United States Lifeguard Standards Coalition
Evidence Review

On the following pages, you will find a primary question (and in some cases ancillary questions), reviewed by the United States Lifeguard Standards Coalition (USLSC), the draft consensus recommendation of the USLSC, and the Scientific Review Forms (usually two) that detail the specific evidence upon which the consensus recommendation was based.

In most cases, for each question, two independent investigators researched existing evidence, including scientific research and other material, related to the question. Each investigator then completed a Scientific Review Form, listing the evidence and an evidence summary. The level and quality of evidence was rated using a standardized evidence evaluation process. The evidence reviewed included, but was not limited to, the following:

a. Population-based studies
b. Epidemiological studies
c. Case-control studies
d. Historic research
e. Case studies
f. Large observational studies
g. Review of past research summaries, and
h. Extrapolations from existing data collected for other purposes

The scientific reviews were presented to the entire USLSC. Each topic was presented, discussed and critiqued by the assembled experts until consensus was reached.

You are invited to comment on this question (as well as the others) and particularly whether you believe that the evidence adequately supports the consensus recommendation. If you are aware of any additional evidence (e.g. scientific research) that was not considered by the Lifeguard Standards Coalition, please list that evidence in your comments. In any comments you choose to make, please be sure to cite the line number, if you are referring to specific wording of the item.

Before commenting, please review the document in full. This includes an initial document, which contains the question or questions investigated and the consensus recommendation. This is followed, in most cases, by two Scientific Review Forms, which list the evidence that was considered in arriving at the consensus recommendation.

Thank you for your time and consideration in reviewing this question. The deadline for comments is December 12, 2009.

VISION

Question

- Is there evidence to support recommending a minimum vision standard for lifeguards?

Ancillary Questions

- If so, what is the minimum requirement?
- Are corrective lenses/treatments acceptable?

Introduction

Many occupations, particularly those in which individuals must be able to perform under stressful situations that require physical ability, have minimum standards for performing these tasks as a prerequisite for employment. Lifeguarding requires the ability to maintain attention and focus for long periods of time. Lifeguards must be able to identify potentially dangerous situations and react to them in a reasonable timeframe to ensure the safety of others. Many questions have been asked about the minimum requirements for lifeguards, including physical ability, age, hearing, and visual acuity.

Evidence Summary

A literature review identified 22 relevant sources. The studies with the highest LOEs included a study that looked specifically at developing visual acuity standards in lifeguarding (Seiller, 1997), and another study that looked at the same but specifically for beach lifeguards (Tipton et al). In sources that involved driving standards and recommendations for other professions, impaired visual acuity reduced people's abilities to perform complex tasks, including operating an automobile (Wood, 2006; Ivers, 1999; Garcia, 2005). Minimum visual acuity standards in their occupations are supported in articles by The American College of Occupational and Environmental Medicine (2002) and by the Communities and Local Government of the United Kingdom's Medical and Occupational Evidence for Recruitment and Retention in the Fire and Rescue Service. Some studies suggested specific standards.

An assessment of specific employment applications for law enforcement, firefighting, the Federal Aviation Administration pilot's license, and lifeguarding provided a consensus that a visual acuity standard should exist. Most of these applications also set minimum visual acuity thresholds for employment, with a limited range that required a minimum vision acuity of no worse than 20/40 in corrected vision in each eye. One study set an uncorrected visual acuity at 20/200. In a study by Tipton et al, as long as lifeguards' vision is corrected during scanning, they were able to reach victims even after loss of corrective lenses.

Consensus Recommendation

There is enough evidence to recommend that there should be minimum visual acuity standards for lifeguarding (6 studies of LOE 3b and 16 additional studies with LOEs between 4 and 5). However, because the amount of direct research about a minimum visual acuity standard in lifeguarding is limited, and indirect studies had lower LOEs with most information as consensus opinion, we feel we can make only a guideline decision. Formal adoption of a standard in lifeguarding would require additional research.

Further research is also needed to determine if corrective devices (contact lenses and glasses) are acceptable for use in a lifeguarding setting. Preliminary studies look promising.

