restricted because of their cost. All of those changes, all of those challenges, have important implications for you, as well as for me and everyone else in the health care field, as we try to maintain the quality of care that the American people must be able to expect of us. And more importantly, we try to maintain the quality of care that we demand of ourselves and our colleagues.

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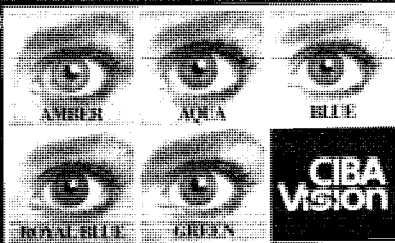


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(continued from page 36)

Let's look at some other facets of the situation from a closer point of view. In New York City currently there are 70 public and private hospitals operating at or close to 100 percent of capacity because of constantly growing demand for care both by those with and without insurance. Nationwide, there is a critical shortage of nurses. In New York City alone there are 3,000 vacancies for qualified nurses. Two upstate hospitals have recently lost their certification for federal funds, totaling 30 million dollars a year, because they don't have enough staff to qualify.

All right. That's enough gloom and doom. All those problems exist and all have to be taken into account. But the last thing I want to do is give you the impression that being a professional isn't a good thing. So let's look at some other changes that are making your profession better than it used to be.

One change I like to see both in your specific field and in mine is the vast increase in women who choose to make their careers in our professions. Traditionally, of course, women who wanted to work in health care became nurses. Their role as "handmaidens to physicians" was well established, well defined, and well preserved for a long time. But no more. Last year, 37 percent of the country's first-year medical students were women. By the end of the century, reasonable predictions are that one physician out of five will be a woman. And the story is even more dramatic in your field. I understand that this college of optometry's new class in September will consist of a record 75 percent women.

Optometry has expanded its scope of practice with the introduction of diagnostic pharmaceutical agents and therapeutics. You, the Class of 1988, are at a point in your professional education that is unparalleled. You have been given the specific knowledge and clinical skills that will place you in the vanguard of your distinguished profession. In addition, you have had a touch of the "real world" in your externships and have become better clinicians because of that experience. Some of you have gone on volunteer missions to provide much needed vision care to people in underdeveloped countries. I have no doubt that all of you who took advantage of that opportunity came back with an enriched spirit of social responsibility as well as greater self-confidence.

All of those things have brought you to this point. Now what? What happens when you see your first patient in your new practice? You will have to tread carefully here. You see, not very long ago the

doctor-patient relationship was nothing more or less than a covenant of trust. Now it's true that your patients will still trust you with their eyes, their health and, in some cases, their very ability to work and function in a visually demanding world. Today, however, with the pressure of economic realities, that covenant often becomes a contractual relationship based on negotiated fees and subject to both advance and retrospective review by one or more third parties who are neither patients nor optometrists. You will find that many patients have to get somebody else's permission before you can do anything for them. And you will also find that in many cases whatever you do will be subject to review by somebody else who just might decide that your services were unnecessary and need not be paid for. Increasingly, health care is perceived as a

*"Are we, and will you be,
looking at your patients
and seeing only those
who can afford your
services or those who are
socially desirable?"*

commodity. It is seen as something that is produced, marketed, bought, sold and distributed like any product coming out of any factory in this country. It is no accident that patients are now more often referred to as "consumers" of health care. Or that doctors of medicine or optometry are very frequently called "vendors" of health care services. People don't "receive" care any more, you know. Now care is "delivered" to the patient, just like the morning milk outside the door used to be. Unfortunately, all of us have to get used to that kind of thing.

I just hope, believe me, my young colleagues, I fervently hope, that the idealism and compassion for others which brought you into your chosen profession four years ago have not waned. I pray that you will find ways every day both to preserve and to rekindle those sacred values. Remember this: your patients are victims of the new attitude as much as you are. It was not their idea to turn trust and hope into contracts and limitations and advance certification. They are still patients and you are still the doctor to whom they have come for help.

With all of the changes that have taken place, a 1986 study by two colleges of medicine and dentistry established that patients and medical residents both saw communication and psychological comfort as very important factors to be attended to by health care practitioners. What that means is: never be too busy to talk to your patients. More important, never be too busy to listen and to express sincere compassion. Many of our patients are vulnerable because of their economic or social level. But we cannot call ourselves care-givers if we are interested only in treating patients who can pay for the care we provide. I have already alluded to insurance problems. Let's make it more specific by pointing out that there are 37 million Americans below the poverty level, if that can be called living. Are we, and will you be, looking at your patients and seeing only those who can afford your services or those who are socially desirable? If I didn't think I knew the answers to those questions, I wouldn't have come here today.

As physicians, or as optometrists, or as any other participants in the field of medical and health care, all of us have a responsibility to be totally honest with our patients. We have a responsibility to disseminate reliable information and to maintain the highest standards of professional practice. We must continue to serve as our patients' advocates within our professional associations and community organizations. As an important part of our advocacy for them, we have a duty to ourselves and to those we serve to keep vigilant watch over our colleagues and to keep them mindful of the oath they took when they were inaugurated into the health care profession. The whole area of your relationship with your colleagues is an important one and deserves your careful attention. There can be problems in that area because the medical and health care professions are not so distinguished and so pure that they are not immune from arguments, bickering, and differences that can best be identified as jurisdictional disputes. That is true of all professions no matter how learned. Lawyers often are verbally attacking each other, not just through taking different sides in legal cases. And in the last year, we have seen clearly that major leaders among the clergy are enthusiastically capable of quarreling, attacking, and backstabbing. But if you are involved in a professional dispute or are the object of criticism from certain of your colleagues, I urge you to keep one major thought in mind: you are not subject to legitimate criticism as long as you func-

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tion within the boundaries of the professional knowledge and skills you have learned here, and as long as you perform all of your functions within the guidelines of the ethics that have been imparted to you in this school.

Speaking of ethics, you will find that the values in our system are often promulgated and monitored by those who are in power within the professional associations to which we all belong. That's the way it should be. Neither we, nor our patients, can afford to let anybody else set forth the ethics by which we must live professionally. You have all that it takes to become leaders in your profession's future in order to help mold that system and maintain those values and ethics that

are so dear to all of us. You have the talent. You have the energy. I hope all of you have the determination to help make a difference.

Today you will take the optometric oath. You will pledge to practice the art and science of optometry faithfully and conscientiously. Never forget that the precious element of humanitarianism makes the difference between excellence and mediocrity. Between aloofness and concern. In effect, between man and machine.

I congratulate you on your splendid achievement. I welcome you as colleagues and I wish you well in your profession. I know that you will summon the best from your experiences at the State University College of Optometry to serve

your patients, your profession, and your community.

Thank you and God bless each and every one of you. □



Dr. George Collins

George Collins, MD
Secretary/Treasurer
American Medical Association

ASCO NEWSMAKERS

International Society for Contact Lens Research Elects New President

Dr. Richard M. Hill, dean of The Ohio State University College of Optometry, was elected President of the International Society for Contact Lens Research at its meeting held in Kauai, Hawaii from August 30th to September 3rd. The International Society for Contact Lens Research, a group of contact lens researchers from around the world, organizes bi-annual meetings to promote the free interchange of research ideas and initiatives, emphasizing both the current status and future directions of contact lens research. Dean Hill will serve as president until the next meeting in France in 1990. □

Optic Neuritis Study Starts Recruitment

NIH Project Seeks Doctor Referrals at 15 Centers

Recruitment has now begun for a trial exploring treatment for optic neuritis, currently one of the most controversial areas in neuro-ophthalmology.

The Optic Neuritis Treatment Trial (ONTT) is the first multi-center collaborative clinical trial in neuro-ophthalmology sponsored by the National Eye Institute of the National Institutes of Health. The Trial also will explore the association between optic neuritis and multiple sclerosis.

"Our clinics at 15 eye centers around the country urgently need the assistance of physicians and other health profes-

sionals in identifying candidates for this study," reported Roy W. Beck, M.D., ONTT chairman and Director of the Neuro-ophthalmology Service at the University of South Florida College of Medicine. "Prompt referral is essential because patients must enter the Trial within eight days of the onset of visual symptoms."

Optic neuritis is a common optic nerve disorder usually affecting people age 18 through 45. Return of visual function is almost never complete. Virtually all patients show some signs of optic nerve damage and most are symptomatic, with abnormalities in visual acuity, contrast sensitivity, color vision, the visual field, and/or the optic disc.

Study Rationale and Methods

"For almost 40 years, neuro-ophthalmologists have debated the efficacy of corticosteroids as a treatment for optic neuritis, but all prior studies have been inconclusive due to either small sample size or poor design," said Dr. Beck. "Currently, there are no established guidelines to follow in deciding on treatment for these patients."

Over the next three years, 435 patients will be entered into the study. The ONTT will randomize patients to one of three treatments: oral prednisone, intravenous methylprednisolone followed by oral prednisone, and oral placebo.

Outcome determinations will be made during the first month following treatment to assess the rate of improvement and at

six months to assess the degree of residual visual dysfunction. Evaluations will include contrast sensitivity, perimetry, visual acuity, and color vision. A Visual Field Reading Center, at the University of California, Davis, will provide computerized analysis of visual fields.

In addition, patients will be followed to explore the association of optic neuritis with multiple sclerosis. Neurologic examinations, magnetic resonance scans and, at times, cerebrospinal fluid studies will be assessed for their predictive value for the development of future episodes of central nervous system demyelination.

In order to enter the ONTT, patients must have acute unilateral optic neuritis, with visual symptoms of eight days or less, and age between 18 and 45.

Clinical centers are located at: W.K. Kellogg Eye Center, Ann Arbor; Johns Hopkins Hospital, Baltimore; University of Illinois, Chicago; Duke University, Durham (with an affiliate clinic at the University of North Carolina); Michigan State University, East Lansing; University of Florida, Gainesville; Cullen Eye Institute, Houston; University of Iowa, Iowa City; University of California, San Diego; University of Arkansas, Little Rock; New York University and New York Eye and Ear Infirmary, New York City; Wills Eye Hospital, Philadelphia; Oregon Lions Sight & Hearing Institute, Portland; University of Washington, Seattle; Georgetown University, Washington, D.C.

For more information, Dr. Beck can be

contacted at study headquarters at the University of South Florida College of Medicine, (813) 974-4810. □

Electronic Communications for Optometrists

The Optometry Echo Conference has been established to foster intercommunication among optometrists. The conference has been formed through the link-up of several Bulletin Board Systems (BBSs) across the country. To participate in the conference you need a computer, a modem and telecommunications software. By calling one of the BBSs listed below you can join the conference. Any message entered on any of the participating BBSs is automatically passed to all of the other BBSs in the conference. Thus you only need to call one of these BBSs in order to communicate with all of the ODs who call these Bulletin Boards.

The Bulletin Boards are: The I.O. Board, (317) 644-3039, Bert Happel, O.D.; Optometry Online,* (314) 553-6068, Dave Davidson, O.D.; and The Relative Connection, (217) 431-1695, Chuck Haine, O.D.

All of the participating BBSs are accessible at 300/1200/2400 baud, 8N1, 24 hours a day. □

*Denotes BBS available through PC Pursuit.

Infant Vision Research Grant Awarded

The Office of Research and Graduate Studies of The Ohio State University announced the awarding of a University Small Research Grant to Dr. Paulette P. Schmidt, assistant professor, TOSU College of Optometry. The purpose of this grant is to evaluate vision and its development in infants and exceptional populations. The project will be completed in cooperation with the Infant and Pediatric Vision Clinic of The Ohio State University College of Optometry. All testing is non-invasive and includes the utilization of preferential looking techniques. □

Barresi Named Dean at SUNY

Barry J. Barresi, O.D., was named Dean for Academic Affairs at the State University of New York, State College of Optometry. A reception to officially welcome the new Dean was hosted by Acting President Alden N. Haffner.

Since joining the College in 1984 as an associate professor, Dr. Barresi has held several academic and administrative positions. His most recent position was as acting associate dean for academic administration and planning. He continues as an associate professor, teaching pri-

mary care optometry and lecturing in public health.

Dr. Barresi is the author of numerous articles in clinical optometry and community health. He is also the editor of the textbook *Ocular Assessment: The Manual of Diagnosis for Office Practice*. His grant experience is in geriatrics and curriculum development and his research interests include health care financing and eye care delivery with his studies based at the Center for Vision Care Policy where he served as its first director. Dr. Barresi is also a past primary care editor for the Editorial Review Board, *Journal of the American Optometric Association*. □

ASCO Conducts Optometric Gerontology Workshops

Three Optometric Gerontology Workshops were held recently in regional locations. The workshops are a result of the Administration on Aging's training grant

entitled, "Geriatric and Gerontology Enhancement of Optometric Faculty and Students to Serve the Vision Care Needs of the Aging Patient," that was awarded to ASCO in September 1987. Sheree Aston, M.A., O.D., Denise DeSylvia, O.D., and Gary Mancil, O.D., serve as the project consultants and conducted the three workshops at the Southern California College of Optometry, Pennsylvania College of Optometry, and the University of Alabama in Birmingham, School of Optometry. A dinner reception for the participants was co-sponsored by VARILUX and the host school.

