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Special Populations and Optometry

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DEPARTMENTS

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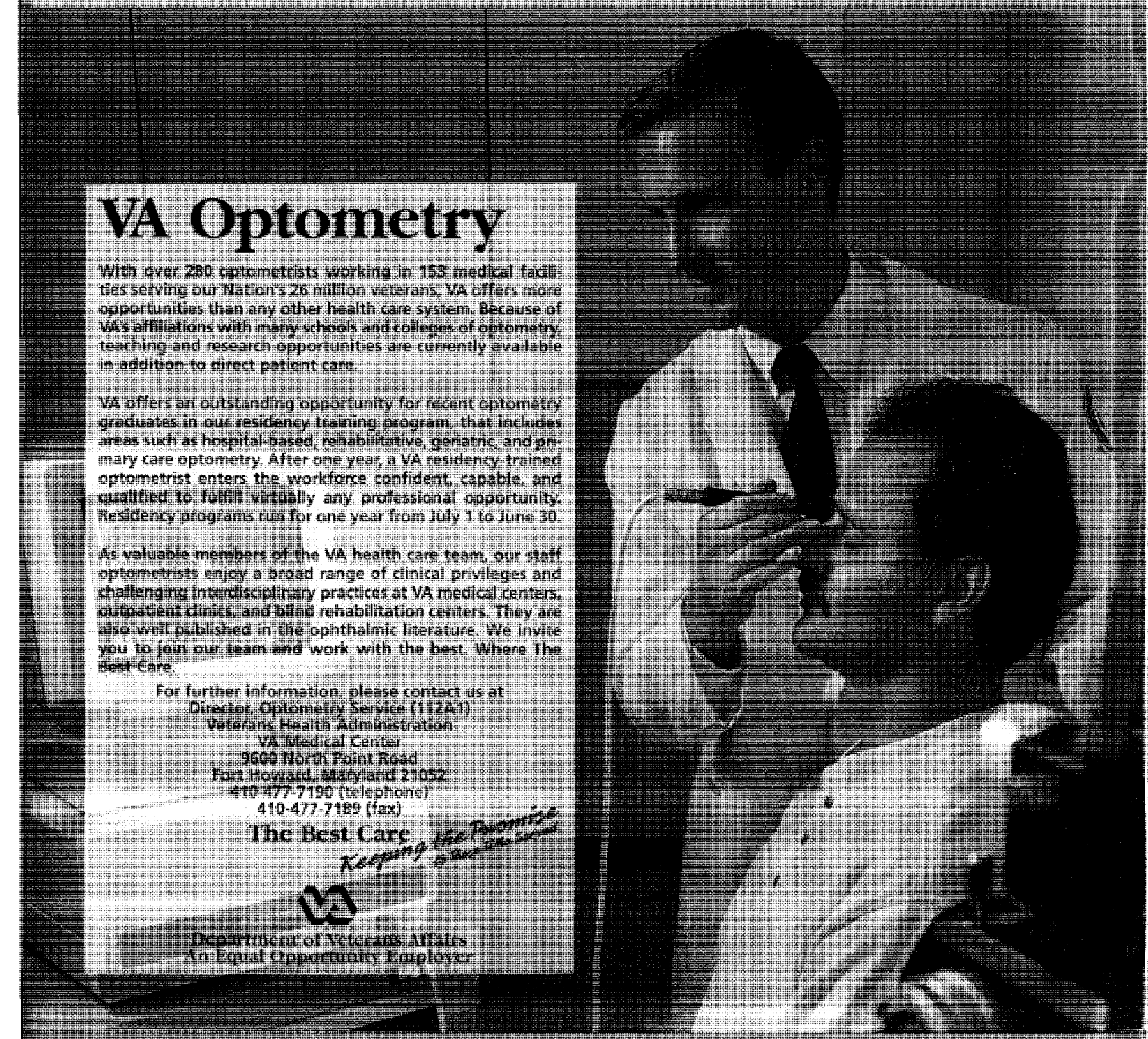

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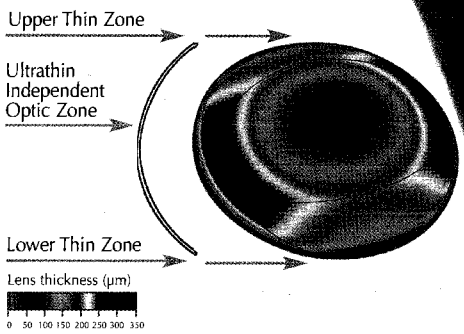

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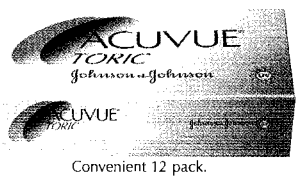

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Guest

EDITORIAL

Special Populations and Optometry

Dominick M. Maino, O.D., M.Ed., F.A.A.O.

"They don't need to see like our other patients. After all they are retarded!"

Although I do not actually hear this stated as often as I used to, I see these sentiments expressed on my colleagues' faces when I lecture on the diagnosis and management of special populations. I also sense this statement going through some of my students' minds as I begin teaching my course on special populations. And I continue to read in the newspaper that some professionals are being sued for refusing to examine those with disability because, *"They don't need to see like our other patients. After all they are retarded!"* Individuals with disability are still frequently treated differently than other patients[1] within the healthcare system.

Since special populations can refer to individuals with differing abilities and disabilities, I will limit this discussion to those with developmental disability. An individual with a developmental disability has a severe, chronic disability ... *1.) attributable to a mental or physical impairment or a combination of mental and physical impairments; 2.) that is manifested before the person attains age 22; and 3.) that is likely to continue indefinitely. This disability results in substantial functional limitations in three or more of the following: self-care, receptive and expressive language, learning, mobility, self-direction, capacity for independent living and economic self-sufficiency... This disability usually results in the need for a combination and sequence of special, interdisciplinary, or generic services, supports or other assistance that is of lifelong or extended duration and is individually planned and coordinated..*[1] The many services needed by this population should include those provided by the primary health care profession of optometry.

There are several basic questions that must be addressed before we can determine the needs of those with developmental disability and whether we, as optometric educators, should be concerned about the education our students receive in this area. These questions include:

1.) Is there a need for eye and vision care for those with developmental disability?

A review of the literature over the last several decades clearly demonstrates that there is a significantly higher incidence of refractive error, oculomotor dysfunction, binocular vision/accommodative disorders[2], perceptual anomalies[3] and eye health problems[4-6] than are typically noted in the general population[7-8] The need for appropriate eye and vision care has been firmly established[9-10].

2.) Do we have the diagnostic tools and procedures available to examine these special patients?

Adaptive examination techniques for patients who require objective approaches to patient care have been developed and used on a wide scale. Measurements of visual acuity,

Dr. Maino is a professor at the Illinois College of Optometry. Dr. Maino coordinated this special issue of *Optometric Education*.

oculomotor assessment, and the determination of refractive error can quickly and accurately be assessed. We can also evaluate accommodative function, binocularity, eye health and various developmental and perceptual skill abilities[11-13]

3.) Can we effectively treat the eye or vision disorders diagnosed in a patient with developmental disability?

Optometry has developed the clinical decision making skills[14] necessary to determine appropriate treatment plans for a wide variety of special patients with eye and vision abnormalities. Current research also supports therapeutic intervention for developmentally impaired individuals. We can not only diagnose but also treat many of the associated ocular disease problems frequently encountered in this population, as well as the numerous refractive, functional and perceptual disorders[15-16].

4.) Should we teach our students about those with disability and how to diagnose and treat their oculo-visual dysfunctions?

Yes, we are morally, legally[17] and ethically bound to provide eye and vision care services for this population.

Since we must provide these services, it follows that we must also create an academic and clinical environment that will allow each of our students to learn how to care for these unique populations. It is not enough to briefly mention special populations as an aside in another course, nor is it appropriate to offer these educational experiences as an elective. Every one of our students should have an opportunity to interact with those with developmental disability in the classroom and through intensive personal clinical interaction.

As our schools and colleges determine the entry level to practice in the profession, we must not consider special populations special in this regard. Individuals with disability are mainstreamed in the classroom and workforce. They live in our communities and will need to have access to optometrists in their neighborhoods. We, as educators, must make certain each of our graduates has the academic background and clinical skills necessary to meet the vision and eye care needs of these visually at-risk-members of our society. We can change our students' perceptions and attitudes towards those with disability[18], but first we must create an academic and clinical environment that clearly demonstrates to our students, our patients and other caring professions, that optometry is the primary health care provider for all patients including those with disability.

We, as educators, must make certain each of our graduates has the academic background and clinical skills necessary to meet the vision and eye care needs of these visually at-risk-members of our society.

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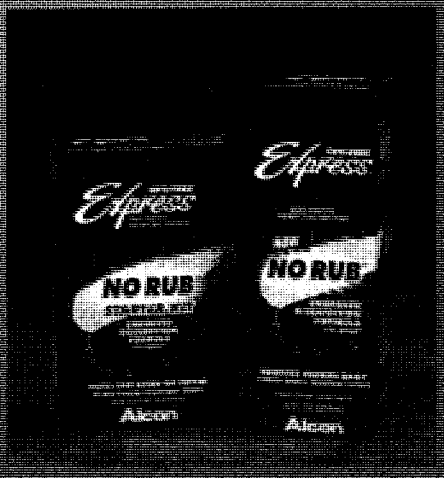

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Transitions Optical Announces Three Appointments

Rick Elias, president, Transitions Optical, announced the appointment of three new managers. Barry Driks was appointed trade marketing manager for North America. In this newly created position, Driks will play an integral role in the North American marketing team's strategic planning and execution, providing synergy among the company's professional and public relations efforts, trade shows and event initiatives. Bette Zaret was named vice president, global strategic marketing. Zaret brings more than 25 years of marketing experience to the position having held increasingly responsible positions in professional and consumer marketing. Susy Cabral was appointed professional and public relations manager. Cabral will focus on leveraging and optimizing professional relations, including Transitions' Advisory Council. Cabral was most recently Canadian marketing manager for Transitions.

Transitions Optical has manufacturing operations in Pinellas Park; Tuam, Ireland; Laguna, Philippines; Sumare, Brazil; and Adelaide, Australia. For more information, visit transitions.com or contact Transitions Optical Customer Service at (800) 848-1506.

Vistakon Introduces New Daily Disposable Lenses

Vistakon®, Division of Johnson & Johnson Vision Care, Inc., announced the introduction of new 1.DAY ACUVUE® Brand Contact Lenses - the world's first daily disposable contact lenses. "..Daily disposable contact lenses are the healthiest way to wear contact lenses," according to Phil Keefer, president, Vistakon® Americas. Keefer said that in clinical studies, patients preferred the comfort of new 1.DAY ACUVUE® 2.5 to 1 over Focus® DAILIES® and 2 to 1 over original 1·DAY ACUVUE®. Like their predecessor, new 1 · DAY ACUVUE® Brand Contact Lenses provide excellent vision correction, convenience and health benefits. But the new lenses also feature a design innovation - a monocurve back surface. In clinical studies, patients preferred the handling characteristics of the new lenses by a 12 to 1 margin over the original 1 · DAY ACUVUE® lenses. In addition, the new lenses have a "1,2,3" inversion mark to help patients determine lens orientation, a design improvement that results in superior ease of handling.

CIBA Gets FDA OK For Continuous-Wear Contacts

The U.S. Food and Drug Administration has approved CIBA's Focus Night & Day contact lenses for up to 30 nights of continuous wear, marking the first time a high-oxygen, extended wear soft contact-lens product with this wearing indication has been introduced in the U.S. Focus Night & Day lenses will be marketed to patients desiring "convenient, continuous vision correction that easily fits with their busy and unpredictable lifestyles. The lenses will also be offered as an alternative to laser surgery."