Validation studies are necessary to confirm that developed thresholds are comparable for all lifeguarding settings, such as including pools, lakes, and open-water environments.

Recommendations and Strength

Standards:

Guidelines: A minimum vision standard for lifeguards should be identified and instituted.

Options: Each facility is encouraged to require testing of corrected and uncorrected vision and to then develop appropriate standards for their venues.

No Recommendations:

Unites States Lifeguarding Standard Coalition
Scientific Review Form

Author: **Andrew Butterfass, MD FACEP**	**Organization Representing:** **American College of Emergency Physicians**
Question: **Is there evidence to support recommending a minimum Vision standard for lifeguards?**	**Date Submitted:** **2/6/08**

Question and Sub-Questions:

Is there evidence to support recommending a minimum Vision standard for lifeguards?

- **If yes- what are the minimum requirements?**
- **Are corrective lens/treatments acceptable?**

Introduction/Background:

Many occupations have developed minimal standards as a prerequisite for employment. Occupations that require individuals to be able to perform under stressful situations requiring physical ability have developed minimal standards for performing these tasks. Lifeguarding is a profession that requires a unique ability to maintain attention and focus for long periods of time. Individual need to be able to identify potential dangerous situations and react to them in a reasonable timeframe to ensure safety for those entrusted to their care. Many questions have been asked about minimal abilities for lifeguards with relation to physical ability, age, hearing and visual acuity.

Evidence Identification and Review

Internet Search Engine's
Pub med

Summary of Key Articles/Literature/Reports/Data Found and Level of Evidence

Author(s) and Year published	Full reference	Summary of Article (if abstract available, first past abstract and then provide your summary	Level of Evidence (Using table below)
Nassau County, New York Department of Health	Application for Approval of Lifeguard Qualifications	Vision Standard requires an eye examination with Snellen chart with and without corrective lenses. Must achieve minimum Snellen score of 20/40 in one eye.	Level 5
County of Los Angeles	Class Specification for Ocean Lifeguard Candidate	Vision Standards require a Snellen score of at least 20/30 in each eye without correction.	Level 5
Las Vegas Metropolitan Police Department	Employment Medical/Vision/Hearing Standard	Near Vision: Candidates who wear Glasses or Hard or Rigid Gas Permeable Contact Lenses Corrected Acuity — A minimum requirement of 20/20 Uncorrected Acuity — No uncorrected near visual acuity requirement Candidates who wear Soft or Disposable Contact Lenses Corrected Acuity — A minimum requirement of 20/20 Uncorrected Acuity — No uncorrected near visual acuity requirement Far Vision: Candidates who wear Glasses or Hard or Rigid Gas Permeable Contact Lenses Corrected Acuity — A minimum requirement of 20/20 Uncorrected Acuity — A minimum requirement of 20/40. Candidates who wear Soft or Disposable Contact Lenses Corrected Acuity — A minimum requirement of 20/20 Uncorrected Acuity — No uncorrected far visual acuity requirement, provided: The candidate has successfully worn contacts for the preceding six months without complications prior to the medical exam. The candidate agrees to replace the lenses every six months to one year or more frequently if needed. The candidate agrees to clean the lenses on a regular basis as recommended by the manufacturer. The candidate agrees to maintain contact lenses wear and to sign an agreement. (Notice of Conditional Employment) Corrections Recruits: Near Vision: Minimum requirement is 20/20. This requirement may be met with or without correction (spectacles, hard or soft contact lenses). Far Vision: Minimum requirement is 20/20. This requirement may be met with or without correction (spectacles, hard or soft contact lenses).	Level 5

