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CANADIAN POLICE RESEARCH CENTRE
CENTRE CANADIEN DE RECHERCHES POLICIÈRES

TR-02-98
To Wear or Not To Wear: A Survey on Current Contact lens Use in the Royal Canadian Mounted Police

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TECHNICAL REPORT
December 1996

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Executive Summary

The Canadian Ophthalmological Society (COS) was asked by the Royal Canadian Mounted Police (RCMP) and the Canadian Human Rights Commission to render an opinion on the acceptability of contact lenses as a reasonable accomodation to the uncorrected visual acuity standard.

The results of a survey study on spectacle and contact lens wear by members of the RCMP are described.

The following paper was published in the Canadian Journal of Ophthalmology, 1997, Vol. 32, No. 3.

The Canadian Police Research Centre (CPRC) would like to thank Dr. G.A. Wells, Dr. J. Brown, Dr. E.J. Casson, Dr. M. Easterbrook, Dr. A. Trottier and those members of the RCMP who participated in this study.

Résumé

A la demande de la Gendarmerie royale du Canada (GRC) et de la Commission canadienne des droits de la personne, la Société canadienne d'ophtalmologie a formulé une opinion sur l'acceptabilite des lentilles comeennes comme moyen de palier à l'acuité visuelle not-male non corrigee.

L'étude présente les résultats d'un sondage sur le port de lunettes et de lentilles comeennes par les membres de la GRC.

Le present article a été publié dans le *Canadian Journal of Ophthalmology,* 1997, vol. 32, n° 3.

Le Centre canadien de recherches policières remercie les Drs G. A. Wells, J. Brown, E. J. Casson, M. Easterbrook et A. Trottier, ainsi que les membres de la GRC qui ont participé à l'étude.

On peut obtenir la version francaisede l'étude sur demande.

The ability of a General Duty Constable in the Royal Canadian Mounted Police (RCMP) to perform his or her job effectively depends on many factors, including adequate vision and hearing.' Public safety often depends on each constable being able to perform his or her tasks efficiently with very little warning. It is therefore crucial that all active members of the RCMP meet minimum standards for each of these sensory factors.

The Canadian Ophthalmological Society (COS) was asked by the RCMP and the Canadian Human Rights Commission to review the current entry-level standards for best-corrected and uncorrected visual acuity. The results of this review, which concluded that the current standards are both reasonable and fair, are reported in Easterbrook et al, 1997.' COS was also asked to assist the RCMP and the Human Rights Commission in the formulation of an opinion as to the acceptability of contact lenses as a reasonable accommodation to the uncorrected visual acuity standard. More specifically, can an individual who does not meet the uncorrected standards for visual acuity but who has demonstrated that he/she is a successful long-term contact lens user, be considered visually capable of carrying out the tasks of a General Duty Constable in a manner that does not compromise the safety of the individual, a co-worker or the public? In this paper, we describe a survey that was conducted using active duty RCMP Constables who wear or could wear spectacles or contact lenses and relate the results of this survey to other pertinent literature on the occupational use of contact lenses in police work.

Vision standards for the RCMP are defined in terms of visual acuity and colour vision. At issue are the standards for visual acuity (VA). Presently, the minimum standards for best corrected visual acuity are 6/6 (20/20) in one eye with at least 6/9 (20/30) in the fellow eye. The minimum standards for uncorrected vision are 6/12 (20/40) in one eye with 6/30 (20/100) or better in the other eye, or 6/18 (20/60) in each eye. In both cases, vision must be correctable to 6/6 in one eye with 6/9 or better in the other eye.[2]

The literature review and task analysis information presented in our recent paper

(Easterbrook et al., 1997) clearly indicate that a General Duty Constable requires 6/6 best-corrected visual acuity to do the job effectively and at least 6/12 uncorrected visual acuity to do the job safely in an emergency situation where he/she has temporarily lost the use of his/her correction. Current standards are, in fact, slightly less stringent than this, but still exclude a significant number of individuals with poor uncorrected acuity.

With the advent of reliable, high-quality soft contact lenses, the question arises: can an individual who does not meet the uncorrected standard but who is a successful contact lens wearer perform the duties of a General Duty Constable effectively and safely?