The workshops have been very well-received by the participants. Reactions varied from the observation of the workshops' organization to the wealth of information received. Within three months, similar workshops will be presented by the participants to the faculty at their home institutions. □



The project consultants of the ASCO Optometric Gerontology Training Grant are, from left to right: Denise DeSylvia, O.D., Gary Mancil, O.D., and Sheree Aston, M.A., O.D.

P R O F I L E

The Development of Optometry in Hong Kong

Marion Edwards, F.B.C.O., D.C.L.P.



Hong Kong Harbour

Abstract

Optometrists in the United States are justifiably proud of the recent advances of their profession with regard to the use of therapeutic drugs. In Hong Kong, however, optometry is in its infancy, and I would like to share the interest and excitement of being present at the birth of the profession here.

Background

Hong Kong occupies an area of approximately four hundred square miles near the eastern edge of the mouth of the Pearl River in southern China. Hong Kong Island was annexed by the British in 1841 (much to the disgust of the government in England and Queen Victoria who considered the territory "a barren rock") and the Kowloon peninsula was ceded in 1860 after the Second Opium War. The New Territories, which comprise 90% of the land area of Hong Kong, were leased to Britain for ninety-nine years in 1898. The population is almost entirely Chinese, with a small expatriate population of North Americans, British, Filipinos and other nationalities, many of whom came to Hong Kong to work for a short time, were fascinated by the life and vitality of the place, and stayed.

Hong Kong has a buoyant and expanding economy with a large budget surplus and only 2% unemployment, but its social services are not well advanced compared with those in some western countries. Health care is provided at low cost at government hospitals, but these are under-funded and over-used. The specter of 1997, when the territory reverts to the People's Republic of China, is causing an exodus of highly trained professionals and this must eventually affect the quality of health care and other services.

The education system is essentially English. Compulsory education starts at the age of six with six years of primary education (two years kindergarten education is optional) and three years of secondary education. After a further two years of schooling, students may sit for the Hong Kong Certificate of Education examination and two years after that, the Hong Kong Advanced Level examinations. The latter examination is similar in

standard to that of the English "A" levels and is required for entrance to professional and degree courses such as optometry, dentistry and medicine.

Between the beginning of this century and World War II there were only a few optical practices in Hong Kong, mostly owned by overseas trained optometrists (mainly U.S. graduates). This happy trend towards professionally trained optometrists might have continued had it not been for the economic effects of the 1939-1945 war.

Hong Kong fell to the Japanese on Christmas Day 1941 and the period immediately after the occupation was a time of recovery and economic and structural rebuilding. In fact those who know Hong Kong would agree that it has been

***"The Optometry Section
has increased from a
faculty of four in 1984
to an establishment
of 16 in 1987."***

rebuilding ever since. The money to continue to send young people overseas to study was no longer available and training by apprenticeship became the norm in many professions including optometry.

Fortunately, some of these opticians (for they could not truly be called optometrists) realized that this type of training, while suitable for a craft, was not adequate for a developing profession. Especially as at this time optometry was surging ahead internationally, with controlling legislation being enacted and degree level training being introduced in many countries. By the early 1970s many Hong Kong opticians were in a financial position to be able to send their children to be educated in optometry at overseas universities. These graduates, who on their return joined together to create the Hong Kong Society of Professional Optometrists, now form a nucleus of professionally educated Chinese optometrists.

In Hong Kong itself things had not stood completely still. A group of opti-

cians who wished to promote the exchange of experience and knowledge, and the improvement of eye care to the public, joined together in 1964 to form the Hong Kong Optometric Association (HKOA). The name was something of a misnomer, being an association of apprentice-trained opticians and not professionally trained optometrists. Before long the Association had started to offer bi-annual part-time courses for its members and these continue today.

In 1975 the Chairman of the General Optical Council (of the United Kingdom), Sir Eric Richardson, visited Hong Kong as a member of the University and Polytechnic Grants Committee. The UPGC is a high powered committee of distinguished academics which finances the institutions of tertiary education and therefore has ultimate control over what courses are offered by the universities and polytechnics of Hong Kong. Sir Eric discussed with the HKOA the possibility of a formal training course and with the support of the HKOA recommended to the Governor that a structured course in optometry be set up.

The die was then cast that optometric education would be provided by the Polytechnic (and not by either of the two universities in Hong Kong), as the course envisaged at that stage was a remedial one to upgrade the standards of those already working as opticians, and not a professional degree level course for school-leavers with university entrance qualifications. The appropriate establishment for a course of this nature was the Institute of Medical and Health Care (IMHC) in the Hong Kong Polytechnic. The IMHC was already offering full and part-time courses in physical therapy, occupation therapy, diagnostic radiography and medical laboratory science and therefore already had the infrastructure required in the way of general courses, such as physiology, microbiology, general pathology, and psychology.

As a result of Sir Eric's recommendations the Optometry section of IMHC came into being in 1978 and the Certificate in Optometry was first offered that year. There were only two staff members on the faculty of the Optometry Section and little money was forthcoming for equipment. The certificate course was a two-year part-time course to upgrade the skills of those already working in the optical shops of Hong Kong. Attendance at the course required the sponsorship of employers and while some enthusiastically encouraged their employees to attend, others saw the course as a means by which their employees would gain the

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skills needed to open their own practices. Given the value placed on owning a business in Hong Kong, this was not an unreasonable fear. Basic sciences were taught in the first year and the rudiments of optometric subjects in the second year.

In 1984 a Higher Certificate was introduced to further raise the standard of those already holding the basic Certificate in Optometry. Graduates of the Higher Certificate in Optometry can refract competently, fit contact lenses safely and recognize the more common eye abnormalities.

While the introduction of these two courses has improved the standard of patient care offered by some of the existing optical shops, long-term optometric care will be provided by graduates of the third course offered by the Polytechnic, the Professional Diploma in Optometry. The Professional Diploma is a three year, full time course which requires university entrance qualifications for admission. The course has developed along the lines of those offered by Commonwealth countries, largely because the secondary schooling in Hong Kong is essentially British in structure and because most faculty members received their optometric education in Australia or the United Kingdom. Demand for the forty places in the course has been high; 723 applications were received in 1984, 586 in 1985 and 815 in 1986.

Year I of the Professional Diploma consists of visual science, general and ocular anatomy and physiology, applied mathematics, statistics, applied microbiology and optics. Year II covers visual science, clinical optometry, contact lens practice, ophthalmic optics and dispensing, gen-

eral pathology and psychology. Year III consists of optometry clinic (general and pediatric/visual training), clinical optometry, contact lens clinic, geriatric optometry and low vision, community health optometry, practice management and professional studies, ocular pathology, general and ocular pharmacology and psychology.

The presence on the faculty of staff members educated at schools of optometry in the United States and Canada has assured some similarity in course structure to that experienced by most North American optometrists.

The Present Situation

The Optometry Section has increased from a faculty of four in 1984 to an establishment of 16 in 1987; presently there are thirteen full-time and twelve part-time optometrists on the staff, three full-time posts having been converted into part-time hours. We are fortunate in having excellent support from other departments in the Polytechnic in the subject areas of optics, microbiology, mathematics and statistics, general anatomy and physiology, general pathology, psychology and pharmacology. We also have supporting technical and clerical staff and clinic secretaries. Ocular pathology is taught by ophthalmologists attached to the government eye clinics.

Our general optometry clinic has nine examination cubicles (a tenth had to be sacrificed to provide working space for our clinic secretaries) and the contact lens and visual training clinic has eight examination rooms. Students examine patients in their final year and the staff/student

ratio in the clinics is 1:3. The need for this close supervision of students in clinic creates special demands on staff resources. Whereas overseas universities with clinically based courses such as medicine, dentistry or optometry fully realize the resource implications, the Polytechnic is only gradually becoming cognizant of the cost of operating an optometry course. Students of other clinical courses offered by the Polytechnic undergo clinical training in government run hospitals, at little or no cost to the Polytechnic in equipment or staff.

Over the past three years a reasonable equipment budget has ensured that clinics and laboratories are equipped to a good standard though some major items such as an ultrasound A and B scan, a computerized perimeter and equipment for contrast sensitivity measurement remain to be purchased. The Section suffers from the perennial Hong Kong problem of lack of space which especially affects our clinic facilities and staff research space. A new clinical area is presently under construction and will be ready in the summer of 1989.

The work of designing and implementing the Higher Certificate and Professional Diploma courses over the past three years has inevitably meant that the staff have had little time for activities other than curriculum and course development. The Institute of Medical and Health Care, of which the Optometry Section was a part, grew too large and in 1987 was split into three departments. At the beginning of the 1987/1988 academic year, Dr. George Woo, formerly of the University of Waterloo, became head of the Department of Diagnostic Sciences (Optometry and Diagnostic Radiography) and under his guidance a number of staff are embarking on research projects in addition to their other duties.

The Certificate in Optometry has been withdrawn, having been intended as a temporary measure to improve the skills of those already working in optical shops and not for the training of new entrants to optometry. The Higher Certificate will continue for as long as there is a viable demand for it, but as entrants to the course must hold the Certificate in Optometry, the pool of those qualified for the course is decreasing each year.

Future Plans

At present, due to the constrictions imposed by a three year course, students are working in the final year clinics before they have completed related didactic sub-

TABLE 1

Milestones in Optometric Education in Hong Kong

1965	Formation of the Hong Kong Optometric Association
1975	Visit of the Chairman of the British General Optical Council, Sir Eric Richardson
1978	Start of the Basic Certificate in Optometry at the Hong Kong Polytechnic
1984	Start of the Higher Certificate in Optometry and also the Professional Diploma in Optometry
1986	Constitution of the Optometrists Board
1987	Graduation of first professionally trained graduates
1990	Proposed starting date for a four year degree program in optometry

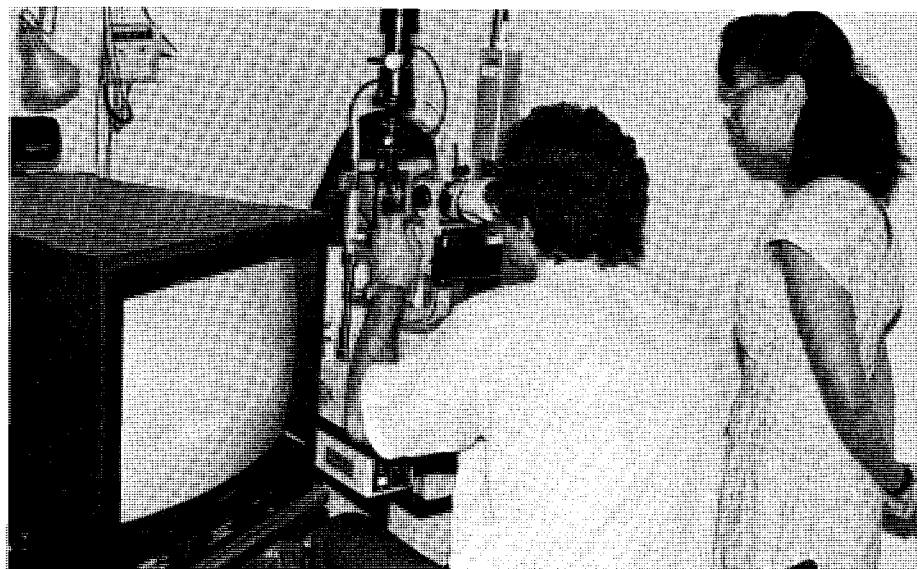
jects. A four year degree proposal is in preparation, with 1990 as the date of implementation. A previous proposal was rejected by the University and Polytechnic Grants Committee who felt that "the time was not yet ripe" for a degree in optometry. Unfortunately the decision had political overtones as holders of other professional diplomas offered by the Polytechnic are employed mainly by government financed organizations and degree holders start higher on the salary scale than do professional diploma holders. The precedent of the conversion of a professional diploma to a degree could prove expensive for the Hong Kong Government. The option of a four year professional diploma was considered, but discarded as students would opt first for the other three-year professional diploma courses, thus leaving optometry with the less talented students. This would result in a high failure rate and a consequential reduction in the popularity of the course. The faculty will, however, sustain their efforts towards a four year optometry degree.

Optometric Legislation

Legislation must follow the development of education, and in March 1983, the Executive Council advised that legislation should be drafted to control the optical profession. The Advisory Committee on Optometry came into being in May 1984 with the purpose of "facilitating the preparation of the draft Optometrists Regulations and advising the Government, pending the formation of the Optometrists Board."

In May 1986 the Optometrists Board was formally constituted, and most matters relating to the practice of optometry now have been addressed by the Board. The objections of ophthalmologists on the Board to the practice of orthoptics by optometrists disappeared when it was agreed that the terms "visual training" or "vision therapy" would be used instead of orthoptics! One major hurdle remains to be surmounted and that is the use of diagnostic drugs by suitably trained optometrists. There is a basic fear among physicians that medical territory is being invaded. Although it is expressed by most prominent objectors as an altruistic concern that drug side-effects will not be recognized by optometrists and that the patient will thereby suffer, there is no evidence to suggest that this will happen.

The wheels of government committees grind slowly and it is likely to be another year before the profession is properly



Biomicroscopy demonstrated using a video slit lamp.