		Color Vision (Police/Corrections/Selected Civilians) The Department uses the Ishihara Pseudochromatic Plate and the Farnsworth D-15 tests. Candidates who fail the Ishihara and pass the Farnsworth D-15 are acceptable Candidates who fail both the Ishihara and the Farnsworth D-15 (two or more crossings of 4 or greater) are not acceptable. The use of X-chrom lenses is prohibited. Refractive Surgery (Police/Corrections/Selected Civilians) Radial Keratotomy (RK) - a waiting period of 1-year post surgery is required prior to the medical exam. Lasik (PRK) - a waiting period of 6 months post surgery is required prior to the medical exam. A review of medical, post-op records and subsequent touch up surgeries is required including the make and model of the laser used. (The candidate will need to see a specialist for evaluation).	
Communities and Local Government United Kingdom	Medical and Occupational Evidence for Recruitment and Retention in the Fire and Rescue Service	The article reviewed Vision requirements for firefighting employment based on English military standards. The article determined that minimal levels of Vision are necessary for firefighters. Specific thresholds including corrected vision, night, color and surgery were also reviewed.	Level 4
Pilot Medical Solutions, Inc	FAA Medical Certification- Visual Acuity Standards and Evaluation	FAA has minimal standards for both private and commercial pilots.	Level 5
Florida State Division of State Fire Marshal	Medical Examination	Require far visual acuity and peripheral vision testing. Does not specify minimal requirement.	Level 5
Invest Ophthalmol Vis Sci. Wood J, Cohen RC, Holland JA, Shun A, La Hei ER.	The effect of auditory and visual distracters on the useful field of view: implications for the driving task.	PURPOSE: The driving environment is becoming increasingly complex, including both visual and auditory distractions within the in-vehicle and external driving environments. This study was designed to investigate the effect of visual and auditory distractions on a performance measure that has been shown to be related to driving safety, the useful field of view. METHODS: A laboratory study recorded the useful field of view in 28 young visually normal adults (mean 22.6 +/- 2.2 years). The useful field of view was measured in the presence and absence of visual distracters (of the same angular subtense as the target) and with three levels of auditory distraction (none, listening only, listening and responding). RESULTS: Central errors increased significantly ($P < 0.05$) in the presence of auditory but not visual distracters, while peripheral errors increased in	Level 3b

		the presence of both visual and auditory distracters. Peripheral errors increased with eccentricity and were greatest in the inferior region in the presence of distracters. CONCLUSIONS: Visual and auditory distracters reduce the extent of the useful field of view, and these effects are exacerbated in inferior and peripheral locations. This result has significant ramifications for road safety in an increasingly complex in-vehicle and driving environment. Visual acuity loss reduces people's ability to perform complex tasks such as driving and automobile.	
American Journal of Public Health Ivers RQ, Mitchel P, Cumming RG	Sensory Impairment and Driving: The Blue Mountain Eye Study	OBJECTIVES: This study examined the associations between vision, hearing, loss, and car accidents. METHODS: A cross-sectional survey of 3654 people aged 49 years and older in the Blue Mountains, Australia, was used. Each subject had a detailed eye examination and interview. RESULTS: Self-reported car accident rates in the past year among 2379 current drivers were 5.6% for those aged 49 to 79 years and 9.1% for those 80 years and older. A 2-line difference in visual acuity was associated with increased risk of accidents (adjusted prevalence ratio [PR] = 1.6), as was visual acuity worse than 6/18 in the right eye (PR = 2.0), overall moderate hearing loss (PR = 1.9), and hearing loss in the right ear (PR = 1.8). CONCLUSIONS: Sensory loss in drivers may be an important risk factor for car accidents. Visual acuity loss reduces people ability to perform complex tasks such as driving and automobile.	Level 3b
J Occup Environ Med. 1999 Apr;41(4):213-5. **Kales SN**, **Aldrich JM**, **Polyhronopoulos GN**,	Fitness for duty evaluations in hazardous materials firefighters.	We analyzed results from the medical examinations of 340 hazardous materials firefighters and applied various objective standards in simulated fitness for duty determinations. Ten percent had elevated blood pressures, 13% had far visual acuity worse than 20/30 in one or both eyes, and 38% had abnormal audiometry. The strictest standards for resting blood pressure and **corrected visual acuity would have failed 2% and 1% of the cohort, respectively**. For audiometry, 0%-5% of the cohort would have failed, depending on the hearing requirements set. The strictest hearing standard did not allow for corrective devices so that few failures would be reversible. **Visual and audiometric testing and measurement of resting blood pressure all have significant clinical yields**. Studies of simulated firefighting are needed to establish minimum hearing	Level 3b