CIBA has amassed more than 2,000 patient-years of clinical study with Focus Night & Day lenses. More than 250,000 patients in more than 40 countries outside the U.S. have worn Focus Night & Day lenses for up to 30 continuous days. The company says that the lenses will be competitively priced with disposable contact lenses currently on the market.

B & L Announces Appointments

Bausch & Lomb announced that Angela J. Panzarella has been named corporate vice president, strategy. Panzarella, an attorney, has been with B & L since 1988, most recently overseeing the company's investor relations.

B & L chairman and chief executive officer, William H. Waltrip, said, "Building on our platform of product and region-specific strategies, this new position will fortify the development of cohesive and coordinated company-wide strategy with true global perspective," Additional, B & L created a single department responsible for all internal and external communications, including investor relations, to be

(Continued on page 62)

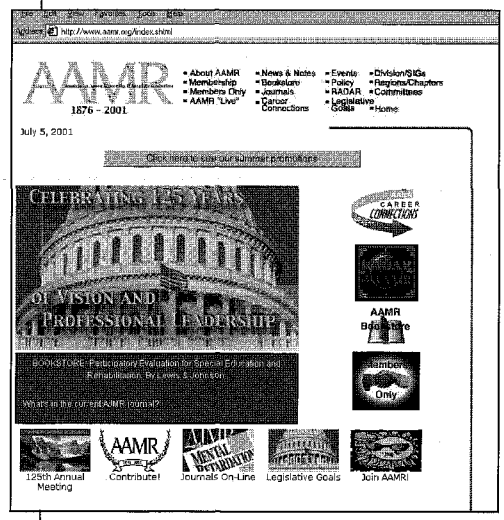
Online Resources for Special Populations

Dominick M. Maino, O.D., M.Ed., F.A.A.O.

If you work with any child or adult who exhibits a genetic anomaly, you must go to the **Online Mendelian Inheritance in Man** website (http://www.ncbi.nlm.nih.gov/Omim/searchomim.html). This URL will give you an incredible amount of information on all 4000 known Mendelian characteristics in man. You will be able to find out a description of the syndrome, its clinical features, cytogentics, and molecular genetics. You will also learn about the syndromes pathogenesis and population genetics and be able to review a list of references. A brief clinical synopsis is also given. I access this site multiple times during the week from my office, lecture podium and clinical facility. Bookmark this URL today!

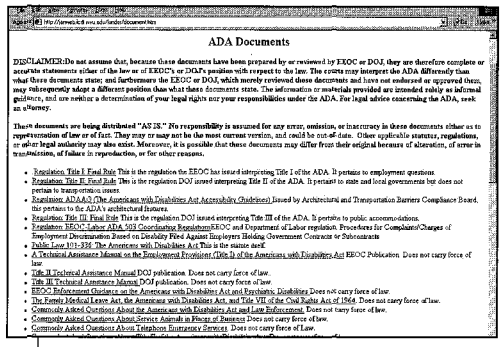
An incredible resource in the area of special populations includes the **CDC Developmental Disabilities** website. This can be accessed by going to http://www.cdc.gov/ncbddd/dd/. Information concerning developmental disabilities, attention deficit disorder, autism and cerebral palsy is available at this website. You can also seek out information about early childhood disorders, hearing and vision impairments, and mental retardation as well.

The **National Association of Developmental Disabilities Councils** promotes national policy, which enables individuals with developmental disabilities the opportunity to make choices regarding the quality of their lives and to be included in their community. Go to http://www.igc.org/NADDC/ for additional information.



The American Association on Mental Retardation is one of the largest national groups available that discusses and promotes research and helps to formulate national policy in the area of special populations and those with developmental disabilities. You can find what you need at http://www.aamr.org/

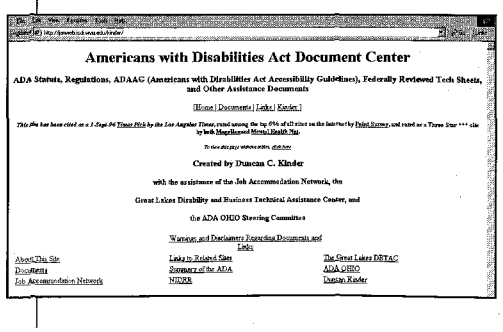
Need information on child development and children with behavioral anomalies? Go to the **Pediatric Development and Behavior** website (http://www.dbpeds.org/) for parental handouts and questionnaires and numerous links your patients and their families will find useful.



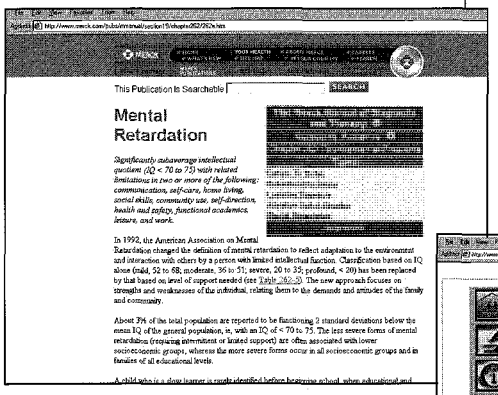
The Americans with Disabilities Act Document Center (http://janweb.icdi.wvu.edu/kinder/) has the original ADA documents online for you to review and to use as a teaching tool. Sometimes you must use the original documents and not just those that summarize or review the original text. This is a most welcome resource.

Autism Research in Genetics and Neuro-imaging provides the latest in research concerning autism. http://www.autismgeneticresearch.org/

Other online resources include:
American Association of University Affiliated Programs
http://www.aauap.org/



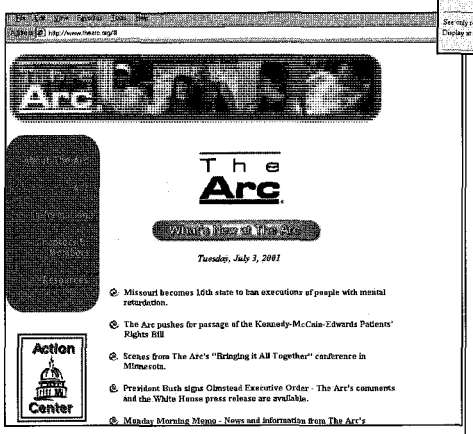
Mental Retardation (Merck Manual)
http://www.merck.com/pubs/mmanual/section19/chapter262/262e.htm



Cognitive and Developmental Disabilities Resources
http://www.waisman.wisc.edu/www/mrsites.html

Association of Retarded Citizens
http://www.thearc.org/

National Institute for Mental Health
http://www.nimh.nih.gov/publicat /autism.cfm



Autism Society of America
http://www.autism-society.org/

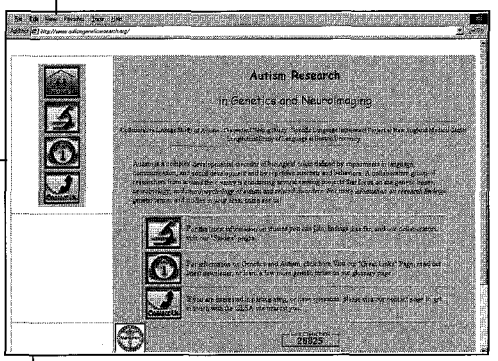
Center for the Study of Autism
http://www.autism.org/

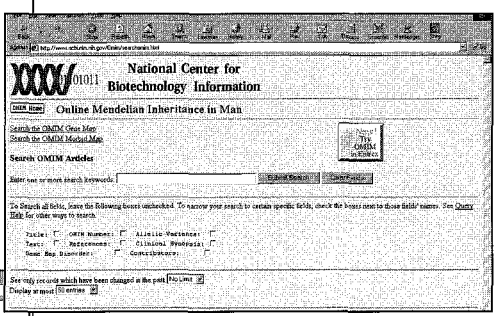
Disability Information Resources (DIR)
http://www.makoa.org/

National Association of Down Syndrome
http://www.nas.com/downsyn/

Fragile X A Research Association
http://www.fraxa.org/

National Fragile X Foundation
http://www.nfxf.org/





Dual Diagnosis
http://www.sma.org/smj/96dec2.htm

United Cerebral Palsy Association
http://www.ucpa.org/

Cerebral Palsy
http://www.cerebralpalsy.com/

Cerebral Palsy Tutorial
http://www.people.virginia.edu/~smb4v/tutorials/cp/cp.htm

Prescription Drug Programs

All too often when we work with patients with disability, we discover that they do not have the fiscal ability to follow through on many of our prescriptive treatment plans. Here is a list of websites that will allow your patients the opportunity to obtain the medicine they need at little or no cost:

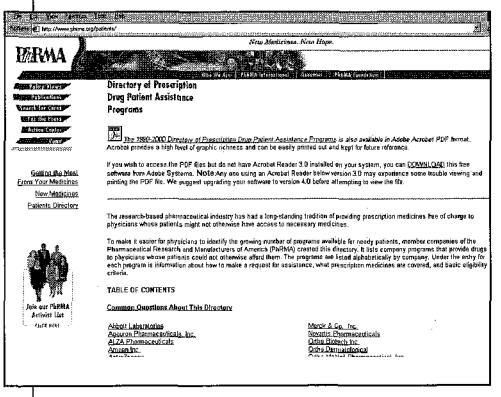
Prescription Drug Assistance Programs
http://www.medicare.gov/Prescription/Home.asp

Directory of Prescription Drug Patient Assistance Programs
http://www.phrma.org/patients/

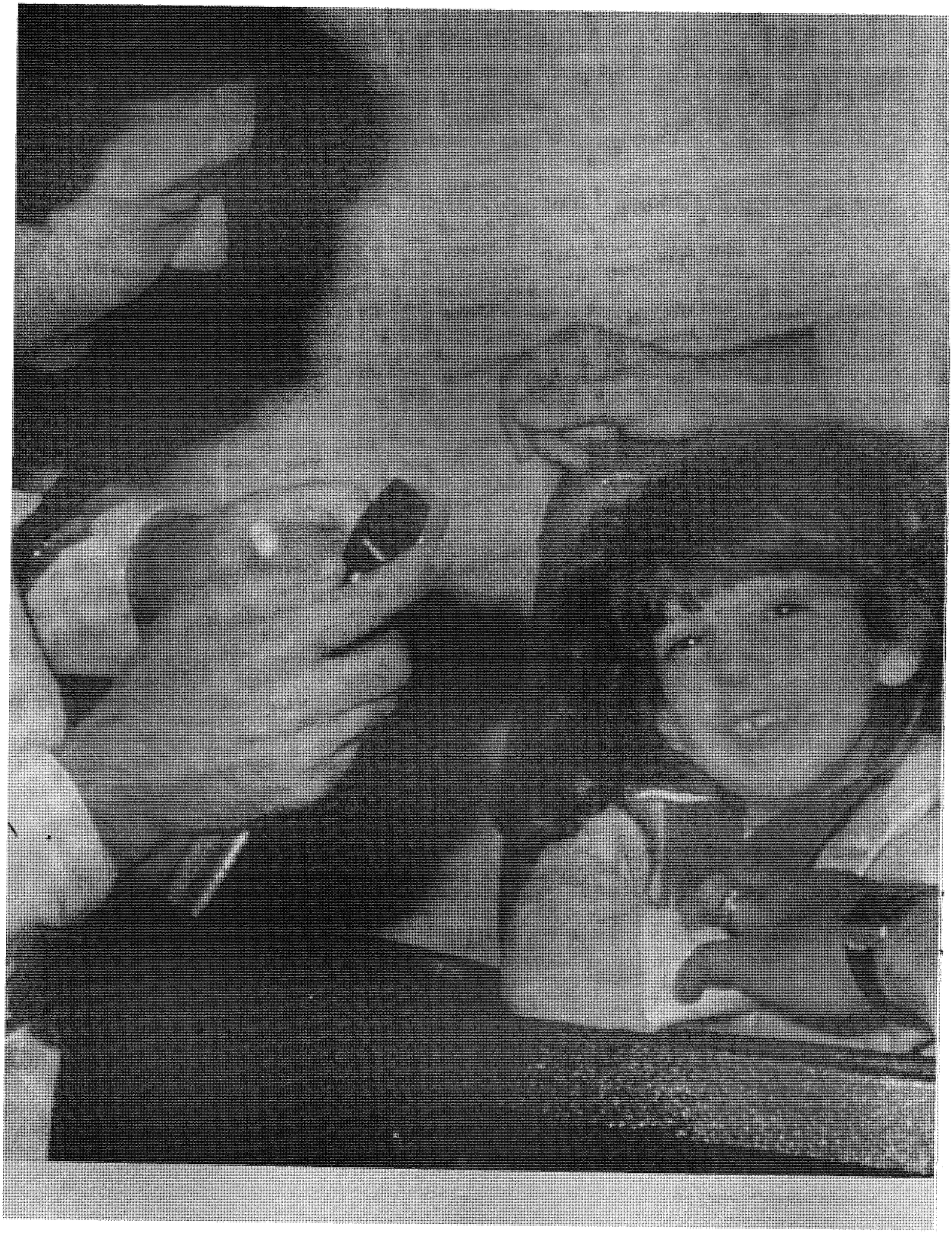
Affording Care: How To Get Free Medications
http://www.thebody.com/afford/free.html

