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Improving contact lens compliance by explaining the benefits of compliant procedures

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ABSTRACT

Aim: To increase compliance with instructions for safe and successful contact lens wear by helping patients understand the advantages and consequences of compliant and non-compliant behavior respectively.
Methods: A series of explanations which elucidate the practical and scientific basis for many of the instructions given at lens delivery and aftercare have been prepared as a means of extending patient education beyond simply being instructed on what to do.
Discussion: The summary versions of these explanations have been prepared at an easier level of readability (age 10–12 years) to assist young patients and adults with reading disabilities, including those for whom English is their second language.
Conclusions: Patients may be non-compliant because they do not understand the practical and/or scientific basis for procedures and the potential consequences of aberrant behavior. Delay in the onset of symptoms associated with non-compliance may allow them to assume that compliance is not important. Explanations which describe why instructions given for lens use are consistent with sustained comfortable and safe lens wear, appear to have the potential to strengthen or change patient attitudes toward being compliant. Behavior modification which reduces the prevalence of non-compliance appears likely to also help sustain better contact lens performance and reduce the prevalence of contact lens failure. These explanations could be modified for use in different practices according to the preferences of individual practitioners and to include new research findings as they become available.

1. Introduction

Notwithstanding considerable interest in the problem [1–9], the prevalence of non-compliance with instructions for contact lens care and wear remains high [10]. Unintentional non-compliance, due to forgetting or not learning or not understanding instructions properly appears to be, at least partly a consequence of the great volume of comprehensive instructions provided at lens delivery to new patients. With the syllabus for an initial delivery visit being so crowded with descriptions of what to do, how it should be done, demonstrations of how to do as well as practice doing, there is little scope for adding explanations which elucidate and justify those instructions. Consequently, another major basis for non-compliance can be a patient's lack of appreciation of why lens care should be done in a particular way. This lack of appreciation could be a reason for intentional non-compliance, especially when being non-compliant is cheaper, easier and saves time, as well as initially at least, appearing to not have any adverse consequences.

For example, the need to regularly clean a case which does not appear to be soiled probably seems unnecessarily onerous to many patients. Such patients could reasonably think it would be a good idea to clean the case when it starts to look dirty. Simply reminding them again and again that they should clean and replace the case routinely may not have the desired effect of changing their attitude if they do not understand the basis for this instruction. However, an explanation of how quickly a transparent slime forms inside the case and how this slime protects and sustains germ growth, and increases the risk of infection, could have a lot of resonance with non-compliant patients.

That pseudomonas aeruginosa, for example, can be associated with very serious corneal infections and are even sometimes able to adhere and grow on antibiotic-loaded surfaces [11] could be used to expand the discussion. Storage cases with antibacterial surfaces may not always prevent the accumulation of bacteria like pseudomonas aeruginosa. After adherence, the bacteria encase themselves in a hydrated matrix of polysaccharides and proteins to form a slimy layer known as a biofilm [11]. Some bacterial strains, particularly pseudomonas, are notorious producers of slime [11].

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Table 1
Information used to maintain or increase compliance with instructions regarding routine case cleaning and replacement (number 3 in the series shown in Table 2).

Why do contact lens cases have to be cleaned and replaced routinely?
There are always some germs in contact lens storage cases. Fresh storage solutions help to keep the number of germs to low levels. However, the surviving germs, including those most likely to cause serious eye infections, form a slime on the inside of the case. The slime is transparent so that a slimy case appears to be clean. The slime makes it easier for other germs to attach to and grow inside the case. More germs means it is easier for your lenses to be contaminated before you put them on your eyes. You might get an eye infection. Drying the case using a clean tissue before recapping will reduce slime growth. To reduce the risk of infection it is necessary to replace cases at least every 3 months, as too much slime reduces the number of germs that can be killed by the storage solution
Summary: Why do contact lens cases have to be cleaned and replaced routinely?
Germs form a slime on the inside of the case
The germs grow on the slimy coating
Drying the case with a clean tissue helps remove the slime and germs
In a clean case, fresh storage solutions can kill the germs on lenses
If your case is cleaned regularly, it will last up to 3 months

Table 2
Topics for which a text has been prepared to explain the reasons why compliance is important. These explanations are freely available as a word file from c.mcmonnies@unsw.edu.au, in both higher and lower reading level grades (designated as summary versions) so that they can be updated and modified to suit the opinions of individual practitioners.