		requirements and determine whether corrective devices can be worn safely during duty.	
Seiller (1997)	Sunglasses: lifeguard vision project; behind the ongoing program to test the vision of lifeguard candidates	Consider the fact that 80% of all information we receive from our environment is visual in nature. Also, consider the fact that pre-employment visual testing is not a requirement for lifeguards. Finally, consider that the inherent responsibility of a lifeguard is to use visual cues to scan a crowded scene and recognize a person in distress. While a lifeguard must be a capable swimmer--tested and certified in many types of emergency rescue and resuscitation techniques--he or she is not required to see accurately. Attempting to address this issue, the staff of the Visual Fitness Institute undertook a project to implement a vision-testing program for lifeguards. After thorough investigation, they determined that their lifeguards needed good visual acuity without the use of contact lenses or glasses. They postulated that contact lenses or glasses might become dislodged or lost during a rescue or scuffle. The state will reject candidates with either poor vision in one eye, reduced peripheral vision, or severe color deficiency. The vision qualifications developed by VFI do not require as stringent a standard.	Level 3b
City of Del Mar (2000)	Job Description: Senior Lifeguard.	Specific vision requirements of job include close vision, distance vision, use of both eyes, ability to distinguish basic colors and shades, depth perception, peripheral vision and ability to adjust focus. There was no minimum standards established.	Level 5
US Department of Transportation: FAA (2004)	A Historical Review of Color Vision Standards for Air Traffic Control Specialists at Automated Flight Service Stations.	This paper has provided a historical review of the technological changes that have affected the color-identification tasks of the AFSS ATCSs and the subsequent changes to the color vision standards and testing materials. Furthermore, the paper introduces the challenges relevant to the development of a work-sample color vision test intended to allow AFSS ATCS applicants the opportunity to demonstrate their color vision ability while performing CRT-related color weather radar tasks.	Level 4
THE UNITED STATES LIFESAVING ASSOCIATION	GUIDELINES FOR TRAINING & STANDARDS AQUATIC RESCUE RESPONSE TEAMS	**Health and Fitness:** Agency requires that a medical or osteopathic physician document that all aquatic rescuers possess adequate vision, hearing acuity, physical ability and stamina to perform the duties of an open water aquatic rescuer.	Level 5
MED-TOX Health Services	Establishing Occupational Vision Requirements for Correctional Officers	Occupational vision requirements are distinguished from "essential job functions" in that an essential job function might be "recognize inmates in the yard from the tower," while an occupational vision requirement might	Level 5

		be described as "applicants must possess 20/20 far visual acuity." A bona fide occupational vision requirement is one that is based on a demonstration that 20/20 visual acuity is *actually needed* to recognize inmates in the yard from the tower.	
Occupational Medicine *1992;**42**:19-22 McElearney*	Pre-employment colour vision testing	Male candidates (1020) for employment in occupations that required discrimination of **colour** were subjected to the Ishihara test and two trade tests of **colour** perception, the Giles Archer Lantern test and the Electricity Supply Industry (ESI) wire test. One hundred candidates failed the Ishihara test, 61 of the 100 passed both trade tests; 16 of the 100 passed the wire test alone and 7 of the 100 passed the lantern test alone but only 16 failed all 3 tests. Seventy-seven of the 84 who passed some part of their **colour** perception assessment were offered employment appropriate to their **colour** vision ability. Eleven of the 16 who passed the wire test alone and 3 of the 6 who passed the lantern test alone successfully entered employment. The Ishihara test, whilst being a useful screening test, is not sufficient on its own as a test of suitability for employment; one or more trade tests should be administered before rejecting candidates who fail it.	Level 3b
American Optometric Association, Commission on Ophthalmic Standards, *Sheedy (1985)*	Recommended Vision Standards for Police Officers	ABSTRACT~A recommended vision standard for police officers is presented. The visual capabilities needed to perform various police duties are described. A specific vision standard, along with criteria for screening referral or screening failure are given each category of visual skills required for police work.	Level 4
NASA Beard et al.	*Occupational Vision Standards: A Review*	Effective aircraft maintenance inspection requires non-destructive inspection and testing (NDI/NDT) personnel to be experienced, skilled, and able. The present certification and qualification process requires applicants to pass written and practical examinations in order to demonstrate that they are qualified to carry out specific NDT methods. Currently no common standard exists in the aviation industry for the visual qualifications of inspectors; however, various airlines and aircraft maintenance facilities have developed their own respective vision qualification programs. This highlights the need for a uniform and universally accepted set of vision standards that would apply to all aircraft NDI/NDT personnel.	Level 4
Canadian Journal of Ophthalmology 2000;35:187-91	POLICY STATEMENT Canadian Ophthalmological Society	The Canadian Ophthalmological Society (COS) Working Group on Driving Standards has developed a set of recommendations for new vision standards for driving in Canada and a new standardized approach to the application of these	Level 4