Recording pattern VER.

controlled. This is a matter of concern to those involved in education as the employment prospects for graduates of the professional diploma will only improve after legislation is on the statute books. At present there is no incentive to the owners of practices to employ professionally trained staff; it is cheaper to promote the receptionist to refractionist! Many of the Professional Diploma in Optometry holders, the first of whom graduated in 1987, have had to accept employment in which the working hours are excessive. A seventy-hour week is not unusual.

Arrangements are being made by the Optometrists Board to permit those who have been providing a service to the public for eight years or more (the so called "grandfathers") to continue in restricted practice after legislation. It is likely that the scope of practice of a registered optometrist will be controlled according to the qualifications held by the individual. The Optometrists Board has been engaged in

writing a syllabus for a simple examination which "grandfathers" will be required to pass before they are registered. If they wish to fit contact lenses, however, it is anticipated that a much more comprehensive examination will have to be passed.

Public Education

So education is available, and legislation is coming, but there is another issue to which the profession must address itself—the education of the public. The public must be made aware that better quality optometric care is desirable and of far greater importance than inexpensive glasses. The faculty of the Optometry Section is doing everything possible to publicize the abilities of its graduates and the Hong Kong Society of Professional Optometrists also works to promote better eye care. The people of Hong Kong need and deserve the best possible optometric care. □

Instructional Strategies for The Optometric Educator

Irving L. Dunsky, O.D., M.S.

Abstract

The purpose of this report is to examine the requirements to complement the design and strategy selection of instructional activity. Factors in the teaching encounter such as planning, honesty and fairness, humor and individual supervision are discussed. Guidelines for the evaluation of optometric instruction are presented.

Introduction

A model that has been previously presented¹ offers a new instructional design for optometry. In this instructional model it is suggested that optometric educators move away from the active-teacher, passive-student traditional mode of teaching toward a four-step instructional process. The instructional model stresses the success of students and their ability to achieve planned objectives.

The instructional process stems from a four-phase teaching plan: 1) designing appropriate instruction to meet stated objectives; 2) selecting strategies for achieving the goals set; 3) the actual instruction; and, 4) evaluating instructional effects. The first two steps have been presented¹ to set the stage and the tone for more effective optometric instruction. We now can examine what is required to complement the design of instruction and the selection of strategies.

The Instruction

Determining student entry-level, formulating goals and objectives, and selecting or designing instructional strategies are all preludes to implementing a teach-

ing encounter. Actually, few of the existing instructional possibilities are employed by optometric educators or practitioners.² Optometric clinical faculty and practitioners stress techniques associated with individual guidance and supervision. They serve as models, conduct small groups and use self-instructional materials.³ These approaches can be the focus of further discussion.

As **planning** instruction has much in common with planning optometric care, so the **provision** of instruction is similar to providing optometric care, particularly practitioners' instructional needs. The first step in implementing individualized instruction is to establish an open relationship based on trust. Without this kind of relationship, the most elaborate and smooth techniques will be far less effective than they could be. The following are important points in creating an atmosphere leading to a productive relationship.

Honesty. This is not just an appeal for a return to old-fashioned values. It is the very heart of earning the student's trust, without which effective learning is unlikely. The student must be given the specific instructional objectives and the basis on which evaluation will be made. First, optometric teachers must know the instructional goals, then they must be communicated to the student. Only through this kind of honesty can the optometry student become a partner in the teaching-learning exchange.

Fairness. As optometric care requires the patient's presentation of symptoms of ocular or visual problems, so instruction requires knowing the students' "symptoms" of learning problems. Students will withhold or distort many of their symp-

toms unless they are convinced they will be treated fairly, will not be rejected, condemned or hurt by what they reveal.

Mutual Respect. The optimal climate for learning complex matter, especially competencies that depend heavily on modeling and emulation, is one of genuine mutual respect. A strained or antagonistic atmosphere leads to rejection of what the optometric instructor says and represents. A positive climate begins with the instructor setting the tone of the encounter. The instructor must communicate a sense of valuing the students as people, of taking the students' feelings and views seriously, and of welcoming their contributions. The students are likely to reciprocate.

Suspending value judgments. The relationship between optometric teacher and students might not be fully mutual in the area of value judgments. In this area, teachers should try to withhold or suspend their personal prejudices that are not germane to the instructional objective. Failing to control such extraneous beliefs can contaminate the relationship, and thereby limit a healthy communication between the faculty member and his or her students.

Humor. Less critical but still important in establishing an educationally positive instructor-student relationship is a relatively relaxed tone. The optometric educator should inject and respond to humor comfortably. This is not an appeal for forced frivolity or contrived story telling. It is an acknowledgement that students are more likely to feel at ease if their instructors are at ease. Natural humor that emerges easily and spontaneously is welcome in the instructional enterprise.

Individual supervision. Optometric

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educators who function effectively as individual clinical supervisors have become comfortable with their choice of this technique. Since it is expensive and difficult to do well, one must have some good reasons for using an individual supervision strategy.

The complexity of the task is one factor that justifies individual supervision. If the optometry student is providing patient care, the students' patient interactions should be witnessed. For simple tasks, a written or pictorial description provides a kind of proxy supervision. Students can compare their performance against what is read or seen, or how the task should be done. But learning the complex tasks of solving clinical problems and relating to patients precludes self-supervision for all except the most advanced students.

In optometry, individual supervision also is dictated by the need for privacy between patient-practitioner or student-teacher. Effective supervision often involves issues that are highly personal both for the patient and the student. Effective clinical instruction goes beyond how the student takes the history, and includes the questions asked of the patient, which may make him or her feel uneasy.

Finally, the location of the instruction itself—the office or clinic setting—prohibits additional people and further justifies the expensive procedures of individuality.

One of the benefits gained from using the individual setting is the ability to provide a model for student emulation. The clinician depicts the very goals toward which the student should move, and serving as an effective model is among the most important supervision techniques. A number of the most important goals to be fulfilled will be discussed below.

If the cardinal goal of all health professional education is cultivating practitioners who will be dedicated to and skilled at continuing to grow throughout their careers, then individual practitioners have an obligation to serve as models for the student who is continuously learning. Providing a model for the inquiring person and authentically demonstrating what is involved in being a continuous learner is a central responsibility and opportunity for an optometric educator.

Given less attention than continuing learning, but still fundamental to optometry practice, is the ability to function productively and comfortably with substantial uncertainty. Uncertainty characterizes clinical practice in terms of the kinds of problems one confronts with both an individual patient's problem and the management of many problems occurring throughout a typical clinical operating day.

Optometric educators must avoid being models for what students often see them do in the academic settings—creating a pretense of certainty when certainty doesn't exist. The pretense often tends to be created by asserting there are obvious right and wrong answers to problems that remain controversial and unsettled. The image of certainty should not be created for the sake of simplicity when certainty does not exist.

The third major modeling goal relevant to individual settings is the ability to give, to extend oneself on behalf of others, even if that includes discomforts. It's easy to avoid unpleasant material by diverting patients to other topics as soon as they begin to get stressful, cry or examine issues in an unpleasant personal light, thus causing one's own uneasiness and insecurity. The ability to listen to distress

"Feedback should be frequent, if necessary, and should involve questions and challenges in addition to evaluation."

openly and sympathetically, to give under difficult circumstances, can best be modeled by clinical instructors in the individualized supervisory setting.

The final modeling goal, and probably one of the most fundamental of all professional attributes, is the ability and willingness to honestly evaluate one's own current level of competence. Ultimately, optometry students will no longer have clinical instructors looking over their shoulders. Even with peer-review mechanisms and relicensing procedures, individual practitioners are largely on their own. They need the skills and willingness to scrutinize their own day-to-day activities. Students develop their capacity partly from evaluating their own performance, and partly from the model their optometric instructors present.

Small-Group Leadership. As individual supervision is well-suited to nurturing complex technical skills and personal attributes, small-group instruction can also meet these goals, but the setting is

best for acquiring complex ideas and developing intellectual skills. The sharing of contrasting ideas in small groups prompts refinement of student thinking. Optometric educators should provide such instruction knowing their students and patients can profit from instruction geared to these purposes.

Again in the small group setting, an atmosphere of openness and trust must be created and sustained or the entire activity will be a failure. Once the appropriate atmosphere has been established, several steps can enhance the quality of the exchange. First, all involved must fully understand and support the purposes of the group and its tasks. The group must accept any assignments, topics to be discussed or problems to be solved, as being part of the instructional objectives and as worthy of pursuit. Short circuiting this phase will nearly always backfire.

Optometric instructors will have two levels of concern: group maintenance and task pursuit. Sustained dissension, inattention, petty disputes and preoccupation with irrelevancies indicate the group process is fragmenting. The source of difficulty must be identified and corrected, and the sense of common commitment reestablished. The clearer or more explicit the task, the less likely "group maintenance" will falter. A few general principles are applicable to most group-learning tasks.

Feedback. All learners in all situations need "feedback." They need to know how they are progressing, the appropriateness of their contributions and if their approach to problem solving is adequate. A properly functioning group shares this feedback among its members. Optometric instructors must encourage this mutual offering of feedback and actually provide it when others don't. Feedback should be frequent, if necessary, and should involve questions and challenges in addition to evaluation. Although the instructor should indicate if a group member's contribution is correct, appropriate statements and conclusions must be allowed to emerge from subsequent discussion.

This subsequent discussion is facilitated by instructor feedback through "neutral inquiry" questions such as, "How did you arrive at that conclusion?" or "Can you review your reasoning behind that solution?" or "What is the next logical step in the sequence you are developing?" Such questions must be asked without implied criticism, and should be asked equally often about correct and incorrect observations. If the optometric instructor's judgment is hastily signaled, these sessions are reduced to the traditional classroom

game of trying to please the teacher.

Instructors are responsible for managing the level of control exerted over the group. Since one purpose of small group strategy is for members to acquire the optometric skills being practiced, the instructor should relinquish control of the process to group members as soon as possible. Group readiness will change with time, so control must be flexible and managed with some delicacy. Throughout the sessions the optometric instructor should test the required level of control by withholding comments and directions for periods of time to see if the group can remain productive. Control over the group process should be withdrawn completely, however, only if the objective is for the group to develop the ability to function autonomously.

Self-Instructional Materials. Well designed self-instructional materials can be more efficient and more appropriate than such conventional techniques as lectures and textbooks for helping learners acquire didactic content.^{4,5} Given that an instructional unit is equally accessible in either its written or oral form, it is the merit of the unit that counts. Merits to be examined by the optometric instructor are: the objective, clarity of presentation, activities expected of the user, provisions for feedback, and actual evidence from trial use.

Objectives should be stated in ways consistent with the instructor's own intentions. Presentation should fit the intended users' vocabulary, education and information level, and appropriate pictorial material should be included. Other than very short units, the format should include expectations of responses from users, and some feedback evaluation of these responses. Ideally the unit designers should have tried it out first with learners similar to those for whom it is now intended, and data on the actual learning outcomes from that trial use should be provided.

Evaluating the Effects of Optometric Instruction

Optometric instructors should want to obtain feedback on their teaching so they can make indicated corrections. Also, they should want to determine outcomes at the conclusion of a total teaching program so they can plan improvements for the next group of students. Finally, systematic optometric evaluation is necessary to determine if a particular program should be continued. And while this report makes evaluation of one's instructional contributions a basic requirement equal to the actual conduct of the instruction, relatively little critical assessment of

optometric instructional effectiveness is done in practice.

Enabling the optometric instructor to plan and execute a full program of instructional evaluation is a complex activity. However, readers interested in pursuing this topic can find helpful overviews.^{6,7} Following are general guidelines in developing an evaluation approach.

What should the instruction achieve? The fundamental point is that evaluation follows only from specified instructional goals. We cannot know how well something has been achieved unless we know in advance what was supposed to be achieved.

Can the instruction achieve these goals? Specifying goals does not necessarily assure the planned instruction can be achieved. If, for example, optometric students are to acquire a set of interviewing skills through an instructional strategy

"Throughout the sessions the optometric instructor should test the required level of control by withholding comments and directions for periods of time to see if the group can remain productive."

of giving three lectures on the topic, then an evaluation program is not worth the trouble. The instruction simply is not equal to the task assigned.

Are these goals worth achieving? Assuming goals have been set which are reasonable expectations for the program planned, a consensus judgment among optometric experts and/or objective testing should determine if the effort to achieve them is worth the trouble.

What did the instruction achieve? The question requires information about the student's level of performance at the outset, at intervals during the instructional program and at the end. Achievement can be measured only in terms of changes that have been effected. If optometric students are able to demonstrate a particular skill at the end of a course, it may only mean they could have done it as well before the course began.

At what cost were the goals achieved? Costs, in terms of time, effort,

resources and actual expenditures, are an important element in determining an instructional program's effectiveness. Some goals are important enough that they must be achieved, regardless of costs. Other goals should be reconsidered if the cost is prohibitive for the goals sought.

What goals were neglected or negatively achieved? This is probably the most difficult question to answer in all evaluations. Many optometry programs succeed in having students acquire a body of knowledge. They are far less successful than assumed to be if they neglect to produce graduates who are devoted to, and skilled at, continuing self-learning. In addition to the risk of having overlooked some vital goals, we must be watchful so as not to do damage.