In 1987, Good and Augsburger3 attempted to answer this question for the Police Force of Columbus, Ohio by surveying 108 police officers who wore contact lenses. The results, which are summarized in Table I, indicate that dislodgment of contact lenses is a relatively infrequent event (19.2% over career), particularly when compared to the frequency of spectacles dislodgment reported in the same study (52% over career).[3] there is, however, a high frequency of instances in which users had to discontinue contact lens wear for a period of time. In addition, there is a high frequency of instances in which the contact lenses had to be removed or vision became temporarily impaired due to irritation.

Sheedy[4-6] has reviewed issues relating to contact lens wear and the uncorrected visual acuity standard by police officers. These issues include:

(1) less chance of dislodgment of contact lenses compared to spectacles;[3-7]

(2) no increase in the risk of ocular injury and some potential protective value;*

(3) visual performance equal to or better than the spectacle lens wearer;

940 long-term success in 60% of people attempting contact lens wear, especially among those contact lens wearers persevering through the first year of lens wear."

More recently, the 1994 POST report [10] described the results of an unpublished study in the Los Angeles Police Department (LAPD) on contact lens wear as a reasonable

accommodation to the uncorrected standard. Officers who did not meet the uncorrected standard, but were successful contact lens wearers, were hired with the provision that they agree to wear contact lenses while on duty. Random inspections over a two year period revealed that, on average, 5% of the officers who were supposed to wear contacts at all times were in fact non-complaint at the time of inspection. In only 15% of these cases, the officers were non-compliant for medical reasons. This indicates that the majority of non-compliance is likely to be the result of poor motivation rather than medical problems even in situations where continuous use of contact lenses is required by contract.

To determine the safety and effectiveness of contact lens wear in the RCMP, we undertook a survey of all RCMP Constables who might be expected to use corrective lenses.

Methods

Subjects: The RCMP Personnel, Administrative, Research and Development (PARADE) database was used to identify all individuals on active duty with visual acuity code of less that V1 (see Table I). Of 3,500 possible candidates (from a total of approximately 17,000 members), survey questionnaires were sent to 1,157 individuals. These candidates included all individuals with visual acuities between V3-V6 and a random sample of approximately 25% of the V2 individuals. The sample size chosen for the survey was sufficient to estimate the responses on the contact lens question within an accuracy of at least 5% based on 95% confidence intervals. It is important to note that those members who did not meet the visual acuity standard were individuals who had met the standard on enrollment, had suffered deterioration of their vision, and were no employed in specialized or altered duties within the force. They all had experience as General Duty Constables.

Questionnaire: Subjects answered 21 Yes/No inquiries (Figure 1) based on the questions from the good and Augsburger survey.3 The questions were modified to describe the occupational conditions of the RCMP more accurately. There were seven additional follow-up questions on the frequency of a given occurrence if a positive answer to the main question was given. The questionnaire, covering letter and pre-addressed stamped envelope

was mailed to each selected member. If no response was received within one month, a letter of reminder and a second copy of the questionnaire was sent to the members not responding. All answers and information about respondents were kept strictly confidential.

Results

Of the 1,157 questionnaires distributed, 1,040 were returned (89.9%) and 1,037 were codable for acuity level. Based on this coding, 3 16 were V3-V6 (response rate of 90.8%) and 721 were V2 (response rate of 89.1%). A total of 934 indicated that they used some form of visual acuity correction while on duty. Three hundred and sixty described themselves as wearing contact lenses at least some of the time.

Since the sampling fractions of the two groups, V2 and V3-V6 were not the same, the results of the questionnaire were adjusted to better represent the population in question. A comparison of the adjusted values with the simple percent values for the sample revealed minimal differences. However, both are given in Table II to allow comparison.

Table I presents an overview of the adjusted results and compares them to the responses reported in the Good and Augsburger survey[3], which sampled the entire population of contact lens wearers on the Columbus, Ohio police force. It can be seen that the outcomes of the two studies are very similar, with approximately 2 1% of the respondents who wear contact lenses reporting dislodgments and 35% reporting that they were unable to wear contact lenses at some point due to irritation.