Need Meds - Pharmaceutical Manufacturer's Drug Assistance Programs
http://www.needymeds.com/

How to Apply to Free Prescription Drug Programs
http://www.sunflower.org/~cfsdays/freedrug.htm



Dr. Maino is a professor, Pediatrics/Binocular Vision Service and Developmental Disabilities Service at the Illinois College of Optometry/Illinois Eye Institute. If you have any suggestions or recommendations for the ascotech column, you may reach him at dmaino@eyecare.ico.edu



Attitudes of Optometry Students Towards Individuals with Disability

Dominick M. Maino, O.D., M.Ed., F.A.A.O.
Gregg Steele, Ph.D., O.D., F.A.A.O.
Shmaila Tahir, O.D.
Radhika Sajja, M.S., O.D.

Abstract

Background: *Multiple factors may contribute to the formation of attitudes held by individuals without handicaps towards people with disability. The primary purpose of this study was to survey optometry students at the Illinois College of Optometry to assess if there was a significant difference in attitudes between the first, second, third and fourth year student population and to determine if there was a critical year of study when attitudes changed. The effects of gender and age were also assessed.*

Methods: *A survey was devised to measure attitudes of first, second, third, and fourth year students toward people with disabilities. Statistical analyses based on age, gender, and academic year were conducted.*

Results: *As students gained experience within the Illinois College of Optometry's didactic and clinical programs, attitudes towards individuals with disability became more positive. The attitudes of fourth year students were significantly more positive than those of students in earlier years. Our study also noted that direct clinical exposure to individuals with developmental disabilities plays a critical role in determining attitudes. Fourth year students showed more positive attitudes toward people that are blind; those who use wheelchairs; and people with mental illness, mental retardation and/or those who are physically disfigured.*

Conclusion: *This study suggests that didactic and clinical experience helps to create positive attitudes towards individuals with disability. These findings strongly support the importance of initiating and improving current curricula by developing appropriate coursework in the area of developmental disabilities and by having students begin direct clinical care for people with disability earlier in their academic careers.*

Key Words: *Attitudes, Students, Optometry, Disabilities*

Introduction

Health care professionals play an important role in the life of an individual with disability. Since these learned professions have been taught the epidemiology, patho-physiology, diagnosis and treatment of disabilities and disease[1], it is often assumed that they are well prepared to interact with individuals who are disabled. Unfortunately, that is not always true. Most optometrists do not routinely interact with disabled people. When optometrists do interact with those with disability, they may have a tendency to treat the disability or disease but ignore the person (i.e. the *diabetic* patient as opposed to the *individual* with diabetes)[2]. Since the examination sequence can easily be adapted for the special needs of individuals with disabilities, there are few reasons why these individuals should not receive the same quality eye care as their non-affected counterparts[3].

Dr. Maino is a professor, Pediatrics/Binocular Vision Service and Developmental Disabilities Service at the Illinois College of Optometry/Illinois Eye Institute. Dr. Steele, recently deceased, was an associate professor at the Illinois College of Optometry when this article was written. Dr. Tahir is a pediatric resident at the College. Dr. Sajja is in private practice.

The undesirable results of this disease vs. person-oriented attitude are exacerbated by optometry's increasing role as gatekeepers into primary health care at all levels. Optometrists' attitudes toward people with disabilities will directly affect the quality of the health care received. A doctor with an appropriate academic base, clinical skills and positive attitude towards individuals with disability would be more likely to employ the necessary effort required to meet the special needs of a disabled patient. On the other hand, a health care professional with a negative attitude may unconsciously communicate these feelings to both the patient and caregiver, which could then adversely affect the care a patient receives[4].

Since significant visual anomalies are found in persons with cognitive, mental and physical impairments[5,6,7,8,9,10] improving the attitudes of health care professionals towards those with disability will improve the care for all patients, including those with handicaps. Earlier studies have noted how difficult it was to positively change the attitudes toward people with disabilities. Direct contact and personal exposure to people with disabilities appeared to have the greatest positive effect. Geruschat and Kershman[11] conducted an experiment that studied the effect of various factors on the attitudes of optometry students toward people with disabilities. This study involved a random sampling of students who were then divided into four groups. One group watched a movie about blindness, another group had a discussion with low vision patients, the third group did both and the final group served as a control. This study concluded that attitudes could not be changed through short-term experimental techniques. Paris[4] showed that attitudes of medical students changed during their academic career. This study concluded that long term exposure to those with disability results in positively changing attitudes and that the completion of a didactic program of instruction for health care professionals is an effective mechanism for changing attitudes as well.

Despite the two studies noted above, Duvdevany, Rimmerman and Portowicz[12] state that little is known about the attitudes, clinical knowledge base and experience of students in the helping professions with regard to those patients having developmental disabilities. The goal of the present

study was to survey optometry students at the Illinois College of Optometry, determine if there is a significant difference in attitudes between the first, second, third and fourth year student population and to assess if there was a critical year of study when attitudes changed. Gender and age effects were investigated as well. This information could then be used to enhance optometric clinical educational programs and academic curricula to appropriately teach optometry students how to interact with and serve the health care needs of people with disabilities.

Methods

Subjects

The subjects were 395 optometry students enrolled in the Illinois College of Optometry. There were 97 first year, 118 second year, 136 third year and 44 fourth year students who participated in the survey. (See table 1).

Most of the first through fourth year students were educated in state universities. The majority of first, second, and third year students were from suburban backgrounds and 43% of the fourth year students were from rural environments (Tables 2 and 3).

Measures

A survey was designed and administered to all on-campus students at the Illinois College of Optometry. Sixty-four percent of the surveys were returned. This survey consisted of 22 questions. (Seven questions covered demographic information, 3 asked about the number of interactions with disabled individuals, 2 questions determined during what situations students felt comfortable/uncomfortable with people with disabilities). Ten of the questions used a Likert scale to assess comfort levels with specific disabilities. The Likert scale used numbers one through six with the number 1 representing strongly agree, 5 representing strongly disagree and 6 representing not applicable. The survey included several questions concerning the frequency of student/patient with disability interaction. We also asked if the students had family or friends who were disabled as well. (See Appendix A for a copy of the survey).

First, second and third year students were given the surveys for completion at the beginning of a regularly scheduled class. We informed the students that completion of the survey was optional and that responses would be anonymous and used for research. Fourth year students obtained their surveys through their school mailboxes.

Table 1
Percent of Students in Age Groups [# in ( ) is total # of students]

		20-24 years of age	25-29 years of age	30-34 years of age	35-39 years of age	>39 years of age
1st Year	Male (40)	28	8	2	1	1
	Female (57)	41	11	4	1	0
2nd Year	Male (45)	18	22	5	0	0
	Female (73)	46	25	2	0	0
3rd Year	Male (84)	12	61	7	4	0
	Female (52)	12	40	0	0	0
4th Year	Male (20)	0	16	3	1	0
	Female (24)	0	18	3	3	0

Table 2
Educational Background of Students

	State	Private	Liberal Arts Major	Other Major
1st year	64	22	11	0
2nd year	83	19	14	2
3rd year	89	21	23	3
4th year	34	6	4	0

Table 3
Demographic Region of Students

	Rural	Urban	Suburban
1st year	26	15	56
2nd year	37	25	55
3rd year	42	33	61
4th year	19	12	13

Results

A total of 593 questionnaires were distributed with 395 responses being returned. Responses were received from 64% of the first year, 74% of the second year, 98% of the third year and 31% of the fourth year students. Many fourth year students are off campus during their final academic year participating in clinical externship programs. Since these students are not on campus during much of their fourth year, this may account for the decreased number of surveys completed and returned. (See Table 1, 2 and 3 for age, gender educational background and other demographic data.)

(Table 4 gives the mean score for questions 12-17 with the numbers in parentheses representing the standard deviation.) There is a significant difference between the responses of fourth year students and that of the other academic years for all survey questions except for those referring to individuals with hearing impairment. Fourth year students showed more

Table 4
Mean Scores and Standard Deviations, Questions #12-17

	1st year students	2nd year students	3rd year students	4th year students
Question #12	2.30 (1.31)	2.47 (1.37)	2.38 (1.14)	1.63 (0.69)
Question #13	2.42 (1.30)	2.71 (1.32)	2.49 (1.10)	2.23 (1.17)
Question #14	2.04 (1.08)	2.15 (1.11)	2.12 (0.85)	1.58 (0.66)
Question #15	3.31 (1.26)	3.31 (1.17)	3.44 (1.12)	2.56 (1.18)
Question #16	2.72 (1.25)	2.89 (1.16)	2.99 (1.18)	2.21 (0.94)
Question #17	2.45 (1.06)	2.66 (1.18)	2.50 (0.98)	2.12 (0.98)

positive attitudes toward those who are blind or visually impaired (p=.0002), individuals using wheelchairs (p=.0013), and people who are mentally ill (p=.0005). Statistically significant positive attitudes were also noted by the 4th year student for individuals with mental retardation (p=.0008) and those with physical disfigurements (p=.0470). No significant differences were found between the attitudes of first, second, and third year students for the questions noted above. A significant difference was noted, however, between the academic years when asked if optometry school affected attitudes toward people with disabilities in a positive way (question #19); if education received in school had prepared the student to appropriately examine a patient with disability (question #20); and if optometry school had prepared the student to properly modify a primary care examination for the patient who exhibits a disability (question 21).

In question number 19, the responses of the 3rd year students were significantly different from those of the 1st (p<.0001) and 2nd year (p<.0001) students concerning how optometric education affected 3rd year attitudes towards those with disability. Fourth year students also differed significantly from the 1st year (p< .0001) and 2nd year students. No difference was found between the 3rd and 4th year students however.

A significant difference was found between the first and third year (p=.0002) students and the second and third year (p<.0001) students with those in their third academic year feeling better prepared to appropriately conduct an evaluation for persons with disability (question 20). For this question, responding fourth year students felt better prepared than any other academic class (p<.001 for comparisons against 1st, 2nd, and 3rd year students). Lastly, (question 21) it was noted that third year students felt they were more appropriately prepared to modify an examination for those with disability than first (p<.0001) and second (p<.001) year students. Fourth year students also felt they could easily adapt their examination sequence for the special needs of the handicapped better than all other classes (p<.0001 for comparisons against 1st, 2nd and 3rd year students).