Optometry students may learn to take a complete history and demonstrate their ability on a final practical exam. But the students may have developed a negative attitude toward such information, and may cease this data collecting as soon as the exam is over. Evaluation of optometry students and their instructional programs must include information on the student's spontaneous behavior on a day-to-day basis, in addition to their formal testing program. We are interested in the inherent repertoire used by the students as part of their routine performance, not the extremes of performance on exams.

A final justification for instructional evaluation is to create an atmosphere for students in which their instructor is conscientiously and openly searching for critical evaluation information on the effectiveness of his or her own activities. Such an atmosphere is bound to have a positive bracing effect on students. They will learn by example that optometric professionals approach all their activities, including patient care, with critical openness to evaluative information. □

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SUSTAINING MEMBER NEWS

Sustaining Members support ASCO initiatives on behalf of the optometric education community. Sustaining members are listed on the inside front cover of each issue. Membership is open to manufacturers and distributors of ophthalmic equipment and supplies, and pharmaceutical companies.

CIBA Announces Breakthrough in Soft Lens Material and Test-Marketing of Disposable Lens

CIBA Vision Corporation has confirmed persistent rumors about its totally new, deposit-resistant material for soft contact lenses.

According to CIBA Vision President and Chief Executive Officer Glen Bradley, Ph.D., "CIBA Vision has achieved a significant breakthrough that will likely lead to the development of a new generation of soft lenses that combines excellent physiological characteristics with handling ease and durability.

The new material, atelaficon A, is a poly(vinyl alcohol) (PVA) polymer that's specifically designed to resist the adsorption of deposits. The result, says Bradley, is a lens that remains virtually free from protein deposits and is very easy to care for.

Atelaficon A has a unique structure that resists penetration of protein deposits and hurls into the lens matrix, says Paul C. Nitelson, Ph.D., CIBA Vision Executive Director, Materials and Solutions Development.

What's more, according to Nitelson, because atelaficon A maintains a neutral charge, it doesn't attract highly charged proteins that deposit on some other lenses.

CIBA Vision plans to develop a new family of lenses based on atelaficon A, which has a 66% water content. The new lenses are expected to be available in late 1989, provide flexible wear convenience, and be compatible with both chemical and thermal disinfection.

The development of atelaficon A was a collaborative effort involving CIBA Vision of Atlanta and CIBA Vision's parent company, CIBA-GEIGY of Ardsley, New York. According to Bradley, "Our connection with CIBA-GEIGY, in particular Central Research Polymers, gives us the research muscle needed to develop new products like atelaficon A and bring them to the market." FDA approval of atelaficon A is pending.

In other news, CIBA announced that it will begin test-marketing its entry into the disposable contact lens market in the United States late this year. The product, named NewVues™ (vitifcon A), will be a new high-quality soft contact lens specifically designed for disposable wear.

As part of the NewVues Disposable Soft Contact Lens test-marketing, CIBA Vision will provide practitioners with a management system to help ensure patient compli-

ance and promote practice growth. NewVues complements the full line of CIBA Vision soft contact lens products. □

Varilux Announces Symposium on Presbyopia, 1989 Essilor Award and Student Award Program

The Fourth International Symposium on Presbyopia will take place June 5-10, 1989, at Marrakesh, Morocco. About 700 leading professionals in ophthalmic disciplines from 25 countries are expected to attend.

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. The format follows that of international scientific congresses, including multilingual interpretation of program sessions, and publication of the proceedings. A book on Presbyopia was a result of the Third International Symposium in Hain.

Essilor International, based in France, developed the Varilux progressive addition lens and is the world leader in research and products for correction of presbyopia. Varilux Corporation is a major supplier of progressive lenses to the American market, and an active supporter of research and professional education in the United States.

Dr. Irving Borish, honorary president of the Symposium, and Bernard Mennar, developer of the original Varilux lens and now chairman of Essilor, will head an international jury to determine the winner of the 1989 Essilor Award. The author of the most outstanding research paper will receive a cash award of 60,000 French francs (about \$10,000).

In addition, Varilux Corporation will award expense-paid trips to the Symposium to the authors of the outstanding papers submitted in each of several categories.

In addition, a special award program is being sponsored by Varilux for students. Third and fourth year students submit case reports on the patients they fit with Varilux lenses. The winner will be judged by a clinical faculty member, according to dispensing skills, application of Varilux to the patient's needs, and the student's analysis of the case. \$500 will be awarded per school. The national recipient and faculty advisor each receive a trip for two to the Fourth International Symposium on Presbyopia in Marrakesh, Morocco, June 5-10, 1989.

Inquiries and submissions for both award categories should be addressed to Rodney L. Tahrán, O.D., Varilux Corporation, 363 E. Vantage Park Drive, Box J, Foster City, California 94404. □

Allergan Optical Hosts Student Winners

Allergan Optical hosted the attendance of 12 fourth-year optometry students at the Sixth Annual Symposium of the American Optometric Association (AOA) Contact Lens Section on September 17 and 18, 1988, in Boston. Selected by their respective institutions, these 12 students were the winners of the Allergan Optical Contact Lens Student Research Award. Each winning entry received a \$1,000 award. In addition, the student authors received personalized commemorative plaques.

Each winner was required to submit an original research paper or project on some aspect of contact lens theory, fitting or design. All winning entries were judged by a scientific review committee from Allergan Optical for an overall winner.

James R. Ranft, a student at The Ohio State University, College of Optometry, was selected as this year's overall winner. Ranft received an additional \$1000 for his winning paper, "Effects of Gemularity on Oxygen Performance of Hydrogel Lenses."

As part of the awards program, each student winner was given the opportunity to travel to Boston for the Contact Lens Section meeting with all expenses paid by Allergan Optical. Complimentary meeting registration was provided for each student attendee by the AOA Contact Lens Section. Additionally, a dinner was held in the winners' honor. Allergan Optical, a Division of Allergan Inc., is a leader in contact lenses and lens care products. □

Bausch & Lomb Appoints Specialty Lens Panel

Bausch & Lomb's newly formed Specialty Contact Lens Panel held its first meeting in Rochester, NY, recently, focusing on technical and practice management issues in the specialty lens field. The thirteen panel members are prominent eye care professionals selected for their varying experience in contact lens fitting and technology and will address the needs and concerns of persons who require more sophisticated professional contact lens fitting.

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SUSTAINING MEMBER NEWS

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Harold O. Johnson, president, Professional Products Division, Bausch & Lomb, said, "The ongoing panel will provide input on products and programs that build practitioner skill and confidence in fitting specialty lenses and help them communicate their expertise to both new and established patients."

Robert A. Koetting, O.D., recently named consultant, professional affairs to Bausch & Lomb, has been involved in the selection of the interprofessional panel and will chair the group.

At a time when specialty lenses are gaining popularity, more skill, knowledge and confidence is required of a practitioner. This panel promises to be an exciting opportunity to exchange ideas on the development of both new products and marketing programs to assist specialty lens fitters, Koetting said.

The other distinguished members of the newly formed Specialty Contact Lens Panel are:

Gary J. Andrasko, O.D., Columbus, Ohio. Dr. Andrasko is on the faculty of the College of Optometry and the Coordinator of the Contact Lens Clinic at The Ohio State University.

James D. Atwood, M.D., Sacramento, California, is currently Clinical Associate Professor of Ophthalmology at the University of California at Davis.

Harold E. Davis, O.D., graduated from the Illinois College of Optometry in 1945 and specializes in contact lenses in Oak Lawn, Illinois. Dr. Davis is a fellow of the American Academy of Optometry and a past president of the American Society of Contact Lens Specialists and the American Optometric Foundation.

Peter C. Donshik, M.D., is a clinical professor and co-chairman of the Division of Ophthalmology (Clinical Affairs) at the University of Connecticut Health Center, Farmington, Connecticut.

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Harriet Stein, President of Harriet Stein & Associates, Inc., a management/communications consulting firm, is an internationally acclaimed speaker, consultant and author specializing in the Eye Care Profession.

Johnson noted that Bausch & Lomb has traditionally implemented advisory panels to gain input from eye care professionals who have extensive experience in their respective fields. He feels that such a distinguished panel will greatly contribute to Bausch & Lomb's future development in the area of specialty lenses. □

G.T. Laboratories Receives FDA Approval for New Fluoropolymer

G.T. Laboratories, Inc., received full FDA approval on September 15, 1988, for its new fluoropolymer RGP contact lens material—Fluorex™ 700. Fluorex™ 700 represents a new generation of contact lenses through a unique advancement in polymer technology. Fluorex™ 700 contains a patented, highly-purified, fluoro-silicate acrylic copolymer which allows for complete chemical reaction without leaving unknown by-products which can lead to lens instability. The inherent composition of Fluorex™ 700 contact lenses provides for a very low wetting angle (15.3° captive bubble), high oxygen permeability ($DK = 70 \times 10^{-11}$), long term stability, and reduction of lens deposition and filming.

The properties of Fluorex™ 700 contact lenses remain unchanged via proper modification and/or patient handling and, therefore, these lenses have had outstanding clinical success. The Fluorex™ 700

is approved for daily wear and is available in a blue tint. Other Fluorex™ materials and lenses in various designs and specifications will become available soon, said G.T. Laboratories' vice president, Tracy Ken Tsuetaki, O.D., M.S. G.T. Laboratories, Inc., is headquartered in Chicago, Illinois. □

Polymer Technology Announces "Partners in Equality" Program

Polymer Technology Corporation (PTC) announced the institution of PARTNERS IN QUALITY, a technical service program for Certified Manufacturers of BOSTON contact lenses. PARTNERS IN QUALITY is an outgrowth of PTC's successful Quality Assurance Program (QAP) initiated in 1987 with the launch of BOSTON® EQUALENS® in the U.S. Only those laboratories which met the rigorous quality assurance standards of the QAP are certified to manufacture and distribute BOSTON EQUALENS.

The PARTNERS IN QUALITY program is a fulfillment of PTC's and BOSTON Certified Manufacturers' commitment to ensure that practitioners and patients receive custom-made BOSTON lenses that are consistent, reproducible and of high quality. The chemical composition of the new BOSTON EQUALENS fluoro-silicone/acrylate material offers unique benefits which can best be harnessed by adherence to specific manufacturing techniques.

On a quarterly basis Certified BOSTON Laboratories voluntarily submit lenses off the production line, to PTC's technical experts for evaluation. The lenses are examined closely and held up to two exacting sets of standards: ANSI (American National Standards Institute) and those established by PTC specifically for its new materials. The lab receives a detailed report that explains the testing process and the results. BOSTON EQUALENS delivers superior comfort, deposit resistance and visual acuity when manufactured to these exacting standards.

The program is voluntary and free to all BOSTON Certified Laboratories. □

Bausch & Lomb Recognizes Outstanding Students

The 1988 winner of the Bausch & Lomb "Excellence in Academic Achievement Award" is Dr. Kathy Jochum, a 1988 graduate of The Ohio State University College of Optometry. A second award, the "Practice Initiation Award," was presented to Dr. Daniel Drought, also a 1988 graduate of The Ohio State University College of Optometry. Each year Bausch & Lomb sponsors such awards to inspire the members of the graduating class at The Ohio State University toward academic excellence and to foster positive practice activities. □

An Analysis of Clinical Test Selectivity by Fourth Year Optometry Students

Donald J. Egan, O.D.
Ralph P. Garzia, O.D.
Michael L. Wolf, O.D.

Abstract

Schools and colleges of optometry by design generally offer a flexible curriculum with the expectation of providing quality education while establishing minimum levels of competency in the training of the primary care optometrist. The measurement of training or competency for the numerous clinical situations possible is difficult at best. In this study, a novel approach for an assessment of clinical competency and judgment was evaluated. This involved having fourth year optometry students select the appropriate clinical tests for different clinical situations. The results indicated diversified test selection while at the same time suggesting the need for a curricular standard of performance to meet the needs of the profession and of the public.

Introduction

Standards of care are an issue addressed not only by the American Optometric Association in its code of ethics and mission statement for the optometric profession¹ but also by the Association of Schools and Colleges of Optometry (ASCO) and the Council on Optometric Education (COE). ASCO in its 1986-

1991 five-year plan lists as the first of its ten tasks to "define clearly the scope of optometric education."² A clear definition will help to direct ASCO member institutions in formulating or reformulating their curricula. ASCO has also provided an optometry curriculum model, enumerating specific curricular elements of the optometric program.³

The Council on Optometric Education, in its accreditation manual for professional optometric degree programs, states that its purpose is to "insure the quality of optometric education by conducting a procedure of accreditation for the schools and colleges of optometry."⁴ Various standards for didactic and clinical education are employed in the accreditation process. The profession of optometry, as well as any other profession, requires minimum standards of performance in clinical patient care. These standards are certainly worthy pursuits with side application to all schools/colleges of optometry.⁵⁻⁸ In this paper, we will consider clinical education as designed to function within existing, more broadly based guidelines. With the number of American and Canadian optometry schools currently at 18, there is naturally significant variation in the primary care exam sequence being taught. It can also be expected that considerable differences exist in the philosophy of handling specialized situations such as contact lens progress evaluations, ocular health "red eye" assessments and binocular vision evaluations. Even within the same institution, the tests performed, their sequence and the time allowed for each procedure may vary from year to year and from instructor to instructor. Individual student variations may result.