	recommendations Vision standards for driving in Canada	standards. These recommendations have been presented to the Canadian Medical Association for inclusion in the ongoing revision of the Physician's Guide to Driver Examination. The recommendations represent the consensus opinion of the working group and are based on a literature review, the experience and expert opinion of the members of the working group and comments from other individuals and organizations. The recommendations contain substantial changes from the existing document, including changes in the minimum requirements for licensing, assessment and review procedures, and the classification of vehicles. It is the working group's opinion that these changes reflect a more sensitive, evidence-based approach to both vehicle classification and the minimum vision requirements for licensing.	
Federal Bureau of Investigation	Federal Bureau of Investigation Special Agent Physical Requirements- Vision Requirements	**Vision Requirements** Special Agent candidates should possess uncorrected visual acuity no worse than 20/200 (Snellen) in each eye, with correction to 20/20 in one eye and at least 20/40 in the other eye. Individuals unable to meet the 20/200 minimum uncorrected acuity may be considered if they provide medical documentation of use of soft contact lenses for at least one year without significant problems or adverse events. If an applicant has had laser eye corrective surgery, a six-month waiting period is required prior to beginning New Agents' Training at the FBI Academy. The applicant must also provide evidence of complete healing by an ophthalmology clinical evaluation. Policy for color vision allows continuation of applicant processing if those who fail initial color vision screening are able to successfully complete the Farnsworth D-15 color vision test.	Level 5
FBI Law Enforcement Bulletin 6:1993 Holden RN	Eyesight Standards: Correcting Myths	In order to gauge the relationship between vision and policing effectively, the project focused on police managers from a wide variety of agencies. The survey population consisted of 92 police executives from across the United States. England, Australia, and Canada attending a conference at the FBI Academy in Quantico, Virginia.(6) The combined length of service for the survey population totaled 1,714 years, for an average of 18.6 years per respondent. Participants were asked if they knew of cases where officers lost their corrective lenses in duty-related incidents. If respondents answered yes, they were asked if the loss of the corrective lenses resulted in injury to the officer or to others.	Level 4?

		Further, researchers asked if the loss of corrective lenses prevented the officer from completing the activity being attempted at the time of loss. Then, respondents were asked to report any incidents in which impaired vision presented a problem, regardless of corrective lenses. Finally, researchers asked respondents to offer comments about police vision standards and to provide phone numbers for further contact. Results Of the 92 participants, 48 (52 percent) said they knew of incidents where officers lost their corrective lenses in the course of duty. Forty-four (48 percent) knew of no such incidents. Twelve respondents (13 percent) recalled incidents where officers sustained injuries related to the loss of corrective lenses. Five (5 percent) reported incidents in which loss of corrective lenses impaired an officer's performance, and 12 (13 percent) recalled incidents where impaired vision unrelated to corrective lenses created a problem. CONCLUSION *Does this mean that law enforcement agencies should immediately eliminate their policies concerning standards for uncorrected vision? Not necessarily. This study is neither sufficiently comprehensive nor scientifically representative enough to draw such a sweeping conclusion.* Police vision standards, as well as other areas, should be based on proven capabilities necessary to fulfill the terms of employment. Instead, the reverse often happens.	
Clarke A. Water Safety Supervisor NJ State Parks	*Eye Health and Vision Standards for Lifeguards*	**VISION STANDARDS FOR LIFEGUARDS** Vision standards for lifeguards vary throughout the United States. Visual recognition of a victim is necessary before a lifeguard can respond to the emergency. The United States Lifesaving Association (USLA) has standards for swimming ability, rescue equipment and training but not visual acuity **CONCLUSION** The ILS, USLA, and lifeguard agencies should require all lifeguards to wear polycarbonate, polarized sunglasses. Polycarbonate lenses block UV light and are the safest material. Lifeguards wearing polycarbonate, polarized sunglasses	Level 4