The third academic year shows a critical change in attitudes towards performing (p<.0001) and modifying examination techniques (p<.0001). We also found that age was statistically significant when it came to: 1.) modifying an examination, 2.) positive attitudes towards those with disabilities, and 3.) preparing to conduct an examination. Gender, on the other hand, does not appear to have an effect on attitudes toward people with disability, but does seem to affect how well prepared a student feels about evaluating an individual with a disability.

Individual students offered many reasons why they would or would not feel comfortable examining those with disability. No clear trend was noted (See Tables 5 and 6).

Table 5
Reasons Students Are Most Comfortable with a Person with a Disability

	Familiar With disability	Contact with Person	Can Imagine Having Disability	Extra Effort Not Needed to Interact with Person	Other
1st year	54.64%	20.62%	11.34%	9.28%	4.12%
2nd year	38.98%	38.14%	10.17%	11.86%	0.85%
3rd year	42.65%	36.76%	7.35%	10.29%	2.94%
4th year	54.55%	20.45%	4.55%	18.18%	2.27%

Table 6
Reasons Students Are Most Uncomfortable with a Person with a Disability

	Prior Bad Experience	Disability Is Frightening	Can Not Imagine Having Disability	Did not Know How to Approach Person	Other
1st Year	24.74%	8.25%	6.19%	55.67%	5.15%
2nd Year	23.03%	12.71%	6.78%	55.08%	3.39%
3rd Year	17.65%	16.28%	1.47%	61.03%	3.68%
4th Year	15.91%	18.18%	2.27%	52.27%	11.36%

Discussion

Paris[4] studied attitudinal differences between first and fourth year medical students and practicing health care professionals. She noted that fourth year students and healthcare professionals generally had similar attitudes towards disabled people and that this attitude was generally more positive than those expressed by first year students. Paris hypothesized that this was true because contact with individuals with disability greatly improved attitudes. Our study noted a significant difference between the responses of 4th year students and all other academic years for practically every survey question. ICO's fourth year students showed more positive attitudes toward the blind or visually impaired, individuals using wheelchairs and individuals with mental illness. They also exhibited more positive attitudes towards those with mental retardation and anatomical disfigurements as well.

We also believe that fourth year attitudes are more positive because they have had increased clinical contact with patients exhibiting developmental disabilities. In addition to rotating through the Illinois Eye Institute Developmental Disabilities Service, our 4th year students have also concluded a course specifically on the topic of special populations. The knowledge base gained from this course allowed our fourth year students to be better prepared for any encounter with a patient exhibiting emotional/behavioral problems, physical or cognitive impairment or other disability.

At the end of the spring quarter all third year students have completed the special populations course. This class is specifically designed to address the pertinent health, developmental, psycho-educational/vocational, and visual attributes specific to those with disability and/or the very young (infants/toddlers). It provides a framework on how to modify evaluation techniques for this population. Initially, we hypothesized that the critical period when attitudes changed would be at the end of the third academic year upon completion of the course noted above. Our results, however, did not confirm this hypothesis. Instead, our results indicated that the critical year for attitude change was the fourth year. However, the third academic year did show a critical change in attitudes towards performing ($p<.0001$) and modifying examination techniques ($p<.0001$). This finding may be due to third year students having not only completed the course on special populations, but also due to their increased clinical maturity through patient care exposure. This result agrees with Duvdevany et al.[7] that a course on developmental disabilities may improve students' attitudes. Once a student is familiar and comfortable with discussing a disability, it is easier to interact with people with disabilities.

Although the fourth year is the critical year of attitude change, this transformation most likely begins during the third academic year. We believe this change begins in the third academic year because 3rd year students feel better prepared compared to 1st and 2nd year students when asked to conduct a special populations examination. The third academic year, however, may not be the critical year of overall attitude change due to the limited amount of disabled patients evaluated. On the other hand, fourth year students show more positive attitudes due to increased exposure to patients with disabilities. Overall attitudes do not seem to change significantly until direct contact is made with people with disabilities on a routine basis.

This suggests that age, direct contact with individuals with disabilities, and being educated about people with disabilities, rather than age alone may be the primary catalyst for a change in attitude.

Gething[138] noted that negative attitudes are more apparent when a person with a disability is perceived as being different or unfamiliar. Our study supports this concept. The majority of students indicated that they would be most comfortable with a person if they were familiar with that person's disability. Our subjects also indicated that they would be most uncomfortable in situations where they did not know how to approach the person with a disability. (See Tables 3 & 4.) A significant difference in attitudes by our students was also noted between individuals who have disabled friends and/or family compared to those who do not. The results of these two survey questions support the finding that direct contact will result in students being more comfortable with people who have disabilities.[4,8]

We also investigated whether age had an effect on attitudes. Age was a statistically significant factor when it came to: 1.) modifying an examination, 2.) positive attitudes towards those with disabilities and 3.) preparing to conduct an examination. This finding may be due to the relationship of age and academic school year since older students tend to be at the higher class levels. Although older students have more positive attitudes towards performing examinations, age alone does not appear to have any effect on attitudes toward people with disabilities. This suggests that age, direct contact with individuals with disabilities, and being educated about people with disabilities, rather than age alone may be the primary catalyst for a change in attitude.

Finally, we were interested in determining if attitudes of female students were different than those of male students. This study showed that gender does not have an effect on attitudes toward people with disability, but does effect how prepared students feel they are to conduct an examination. This finding is inconsistent with Paris'[4] research where females were found to have more positive attitudes overall. It is important to note that males felt more prepared to perform and modify examinations than females in our study, however.

As one would expect, clinical experience and educational course work differentiated the various academic years. Although our 1st year students do not participate in direct clinical care, they do observe patient examinations. Second year students also observe clinical examinations, as well as, perform visual screenings. During the data collection phase of this project, our 3rd year students were directly involved in patient care for eight hours a week and were in the process of completing a course on

Appendix A
Attitudes of Optometry Students Toward Disabilities Survey

1. Gender
   A. Male B. Female

2. Age
   A. 20-24 B. 25-29 C. 30-34 D. 35-39 E. > 39

3. Race (optional)
   A. Caucasian B. African-American C. Asian D. Other

4. My undergraduate degree is from a :
   A. state university B. private university C.college (liberal arts) D. other

5. My hometown is in an area considered to be:
   A. rural B. urban C. suburban

6. Do you have any type of disability?
   A. Yes B. No

7. Do you have any friends or family members with disabilities?
   A. Yes B. No

8. In the last 12 months, how many encounters have you had with people who are disabled?
   A. 0 B. 1-4 C. 5-10 D. > 10

9. How frequently do you interact with a person/people with disabilities?
   A. once a day B. once a week C. once a month D.once a year E.never

10. I would be MOST COMFORTABLE with a person with a disability if:
    A. I was familiar with the disability
    B. I had personal contact with person with particular disability
    C. I could imagine myself having the disability
    D. extra effort was not needed on my part to interact with the person
    E. other: please specify_____

11. I would be MOST UNCOMFORTABLE with a person with a disability if:
    A. I had a prior bad experience with a person with the specific disability
    B. the disability frightened me
    C. I could not imagine myself having the disability
    D. I did not know how to approach the person
    E. other: please specify_____

For the following statements:
1 = Strongly agree 2 = Agree 3 = No opinion
4 = Disagree 5 = Strongly disagree 6 = Not Applicable

12. I am comfortable interacting with people who are blind or visually impaired.
    1 2 3 4 5 6

13. I am comfortable interacting with people who are hearing impaired.
    1 2 3 4 5 6

14. I am comfortable interacting with people who use wheelchairs.
    1 2 3 4 5 6

15. I am comfortable interacting with people who are mentally ill (psychiatric).
    1 2 3 4 5 6

16. I am comfortable interacting with people who are mentally retarded.
    1 2 3 4 5 6

17. I am comfortable interacting with someone who is physically disfigured.
    1 2 3 4 5 6

18. I have stared at someone with a disability.
    1 2 3 4 5 6

19. I feel my education in optometry school has affected my attitudes towards disabilities in a positive way.
    1 2 3 4 5 6

20. I feel my education in optometry school has prepared me to properly examine a patient with a disability.
    1 2 3 4 5 6

21. I know how to properly perform or modify an eye exam on a patient with a disability.
    1 2 3 4 5 6

22. How many eye exams on a person with a disability have you performed or observed?
    A. never B.1-5 C. 6-10 D. 10-15 E. >15

special populations. Fourth year students are directly involved in approximately 40 patient care hours a week and are required to participate in a 6-week rotation through the Developmental Disabilities Service of the Illinois Eye Institute (IEI). The Developmental Disability Service serves individuals who have mental retardation, physical handicaps, mental illness and behavioral/emotional disorders from birth through mature adulthood. Fourth year students have additional experience with people with disabilities in primary and advanced care, and other off-campus clinics and externships with the majority of contact being within the Developmental Disabilities Service of the IEI.

Summary

The results of this survey suggests that:

1.) Fourth year students' attitudes towards those with disability were more positive than those of students in the other academic classes.
2.) Age, direct contact, and education were significant factors in the areas of
   a.) knowing how to modify an examination for individuals with disability,
   b.) having a positive attitude towards people with disability, and
   c.) being properly prepared to perform examinations on patients with disability.

Gender, however, does not appear to have an effect on attitudes, but it does affect how well a student feels prepared to conduct a special populations examination.

This study evaluated the attitudes of students toward individuals with disabilities and noted any differences in attitudes between the first, second, third, and fourth year optometry student. We hypothesized that fourth year students would have more positive attitudes than those from the other academic years because of their exposure to a course on special populations and increased clinical experience. We initially believed that the critical year of attitude change would be at the conclusion of the third academic year since this is when the student has completed his/her first year in the Primary Care clinical rotation and all didactic courses. We did discover that third year students showed a change in attitudes towards performing and modifying examination techniques. It appears, however, that both course work and clinical exposure in the area of developmental disabilities during the 4th year are the critical components involved in fostering positive student attitudes towards special populations. This is important because coursework without clinical exposure, or conversely, clinical exposure without the suitable coursework may not improve student attitudes in a positive manner.

This study suggests that didactic **and** clinical experience helps to create positive attitudes towards those with disability. These findings also support the importance of initiating and improving current curricula by developing appropriate coursework in the area of developmental disabilities and by having students begin direct clinical care for people with disability earlier in their academic careers.

Additional research will be required to determine if differences exist between optometry students and practicing optometrists. We also suggest that a prospective longitudinal study be performed using first and second year optometry students to determine if a natural progression of changing attitudes occurs as the students progress through the four-year professional curriculum.

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Modifying the Curriculum: Teaching Clinical Students About Caring for Patients with Disabilities

Ellen Richter Ettinger, O.D., M.S., F.A.A.O.

Abstract

As primary eye care providers, optometrists must be prepared to provide eye care to patients with disabilities, but clinical curricula do not traditionally prepare students to do so. This paper examines how the curricula of optometry programs can be modified to prepare graduates to meet the needs of patients from special populations.

Key words: *Curriculum, disabilities, courses, cerebral palsy, Down syndrome, fragile X, mental retardation, autism*

Introduction

Patients from special populations have been underserved by the health care community for many years. A primary reason for this is that the curricula of clinical training programs do not traditionally prepare graduates to address many of the needs of patients with disabilities.

Although some patients with disabilities are able to respond to the standard optometric examination, from case history through the testing sequence and the discussion at the end of the examination, many are unable to do this.[1,2] Some are unable to speak, so they cannot give information verbally during the case history, or respond in the traditional way during testing. Many patients in wheel chairs, or with postural difficulties, are unable to sit in front of typical optometric equipment like slit lamps, keratometers, and phoropters. These are examples of some of the challenges that cause many clinical students, as well as doctors, to be overwhelmed and confused with regard to how to collect information from patients.