To our knowledge, no attempt has been made to systematically document this variation as it exists between schools or, for that matter, within a particular optometric institution viewed in isolation.

If a uniform set of minimum procedures or standards for a particular clinical situation can be designed, it will provide a working foundation which they student can modify with professional judgment and personal preference to fit an individual patient's situation.

A first step in standardizing clinical education for North American optometry students would involve the identification of differences in the way general and specific situations are handled by students at the same school of optometry. Comparisons among schools could follow to determine disparities in didactic philosophy as they exist on a broader, institutionally based scale.

In this paper, we seek to address the first part of this process: an analysis of individual student test selections in the management of a given clinical situation, within the same optometric institution—in this case, the University of Missouri-St. Louis School of Optometry.

Methods

As part of the 1986 fall semester clinic Seminar course, fourth year students were provided with a series of questions. The students were given approximately six weeks to answer the questions which ranged from general to rather specific clinical situations. Group work was discouraged and in many cases not possible due to out-of-town clinical rotations. The questions were as follows:

1. List all tests in order of sequence

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TABLE 1

List in sequence all tests that you would perform on a primary care patient. Next to each test, estimate the amount of time it should take to perform.

TEST	RANGE OF TIMES (minutes)	ACTUAL TIME (minutes)	NUMBER
Case history	2.0 - 10.0	2.5	24
Visual acuity unaided & aided	5.0 - 4.0	2.75	24
Cover Test	3.3 - 3.0	0.5	24
Color vision	4.2 - 3.0	1.5	22
Stereopsis	2.5 - 3.0	1.0	21
Near point of convergence	1.7 - 1.0	.25	20
Amplitude of accommodation	5.0 - 3.0	.75	20
Ocular motility	3.3 - 2.0	.42	23
Pupils	3.3 - 1.0	.42	24
Angle Kappa Hirschberg	2.5 - .50	.33	4
Bruckner's test	.25	.25	2
Sphygmomanometry	5.0 - 2.0	1.0	16
Keratometry	1.0 - 3.0	1.25	22
Refraction retinoscopy through binocular BVA	3.0 - 15.0	4.75	24
Heterophoria distance, horizontal and vertical	0.5 - 2.0	1.0	23
Vergence distance, horizontal and vertical	0.5 - 2.0	2.0	23
Heterophoria near, horizontal	.33 - 2.0	.33	23
Vergence near, horizontal	.50 - 2.0	1.25	23
Binocular X-cylinder	.50	.75	5
Biomicroscopy	2.0 - 6.0	3.0	22
Visual fields (screening)	1.0 - 10.0	1.25	24
Fundus examination	2.0 - 10.0	3.5	24
Tonometry	0.5 - 4.0	1.5	24
Trial frame	2.0 - 5.0	3.0	24
Case presentation, consultation	1.0 - 5.0	2.0	24
Total times			
range	38.5	27.0-57.0	37.25
mean	10.0		
st. deviation	10.0		
median	40.0		

that you would perform on a primary care patient. Next to each test, estimate the amount of time it should take to perform.

2. Your primary care patient comes late for an appointment. You consequently need to minimize your examination time. What tests (if any) would you eliminate?

3. A patient comes in with an emergency "red eye." What tests do you need to perform?

4. A patient comes in for a contact lens check complaining of an irritating right lens (soft or rigid—your choice). List all the tests that you need to perform.

5. A patient comes in for a vision therapy evaluation for a convergence insufficiency (referral from primary care clinic). List all the tests you need to perform.

Results

Answers were available from 24 students, and were integrated and analyzed by question as follows:

Question One:

All tests are listed in a composite sequence in Table 1, even if included by only a few students. Next to each test, the range of estimated performance time allotted for it is indicated. These are the minimum and maximum times suggested by any individual student. The number of students that selected each test is stated in the last column. Finally, the mean (38.5 minutes), standard deviation (10.0 minutes) and median (40.0 minutes) total estimated examination times were calculated. To place these times into perspective, a trial under actual conditions was performed as a comparative model. A 12-year-old myopic patient with no previously detected ocular health or binocular vision problems was examined by one of the authors (MLW) with each procedure timed.

Question Two:

The purpose of this question was not to suggest shortening the optometric routine from minimum standards of care but to ascertain what students feel are im-

portant or not important test procedures. Tests suggested for elimination in this shortened examination scenario are listed in Table 2. Following each test, the number of students excluding each test is presented as a ratio of those who had included it in their original primary care examination sequence (e.g., 12/20 indicates that of the 20 students that included this test in their comprehensive test battery, 12 would have eliminated it). Almost all responses indicated that consideration must be given to the patient's age, complaints, history, and duration of time since the last complete visual examination.

Question Three:

Table 3 presents the tests selected to evaluate the "red eye" patient and the number of students from the sample who chose this procedure.

Question Four:

Answers were divided on the basis of whether the student chose to address the soft or rigid contact lens problem. Nine students chose to answer the soft lens

scenario, and 15 the rigid lens. The tests selected were identified and presented in Table 4.

Question Five:

Presented in a similar fashion, Table 5 lists the number of students from the sample that selected a particular test to properly evaluate this clinical situation.

Discussion

The results suggest a number of interesting conclusions. Some variation exists even among students at the same optometric institution in their approach to different clinical situations. The first question was intentionally a very general one, serving not so much to determine how a student defined a "primary care examination" as to what tests and procedures comprise it. Nearly 80% of the students indicated a relatively complete examination as taught in pre-clinical courses. These represented a balance between tests of ocular integrity and visual function. Only one student did not include any nearpoint tests; no one suggested no tests for ocular health assessment.

Although there was considerable agreement in the particular tests selected, there was a measurable variance in the amount of suggested time required to perform each test as illustrated in Table 1. For instance, some students indicated that a fundus examination should take 10 minutes; other students suggested only two minutes. Twenty seconds to perform a complete cover test is quite unrealistic especially if this is your only evaluative test. Although this time disparity can be explained in a variety of ways, it most likely represents a general uncertainty as to the amount of time required to complete a test. With little provided feedback in the formal curriculum, these students displayed a varied perception of time. Although there are certainly situations when a 10 minute fundus evaluation is appropriate, the procedure was completed in a little over 2.5 minutes in the actual examination situation. As indicated in Table 1, there are several instances of large differences between perceived time to complete a particular test and the actual time expended. It is interesting to note, however, that the mean suggested time for the entire sample to complete an examination was not different from the actual time.

This concept of the perception of time has important implications for optometric education. With this in mind, students may more adequately apportion their testing depending on the needs of particular patients. In post-graduate employment situations, a new graduate may be

TABLE 2

Your primary care patient comes for an appointment. You consequently need to minimize your examination time. What tests (if any) would you eliminate?

Test	Students Choosing to Eliminate/ Students Responding
Case history	1/24
Visual acuity	
aided	0/24
unaided	7/24
Cover test	3/24
Refraction	0/24
Ophthalmoscopy	
Direct	0/24
Indirect	5/17
Tonometry	0/24
Color Vision	19/22
Stereopsis	18/21
Near point of convergence	10/20
Amplitude of accommodation	12/20
Pupillary evaluation	3/24
Angle Kappa/Hirschberg	3/4
Ocular motility	5/23
Biomicroscopy	2/22
Visual fields	9/24
Keratometry	18/22
Retinoscopy	5/24
Binoocular x-cyl	1/5
Heterophoria	18/23
Vergences	
Distance	18/23
Near	4/23
NRA/PRA	11/19
Trial frame	4/8
Case discussion	0/24
Sphygmomanometry	10/16
Bruckner's test	1/2

TABLE 3

A patient comes in with an emergency "red eye." What tests do you need to perform?

Test	Students Responding
Case history	24
Visual acuity	
unaided	4
best corrected	24
pinhole	18
Pupillary examination	22
Confrontation visual fields	2
Ocular motility	5
Biomicroscopy	24
Direct ophthalmoscopy	12
Tonometry	18
Gonioscopy	3
Dilated fundus examination	1
In office or lab-conducted smears and/or cultures	7

TABLE 4

A patient comes in for a contact lens check complaining of an irritating right lens (soft or rigid—your choice). List all the tests that you need to perform.

Test	Students Responding
SOFT LENS	9 students
Case history	8
Visual acuity	
unaided	1
aided	9
External observation	1
Biomicroscopy	
lenses on	9
lenses off	8
Keratometry	
lenses on	6
lenses off	4
Refraction	
lenses on	6
lenses off	2
Contact lens inspection	6
Lens verification	6
RIGID LENS	15 students
Case history	15
Visual acuity	
unaided	4
aided	15
Biomicroscopy	
lenses on	15
lenses off	14
Keratometry	
lenses on	2
lenses off	6
Refraction	
lenses on	9
lenses off	5
Contact lens inspection	15
Lens verification	14
Patch test for solution allergy	1

under the mistaken impression that a "complete examination" can be performed in 15-20 minutes. Conversely, an overcommitment of time may occur.

Although a comprehensive study of examination sequence is beyond the scope of this paper on test selectivity, several issues are quite obvious and relevant. A few students (14%) preferred to perform the ocular health sequence (ophthalmoscopy, biomicroscopy, tonometry) prior to refraction. Most students (54%) performed the sequence subsequent to refraction. The remaining 32% of the students split the health assessment. Ophthalmoscopy would be performed before the refraction, with the other tests placed at the very end of the examination.

The students are formally taught in

pre-clinical courses to perform internal and external ocular assessment after the refractive and binocular vision evaluation. However, there is considerable diversity of opinion among the clinical faculty. One group believes that the maximum correctable acuity should be known before the fundus is examined. Another group believes that potential limitations on acuity caused by ocular disease should be well understood before futile attempts at refraction. This diversity of opinion is probably reflected in differences in the students' suggested test sequences. This influence of clinical faculty also can be illustrated with stereopsis and color vision testing. The students uniformly chose to measure stereopsis and color vision before the refractive sequence. This use of stereopsis and color

vision as part of a series of tests conducted under habitual conditions is also uniformly held by the clinical faculty.

When confronted with a clinical situation that placed a premium on time (Question 2, Table 2), most students responded in a completely predictable fashion. Certain core tests or procedures represented a minimum examination when the major concern was time. All of the students suggested that history, acuity, refraction, fundus examination and tonometry be performed. All but two students included biomicroscopy and over 85% included a cover test and vergence testing at nearpoint (although most eliminated heterophoria measurements). Clearly the time constraints had forced the students to make important choices. They responded to the question in a predictable and seemingly appropriate fashion. The need to establish the refractive and ocular health status were deemed the most essential components of an examination when there were time constraints present.

In the case of a new patient where baseline data was unavailable, some students would have rescheduled the patient so that more time could be allowed as necessary for an initial examination. If the patient had been seen previously, previous exam information would have allowed for a safely shortened problem-oriented examination.

The reasons for elimination of any given test were very similar among the students. For example, elimination of keratometry was justified by those who excluded this test for one of the following reasons: a noncontact lens wearer, previous patient with baseline data already on file, absence of anterior segment pathology, or the availability of a habitual correction.

However, an examination of the justifications for the elimination of some tests revealed important misconceptions. The first misconception involved sphygmomanometry. Over half of the students who eliminated this procedure suggested that patients would have this information available from their medical practitioners. However, other students suggested that an internal examination would permit detection of systemic hypertension. Although this is most certainly true, the public health aspects suggest the essential need to detect this disorder before any overt physiological changes occur in any organ system.⁹

Another area of considerable misunderstanding concerns the clinical use of the cover test. As can be seen from Table 2, all students included this procedure in their shortened examination sequence,

but with many other tests of binocular function eliminated. The ability of the cover test to detect significant binocular imbalance was the major justification for this decision. The cover test is the single most useful tool for detecting the presence of strabismus. But the fallacy in this logic is that many binocular anomalies are not accompanied by a significant horizontal heterophoria.¹⁰ Disorders of vergence and accommodation can produce significant clinical problems without adversely affecting the heterophoria. This limits the specificity of the cover test in any evaluation of binocular visual function.

Questions 3-5 (Tables 3-5) presented much more specific clinical situations for the students to deal with. The responses to the "red eye" and contact lens scenarios produced surprisingly consistent responses. The binocular vision case, however, produced a much wider variation in responses. In this example, at least 25 different tests were selected by the 24 students in the sample. This discrepancy has several possible explanations. First, faculty may have prepared the students for these clinical situations differently. A dogmatic approach to management as opposed to a more intuitive, individualistic style could lead to quite different endpoints in test selection. Another explanation concerns the perception of the complexity of the convergence insufficiency patient. The proper evaluation of accommodative and vergence functions requires more extensive testing. This testing is extremely important in order to arrive at the proper disposition and therapeutic strategy. Without this testing, needless lens application or vision therapy can result. In other words, there are fewer clinical alternatives with the "red eye" or contact lens patient. Test selectivity would be necessarily narrower in these situations. An alternative, a perhaps more attractive explanation, is the fact that there exists more confusion on the students' part concerning the tests used in the diagnosis of binocular vision disorders. There may be considerable uncertainty in the theoretical construct of tests of accommodative and vergence function as well as imprecise goals in the evaluation of a patient with convergence insufficiency.