		will not only protect their eyes from the harmful effects of UV light but will also see swimmers more effectively. The ILS, USLA, and lifeguard agencies need a well-researched vision and eye health policy that should consider: □ Visual acuity distance and near □ Contrast sensitivity □ Depth perception/Binocularity □ Color vision □ Lasik Surgery □ Contact lenses □ Effects of bright light on vision □ Visual perception □ Visual memory □ Frequency of vision and eye health exams	
Tipton M. et al. Department of Sport & Exercise, Institute of Biomedical & Biomolecular Sciences, University of Portsmouth, Portsmouth 1 School of Life and Health Sciences, Aston University, Birmingham, UK 2 Department of Ophthalmology, Southampton General Hospital, Southampton, UK	**Visual acuity standards for Beach Lifeguards**	**ABSTRACT** This project was designed to determine, in an operational scenario, the visual acuity required by beach lifeguards (BLG) in order to identify a human head at 300m. It was hypothesized that this would be greater than that calculated (6/17), due to factors associated with location/detection, colour, contrast, lighting and movement in the operational scenario. Following eye tests to ensure normal vision, twenty-one BLG undertook a series of tests on two beaches. During these tests the vision of the BLG was blurred (using spherical lenses placed within a trial frame) to a visual acuity at which they could not identify any of the targets presented to them (approximately 6/70). The targets were human heads or equivalent sized and shaped buoys. The subjects were required to look out to sea or across a wet beach and report if they could see the target in the water or on the sand at various distances. Visual acuity was improved by gradually reducing the refractive blur in 0.25 dioptre increments until the subject could identify the head to the point at which they would investigate the object further using binoculars. It was determined that, on average, to identify a human head in the sea at 300m a BLG required visual acuity of 6/7. This represents a high standard of visual acuity that is likely to exclude some existing and potential BLG. It is therefore recommended that consideration should be given to allowing BLG to wear spectacles. On the basis of the other tests undertaken it was concluded that the uncorrected vision of a BLG should be 6/14.	Level 3b

Level of Evidence	Criteria
Level 1a	Population based studies, randomized prospective studies
Level 1b	Large non-population based epidemiological studies, meta-analysis or small randomized prospective studies
Level 2	Prospective Studies which can include, controlled, non-randomized, epidemiological, cohort or case-control studies
Level 3a	Historic which can include epidemiological, non-randomized, cohort or case-control studies
Level 3b	Case series: subjects compiled in serial fashion without control group, convenience sample, epidemiological studies, observational studies
Level 3c	Mannequin, animal studies or mechanical model studies
Level 4	Peer-reviewed works which include state of the art articles, review articles, organizational statements or guidelines, editorials, or consensus statements
Level 5	Non-peer reviewed published opinions, such as textbooks, official organizational publications, guidelines and policy statements and consensus statements
Level 6	Common practices accepted before evidence-based guidelines or common sense
Level 1-6E	Extrapolations from evidence, which is for other purposes, theoretical analyses, which are on-point with question, being asked. Modifier E applied because extrapolated but ranked based on type of study.

