

American Optometric Association Eye Safety Project Team:

Gregory W. Good, O.D., Ph.D., Jeffrey L. Weaver, O.D., Steven A. Hitzeman, O.D., Col. George L. Adams, III, O.D., and William L. Lapple, O.D.

Eye safety—You can make the difference

For the first time in its short history, the Healthy People Initiative¹ has included vision objectives to help reach its goal for creating a healthier American public. Some of the vision objectives are general in nature:

1. Increase proportion of persons who have a dilated eye examination at appropriate intervals.
2. Increase the proportion of preschool children ages 5 years and under who receive vision screening.

Several are related to specific disease entities:

1. Reduce impairment from diabetic retinopathy.
2. Reduce impairment from glaucoma.

It is easy for practicing optometrists to understand their roles in helping Americans meet these particular objectives. That is what we do every day in practice.

There are 2 objectives that deal with eye safety, with the goal of reducing preventable eye injuries at work and home:

1. Reduce occupational eye injury.
2. Increase the use of appropriate personal protective eyewear in recreational activities and hazardous situations around the home.

For these objectives, the practicing optometrist's role is less obvious and certainly is complimented with a commitment by the entire office staff.

The most recent estimates show that, on average, 2,000 occupational eye injuries requiring medical treatment occur every workday.² (This figure was partially determined using data

from the National Electronic Injury Surveillance System [NEISS], which monitors injuries and illnesses treated in emergency rooms. Because the majority of most injuries in the United States are treated in non-emergency room medical facilities, the original NEISS estimate was increased by approximately 2.5 times to arrive at the 2,000 eye injuries per day figure.³) Within industry, the majority of eye injuries occur to workers not wearing any eye protection. The Bureau of Labor Statistics found that in 60% of occupational eye injuries, eye protection was not worn.⁴ Additionally, for cases in which an injury occurred in spite of wearing eye protection, most injuries occurred when the wrong type of protector was used or was improperly adjusted. When safety equipment is fit and used properly, it is estimated that more than 90% of eye injuries can be lessened in severity or prevented entirely.⁵

The number of eye injuries each year associated with sporting activities is also staggering. Estimates from the NEISS program indicate that more than 40,000 eye injuries occur and are evaluated within emergency rooms each year from sporting activities.⁶ Because these estimates are only from emergency rooms, it is logical to assume that the 40,000 number underestimates the actual total by approximately 2.5 times as was described above. Therefore, a better yearly estimate for sports-related eye injuries may be 100,000. Similar eye injury numbers are found associated with lawn and garden products. Clearly, the number of eye injuries each year is putting vision at risk for a large number of our patients.



Gregory W. Good, O.D., Ph.D.

Is optometry doing enough?

With eye injury numbers like these it is easy to see why it is so important for optometry to be involved in helping prevent eye injuries whether at home or at work. As the primary eye care profession, optometry should be participating at all levels to help maximize eye safety.

To help determine how optometry is currently participating in industrial eye safety, AOA's Eye Safety Project Team sent a short survey dealing with issues surrounding safety glasses to nearly 1,000 companies in Ohio. A complete list of all "companies" registered in Ohio was obtained from the Bureau of Workers' Compensation. Every sixth company that had "manufacturing" or "construction" in its official State of Ohio name was sent a 13-question survey. One hundred

Table 1 Vision Survey of Industry

| | |
|---|-----------------------|
| Does your company provide PRESCRIPTION safety glasses at no charge to employees? (Separate from glasses provided through a Vision Insurance Plan) | YES 34.4% NO 65.6% |
| When a worker requires PRESCRIPTION safety glasses, how does the employee obtain the prescription for the safety glasses? | |
| Specific Eye Doctor/Optical Shop that has signed agreement to provide services | 27.4% |
| Worker required to bring prescription from private eye doctor | 62.6% |
| Where do workers choose, and get measured for, prescription safety frames? | |
| Eyeglass dispensary ON-SITE within company | 3* |
| Eye Doctor/Optical Shop has signed agreement to provide services | 19 |
| Worker's private eye doctor completes order form provided by company | 16 |
| Other | 21 |
| Where do workers have safety glasses adjusted when they get out of adjustment? | |
| Eyeglass dispensary ON-SITE within company | 4 |
| Eye Doctor/Optical Shop has signed agreement to provide services | 15 |
| Worker is responsible to have this service provided privately | 36 |
| Other | 7 |
| Who determines what specific safety devices are required for different jobs in plant? | |
| Individual worker | 14 |
| Supervisor of individual worker | 19 |
| Company safety personnel | 37 |
| All workers just wear safety glasses | 3 |
| During the past year, have any employees received a safety briefing concerning the eyes and vision? | YES 52 NO 41 |
| Does your company require pre-employment vision screenings of applicants? | YES 8 NO 86 |
| Do you have an eye doctor/vision consultant that has given advice on vision requirements for certain jobs in your company? | YES 6 NO 86 |
| Does your company have a WRITTEN policy regarding contact lens wear within your plant? | YES 8 NO 84 |
| Are there jobs within your plant for which the wearing of contact lenses is NOT allowed? (NOs involved working with chemicals and/or welding operations.) | YES 10 NO 79 |

Note: The above numbers apply only to those companies that said that safety eyewear was required for at least some their workers.