Overall, in the more specific clinical situations, most of the students selected appropriate tests to evaluate the particular clinical situation. A few chose completely incorrect procedures—they failed to select all the necessary tests. Neglecting to perform a biomicroscopic evaluation in a rigid contact lens wearer with an irritated eye is a clear example of such an incorrect procedure. There were several more serious offenses. Only 50% of the

TABLE 5
A patient comes in for a vision therapy evaluation for a convergence insufficiency (referral from primary care clinic). List all the tests you need to perform.

Tests	Students Responding
Case history	24
Visual acuity	
unaided	10
aided	21
Cover test	
distance	24
near	24
Heterophoria	
distance	19
near	20
Vergences	
distance	18
near	20
Near point of convergence	22
MEM retinoscopy	15
Mono/Bino X-Cyl	14
AC/A determination	14
Relative accommodation	14
Amplitude of accommodation	14
Accommodative facility	
monocular	10
binocular	16
Stereopsis	13
Delayed subjective	13
Vergence facility	9
Fixation disparity	9
Kinetic cover test	8
Keystone visual skills	7
Vectogram assessment	7
Angles Kappa/Hirschberg	5
Saccade assessment	4
Worth 4 Dot	4
Eye dominance	3
Prism adaptation test	2
Bruckner's test	1

students indicated the need to perform a fundusoscopic evaluation in the "red eye" scenario (Table 3). It would be imperative to rule out posterior uveitis or traumatic retinal damage. Two students did not even include a pupillary evaluation.

A surprise for the contact lens (Table 4) case was post-wear refractive status. For both soft lenses (7/9) and rigid lens (10/15) the majority did not evaluate the subjective refraction with the lenses removed. Because this is usually the first sign of an adverse physiological response, its inclusion should be restressed in the clinical education program. A "rough" refractive status may be inferred from an optimum soft lens acuity but, as is well known, not from an optimum rigid lens acuity.

An equally grievous, if not as catas-

trophic error, is the failure to completely test accommodative function in the convergence insufficiency patient (Table 5). Although almost all of the student sample selected one test of accommodation, nearly 50% did not recommend further testing. There remained the tendency to utilize binocular accommodative facility, ignoring monocular testing. This tendency contaminates the ability to judge accommodative facility in the absence of vergence influences. There also was a tendency to use inappropriate tests for this particular scenario. Testing of angle kappa (Hirschberg), prism adaptation test and Bruckner's test are completely unnecessary in this case.

These errors in judgment suggest the need for improved and systematic instruction for appropriate test selectivity.

An examination standard is required to provide a curricular test model for fairly specific case types. There is often considerably less regimentation in clinical instruction (and perhaps in optometric practice) for these situations. Just as effective patient care is essentially dependent upon proper diagnosis, a correct diagnosis requires appropriate testing. Optometric educators should establish proper standards not only in the psychomotor performance of clinical tests, but also in their correct application and utilization.

Summary

ASCO has suggested a curriculum evaluation and revision process be performed at the schools and colleges of optometry.¹¹ The goals of this curriculum revision process include making didactic material more clinically relevant and teaching students to be problem solvers and critical, independent thinkers. This in no way should diminish the necessity of understanding the theoretical aspects of the practice of optometry. These goals are consistent with what we have suggested above; i.e., a basic core examination for clinical situations as defined by

specific standards. Perhaps informal versions of these standards have been presented at other optometry schools as they have at the University of Missouri-St. Louis in various phases of its curriculum. Developing a formal instructional model should result in greater consistency and uniformity in optometric education and in the practice of optometry. A first step, as suggested in this paper, is to define variances where they exist within a single institution and to put these in perspective, relative to the behavioral objectives in didactic and clinical instruction curricula. At the same time, scientific methodology, deductive reasoning and logical analysis must be encouraged to ensure quality patient care and appropriate levels of competency. □

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Teaching Students How To Manage Strabismus

A need for structure

Jerome Rosner, OD and Joy Rosner, OD

Abstract

The clinical management of strabismus by primary care optometrists continues to be eclectic, ranging—in some offices—from a virtually automatic surgical referral for all patients with strabismus, to the opposite, “Come one, Come all” entrepreneurial approach that follows the format of “How do we know if we can help until we try?” This paper proposes that such diversity stems from the limited clinical experiences that can be provided in a standard optometric education and argues for a move away from the traditional instructional approaches to the adoption of a structured method in which optometry students are taught differential diagnosis, prognosis and treatment of strabismus on the basis of identifying pivotal decision points.

Introduction

A recently published article begins with the following statements: “Most of us who practice optometry don’t get particularly involved in vision training. Although vision training comprises a significant portion of optometric education, few apply this knowledge in practice, and just as few . . . will refer out a patient who is a candidate for training. One problem . . . is the wide diversity of ways in which it is practiced. It seems that no two practitioners do things the same way, yet they all claim to be successful. It leaves those of us non-VT’ers wondering.”¹

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As optometrists who have had direct involvement teaching this subject in both the lecture hall and the clinic, and who have observed colleagues doing likewise, we are compelled to say, “Hear! Hear!” and would append the comments quoted above with the phrase, “especially when it comes to constant strabismus.” Why do so very few optometrists offer vision training to patients with strabismus? Is it because vision training does not work for such patients? And why do the treatments recommended by those relatively few practitioners who do offer vision training differ so markedly, one from the other? Is it because designing a vision training regimen for constant strabismus depends upon something analogous to the role assumed by a master chef—“a pinch of this, a dash of that”? Are insightful clinical hunches needed to design the treatment program? Is each case so unique that no standardized approach will do? We would argue otherwise to all of this and suggest that the situation previously described is due to the way we teach our optometry students.

Optometry is both an art and a science, with science guiding most diagnosis and treatment decisions, and the art centered mainly on the interpersonal aspects of patient care and the innovative clinical thinking that is needed when the scientific principles of diagnosis and treatment fall short. Surely this is obvious in how our graduates address a case of ametropia or fit a contact lens. Unfortunately, when it comes to treating constant strabismus* with vision training, the artistry appears to outweigh the science.

Why is this so? This is a particularly interesting question when one considers how much progress has been made in

understanding the neurophysiological development of normal and abnormal binocular vision^{2,3,4,5}; and in developing inexpensive, transportable, easy-to-understand instruments that provide the patient with feedback, thereby making it possible for the training activities to be done without constant, direct professional supervision.⁶ The basic scientists and the equipment designers have moved significantly forward; the clinicians do not appear to have done as well. We propose that the main reason for this dilemma is that we instructors attempt to teach too much too quickly. The standard optometric curriculum dictates that *all* students should learn how to manage *all* types of strabismus with *all* types of equipment. We believe that *all* students should be taught how to manage *some* types of strabismus, and *some* students—those with a special interest—more than that.

Strabismus at the Primary Care Level

Some cases of constant strabismus are easily managed. They derive from various types of innervational dysfunctions and display a *potential for normal binocular vision* under certain conditions.⁷ They require a minimum of testing and can

*(Although we limit our remarks in this paper to strabismus, this does not imply that the situation is much better when it comes to the clinical management of non-strabismic patients with binocular dysfunction. True, such cases are less complex; hence, there is less disagreement among practitioners who prescribe vision training as to the form that treatment should take. However, the problem of so few practitioners offering vision training persists and, to some extent, what we suggest below pertains to that situation as well.)

usually be treated successfully with lenses and/or home-based, office-guided vision training regimens that employ uncomplicated, inexpensive equipment. Other cases of strabismus are more complex, deriving from anatomical (neurological and/or muscular) impairments.⁸ Vision training often is not appropriate for them, and when it is, the case usually requires much more in-office attention (artistry) and equipment.

The didactic material relevant to all types of strabismus can be covered in the lecture hall in a reasonable length of time, but the students rarely, if ever, have sufficient clinical experiences to integrate that information; i.e., translate it into readily applicable clinical skills. There are too many students and too few appropriate clinic patients to provide the necessary experiences. As a result, we graduate optometrists who know a little about a lot—enough to answer the questions presented in licensure examinations, enough (perhaps) to acknowledge that their strabismus clinic instructors know how to manage a strabismus case, but, for the most part, not enough to feel secure about accepting strabismus cases for treatment and thereby teach themselves more. The outcome: most optometrists are inclined to refer their strabismus cases to surgeons, regardless of the nature of the condition; and a few optometrists—those with a high interest in strabismus and risk-taking temperaments—accept these patients, but then have to design their own treatment approaches because they were not taught a basic, standardized approach to the problem while in school.

Should the situation be remedied? We believe that it should. Too many patients are neglected or treated inappropriately because their primary-care optometrist did not recognize the available treatment options. How can it be remedied? That topic is the main concern of this article. We believe that students can and should be taught a systematic method for making diagnostic and treatment decisions in cases of constant strabismus, just as they are taught a systematic method for making diagnostic and treatment decisions in cases of ametropia. We believe that students can and should be taught how to (a) identify those strabismic patients who can be treated successfully in a primary-care setting and those others who warrant something different, and (b) how to treat the former type effectively by using a systematic approach.

In presenting this information, we make the assumption that there is far less confusion and disagreement regarding the detection of strabismus than there is

about the design and management of treatment programs. Hence, most of what follows centers on diagnostic procedures that directly influence treatment decisions.

Goals for All Students

We propose that *all* optometry students, upon graduation, should be able to:

1. detect strabismus.
2. describe strabismus in terms of constancy, direction, magnitude, laterality and comitance.
3. assess a strabismic patient's potential for binocular function.
4. identify reasonable treatment options (reassurance, referral, compensation, remediation) for a strabismic patient on the basis of the patient's:
 - a. apparent potential for normal binocular function.
 - b. ability to benefit from vision training; i.e., has the cognitive and motivational traits needed to learn a new set of behaviors by engaging in activities that are based on the general principles of bio-feedback.
5. communicate clearly to the patient about diagnosis, prognosis, and the various treatment options, including some idea of what surgical treatment, if it is recommended, will involve—what the surgeon will do (in lay terms), its potential benefits, risks, limitations, etc.
6. estimate the amount of time/effort that primary-care vision training will require, in those cases where it is recommended.
7. design and manage a primary care vision training program when such treatment is indicated.

How can these instructional goals be achieved? By teaching all students to make clinical treatment decisions on the basis of structured, heuristic assessment, where only certain key factors are pivotal and other information—such as the direction, laterality and magnitude of the strabismus—albeit valid, interesting and germane to the diagnosis, are subordinate. The flow charts presented in Figures 1 and 2 illustrate such an assessment strategy.

Inspection of Figures 1 and 2 reveals that the essence of strabismus evaluation, at this level, requires the practitioner to address a very limited set of pragmatic questions. In Figure 1, these are:

1. Is there amblyopia?
2. If both foveas are stimulated simultaneously (by using prisms and/or an apparatus which compensates for the misalignment), does the patient display a capacity for third degree (stereopsis) fu-

sion or, if not, then second degree (Worth Dot Test) fusion?

3. Is there an innervational component; i.e., is the magnitude of the deviation affected by accommodation?

As the flow diagram of Figure 1 indicates, any existing amblyopia should be addressed first. Once this concern has been eliminated, then prognosis depends upon how the patient responds to the second and third questions. If a positive response is obtained from the second question, prognosis may be viewed as very favorable; further investigation—the testing sequence defined in Figure 2—should be conducted. If a positive response is obtained from the third query and not from the second, then prognosis is less favorable, although continued assessment is still worthwhile. If, on the other hand, neither of these questions yields an affirmative response, then prognosis should be viewed as poor (at least, when managed by the primary-care practitioner) and serious consideration should be given to other options; e.g., refer patient to an optometrist who has acquired secondary care level skills, or to a surgeon, or—in those cases where cosmesis is not an important factor—simply reassure. There is no need for more extensive testing.