Table II shows a more detailed analysis of the responses to each question on the survey. Of those who wore spectacles, 59% had their glasses dislodged while on duty, 72% removed their glasses because of fogging-up and 82% had to remove their glasses because of rain, snow or liquid obscuring vision. For contact lens wearers, 21% indicated that their lenses have dislodged, fogged up or froze on duty enough to interfere with their vision. A far smaller percentage had experienced loss of one (10%) or both (1%) contact lenses. Irritating effects of environmental conditions on wearing contact lenses was not unusual,

with 37% indicating contacts needed to be removed and 29% indicating interference with vision. Of those who reported situations in which there was exposure to CS gas, OC spray or other operational chemicals, 32% indicated that the contacts provided protection and 28% believed that the contacts made it more difficult.

Thirty-five percent of contact lens wearers indicated that on at least one occasion they were unable to wear their lenses while on duty for medical reasons. The median length of the reported down time was 3.14 days with a range from 0.2 to 365 days with 7 of 103 respondents reporting more than 50 days of down time in the last year.

The results in Table II were also analyzed by visual acuity code group (V2 vs. V3-V6). Generally the groups were very similar but a few differences were noted. In particular, more subjects in the V2 coding group indicated that their eyes had become irritated from environmental factors while on duty such that the contacts had to be removed (39.0% vs. 27.3%; **P=.0289).** Regarding glasses, significantly more code V3-V6 than V2 indicated that their glasses had fallen/knocked off while on duty (68.9% vs 58.0%; **P=.0014)** and that frames had been broken on duty (51.5% vs. 44.2%; **P=.0390).**

Discussion

As Table I and II demonstrate, our results, confirm and extend Good and Augsburger's conclusions. Contact lenses are just as likely to be dislodged or to cause irritation such that they are not work while on duty in this group of RCMP officers as was the case for Good and Augsburger's sample of police officers in Columbus Ohio.'

The analysis of spectacle wearers in the RCMP revealed that the respondents often had to remove their glasses due to fogging, rain or snow and were quite likely to experience having their glasses knocked off, or broken while on duty. This suggests that the probability that a General Duty Constable will have to perform a critical duty without the aid of his/her spectacles is considerable.

While dislodgments of one (10%) or both (1%) contact lenses were not a likely as

dislodgments of spectacles, 35% of Constables wearing contact lenses reported that they had to remove their lenses or were unable to wear them while on duty at some time during the past two years due to irritation.

For both spectacle dislodgment and contact lens removal, the frequency of reported events were significantly higher for the groups with poorer uncorrected vision (V3-V6). This may be due to the fact that these events are more memorable for the group that had to perform the duties of a constable, however, briefly, with acuities of less than 6/18. Alternatively, this group may be less likely to wear their correction on a daily basis, reducing their exposure to potential dislodgment/removal.

The median down time for medical reasons (i.e. irritation, infection, etc.) Amongst contact lens wearers in the RCMP study was 3.14 days, but ranged up to 30 days (excluding outliers). Goldberg et al.[10] demonstrated that medical reasons only account for fifteen percent of total down time when random inspections are held. Thus, the estimate of 3.14 days median down time derived from the RCMP study represents only a portion of total down time. The median value of total down time may be as great as 21 days per year.

These results suggest that individuals with poor uncorrected vision who normally wear contact lenses are very likely to be wearing spectacles on duty at least some of the time. Given this and the high reported probability of spectacles fogging, being obscured, being dislodged, and/or broken, there is a significant chance that these individuals may have to function in an uncorrected state at some time during an emergency. On this view, it would seem inappropriate to allow the use of contact lenses as an accommodation to the uncorrected visual acuity standard.

COS Recommendation

a) Due to the possibility that contact lens wearers may not always be wearing their contact lenses while on duty and due to the high probability of dislodgment or obscuration of spectacles, there is a very real potential for

Constables who are contact lens wearers to be required to function in an uncorrected state at some time while on duty. Therefore we recommend that the RCMP should not grant a waiver to individuals who do not meet the uncorrected visual standards required by the force.

B) In recent years, soft disposable and continuous wear lenses have been available to the contact lens community. Although new materials in lenses are available, it is our opinion there is no new technology in lenses that would allow the use of contact lenses as a reasonable accommodation to the uncorrected standard.