* Numbers without "%" are raw numbers. Not all questions had the same number of total responses.

twenty-five of the surveys (of 914 surveys sent), were completed and returned. The results present an interesting view of eye safety from the company's perspective. The results are shown in [Table 1](#).

That only 34% of the responding companies provide prescription eyeglasses at no cost to workers may be surprising to many readers. This may seem exceptionally low to those of us who believe it is an OSHA requirement for companies to provide prescription devices to all workers. This is not the case, of course. Providing plano safety devices that fit over street glasses is sufficient to comply with OSHA requirements. Therefore, in many cases, if workers want to wear prescription safety glasses, there is a good chance that they must purchase the glasses themselves. Many companies provide vision care plans that al-

low workers to obtain safety glasses as a periodic insurance benefit. This, however, would "use up" the benefits for that year and not allow coverage for dress eyewear.

The survey also shows that for the majority of cases, workers are responsible for obtaining adjustments to eyewear on their own. Although this is not unexpected, it does illustrate that optometric offices can be involved with eye safety across a variety of avenues. Determining the safety glass prescription, ordering safety glasses, or adjusting safety spectacles are all opportunities for optometry office personnel to discuss eye safety issues with patients at times other than during comprehensive evaluations.

Eye safety discussions

What can we and our office staffs do to convince patients to wear personal pro-

TECTIVE equipment when it is appropriate? How can we modify behavior? To best change health-related behavior for our own good, the Health Benefit Model was first proposed in the 1950s.^{7,8} This model explains how individuals must be approached on 4 different levels to institute long-term change. The model holds whether we are discussing smoking cessation, seat belt use, or the wearing of safety glasses. Our discussions with patients should address the 4 levels discussed below.

Perceived susceptibility

For individuals to make a conscious decision to routinely wear eye safety protectors, they must accept the fact that they are susceptible to eye injury. Individuals must believe there is a real threat to their vision and eye health. Educating patients and workers on the large numbers of eye inju-

ries that occur in the United States each year is a start; however, individuals need to believe it can happen to them and not just “to the other guy.” Personal knowledge of an incident is often necessary before individuals realize that they are at risk. Having an example of an injury sustained by someone they know, someone within their company, or someone in their hometown can be very useful. Testimonials by celebrities or sports figures can help individuals see that “yes, it can happen to me!”

Perceived severity

Believing that the consequences of an eye injury can be severe is required before a change in behavior will be acceptable. Patients and workers must understand the overall importance of vision to our everyday lives and that vision loss is possible from injury. Showing slides of injured eyes helps drive home this point. Individuals often don't understand how fragile the eyes can be. A small scar to the skin can have no consequences, whereas the same small scar to the cornea can “steal” vision needed for reading, driving, or working.

Perceived benefit

Individuals must believe that eye protection does work. No one will wear safety glasses if it is generally believed that they serve no protective benefit. Individuals must have confidence that safety glasses can protect the eyes from injury. A demonstration of the toughness of a polycarbonate lens can help drive home this point.

Perceived barriers

Barriers to the general wearing of safety glasses include cosmesis concerns, comfort, and interference with clear vision. Individuals not accustomed to wearing spectacles will eventually adapt to discomfort behind the ears or subtle visual distortions; however, cosmetic concerns will continue to impede compliance with safety spectacle wear regardless of the time frame.

Representatives of workers should be involved in choosing safety eyewear styles that are most acceptable. There are hundreds of styles available today from which to choose. The styles that are most appropriate will depend on many factors including the age and sex of the workers. A style that looks good is more likely to be worn when it is needed for protection.

For recreational and home safety, optometrists should stock a wide range of safety eyewear that is appropriate for the types of hazards that may be encountered. Different styles are required for basketball than for football or lacrosse. The American Society for Testing and Materials (ASTM Section 15.07, www.astm.org) has developed standards for eye protective devices for specific sports to ensure that the device will protect against the foreseeable hazards for different sports.