Figure 2 follows up on Figure 1 and pertains only when prognosis justifies the additional testing. It describes a process whereby the optometrist, having already established to some extent the patient's potential for normal binocular vision, attempts to identify an inexpensive, transportable instrument and procedure which enables the patient to obtain, and know (by visual feedback) that he/she has obtained binocular function, albeit his bifoveal misalignment. If one is found, it becomes the entry point into a vision training program that can be engaged in without constant professional supervision; i.e., out-of-office treatment in conjunction with regular (weekly, bi-weekly) in-office visits for monitoring progress and making appropriate modifications in the training program. No further testing is needed to determine how to initiate treatment. The Figure 2 apparatus/procedure which produced the favorable response is the one that should be employed as the first step in the vision training program, with the subsequent steps being designed to decrease the patient's dependence on a device in order to maintain simultaneous binocular vision. (The instruments designated in Figure 2 are not the only ones that may be used in this way. They were selected because they provide for starting vision training at nearpoint and/or distance, and are easy

for patients to manage. There is no reason, however, that other instruments could not be used. The critical concern is that the instrument selected is one that (a) enables the patient to respond binocularly (and without displaying ARC) despite

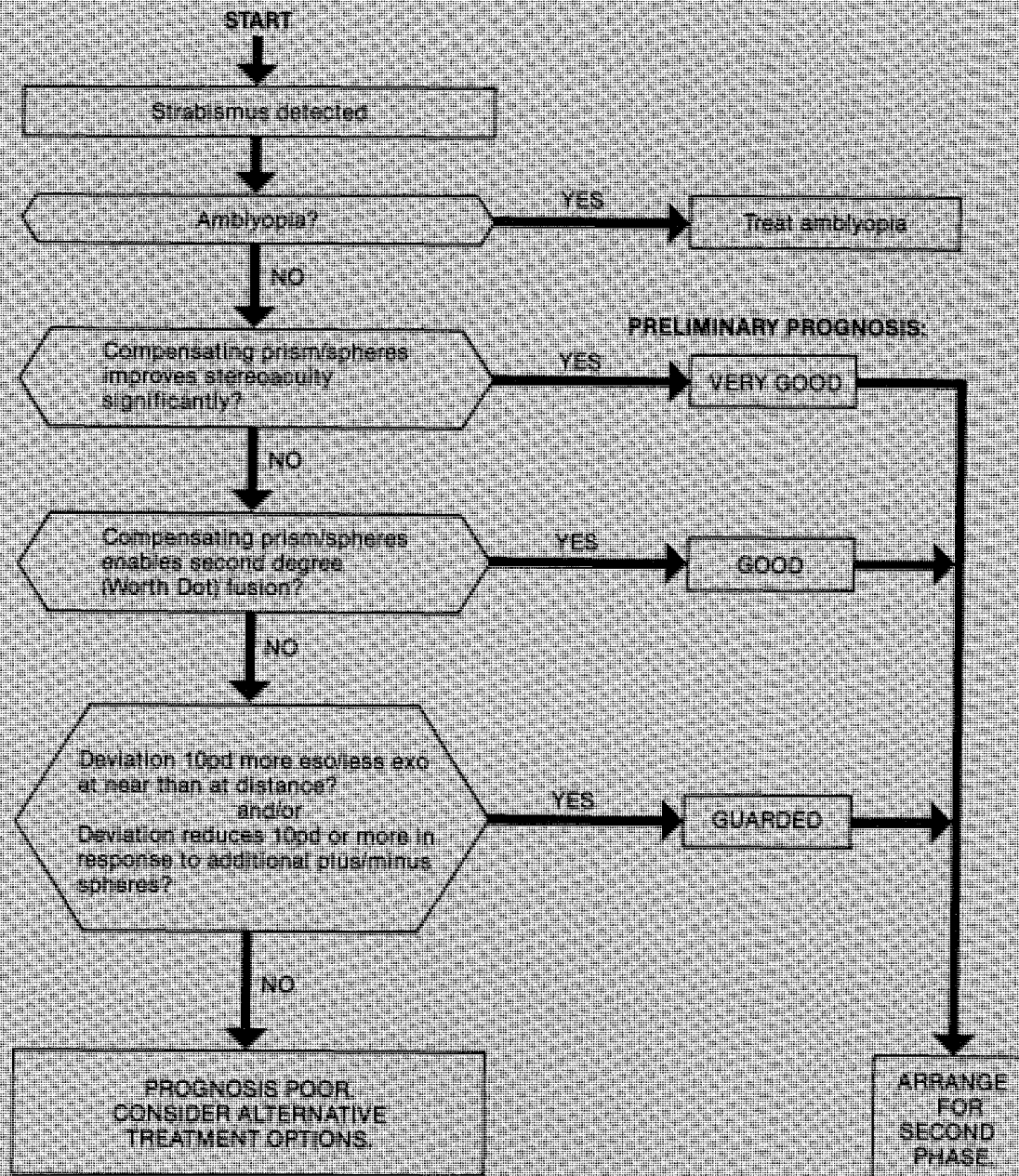
the misalignment of his visual axes, and (b) provides visual evidence to the patient that he/she is responding binocularly.)

Specifically, when the training is successfully conducted, the patient proceeds through the following stages:

1. Patient displays single, simultaneous binocular vision, even though eyes are misaligned, by using prisms, spheres and/or a vision training apparatus that accommodates the misalignment. (This is depicted in Figure 2.)

FIGURE 1

Diagnostic Sequence for Constant Strabismus: First Phase



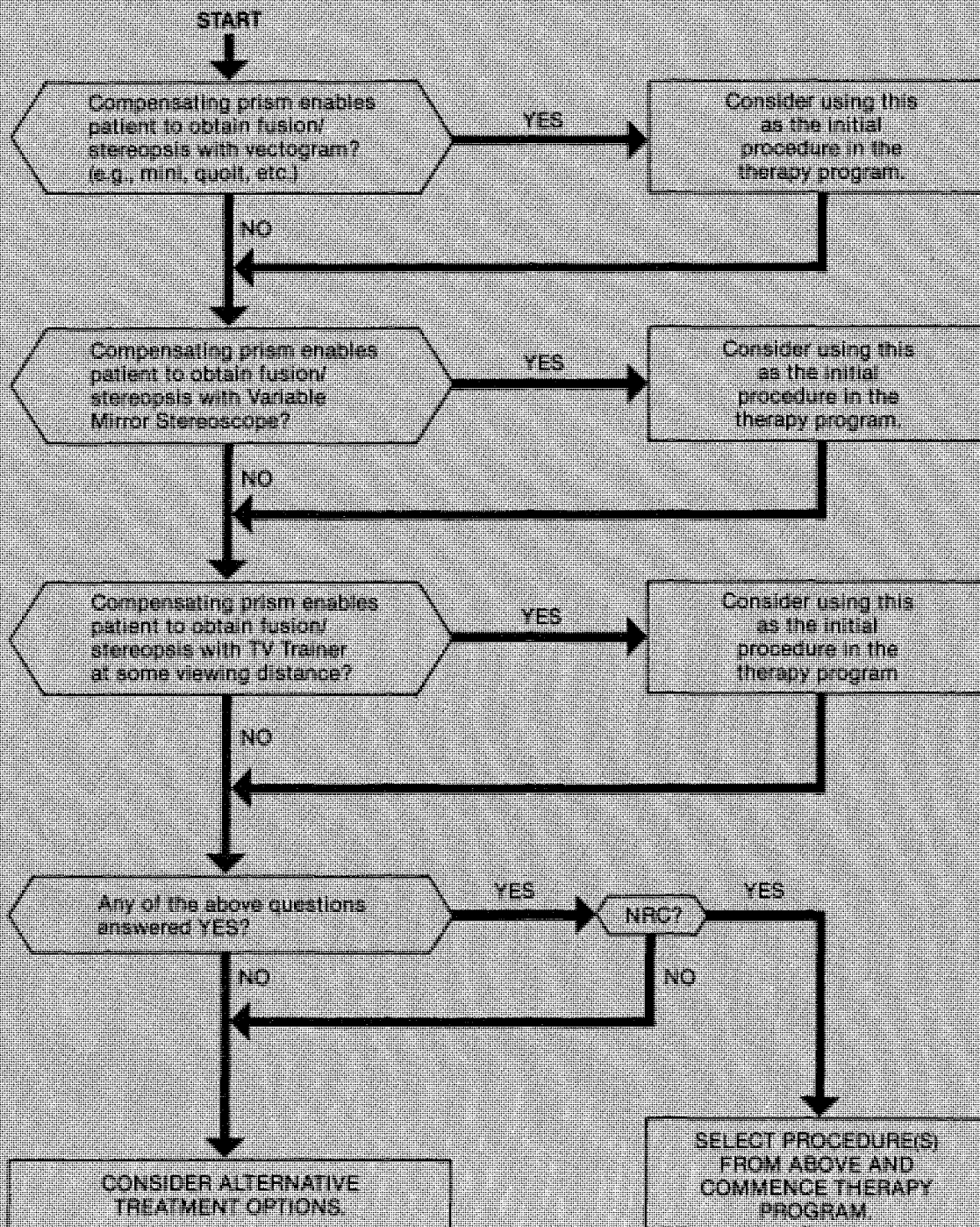
2. Patient acquires some adaptive "ranges" around that fusion point; i.e., is able to maintain normal binocular function even when some of the compensatory aid provided by prisms, spheres and/or the vision training apparatus is eliminated.

3. Patient's fusional ranges increase to the degree that he/she is able to maintain binocular alignment without the aid of prisms and/or a vision training apparatus; i.e., status of strabismus changes from *constant* to *intermittent*. (At first, this may only be possible if the patient

consciously thinks about what he/she is doing. In time, of course, it should/will become automatic—a habit.)

4. Patient acquires some adaptive "ranges" around that fusion point; i.e., status of binocular condition changes from *intermittent strabismus* to *vergence*

FIGURE 2
Diagnostic Sequence for Constant Strabismus: Second Phase



infacility. (Again, at first this may only be possible if the patient thinks about what he/she is doing; in time it will become habitual.)

5. Patient acquires vergence facility; i.e., the capacity to adapt quickly and easily to reasonable amounts of base-in and base-out prism while holding accommodation constant.

All of this may sound too simple and prompt one to ask: "If it is all that easy, why haven't we been successful in teaching it up till now?" A good question for which there is a reasonable answer: optometry students are taught a great deal about strabismus. They are required to learn about a variety of neuromotor and sensory processes and how to evaluate them. They are required to learn many clinical tests; e.g., tests for assessing the magnitude of deviation, tests for assessing retinal correspondence, tests for assessing the accuracy of fixation, tests for assessing comitance. But they receive insufficient practical experience with strabismic patients to recognize (1) the redundancy and/or the hierarchical interrelationships of many of these tests; i.e., the fact that there is no need to test for eccentric fixation if the deviating eye displays 20/20, just as there is no need to test for anomalous retinal correspondence if the patient does not respond as though binocular in a given test condition; (2) that treatment of strabismus with vision training requires a behavioral rather than a medical approach; that vision training, even when successful, does not cure the condition—eliminate the cause; rather, effective vision training helps the patient learn how to obtain normal binocular vision *despite* the entering condition. Lacking these insights (and our explicit guidance), the student resorts to random application of the many tests he/she has learned which, in turn, yields a random assortment of information but does not lead to effective treatment decisions.

The ultimate outcome of all this is that most optometry students make the determination very early in their professional careers to steer clear of strabismus. In their view, the condition is not worthy of as much extra study as it seems to need; it is a confusing topic; it is not prevalent enough to have much effect on earnings; and it is relatively innocuous—few, if any, charges of malpractice stem from failing to offer vision training to strabismic patients. They then go on to fulfill this determination as they conduct their practices. The not-so-average students, those relatively few who are interested in strabismus and endowed with entrepreneurial temperaments, behave some-

what differently. They are likely to adopt the attitude, "Nothing ventured, nothing gained; may as well try some vision training with my strabismic patients and see what happens." They tend to make most decisions concerning vision training on the basis of educated hunch rather than a systematic decision making process, and are willing to try a second approach if the first effort turns out to be ineffective. Over time, if these young practitioners persist (and not all do), they learn from this trial-and-error process; their decision making skills improve; they become experts. But even then they do not receive very many referrals from their colleagues. Why? Probably because their colleagues are not willing to refer *all* of their strabismic patients, but neither are they able to identify which ones should be referred for vision training and which are best served by alternative treatment. The result: our present situation—the dilemma described at the onset of this paper.

Conclusion

It is no longer reasonable to teach students to approach a case of constant strabismus in a manner which implies the concept: "Learn all you can about the strabismus; then make the diagnosis; then define the treatment." Enough is now known about the condition to make it feasible for us to teach our students to deal with strabismus the way they deal with reduced visual acuity—by working through a heuristic sequence of questions (tests) which lead ultimately and efficiently to the information needed to propose effective treatments.

None of this is meant to suggest that we are against students being required to learn as much as they can about the pathogenesis, diagnosis and treatment of constant strabismus. On the contrary, they *should* learn as much as they can, but they also should be shown an efficient way of applying that information so that the tests they have learned become tools

that help them manage clinical problems rather than simply sources of interesting data with little, if any, practical value.

We acknowledge that some of our colleagues will dispute our observations and recommendations, and argue that we should not reduce the diagnosis and treatment of constant strabismus to the format of a flow chart—a "cookbook." We would disagree and contend that such a "cookbook" will enable the average student to learn the basic recipe to be followed when a constant strabismic presents: to identify those patients that he/she can treat effectively, and those that require something more. As they use and become familiar with these basic steps, they will begin to recognize how to modify them when cases present that require something more than what is provided by the flow chart. If they do not learn the basic recipe, they are not likely to spend enough time in the "kitchen" to learn how to deal with even the relatively simple cases, let alone those that are more complicated. □

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ASCO CALENDAR - 1989			
January 4-7	AOSA Congress Toronto, Canada	March 17-19	ASCO Board Meeting Houston, Texas
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January 6-8	AOA Spring Meeting Florida	June 24-29	AOA Congress New York

Retinitis Pigmentosa, John R. Hecklively, M.D., with 12 contributors, J.B. Lippincott, Philadelphia, 1988, 269pp. Illus., color plates, hard bound, \$67.50.

Retinitis Pigmentosa is a specialty text on the subject of genetically determined pigmentary degenerations of the retina. The authors approach the topic with a general description of R.P. followed by its genetics, clinical test methods, histopathology, clinical findings and management. Included in the text are in-depth discussions of clinical R.P. types as well as flecked retina syndromes, choroideremia, gyrate atrophy, and pseudo-R.P.