Summary Table of Evidence

Supportive of Recommendation	Opposing Recommendation	No Position
Seiller (1997) Sunglasses: lifeguard vision project; behind the ongoing program to test the vision of lifeguard candidates. They determined that their lifeguards needed good visual acuity without the use of contact lenses or glasses.		
Wood (2006) The effect of auditory and visual distracters on the useful field of view: implications for the driving task Visual Acuity loss reduces people's ability to perform complex tasks such as driving and automobile.		
Ivers (1999) Sensory Impairment and Driving: The Blue Mountain Eye Study Visual Acuity loss reduces people's ability to perform complex tasks such as driving and automobile.		
Kales (1999) Fitness for duty evaluations in hazardous materials firefighters. Studies of simulated firefighting are needed to establish minimum visual requirements and determine whether corrective devices can be worn safely during duty.		
Occupational Medicine *1992;**42**:19-22* McElearney Pre-employment colour vision testing		
Communities and Local Government United Kingdom Medical and Occupational Evidence for Recruitment and Retention in the Fire and Rescue Service The article determined that minimal levels of visual acuity are necessary for firefighters. Specific thresholds were also reviewed.		
US Department of Transportation: FAA (2004) A Historical Review of Color Vision Standards for Air Traffic Control Specialists at Automated Flight Service Stations.		
American Optometric Association, Commission on Ophthalmic Standards, Sheedy (1985) Recommended Vision Standards for Police Officers A specific vision standard, along with criteria for screening referral or screening failure is given each category of visual skills required for police work.		
NASA Beard et al. Occupational Vision Standards: A Review This highlights the need for a uniform and universally accepted set of vision standards		
Canadian Journal of Ophthalmology 2000;35:187-91 POLICY STATEMENT Canadian Ophthalmological Society recommendations Vision standards for driving in Canada developed a set of recommendations for new vision standards for driving in Canada and a new standardized approach to the application of these standards		
Nassau County, New York Department of Health Application for Approval of Lifeguard Qualifications Sets specific visual acuity standard for employment.		
County of Los Angeles Class Specification for Ocean Lifeguard Candidate (2006) Sets specific visual acuity standard for employment.		
Las Vegas Metropolitan Police Department. Employment		

Medical/Vision/Hearing Standard. Sets specific visual acuity standard for employment.		
FAA Medical Certification- Visual Standards and Evaluation Sets specific hearing standard for employment.		
Florida State Division of State Fire Marshal Medical Examination		
City of Del Mar (2000) Job Description: Senior Lifeguard.		
THE UNITED STATES LIFESAVING ASSOCIATION GUIDELINES FOR TRAINING & STANDARDS AQUATIC RESCUE RESPONSE TEAMS		
MED-TOX Health Services Establishing Occupational Vision Requirements for Correctional Officers		
Federal Bureau of Investigation Special Agent Physical Requirements- Vision Requirements Special Agent candidates should possess uncorrected visual acuity no worse than 20/200 (Snellen) in each eye, with correction to 20/20 in one eye and at least 20/40 in the other eye.		
FBI Law Enforcement Bulletin 6:1993 Holden RN Eyesight Standards: Correcting Myths Police vision standards, as well as other areas, should be based on proven capabilities necessary to fulfill the terms of employment		
Clarke A.: Water Safety Supervisor NJ State Parks Eye Health and Vision Standards for Lifeguards The ILS, USLA, and lifeguard agencies need a well-researched vision and eye health policy		
Tipton M. et al.: Visual acuity standards for Beach Lifeguards It is therefore recommended that consideration should be given to allowing BLG to wear spectacles. On the basis of the other tests undertaken it was concluded that the uncorrected vision of a BLG should be 6/14.		