What can I do?

It is important that eye safety issues are discussed with patients at each and every patient visit. Whether discussing eye hazards at work, at school, at play, or around the home, there are numerous issues that can be addressed.

Be a role model for your neighborhood. Wear eye protection when working in the yard or during athletic endeavors. Make safety devices available to your patients and try to make eye safety part of everyday life. This is the method approached by the U.S. Army in their Combat Eye Protection program.⁹ “Train as you will fight” is the motto. Safety glasses are now issued to all soldiers deploying to southwest Asia and will soon be issued to all basic training soldiers throughout the Army. Combat eye protection will become part of the uniform and will be in place when they are needed. The U.S. Army has had tremendous recent success in convincing commanders and soldiers throughout the ranks of the benefits of routinely wearing protective eyewear.

Help make the wearing of protective eyewear a habit. Only then can we ensure that the protection will be in place when it is needed!

Summary

Optometry can be the “go to” profession when questions concerning eye safety and eye injury prevention are raised. Help your patients recognize the hazards they face and help convince them that they are at risk. This can be done on an individual patient basis or with general discussions at safety talks at a local industry or school. Have your office personnel bring up safety issues with every patient. It is our responsibility as *THE* Primary Eye Care Profession to help ensure that preventable eye injuries don't occur. Do the right thing. Help Healthy People 2010 reach its eye safety goals. You can make the difference.

References

1. Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services. Healthy People 2010. <http://www.healthypeople.gov/>. Last accessed March 1, 2006.
2. National Institute for Occupational Safety and Health. Eye safety. <http://www.cdc.gov/niosh/topics/eye/>. Last accessed March 1, 2006.
3. Nonfatal occupational injuries and illnesses treated in hospital emergency departments—United States, 1998. *MMWR* April 27, 2001; 50(16):313-7. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5016a3.htm>.
4. U.S. Department of Labor. Accidents Involving Eye Injuries. Report 597. Washington, DC, Bureau of Labor Statistics, 1980.
5. Prevent Blindness America, 2005. Prevent Blindness America fact sheets. http://www.preventblindness.org/resources/factsheets/Preventing_Workplace_Injuries_MK33.PDF. Last accessed March 1, 2006.
6. Prevent Blindness America, 2005. Prevent Blindness America Fact Sheets. http://www.preventblindness.org/resources/fact_sheets.html#sports. Last accessed March 30, 2006.
7. Rosenstock IM. Historical origins of the health belief model. *Health Education Monographs* 1974;2(4):470-3.
8. Becker MH. The health belief model and personal health behavior. *Health Education Monographs* 1974;2(4):324-469.
9. Bye-bye BCGs: The plan to dump those ugly glasses. *U.S. Army Times*: June 13, 2005, p. 14. Army Times Publishing Company.

Corresponding author:

Gregory W. Good, O.D., Ph.D., The Ohio State University, College of Optometry, 338 West 10th Avenue, Columbus, OH 43221

good.3@osu.edu



American Optometric Association

243 N. Lindbergh Blvd. • St. Louis, MO 63141 • (314) 991-4100

FAX: (314) 991-4101

Eye Safety Policy

Background

The Healthy People Program was developed as the disease and injury prevention framework for the United States. With the Healthy People 2010 initiative, objectives specifically related to vision have been included in the program. At least three of these objectives address the issue of eye injuries:

- 28-4 Reduce blindness and visual impairment in children and adolescents aged 17 years and under
- 28-8 Reduce occupational eye injury
- 28-9 Increase the use of appropriate personal protective eyewear in recreational and hazardous situations around the home.

The American Optometric Association (AOA) is an ardent supporter of these objectives and believes that the human and economic costs associated with eye injuries are preventable with proper education and intervention. The AOA believes that the use of protective eyewear is a necessary component of a healthy lifestyle to help ensure a lifetime of functional vision. No one should participate in any activity without knowing the risks of eye injury; and, where appropriate, personal protective eyewear should be made available to encourage routine use. The American Optometric Association makes the following recommendations to promote eye safety as appropriate and reasonable for each patient:

Recommendations

1. Primary care practitioners should educate their patients on the risks of eye injury during work, play and other activities that fill one's daily life.
2. Eyecare practitioners should provide information on the availability of appropriate eye protection and encourage the use of eye-protective devices.
3. Supervisory officials in the workplace, schools and at recreational events should mandate wear of eye protection in all activities in which a risk of eye injury exists.
4. Parents should set a good example by wearing protective eyewear themselves as well as encouraging good habits by requiring protective eyewear for their children early in life.

--Approved by the AOA Board of Trustees, November 4, 2005