With improved technology facilitating mobility and travel for patients, doctors in all types of clinical environments are being asked to care for patients with disabilities. Laws prohibiting discrimination make it even more imperative for graduates of clinical programs to be familiar with how to provide proper care for patients with disabilities.[3]

This paper will examine how the curricula of optometry programs can be modified to prepare graduates to meet the needs of patients from special populations. This may be particularly relevant to optometric educators serving on curriculum committees and curriculum reform groups, faculty members teaching courses, administrators planning academic programs and evaluating course content, and clinical preceptors/instructors working with students in clinics.

Dr. Ettinger is an optometrist with United Cerebral Palsy of New York City. She is also a visiting professor at the New York University School of Medicine.

Attitudes of Students

A basic component of preparing clinical students to work with patients with disabilities is to address attitudes.[3] Many people who have not been around individuals with disabilities are fearful, apprehensive, and hesitant. These attitudes of fear and discomfort transfer to sub-optimal care in the clinical environment because they interfere with developing warm doctor-patient relationships, as well as collecting clinical findings effectively, and determining patient management plans that are relevant to a patient's needs. These issues are frequently discussed in Communications courses, Psychosocial courses, and Ethics courses. But the best form of teaching proper attitudes is probably dependent upon appropriate attitudes of clinical faculty in the clinical environment. Faculty members must serve as positive role models for students in the delivery of care to all patients. Instructors who become nervous and hesitant around patients with disabilities would serve to magnify and reinforce students' feelings of discomfort and fear. So these issues must be covered not only across the curriculum for students but also in clinical faculty training programs.

The Clinical Examination

The clinical examination can be thought of as consisting of several components:

- case history
- clinical examination sequence
- clinical decision making and determination of patient management plan
- discussion with patient regarding doctor's recommendations and patient management plan

Suggestions for including information regarding each of these components in courses within the optometric curriculum are presented in Table 1. Comparable courses often have different course titles at different institutions, so the course titles listed in Table 1 were chosen to be most descriptive of what a course covers. Evaluating the curriculum at a particular school with

Table 1
Types of Courses

Attitudes
Communications courses
Psychosocial/Psychodynamics courses
Ethics courses
(also important: Training programs for clinical faculty members)

Case History
Communications courses
Psychosocial/Psychodynamics courses
Clinical Procedures/Methods courses in which case history is taught
Pediatrics courses
Ethics courses

Clinical Examination
Clinical Procedures/Methods courses (lectures and laboratories)
Ocular Disease courses (including using hand-held equipment)
Binocular Vision courses
Vision Therapy courses
Visual Perception courses
Practice Management courses

Decision Making and Determination of Patient Management Plans
Clinical Case Analysis courses
Optometric Theory courses
Normal and Abnormal Vision Development courses
Binocular Vision courses
Visual Perception courses
Ocular Disease courses
Grand Rounds Seminars/Student Case Presentations

Case Discussion of Doctor's Recommendations
Same as courses listed for case history (above).

regard to whether particular courses include the information listed may necessitate identifying which courses, under a different title, match up with the courses listed in Table 1. For example, some institutions may call a course Clinical Procedures, and others may use Clinical Methods, while still others may use the title Optometric Procedures or Optometric Methods.

Case History

The case history, situated at the beginning of the examination, sets a tone for the doctor-patient interaction. Making the patient feel comfortable and involved can allow for a cooperative interaction for the rest of the examination; making the patient feel excluded and ignored makes it difficult to facilitate a patient's cooperation during the next part of the examination.

Students must be taught that the case history is a crucial point in the patient encounter not only for the purpose of collecting information, but also as a valuable opportunity to help make patients feel more relaxed in the clinical environment at the beginning of the examination. [4]

Students must learn the types of information that must be collected in the case history, such as: the chief complaint, current ocular symptoms, ocular history, medical history, family ocular and medical history, birth history, developmental milestones, school/work activities, hobbies, personal goals and other visual demands. Equally important to knowing what information to gather, students must also learn *how* to perform the case history properly to make the patient comfortable in the clinical environment.

In examinations with patients from special populations, someone other than the patient is often the person who gives information for the case history. Students must learn how to gather information from one person without alienating the patient, and making him or her feel excluded from the examination. Patients sometimes feel like they are being ignored, treated like a child, or treated like they are not intelligent when they appear to be "left out" of the discussion during the case history. Some doctors even make a patient feel like an inanimate object by totally ignoring him or her, while taking the history from another person in the room. So students must learn how to take case histories from patients, while still maintaining eye contact with them, and making them feel involved.

Types of recommendations regarding case history are often discussed in Pediatrics courses, but it is important to discuss the application of these recommendations with regard to special populations, as well. Especially when the patient is an adult, it is important to treat the patient with dignity if the doctor needs to take the case history from someone else in the room.

Case history is also often discussed in Communications courses, Psychosocial courses, and Clinical Procedures or Clinical Methods courses, but the context of successfully performing a case history when a person other than the patient provides the case history information is frequently omitted. Ethics courses can also address proper attitudes and recommendations for conducting the case history. Examples of courses in which information on case history can be included are given in Table 1. Multiple courses are listed because it is important that this information be included within the curriculum and reinforced across courses.

Students must also be taught that just because a person is non-verbal, it doesn't mean that the person is not able to communicate. Many patients use communication boards. Some hearing impaired individuals may prefer to

communicate in writing with a pad of paper and pen; other patients may have other methods of communication.[4] Understanding how a patient communicates helps the doctor acquire the case history, but it also helps the doctor determine how he or she can gather information during the next part of the examination, the clinical testing sequence.

Clinical Examination

The courses that teach how to perform clinical examination techniques are often referred to as Clinical Procedures or Clinical Methods courses. Some procedures are also taught in some Ocular Disease, Binocular Vision, Visual Perception, and Vision Therapy lectures and laboratories. Frequently, the standard technique of performing these tests is taught, and students do not learn how to adjust a piece of equipment for a person in a wheel chair, how to use hand-held equipment on patients who are not able to sit behind traditional equipment like a standard slit lamp or tonometer, or other adjustments for patients with special needs. While hand-held slit lamps and tonometers exist, students often do not learn to use these models.

When learning about clinical testing, students must also learn how to work with patients who are inattentive or uncooperative. Mentally retarded patients and young patients frequently do not realize the importance of paying attention. Recommendations such as using colorful targets, having multiple targets for testing, and using proper communication techniques to maintain the patient's interest are essential. These are sometimes covered in Pediatrics courses, but since they are often needed with adults who are mentally retarded, it is important to teach students how to apply kinds of recommendations in all appropriate situations, not just with children.

Students must also learn to be creative in determining ways of gathering clinical data. As with the case history, just because a patient is non-verbal, it does not mean that the patient cannot communicate. For example, a doctor may take visual acuities using a patient's communication board, a pad of paper and a pen for the patient to write responses, or a matching technique using pictures placed in front of the patient. By being creative and paying attention to the patient's abilities to communicate, the doctor can gather more clinical information.[1,2]

Students must also learn that in contrast to the traditional optometric examination which generally follows a specific and predictable sequence, it is often important to be flexible and skip around in accordance with the patient's level of attention and cooperation. Since this flexibility is a big deviation from the standard examination with a specific order, it is important that this concept to be explained in detail.

Experience, logic and common sense can also help to guide the clinician in knowing how to modify the examination sequence to meet a patient's needs.

Clinical Decision Making and Determination of Patient Management Plans

Courses that address clinical decision making are frequently called Clinical or Case Analysis courses, or Optometric Theory courses. Decision making is also covered in Grand Rounds Seminars and other courses with student case presentations.

Experience, logic and common sense can also help to guide the clinician in knowing how to modify the examination sequence to meet a patient's needs.

In addition to clinical decision making strategies which apply to the general population, students must also learn specific information regarding special populations. For example, in order to make proper decisions regarding patients with cerebral palsy, it is important for students to learn about the ocular characteristics of patients with cerebral palsy. Patients with cerebral palsy have a higher prevalence of strabismus, amblyopia, oculomotor dysfunction, and accommodative deficits than is found in the general population.[1] While cerebral palsy is not primarily a visual disorder, there are associated ocular problems that can interfere with visual performance. Similarly, students must learn about the ocular characteristics of other disabilities such as Down syndrome, autism, mental retardation, fragile X, hearing impairments, developmental disabilities, learning disabilities, and other disabilities.[2,4-10] For example, if the parents of an autistic child are worried about the child's "light gazing" habits, it is important for the doctor to know that this is a characteristic behavior of the autistic population, and not a sign for which to be concerned.

Another course that would be relevant to the component of the clinical examination is Practice Management. While this course is not traditionally associated with teaching specifically about clinical examination procedures, there are often discussions about which equipment a graduate would want to purchase in setting up an office, and hand-held equipment may be included as part of this discussion. Further, office layout is often discussed, and setting up a plan that has appropriate space for patients to navigate wheel chairs would be a useful discussion. Finally, training staff members to be sensitive to, and respectful of, special populations can also be included.

Case Discussion of Doctor's Recommendations

In the discussion at the end of the examination in which the doctor's recommendations are given, it is important to remember that like the case history, it is often important to address someone in addition to the patient in order to facilitate compliance with recommendations. It may be the parents or family of the patient if they accompany the patient, or it may be a home health care attendant, a babysitter, a social worker, a teacher, or other advocate of the patient attending the examination. If the parent or family member is not in attendance at the examination, compliance may rely on sending written recommendations such as when the patient should wear glasses, how to follow a patching routine for amblyopia prevention, or whatever additional testing is necessary and why.

Patients with disabilities often have complex medical needs and are frequently under the care of multiple health care professionals including neurologists, internists, orthopedic surgeons, physiatrists, psychiatrists, psychologists, social workers, physical and occupational therapists, and others. It

can be extremely helpful to write letters to the patient's other doctors, therapists, and teachers. In order to write letters to other people, students must learn to get the patient's (or family's) permission, and learn to write these types of letters. In conversing or writing with the patient's other health care professionals and advocates, students must know the proper "lingo" and terminology often used, such as paraplegic, quadriplegic, spasticity, dyskinetic, as well as others. [1] Many patients are involved in multiple therapies, and communicating with other health care professionals involved in a patient's care is often paramount in optimizing the patient's overall management. Teaching students to communicate with the other members of a patient's health care team is an important part of educating optometry students.

Conclusion

Schools and colleges of optometry must teach students to care for patients from special populations.

Some schools of optometry have developed specific courses (either required or elective) in providing care to patients from special populations. Required courses are optimal, since elective courses suggest that providing care to these patients is "optional" (as in the choice of taking the course).

In some programs the topic of providing care to patients with disabilities is covered in one, or a few, *separate* lectures on providing care to patients from special populations. These are often guest lectures, frequently with an optional basis for student attendance.

The problem with providing separate lectures only on these topics is that by segmenting this topic, the information takes on an isolated connotation and understanding in the minds of students, and students learn to think of this as "specialty" care, that is separate from the rest of the information that they need to know. While special lectures on this topic can be very helpful, the topics must also be reinforced *across the curriculum* whenever possible, so that clinical students learn to think of providing care to patients with special needs as a fundamental and necessary part of their training.

In addition to being *trained* with regard to topics that are relevant to patients from special populations, students should also be *tested* with regard to their knowledge of these areas, to assess their competence, and to communicate the importance of these topics.

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ASCO Meetings Calendar

ASCO Executive Committee
March 21, 2002
Ft. Lauderdale, Florida

ASCO Board of Directors Meeting
March 22 (a.m.), 2002
Ft. Lauderdale, Florida

ASCO Strategic Directions Board Retreat
March 22 (p.m.) - 23 (a.m.) 2002
Ft. Lauderdale, Florida

ASCO Chief Academic Officers Meeting
June 24-25, 2002
New Orleans, Louisiana

ASCO Executive Committee Meeting
June 25, 2002
New Orleans, Louisiana

ASCO Annual Meeting
June 25-26, 2002
New Orleans, Louisiana

ASCO Annual Luncheon
June 26, 2002
New Orleans, Louisiana

ASCO Corporate Contributors Breakfast
June 28, 2002
New Orleans, Louisiana

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Development of Optometric Clinical Skills for the Management of the High-Risk Pediatric Population

Stacy Ayn Lyons, O.D., F.A.A.O.
Bruce D. Moore, O.D., F.A.A.O.