VISION QUESTIONNAIRE

1. *Do you wear glasses/contact lenses while on duty?*
2. *Which do you wear most often while on duty?* *Glasses* *Contacts*
   If you wear contacts for at lease some of the time on duty, continue to question 3. If you wear glasses and not contacts go to question 12.
3. *What type of contact lenses do you wear while on duty?*
   Hard *Gas Permeable* *Soft*
4. *Have your lenses ever dislodged, fogged up, frozen while on duty, enough to interfere with your vision?*
   a) If yes, howfrequently during the last two years?
5. *Have you ever had trouble with one lens, but not the other, that was sufficient to interfere with your ability to do police work?*
6. *Have your eyes ever become irritated from environmental factors (such as dust, smoke,* ***CS*** *gas, capsicum spray, wind, cold, sand or snow) while on duty such that the contacts had to be removed?*
   a) If yes, how frequently during the last two years? _____
7. *Have your eyes ever become irritated from environmentalfactors while on duty such that it interfered with your vision?*
   a) If yes, how frequently during the last two years? _____
8. *Have you been exposed to CS gas, OC spray or other operational chemicals while wearing contacts?*
   a) If yes, how frequently during the last ten years? _____
   b) If yes - Did the contacts make it more difficult?
   - Did the contacts provide protection?
9. *Have you even lost a contact lens while on duty?*
10. *Have you ever lost both lenses at the same time while on duty?*
11. *Have your eyes ever been sufficiently irritated (from overwear, infection, injury, etc.) That you were unable to wear your lenses while on duty?*
    a) If yes, how frequently during the last two years?
    b) If yes, how much "'down time" did you have with your contact lenses in the last year? _____
12. *Are you aware of situations where other police officers have been unable to perform their duties as a result of their reliance on contact lenses?*
12. *If you wear glasses have you ever had your glasses fall of or be knocked off while on duty?*
    Yes *No*
    a) If yes, how frequently in your career?
14. *Have your glasses ever fogged up sufficiently that you needed to remove them to perform police duties?*
    Yes *No*
15. *Have you ever had to remove your glasses because of rain, snow, or liquid obscuring your vision?*
    Yes *No*
16. *Have you ever suffered an injury to the face or eye area because of your glasses?*
17. *Have the glasses ever protected you from injury or incapacitation?*
18. *Have your glasses ever shattered or cracked while on duty?*
19. *Have your frames been broken while on duty?*
20. *In your opinion, as a police officer, is it safe to allow people to do police work who are dependent on glasses in order to see well enough to do the job.*
21. *In your opinion, as a police officer, is it safe to allow* ***people*** *to do police work who are dependent on contacts in order to see well enough to do the job?*

Fig. 1 - Questionnaire completed by members. Unless otherwise indicated, a yes or no response is required.

TABLE I

Summary of Survey Results

Question	Good and Augsburger Average %	RCMP Survey Adjusted %
Soft lenses dislodged/fogged	**19.2**	**21.2**
Lost lens while on duty	**9.6**	**9.8**
Irritated-remove contact on duty	**46.6**	**37.4**
Irritated - interferes with vision	**46.6**	**29.7**
Irritated - not able to wear contact	**32.9**	**35.4**

TABLE II

Summary of Results of RCMP Survey

	Question	Adjusted % yes	Average % yes(n)
S	Glasses fallen off or knocked off while on duty	59.2	61.6 (913)
S	Glasses fogged up sufficiently to remove them	71.8	71.9 (913)
S	Remove glasses due to rain, snow or liquid	81.8	80.5 (910)
S	Glasses shattered or cracked while on duty	16.4	16.5 (914)
S	Frames broke while on duty	45.0	46.6 (914)
S	As a member of the RCMP, is it safe to perform police work while dependent on glasses	83.4	84.5 (960)
CL	Lenses dislodged, fogged up, frozen while on duty - interferes with vision	21.2	20.7 (343)
CL	Contact lens lost while on duty	9.8	10.2 (334)
CL	Both lenses lost at the same time while on duty	1.4	L.l (336)
CL	Eyes irritated by environmental factors - remove lens on duty	37.4	34.6 (341)
CL	Eyes irritated by environmental factors - interferes with vision	29.7	28.8 (344)
CL	Exposure to gas/chemicals - contact lenses make it worse	27.7	26.2 (65)
CL	Exposure to gas/chemicals - contact lenses provide protection	31.8	35.6 (59)
CL	Eyes irritated such that contacts could not be work	35.4	34.8 (336)
CL	Situations where other members were unable to perform due to their reliance on lenses	6.1	5.3 (360)
CL	As a member of the RCMP, is it safe to perform police work while dependent on contacts	87.9	89.2 (93

CL = answered by contact lens wearer
S = answered by spectacle wearer

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