Textual Summary of Evidence:

After a thorough review of the Internet and pubmed databases for key words related to Lifeguarding, Vision Standards, Police, Firefighting, and driving requirements, 22 sources were identified. The highest levels of evidence-involved a study that looked specifically at visual acuity in lifeguarding. Seiller (1997 Sunglasses: lifeguard vision project; behind the ongoing program to test the vision of lifeguard candidates) looked at developing visual acuity standards for lifeguards. Tipton et al. looked at visual acuity standards specifically for beach lifeguards. The next sets of sources looked at driving standards and recommendations for other professions. Wood (2006), Ivers (1999), and Garcia (2005) all found that impaired visual acuity reduces people's abilities to perform complex tasks including operating an automobile. Kales (1999), The American College of Occupational and Environmental Medicine (2002), and the Communities and Local Government of UK's Medical and Occupational Evidence for Recruitment and Retention in the Fire and Rescue Service articles all supported minimal visual acuity standards in their occupations. Some studies even suggested specific standards.

Additional sources included specific employment applications for police, firefighting, the FAA pilot's license, and Lifeguarding. Though not scientifically reviewed, these applications provide a consensus that a minimal visual acuity standard should exist. Most of these applications also set minimal visual acuity thresholds for employment. These studies provided a limited range that required there should be minimal vision acuity of no worse 20/40 in corrected vision in each eye. One study set an uncorrected visual acuity at 20/200. Tipton et al showed that as long as lifeguards vision is corrected during scanning they were able to reach victims even after loss of corrective lenses.

We feel that there is enough evidence to recommend that there should be minimal visual acuity standards for lifeguarding. Due to the fact that there was limited amount of direct research about a minimal visual acuity standard in lifeguarding, indirect studies were lower levels of evidence and the majority of information was individual consensus, we feel we can only make a guideline decision. Additional research specific to lifeguarding needs to be undertaken in order to formally adopt a standard.

Further research needs to be completed to determine if corrective devices (contact lenses and glasses) are acceptable for use in a lifeguarding setting. Preliminary studies look promising. In additions validations studies need to be completed to confirm that thresholds developed are comparable for all lifeguarding settings including pools, lakes and open water environments.

Preliminary Brief Evidence Summary and Guideline Document Section:

Evidence from 6 studies of an evidence level of 3b and 16 additional studies with evidence levels between 4 and 5 document that a minimal visual acuity standard should exist.

There is expert opinion and consensus that a minimal visual acuity standard should exist. Most of these applications also set minimal visual acuity thresholds for employment.

Therefore, it is recommended that a minimal vision standard for lifeguards should be instituted as a guideline. In addition, each facility is encouraged to require testing of corrected and uncorrected vision and to then develop appropriate standards for their venues.

Further research needs to be completed to determine if corrective devices (contact lenses and glasses) are acceptable for use in a lifeguarding setting. Preliminary studies look promising. In additions validations studies need to be completed to confirm that thresholds developed are comparable for all lifeguarding settings including pools, lakes and open water environments.

Preliminary Guideline Document Section:

Recommendations and Strength (using table below):

Standards:

Guidelines: There should be minimal visual acuity standards for Lifeguarding.

Options: Each facility is encouraged to require testing of corrected and uncorrected vision and to then develop appropriate standards for their venues.

No Recommendations:

Guideline Definitions for Evidence-Based Statements

Statement	Definition	Implication
Standard	A standard in favor of a particular action is made when the anticipated benefits of the recommended intervention clearly exceed the harms and the quality of the supporting evidence is excellent. In some clearly identified circumstances, strong recommendation standards may be made when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms.	One should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.
Guideline	A guideline in favor of a particular action is made when the anticipated benefits exceed the harms but the quality of evidence is not as strong. Again, in some clearly identified Circumstances, recommendations may be made when high quality evidence is impossible to obtain but the anticipated benefits outweigh the harms.	One would be prudent to follow a recommendation but should remain alert to new information.
Option	Options define courses that may be taken when either the quality of evidence is suspect or, level and volume of evidence is small or carefully performed studies have shown little clear advantage to one approach over another.	One should consider the option in their decision-making.
No recommendation	No recommendation indicates that there is a lack of pertinent evidence and that the anticipated balance of benefits and harms is presently unclear.	One should be alert to new published evidence that clarifies the balance of benefit Versus harm

Attach Any Lists, Tables or Summaries Created As Part Of This Review

(Please include any tables, lists of items or procedures and tables which you created as part of the review that would be helpful for final analysis or publication in the final document)