Abstract

With the ever-changing scope of optometric practice, we are faced with deciding how to educate our students to provide routine optometric care of the infant and young child. Implicit in the care of young patients is the necessity for early and routine care of high-risk pediatric populations. This paper describes how The New England College of Optometry (NEWENCO) prepares students to render care of high-risk pediatric populations so that graduates are trained to meet the changing standards of the profession.

Key Words: *clinical skills, high risk pediatric population*

Introduction

Optometry is the primary entry point profession for routine vision care in the United States. Optometrists are widely distributed around the nation and currently see the majority of primary eye care patients of all ages. However, one important group that does not receive routine care is the youngest segment of our population, namely infants, young children and children with special needs. Currently, eye care providers do not see the vast majority of this population, unless an obvious problem is identified[1].

In the past optometry students had minimal exposure to these populations. As a result there was discomfort caring for these patients, and practitioners did not encourage their patients to bring their young children in for routine eye care. Hence, the public did not receive appropriate health education concerning the importance of early eye care.

Optometry has recently come to recognize this problem. In 1994, the American Optometric Association (AOA) published The Guideline on the Pediatric Eye and Vision Examination.[2] This was the first statement by the profession describing the need for routine vision care for infants and young children. In the year 2000, Operation Bright Start developed more detailed guidelines for routine optometric care for the infant.[3] Implicit in these recommendations for the routine care of infants and the young child is the absolute necessity for the early and routine care of the high-risk pediatric populations.

The purpose of this paper is to describe the NEWENCO approach to the didactic and clinical education to the care of the high-risk pediatric population.

Dr. Lyons is chief, Pediatric Optometry and Binocular Vision Service, at the New England Eye Institute and an associate professor at The New England College of Optometry.

Dr. Moore is the Marcus Professor of Pediatric Studies at The New England College of Optometry.

High Risk Pediatric Population

The current best estimates of vision problems in the otherwise normal preschool populations are: amblyopia 2.5-3%, strabismus 4-5%, significant refractive error 10-20%, and ocular disease, all types combined, under 1%.[4] Although these prevalence levels are relatively low (except for refractive error) the impact on individuals and society may be correspondently high. The public health implications are great. It has been estimated that there is more vision loss due to amblyopia than all other causes combined in the population of Americans under 45 years of age.[5] Prevalence levels of these disorders are even higher in the high-risk pediatric populations.[6]

The high-risk population includes those individuals who, as a result of economic or social conditions, have reduced access to health care, and those individuals who are at high risk for medical problems based on personal or family history. Specific risk factors include poverty, a lack of health insurance coverage, language and cultural barriers, geographic isolation, poor education, and previous episodes of chronic or acute illness. The people who most often fall into this category include the homeless, the unemployed, minorities, urban and rural poor, those with chronic illnesses, the elderly and the young, substance abusers, migrant workers, and illegal aliens. In short, many individuals may become medically at-risk at various times in their lives.

Boston is better able to provide quality primary health care to its children than many other communities in the United States. We are fortunate to have an extensive system of community health centers that serve virtually every community in the city with high quality multidisciplinary health care. Most of Boston's children currently receive quality primary health care.[7] For example, immunization levels are among the highest in the country.[8] Secondary

and tertiary health care is available to all children in this city regardless of ability to pay.

In spite of these favorable factors, there are serious problems in the health of the children of the city. Approximately 10,000 babies are born each year to Boston residents. Over 10% of these babies are of low (<2500 g) or very low (<1500 g) birth weight. Almost 25% of all newborns are either premature or small-for-gestational age. Many of the mothers are teenagers, single, poorly educated, and either on Medicaid or are uninsured. Some receive little or no prenatal care. In short, many of the infants in Boston are at high risk for health problems. From a narrower perspective, these infants are especially at high risk for vision threatening disorders.

Didactic and Clinical Education

NEWENCO's didactic program has been in place for a long time, essentially pre-dating the AOA clinical guidelines. Some content is provided on general and visual development including normal milestones of young children. Although, there is some content in the third year curriculum on high risk and special needs pediatric populations, the content and focus is limited and clearly needs revision. Our approach is ongoing in its development.

Previously, there were no patient care exposures during the clinical education of first year students at NEWENCO. During the second year, students were minimally exposed to screenings of school aged children, as well as a few patient encounters towards the end of their second year. Third year students are sensitized to adult high-risk population. (See Table 1.) We have developed clinics that support neighborhood health centers, the homeless and the elderly, (institutionalized, in adult day care facilities, and homebound).

Our fourth year clinical program is a 12-month program in which each student is required to complete four, 3-month rotations. These rotations vary in orientation from primary care, ocular disease, tertiary care and specialty populations. The community health centers provide a concentrated experience of primary and secondary pediatric and adult urban populations. All of our students have at least one 3-month experience at a neighborhood health center.[9]

Table 1
New England Eye Institute's Community Service

Adult Day Care Facilities
Elder Service Plan of Harbor Health
Elder Service Plan of Mutual Health

Home Care
Boston University Geriatric Service
St. Elizabeth Home Medical Service
The Boston Home
Upham's Home Care
Visiting Nurse Association of Greater Salem
Wingate of Brighton

Homeless Shelters
Boston Health Care for The Homeless Program
Bread and Jam
Caspar Emergency Service
New England Shelter for Homeless Veterans
Pine St. Inn
Rosie's Place
Women's Lunch Place

In the pediatric rotation, the students receive an intensive 3-month clinical experience with children having special needs and with high-risk pediatric populations in a variety of settings. Long ago NEWENCO developed a decentralized clinical teaching and clinical care system. Instead of a large central clinical facility on campus, NEWENCO developed a system employing a large number of off-campus clinical sites in a wide variety of clinical settings. Many of these involve multidisciplinary environments that allow students the opportunity to learn about vision care in a holistic manner integrating with other health professionals.[10]

Through these community patient care settings, NEWENCO is able to provide students with a diverse and complex patient care population.

The New England Eye Institute, the clinical corporation of the college, administers pediatric service programs. Pediatric clinical affiliations have been developed at The Fenway Practice, Perkins School for the Blind, Cotting School for Multi-Handicapped Children, New England Pediatric Care (Long term care facility for children with severe impairments), a number of community health centers pediatric sessions, tertiary and rehabilitation hospitals, Head Start, and Early Head Start programs. (See Table 2.)

Table 2
New England Eye Institute's Pediatric and Binocular Vision Service

Clinic Based
New England Eye Institute/Fenway

School Based
Boston Public School Screening Program
Cotting School for Multi-handicapped Children
Head Start and Early Head Start Program
Hosmer Elementary School
Perkins School for the Blind

Community Health Center Based
Dimock Community Health Center
Geiger Gibson Health Center
Joseph Smith Community Health Center
Martha Elliot Health Center
South Boston Neighbor Health Center
South End Neighborhood Health Center
Upham's Corner Health Center

Hospital Based
May Institute
New England Pediatric Care
Shaughnessy Kaplan Rehabilitation Center
Tufts New England Medical Center

Substantive clinical exposure to young children occurs at the Head Start sites. Head Start is an education-

al, health care, and socialization program for children living under the federally defined poverty level. Approximately 20-25% of the entire population of preschool age children in the United States are eligible for Head Start, although there are fewer children actually enrolled, due to budget limitations. It is mandated that at least 10% of enrollment opportunities be for children with disabilities. This defines the high-risk pediatric population. Early Head Start is a fairly new program that targets children under the age of 3 years. This component of Head Start is growing rapidly.

Our Pediatric Rotation

In terms of high risk and special needs pediatric populations, students in their final year at NEWENCO obtain experience in three categories of clinical settings: primary care, school-based, and preschool-based sites. Students are exposed to each of these categories during their three-month rotation. The system of community health centers provides an excellent opportunity for multidisciplinary clinical optometric practice among a remarkably diverse population of children and adults. Students spend time with other professionals and gain insight into the full spectrum of health, educational, and societal issues.[7] This broad approach, beyond that of eye care alone, is invaluable to the students and the profession of optometry. This is especially true with high-risk infants and special needs populations. Clearly, these individuals have a host of other problems that must be considered in a multidisciplinary team approach.

Community Health Centers

An example of how this multidisciplinary approach works in the community health center setting follows. A teenage mother brought her 9-month-old infant child into the health center for a red eye with discharge. The child is first seen by a pediatric nurse practitioner who suspects conjunctivitis, but the child appears photophobic as well. The infant was of low birth weight and was born prematurely to a very young mother who is not English speaking. The child has been followed for failure to thrive. The nurse consults with the optometry service within the health center. The student and the attending optometrist faculty member examine the child, and determine that the child indeed has a conjunctivitis, but also manifests a head tilt and an intermittent esotropia. The child receives a prescription for an antibiotic and is sent back to the pediatric department for an evaluation of neurological status, prior to undergoing a more comprehensive optometric evaluation.

Is this an isolated eye problem or is this part of a more disseminated neurological issue? Was there a head tilt and esotropia before? Is it related to the prematurity and failure to thrive? Communication between the pediatric primary care and optometry programs is critical to proper diagnosis and management. This case illustrates the importance of developing skills and clinical thinking in a holistic manner. The optometry student must consider not only the eye problems, but must also consider the underlying health and social issues. The student must also be highly sensitive to cultural issues and language barriers.

The system of community health centers provides an excellent opportunity for multidisciplinary clinical optometric practice among a remarkably diverse population of children and adults.

Special Needs Schools

Schools for children with special needs also utilize a multidisciplinary approach. Schools have traditionally utilized a team of educators, psychologists, occupational, physical, and communication therapists, nurses and guidance counselors. The Cotting School is a school for children with multiple impairments, which incorporates a multidisciplinary approach. Comprehensive visual services were added to their program to gain access for their high-risk students to pediatric eye care professionals with a distinctly functional emphasis. The optometry clinic serves as an integral part of the functional assessment of each child. If optometry is having difficulty examining a child, the classroom teacher may aid in adapting the examination, ensuring optimal patient care. Students gain experience with other professionals in the health care and educational arenas. Part of the student's education is a sensitization to issues pertaining to children with special needs and their families. Students spend time with the other professionals in this educational environment learning about the abilities of people with special needs.

An example of how this works at the Cotting School follows. A communication therapist refers a 12-year-old non-verbal girl with Down syndrome to our eye clinic for a comprehensive visual evaluation. The communication therapist is not sure how large the print should be in her student's communication book. Before examining this child a consult is arranged with the Cotting medical staff for any medical issues pertaining to our patient. Then a consult is made with the classroom teacher to determine if any adaptations are necessary to incorporate into our examination. For example, we learn the child does not know her letters accurately and matches number 1 through 5 and pictures well. A fourth year intern and the attending faculty member then examine the patient. They find that the patient is a high hyperope, has cataracts and blepharitis. The attending faculty member then contacts the parents to discuss the evaluation and management strategies. A number of frames are selected for the patient to take home. The patient and parents will choose a frame and return them so glasses can be fabricated. The results of the examination are then discussed with the classroom teacher and communication therapist.

Early Intervention Programs

NEWENCO screens and examines approximately 2500 children a year through the Head Start and Early Head Start programs in the city of Boston. This experience provides a substantial number of high-risk chil-

dren for our students to examine. It also provides our students with an understanding of the behaviors of young children. Our interns are sensitized to the complex cultural, educational, societal and medical issues pertaining to this high-risk urban pediatric population. An example of this follows. A fourth year optometry student examines a three and a half year old child at a Head Start site in Boston, noting unusual eye movements, strabismus, anisometropia, and a strong fixation preference for the right eye. The child is very difficult to examine, is highly distractible, has poor language skills, and clearly has a host of medically related problems. The available history from Head Start indicates prematurity, cerebral palsy, unspecified vision problems, and a recurrent question of parental neglect. Glasses are prescribed and ordered at the Head Start site. On follow-up several weeks later, the child is wearing the glasses at school. The glasses are retained at school in the teacher's possession, because of concerns about their use at home. Patching was prescribed in school only, again because of concerns about compliance at home. The optometry student following this child became involved with the child, the school, and the parents in the child's management strategy.