Retinitis Pigmentosa could be considered somewhat less than comprehensive by virtue of its relatively light treatment of electrodiagnostic methods, perimetry and other clinical diagnostic procedures. However, this is not a serious drawback since these more technical areas are often better covered elsewhere and the purpose of this text is mainly a discussion of the genetic and clinical features of R.P. In this regard, the various clinical presentations of R.P. are skillfully covered in the text and are well illustrated by the many color fundus photos.

A strength of the book is reflected in the section on histopathology which illustrates by both light and electron microscopy the photoreceptor and RPE damage that underlies the disease we call retinitis pigmentosa.

Retinitis Pigmentosa is organized for an understanding of this specialty topic area and as such would qualify as an excellent course text, or as a reference. It is readable from start to finish making it also useful for self-study. It is recommended to students and clinicians alike. □

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Clinical Teaching for Medical Residents—Roles, Techniques and Programs, Springer Publishing Co., New York, 1988, 270 pp, hard-bound, \$35.00.

This book clearly identifies teaching as a priority of a residency, but one which clearly comes after learning and patient care. However, residents are frequently expected to teach other residents, usually those more junior, as well as interns. These teaching residents are seldom re-

cipients of any teaching training. The acquisition of these skills makes them more effective as teachers while residents and more marketable to educational programs when they leave. Their developed teaching skills can also enhance their effectiveness with patient communication. The economic pressures facing clinical education make it even more desirable for residents to teach and the process is enhanced if they teach well. It is the responsibility of the institutions to effectively utilize the residents so that they are not misused and their educational needs are not lost. The authors have succeeded in identifying the problems and offering solutions.

The authors point out that a particularly desirable feature in the utilization of residents is that they are usually closer in age and experience with the students than other faculty, and communications may be easier. The residents' own learning is often aided because the ability to teach a concept often requires a higher level of understanding. This may be neutralized by their lack of clinical experience. Thus their utilization should be carefully integrated.

The resident must join with all clinical faculty in providing the role model that will shape the student. A resident who exhibits a depersonalized approach to patient care will create that attitude in the student, and the humanistic teacher will help to generate that demeanor.

One of the particular strengths of this book is found in Chapter Four in which the authors detail how to organize clinical rounds to maximize good care and teaching. This chapter includes a very helpful checklist. If clinical educators read only this chapter, they will find the book useful. The chapter on evaluative techniques (Seven) can be helpful in faculty development since we often learn better when we appreciate how we will be evaluated—the assessment instrument helping to set the standards.

This book is also useful in creating more effective seminars as well as for classroom teaching skills.

This is a good text for all clinical educators. While I do not recommend that all residents and clinical faculty rush out to purchase it, this book should certainly be available to this constituency. I would cer-

tainly suggest that institutional libraries have this book available; residents as well as those responsible for resident education will find it highly desirable. □

Guest Reviewer:

D. Leonard Werner

Professor

State College of New York

State College of Optometry

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Rigid Gas-Permeable Contact Lenses, Edward S. Bennett and Robert M. Grohe, ed., with 18 contributing authors, Professional Press Books, Fairchild Publications, New York, 1986, 526 pages, \$65.00.

Over a fairly short period of time, the contact lens field has gone through several periods of significant change. For a time, the contact lens field ignored rigid lenses for the simplicity of fit and ease of adaptation of soft lenses. Indeed, there is a "lost generation" of optometrists who were never taught nor practiced the art of rigid lens design, fitting and management. However, we have now come full circle and we find ourselves fitting more and more rigid gas permeable lenses. *Rigid Gas-Permeable Contact Lenses* is written to both inform the "lost generation" of practitioners and to help the experienced PMMA better adapt to gas permeable strategies.

The authors tackle the full realm of gas permeable contact lens fitting and patient management. Included in the text are chapters on basic corneal metabolism and physiology, materials and properties unique to gas permeable lenses, patient selection, lens design, lens care, modifications, treatment options for special problems and patient and practice management techniques, as well as several other topics. The editors chose their contributors wisely, including polymer chemists, optometric academics and private practitioners. This allows for a unique collection of explanations on topics such as polymers used in rigid gas permeable lenses, fitting strategies including computer-assisted design techniques, and problem solving from both the physiological standpoint and the practice management position.

The text is well-documented with the latest information about rigid gas

permeable contact lenses. It is especially good at adapting traditional PMMA knowledge to the subtleties of the gas permeable lens. Problems such as lens flexure, using PMMA diagnostic lenses, special care requirements and wettability are addressed.

Several schools and colleges of optometry are using this text to teach their students the art and science of rigid gas permeable contact lens practice. This reviewer feels that the text will update the experienced practitioner, will teach the "lost generation" and serve as a reference in the optometric office for many of the basic design and management strategies which are necessary to have a successful contact lens practice. □

Guest Reviewer:

Marcus G. Piccolo, O.D.

Director, Contact Lens Service

University of Houston

College of Optometry

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The Eye and Its Disorders in the Elderly, F.I. Caird and John Williamson. John Wright and Sons, Bristol, England, 1987, 160 pp., hard-bound, \$43.00.

The text has contributions by 17 individuals, all physicians, most of whom are ophthalmologists. It is generally written for the benefit of geriatricians rather than specifically for the eye care practitioner. Consequently, some of the topics covered may be lacking for today's informed primary care optometrist. However, most of the text is quite informative.

The chapter, "Pathology of the Aging Eye," gives a good overall description of the process from an histological and cellular perspective. In fact much of the text is written from a physiological and histological perspective—an approach that is interesting and quite informative. The chapter, "Common External Eye Disease in the Elderly," is too short and leaves the reader with a feeling of wanting more although the major external eye problems of the elderly are covered. The chapter on glaucoma is generally written for the non-eye care practitioner but the brief yet complete therapeutic guide is good.

The chapters, "The Aging Lens" and "Cataract," are well presented from a cellular perspective and give good insights into the examination and evaluation of the cataract patient as well as clear descriptions of cataract surgical procedures. However, the section on the rehabilitation of the post cataract surgical patient is too superficial for today's aware OD. The chapter, "Visual Changes With

Age," is a good basic overview with some valuable suggestions for environmental considerations to enhance the vision of the aged population. "Age Related Macular Degeneration" is well presented from a cellular point of view but the discussion on management is written more for the lay reader than the primary eye care person. The chapters on Diabetic Retinopathy, Retinal Vascular Disease, Retinal Detachment, Disorders of the Optic Nerve are extremely well written as is the chapter on Neuro-ophthalmology.

The book is a British publication, so much of the information on the specific services available for the blind found in the chapter on "Social Aspects of Blindness in Old Age" has references only to services available in England although there are appropriate parallel services available in the United States.

The book is extremely well written, easily understood and quite informative. It is a welcome addition to the library of any clinician who is interested in the care of the elderly as well as for those who have more than a passing interest in the physiological, histological and pathological aspects of the aging and diseased eye. □

Guest Reviewer:

Gerald G. Melore, O.D., M.P.H.

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Retinal Dystrophies and Degenerations, David A. Newsome, MD, Editor, with 19 contributors. Raven Press, NY, 1988, 382 pp. Illus., color plates, hard bound, \$110.00.

Retinal Dystrophies and Degenerations is a detailed text book about a variety of retinal problems. As the title implies, the topics of retinitis pigmentosa and other tapetoretinal degenerations are treated over several chapters. Not only are these diseases explained and illustrated well but there is excellent supporting coverage in a detailed opening chapter on the performance and interpretation of electrodiagnostic and other specialized tests.

What the title of this book, however, does not imply, is that its topics include chapters on a broad range of other more common retinal problems. These include vitreoretinal degeneration, progressive myopia, retinopathy of prematurity, toxoplasmosis, albinism, toxic retinopathies, and dominant drusen.

Retinal Dystrophies and Degenerations is well written and thorough. The high level of detail presented is not only helpful clinically but would qualify the

text as an excellent academic source book. The illustrations are helpful and the ample color plates will aid the reader greatly in his/her understanding and clinical recognition of these diseases. Because of its broad topical basis, *Retinal Dystrophies and Degenerations* will be an excellent course textbook in the area of retinal disease. □

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Manual of Clinical Problems in Ophthalmology, John W. Gittinger, Jr., M.D., and George K. Asdourian, M.D., Little, Brown and Company, Boston, 1988, 218 pp., soft-bound, \$19.50.

Manual of Clinical Problems in Ophthalmology is a new addition to the Little, Brown Spiral® Series that, as stated by the publisher, contains brief, two- to three-page summaries on clinically relevant topics. It is intended to be a companion volume to Pavan-Langston's *Manual of Ocular Diagnosis and Therapy*, one of a series of outline-format manuals covering a wide variety of topics in medicine.

The manual is divided by anatomical categories into 11 chapters. The clinical topics covered in each of the chapters are oriented toward those ocular disease entities that provide special clinical therapeutic and management challenges and about which new information has become available. For example, included in the topical areas are *Acanthamoeba* keratitis, traumatic hyphema, toxocariasis and migraine. Although the subsections are inconsistently organized, each contains concise, well-referenced, current information as to disease pathogenesis, diagnosis and treatment. One valuable feature of the manual is its annotated references. Each of the reference entries is followed by one or two sentences which describe the content of the article and highlight its most redeeming characteristic. This organization allows readers to easily direct their attention to references of interest for additional reading.

The manual serves as an excellent, portable, and very readable clinical reference on a wide variety of ophthalmic issues to help the practitioner keep abreast of current therapeutic views. In its capacity as an adjunct to more in-depth volumes in the clinician's library, it is a valuable addition for the optometrist who routinely faces the therapeutic challenges of the conditions covered in this volume. □

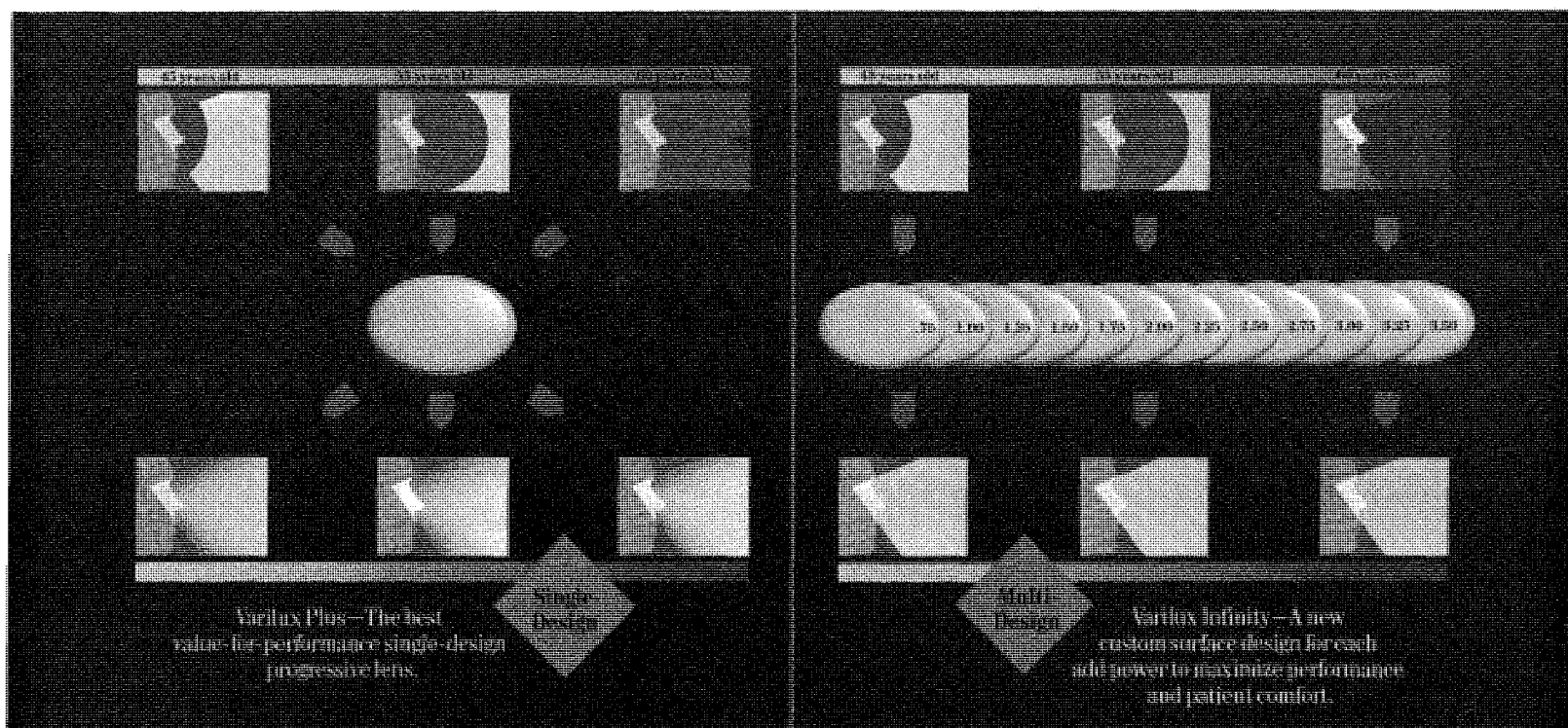
Guest Reviewer:

Linda Casser, O.D.

Indiana University

School of Optometry

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