What's Next

Our three-month intense pediatric rotation has been a success in sensitizing students to the complex cultural, societal, educational and medical issues pertaining to this high-risk pediatric population, but it has its limitations. At this time, we are only able to educate a third of the graduating class with this intense clinical experience. We give a less intense pediatric experience through the community health care system to the rest of the class but this is not enough. We are committed to increasing the number of students who rotate through our rotation to 100% of the fourth year class within five years.

NEWENCO has agreed on the remodeling of clinical education as one of its institutional goals. During this process, NEWENCO has agreed to start clinical experience during our students' first year. The purpose of this is to begin the process of transformation of thought and behavior from undergraduate student mode to clinical optometrist mode. Historically, optometric education places students in traditional classroom modalities in the first two years with relatively little clinical opportunity. We believe that this is a major impediment to the acquisition of clinical optometric skills and thinking, in particular, sensitization to special populations.

First year students will have the opportunity to screen early elementary children within the Boston Public Schools. This will allow students to develop optometric skills as well as a comfort level with a diverse population of young children.

A focused clinical experience with pediatric and special needs populations is essential for developing clinical skills and thinking for a broad range of patient care services.

Conclusion

An early clinical exposure to the care of infants and preschoolers is critical for converting the student into the clinical optometrist. A focused clinical experience with pediatric and special needs populations is essential for developing clinical skills and thinking for a broad range of patient care services. It is the philosophy at NEWENCO that the best way of achieving this is to integrate the profession of optometry into other health care and educational systems. As a result of our student's clinical exposure to these special pediatric populations, a breadth of experience and comfort is gained. We need to continue to develop these clinical opportunities on a profession wide basis.

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"No Tears" Pediatric Optometry: Introducing Student Clinicians to Infant Examinations

Gregg Steele, Ph.D., O.D., F.A.A.O.
Valerie Kattouf, O.D., F.A.A.O.

Abstract

A challenge confronting preceptors in a pediatric optometry rotation is teaching infant examination techniques to fourth year clinicians. Students at this level often fear the infant population and the unfamiliar examination techniques, as well as the emphasis upon objective diagnostic data. The challenge becomes even greater when the instruction takes place in a community-based ambulatory clinic as opposed to an optometry school-based specialty clinic. By their nature, community-based ambulatory clinics often stress a more abbreviated and focused examination1. This can sometimes be at odds with the educational goals of the rotation. We have developed an approach to precepting we term interactive modeling to address the educational and the clinical care needs of the community-based site.

Key Words: *pediatric optometry, community-based ambulatory clinic, interactive modeling*

Dr. Steele, recently deceased, was an associate professor at the Illinois College of Optometry when this article was written. Dr. Kattouf is coordinator of the Pediatric Residency Program and an associate professor at the Illinois College of Optometry.

Pediatric Optometry in the Community Based Setting

Community-based clinics were increasingly used for pediatric rotations in medical education during the 1990s. Community-based sites present a realistic view of pediatric practices to medical students and encourage the acquisition of skills that are effective in time-limited patient encounters[1]. These skills include performing focused patient interviews, learning to collect and synthesize essential data to reach diagnoses and treatment plans, and learning to document findings and plans in a concise, organized manner[1]. Although relatively short office visits present a challenge to teaching, it has been demonstrated that these community-based clinics can be very successful in educating student clinicians[1].

The benefits of a community-based clinic rotation apply to pediatric optometry as well. For the past four years the Illinois College of Optometry has provided vision care at the Friend Family Health Center in the Hyde Park neighborhood of Chicago. The Friend Center, a multidisciplinary clinic, provides services for patients ranging in age from birth to 18 years of age. The optometry clinic provides predominantly primary care services for its patients. Fourth year clinicians rotate through the clinic during their pediatric rotation at ICO, working at the Friend Center one day a week for a quarter. The Friend Center has two exam rooms, with appointments staggered every 15 minutes between the rooms. This scheduling places a premium upon the efficiency and organization of student clinicians. For the majority of school age patients, student clinicians provide direct patient care, with preceptors monitoring skills and providing consultation on the diagnoses and treatment plans. Most student clinicians have had no previous exposure to infant evaluations, however. The clinicians are introduced to infant exam techniques in their didactic courses, but the translation from the classroom to the implementation of these techniques is difficult. Students often build up fear and lack confidence in their infant examination skills. In addition, student clinicians frequently exhibit a rigidity regarding the order in which they approach an examination. The preceptor should take a more active role addressing these concerns in an infant examination.

Interactive Modeling in the Infant Exam

In the interactive modeling approach, the preceptor takes the leading role in the examination. The student clinician is not merely an observer, however, but actively participates in the data collection and analysis. When a student clinician encounters his/her first infant patient, the examination proceeds in the following sequence:

Preparation: Before the preceptor and student clinician enter the exam room, they briefly review exam methods appropriate for infants. The student clinician should be aware of different methods to assess visual function in the infant. As an example, visual acuity measurements might include tests such as Teller Acuity cards, fixation, or use of small candies or cereal. Techniques that student clinicians should be familiar with are summarized in Table 1 (adapted from reference 2). Flexibility is stressed to the student clinician-if the infant is not responding to a certain method, move on to another test. Finally, organization is discussed. The clinician

Table 1
Examination Techniques for Infants[2]

Assessment Area	Technique	Brief Description
Visual Acuity	Fixate & Follow	Qualitative method; can the child follow a transilluminator light with accuracy?
	10 prism diopter base down test	Qualitative; does the child alternately fixate between the vertically diplopic images?
	Candy Bead Test	Qualitative; can the child grasp a candy bead with equal ease OD and OS?
	Optokinetic Drum	Qualitative; horizontal nystagmus confirms the presence of vision up to (but not including) visual cortex
	Teller Acuity Card	Quantitative; forced choice preferential looking
Binocularity	Brückner Test	Simultaneously compare the whiteness & brightness of the retinal reflexes
	Hirschberg/Kappa Test	Compare the corneal reflexes binocularly & monocularly to detect strabismus
	Krimsky Test	Place prism before fixating eye until corneal reflex of deviating eye matches that of fixating eye
	Cover Test	Use thumb as opposed to an occluder
Refractive Error	Mohindra Retinoscopy	Near retinoscopy without cycloplegia
	Cycloplegic Retinoscopy	Use 0.5% (under 1 year of age) or 1.0% (over 1 year of age) cyclogyl
Ocular Health	Burton Lamp	Provides magnified views of the anterior segment
	Binocular Indirect Ophthalmoscopy	Provides binocular views of the posterior pole

should have tests and instruments arranged in a convenient manner, so precious time isn't wasted looking for instruments, since the window of opportunity for data collection during the infant evaluation is often shorter than in older patients.

The Examination: During the examination, the preceptor takes the lead during the interview and data collection. The student clinician observes the exam and often acts as a recorder. The preceptor calls the student's attention to pertinent findings and actively involves the student in collecting certain aspects of the data. If time and patient attentiveness allow, the preceptor may have the student repeat a test procedure in order to increase experience and eliminate fear. An example of student involvement during the examination is the assessment of infant binocularity. If the preceptor is performing the Hirschberg test, s/he should make sure the student observes the corneal reflexes and is able to interpret the results. The student clinician should be actively involved in tests that can benefit from a second pair of hands. An example would be attempting to determine gross confrontational fields in infants, where one examiner holds the infant's attention while the other examiner brings a toy in from the side. By allowing the student clinician to participate in the data collection, a sense of responsibility for the patient encounter should develop.

After the data has been collected, the preceptor and student clinician should confer on a diagnosis and treatment plan. The student clinician's input is solicited first, and the preceptor adds to and modifies the diagnosis and treatment plan as needed. An important aspect is relating the diagnosis to the data collected-what data does the student clinician have to support her/his diagnosis?

Review: A key aspect is to review the exam at the end of the clinic session. At the Friend Center, this can occur at lunch or at the end of the day. The exam techniques should be discussed, making sure the student clinician understands the techniques that were used. Alternative exam procedures should be suggested, and the techniques for those procedures discussed or demonstrated. By the end of the review, the student clinician should feel comfortable with conducting the examination and the results of the exam.

As a part of the review, student clinicians are asked how they would approach their next infant exam. The goal of the interactive modeling approach is for the student clinician

to assume more of the responsibility for the exam. By the end of the quarter, the student clinician should take the lead in the exam, with the preceptor observing and verifying results. Students have been successfully trained in the area of infant examination when they are able to determine a gross visual acuity on a non-verbal child, assess binocularity, rule out the presence of strabismus and amblyopia, correctly determine refractive error and complete an ocular health assessment. Students who can complete this with objective data collection and alternate examination techniques successfully complete the rotation.

Conclusions

The community-based interdisciplinary clinic offers a challenge to the optometry preceptor, especially with infants as patients. The interactive modeling approach allows the preceptor to demonstrate infant exam techniques to student clinicians in an efficient manner. Modeling and student observation are important parts of the approach, but active participation by students is equally important. As Scheiner observes with regard to medical education, "continued observation without patient care responsibility diminishes independent learning and may result in student boredom."[1] Student participation increases with each infant encounter, allowing students to overcome their fear of infant encounters in a gradual, supervised manner. By the end of the rotation, student clinicians should have the confidence to approach the most challenging patients.

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Resources

IN REVIEW

Anterior Segment Disease: A Diagnostic Color Atlas Arthur Boruchoff, Boston: Butterworth-Heinemann, 2000, 256pp. $155.00.

This is a hardcover color atlas focusing on diagnosing anterior segment diseases/entities. The author's focus is to provide examples of ophthalmic conditions encountered in daily practice and to help in answering questions such as what a particular disease or abnormality looks like, what combination of findings constitutes a specific disease entity and what other diseases should be considered in the differential diagnosis.

The book is organized based on the ICD-9 (International Classification of Diseases) coding system and consists of 15 chapters including disorders of the globe, disorders of the iris and ciliary body, cataract, keratitis, corneal opacity, conjunctiva, eyelid inflammation, disorders of the eyelid, lacrimal system, orbit, ocular tumors, congenital anomalies affecting the eye, trauma, complications of surgery and examples of replaced tissue. The diseases are then grouped under a particular heading, which is based on the most important clinical features shared by all of the clinical entities within that grouping (e.g. corneal degenerations). Characteristics that are shared by all diseases within that grouping are highlighted in a shaded, blue area directly under the group heading. After this generalized characterizing, the most important diseases are featured and differentiated with pertinent text or tables to highlight the particular features found in a typical presentation of that condition.

As the title denotes, this is primarily a color atlas. The focus is on the 410 high quality, actual patient color photographs of the various conditions highlighted in the book. The author has tried to find photographic representations that are considered to be typical of the disease entity. Multiple pictures are used when a single picture is unable to display all of the features of a particular condition, and as many diseases progress over time, multiple examples are used to demonstrate this progression. The illustrations are of the highest quality and are the primary focus of the book. The resolution of the pictures is excellent, and the author has used digitized color photographs and edited them using Adobe Photoshop to eliminate extraneous material and highlight the details of the particular condition. The resulting photographs are of the highest quality and emphasize the distinguishing features of the pathological changes associated with the disease. The text that accompanies the illustrations is in bullet form to succinctly describe any additional pertinent signs, symptoms or etiologies. Differential diagnoses are in table form and scattered throughout the text to aid the reader in determining an appropriate diagnosis.

The author has targeted both ophthalmology and optometry. This atlas would be an excellent addition to any practitioner's library, but in particular, I think it would be a very worthwhile addition to both optometric students and residents. Anterior segment conditions are often difficult to visualize, especially from text information. This book has excellent quality photographs depicting the *typical* presentation of each condition, with the addition of brief and only pertinent text information

(Continued on page 63)

headed by Barbara M. Kelley, as vice president, communications and investor relations.

Marchon Introduces New Frames

Marchon Eyewear has added two new frames to its Flexon® Select collection. The styles - known as T-Wire frames - are ultra-thin, lightweight, and offer exceptional comfort while maintaining a modern, fashion forward look. With T-Wire technology, the eyewire is imbedded in a groove at the perimeter of the lens, allowing the frame to be extremely thin and minimalistic. Flexon Select T-Wire frames have the added benefits of endurance and flexibility, because the bridge and temples are made of Flexon memory metal. Flexon memory metal is a titanium-based alloy that can "remember" its original shape and return to it - providing superior fit, comfort and durability. It is 10 times springier than spring steel, 25 percent lighter than conventional metals, corrosion-resistant and fatigue-resistant.

Marchon Eyewear, Inc., headquartered in Melville, New York, is the world's largest, privately owned producer and distributor of fashion and technologically advanced eyewear and sunwear.

Zeiss Foundation Earns Colts Performance Seal

Carl Zeiss Optical, Inc. announced that Foundation Super Hard Coating has earned the Colts' Performance Seal. The Colts report said that the test results "represent some of the higher scores we've seen."

"We are thrilled to have earned the Colts Performance Seal for the Foundation coating, said Ed Greene, president. "There is nothing more satisfying than having a non-biased party confirm that what you are doing is right on." The Colts' Performance Seal is given to those manufacturers who have achieved a quality level set by Colts Laboratories. This level includes confirming claims that are made by the manufacturer as well as rigorous performance testing of the coating to assure that there are no abrasion, crazing and adhesion issues.

Carl Zeiss Optical, Inc., located in Chester, Virginia, is the U.S. headquarters for the distribution of Carl Zeiss, Germany, ophthalmic lens products, coating equipment, binoculars and riflescopes. For additional information, please call 1-800-338-2984 or visit our Web site at www.zeisslenses.com

PRIO Introduces Kids Computer Vision Solution

PRIO Corporation has introduced the PRIO Kids Complete Computer Vision Solution, which provides eye doctors with the tools needed to build a children's computer vision specialty into their practice. The collection features a brightly colored display with "kids only" frames and matching clip-on lenses for sun and computer use; the PRIO Kids diagnostic instrument; and educational materials for parents on computer vision care.

"Computer Vision Syndrome (CVS) is a well-documented condition that affects millions of people in the workplace," said Jon Torrey, president/CEO of PRIO. "It's a health problem that we're finding is also affecting 25-30% of children who are growing up using computers at home and in school. Now, for the first time, doctors can offer their pediatric patients a solution to this growing problem."

"The unique characteristics of a child's eye functions, combined with the way children use computers, make them more susceptible to computer eyestrain," **said Dr. Pia Hoenig**, chief, Binocular Vision Clinic, **University of California Berkeley School of Optometry.** Dr. Hoenig is completing a study at UCB comparing methods of diagnosis of children with computer related vision problems.

For more information, call 800-621-1098 or visit www.prio.com

Paragon Vision Sciences Expands Professional Services

F. Keith Leach II is the newest member of the Paragon Vision Sciences team. Keith joins Paragon as the new manager of consultation services. Tim Koch, director of professional services, said, "I welcome Keith as a colleague. His communication skills and extensive experience will have a significant impact on the level of expert service we can deliver to practitioners everywhere."

Since Paragon obtained daily wear clearance for Paragon CRT, the unique patent pending design and fitting system for Corneal Refractive Therapy, it has been focusing on the ongoing clinical studies necessary to apply for overnight approval and is in preparation of its worldwide launch of CRT planned for 2002. Paragon is a company known worldwide for advanced oxygen permeable materials marketed under Paragon HDS®, ParagonThin, FluoroPerm® and Paraperm® brand names. For information on Paragon, call 800-528-8279 or visit their web site at www.paragonvision.com

Transitions Optical Launches New Lens

Transitions Optical, Inc. introduced a breakthrough in lens technology, its first clear (at least clear indoors) lens — Next Generation Transitions® 1.50 Lenses. "This is one smart technology," said Dave Cole, general manager of the Americas for Transitions Optical. "The industry now has the option to offer consumers a clear indoor lens that adjusts to varying light conditions."

So significant is the improvement in indoor clarity, Transitions Optical is positioning Next Generation Transitions as an alternative to regular lenses. "With this leapfrog in technology, Next Generation Transitions simply doesn't belong just in the photochromic category," Cole said. "Eyecare professionals will confidently be able to offer Next Generation Transitions to any consumer. They're a smart choice in everyday lenses." As with all Transitions products, Next Generation Transitions provide 100 percent UVA and UVB protection.

(Continued from page 61)

to help diagnosis. I like the author's use of the ICD-9 coding system to organize the book. It is a universal coding system that all practitioners should be familiar with and utilizing. As this is a color atlas focusing on diagnosis, there are no treatment protocols included in the text. I found myself looking for the treatment options, until I remembered the focus of the book was that of a diagnostic color atlas.

This book is highly recommended if you do not currently have an anterior segment color atlas. Even if you do, you won't be disappointed with the quality of the photographs in helping you visualize anterior segment conditions. This book would be a valuable addition for optometric students and residents as they continue to learn and be exposed to the extensive variety of anterior segment disorders.

Guest Reviewer:
Dr. Blair Lonsberry
Assistant Professor
Southern College of Optometry

Drug-Induced Ocular Side Effects with CD-Rom, fifth edition. FT Fraunfelder, FW Fraunfelder. Boston: Butterworth-Heinemann, 2001, 824 pp., $59.95.

The preface to this text tells the reader exactly what to expect: "A 'quick' reference book that "boils it down." The book is intended to serve as a guide for determining if a drug is the cause of an ocular problem.

Its effective organization does, indeed, make this a quick reference book. The format is clear, and a perusal of the "Instruction to Users" makes it easy to follow. Each chapter is dedicated to a specific drug category, and the chapters are divided into sections by class of drug, in alphabetical order. The drugs themselves are also listed, in alphabetical order, by generic name. Each listing gives brief information on international proprietary names, primary use of the drug, possible ocular side effects given various administrations, clinically significant findings, and the most current and or recommended references. There is a significant chapter on "Drugs Used Primarily in Ophthalmology." (although, one could argue that this should be entitled "Ophthalmic Drugs.") A comprehensive index organized by side effects is included at the end of the text.

The jewel in this guide is the "Clinical Significance" for each drug. This is a candid discussion including such information as the likelihood of a specific side effect, and whether it is reversible or transitory. Clinical trial information, case reports, and literature references are sometimes given. Additional information on drugs used in combination with one or more drug(s), and how this affects the potential ocular side effects, is sometimes provided. Of special note are occasional clinical pearls on patient management for using drugs that can cause significant ocular side effects and discussions regarding controversial findings.

This is a concise yet complete compilation of reports in one place. It is a practical resource that would complement any eye care professional's library. While it is not small enough to be pocket-sized, it is definitely portable enough for a practitioner to keep handy. Or, for even more convenience, there is a CD-ROM included, which allows a simple download of the interactive full text onto your office computers and your laptop for "at your fingers" availability.

Guest Reviewer: Dr. Eunice Myung
Instructor
Southern California College of Optometry

The Lighthouse Handbook on Vision Impairment and Vision Rehabilitation Volumes 1and 2. B. Silverstone, M.A. Lang, B.P. Rosenthal, E.E. Faye, editors in chief, New York: Oxford University Press, 2000, 1371pp. $275.00.

The conception and production of a comprehensive handbook of any clinical field is a difficult endeavor. There will always be omissions of important areas of current clinical research and repetition of information with multiple authors. Happily, I did not find these problems to be of any consequence in this text.

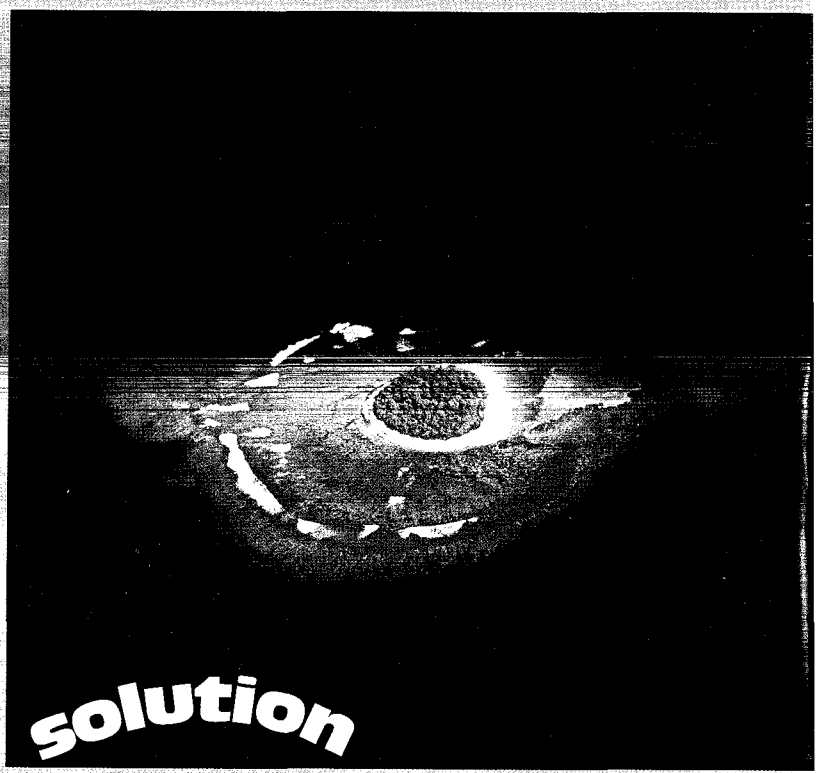
As the editors explain in the preface, these volumes are an interdisciplinary attempt to fully address the topics of vision impairment and vision rehabilitation. The advantages of this publication are the simplicity of its layout, the ease with which information can be found, the comprehensive range of topics discussed and the particular pertinent issues addressed for each.

Organizationally, there are two volumes, which cover "Vision Impairment" and "Vision Rehabilitation" respectively. There are five parts in the first volume on vision impairment from a medical, functional and psychosocial perspective. Part I provides an excellent overview of the major causes of vision loss worldwide in sufficient detail, utilizing fine tables, diagrams and figures. Chapters 2 through 10 cover these disorders from the pediatric to the adult population. The inclusion of age-related cataracts and refractive disorders reflects the worldwide perspective, since these disorders are highly prevalent cause of vision impairment in developing countries. The information in Part II, "Visual Disorders: The Functional Perspective," focuses on vision loss from a visual perceptual point of view and reviews the methodology of psychophysical study in Chapter 11.

Volume 2, "Vision Rehabilitation," starts with an interesting historical insight into this field in Part VI. Case fragments are employed to good effect to highlight points or treatment techniques throughout this volume. The chapters in Part IX, "Psychological and Social Factors in Visual Adaptation and Rehabilitation" are thorough yet readable and well referenced.

This is a first class work that, despite multiple authors, maintains an excellent integration of concepts without a lot of replication in different chapters. This book covers all scientific, clinical and practical areas of vision impairment and vision rehabilitation. Although not an essential text for optometry students, I highly recommend it as an extremely useful text that will add value to the reference library of optometrists, ophthalmologists, psychologists, rehabilitation teachers, social workers, occupational therapists and all others interested in the area of rehabilitation.

Guest Reviewer:
Dr. Pamela R. Oliver
Nova Southeastern University
College of Optometry



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