1	Do contact lenses need to be rubbed clean before they are stored overnight in a case?
2	How important is hand washing before handling contact lenses?
3	Why do contact lens cases have to be cleaned and replaced routinely?
4	Why is it important to clean and rinse lenses before storage rather than before insertion?
5	Is it ok to just top-up the storage solution?
6	What happens if the nozzle-tip of the solution bottle becomes contaminated with germs?
7	Can tap water be used to rinse lenses or storage cases?
8	What are some of the advantages of keeping contact lenses clean?
9	Is it safe to change brands when buying new solutions?
10	What are the reasons for maintaining a strict lens replacement schedule for disposable lenses?
11	Why should contact lens wearers have regular eye examinations?
12	Is swimming safe with contact lenses?
13	Who can sleep in their contact lenses?
14	Use of cosmetics with contact lenses.
15	Is the bathroom the best place to handle lenses?
16	Is it a good idea to keep my spectacle prescription up to date?
17	Why is keeping eye-lashes clean a concern for contact lens wearers?
18	Why is it necessary to dry my hands after washing?
19	Is it safe to play sport in contact lenses?
20	Are there any special requirements when wearing contact lenses in an industrial or work shop environment?

When discussing the need for case cleaning, referring to slime instead of biofilm [12] may have greater attitude and behavior changing potential. The word slime is likely to have more negative associations for patients than biofilm, which is meaningless jargon to most of them. Apart from slime being a problem in swimming pools and causing rocks to become treacherously slippery, members of the lowest levels of society can be described as slime. Consequently, patients may be more motivated to remove a slime than a biofilm from their case and lenses? Slime can be disclosed in an apparently clean case using crystal violet [6,13]. Photographic representation of information improves compliance [14]. Rather than only verbal presentation then, a photographic illustration of slime staining in an apparently clean case can be a dramatically useful aid for improving case cleaning compliance [6,13]. However, ideally the points made in the consulting room can also be supported by a written version (see Table 1, number 3 in the series shown in Table 2).

2. Literacy and written communications

Apart from some people being averse to reading instructions before attempting any new task, there is the problem of poor literacy and associated reduced comprehension of written material. Patients with inadequate health literacy are less likely to comply with prescribed instructions [15]. In a sample of 200 glaucoma patients, 75% reported having graduated from high school but less than half could read at a ninth-grade level (age 14–15 years) or above [15]. Over 10% of the subjects possessed health literacy skills at the third-grade level (age 8–9 years) or below [15]. Only 32% of a sample of ophthalmic patient educational materials produced by the American Academy of Ophthalmology were found to be written at or below the eight-grade reading level (age 13–14 years) recommended for public materials [16]. Health literacy is usually a greater challenge than everyday language literacy given the common use of, for example, unfamiliar anatomical terms and jargon as well as complex descriptions of disease processes.

Consequently, apart from young patients having limited reading ability, it is not feasible to expect significant numbers of adult patients to benefit fully from written instructions. Making assumptions about literacy levels for particular patients can be misleading. Dyslexia is pervasive and reaches into all levels of society, with famous examples among the very intelligent and successful. Parents would usually be able to help their children with written instructions, but in some cases this support may not be possible if the reading skills of the parents are low. Migrants often have particular difficulty with their new language in written form. Handouts and other forms of printed information provided for patients can ideally be provided in language which is within the scope of patients who are less able readers. The sample message shown in Table 1 indicates the same information written in two levels of reading ability with the easier level described as a summary. Avoiding complex words and long sentences helps to lower the reading level required [17]. Similarly, verbal explanations and advice should always be as jargon free as possible (e.g. slime instead of biofilm) [12]. The average reading level for the original explanations (16–17 years of age level) in this series of explanations (titles listed in Table 2) has been reduced in the summary versions which follow the original versions to an average of 10–12 years of age level.

A survey of Australians aged 15–74 years found that 20% had very poor literacy skills and 27% only had the ability to read simple, clearly laid out material associated with tasks that are not too complex [18]. Similar findings would be expected in comparable countries [15]. Hopefully a significant number of patients will appreciate and benefit from the summary versions of the explanations.

3. When should explanatory material be presented?

Presentation of this form of explanatory information will usually have the greatest impact when it is relevant to particular aftercare signs and symptoms which are, or could be associated with non-compliance. A printed version alone can be an effective means of education [19] but more so when it supplements a verbal version provided in the consulting room to explain the basis for signs and/or symptoms. For example number 4: "Why is it important to clean and rinse lenses before storage rather than before insertion?" and number 8: "What are some of the advantages of keeping contact lenses clean?" could be helpful for a patient presenting with the commonly encountered signs of chronic limbal and/or palpebral conjunctival injection [7–9]. The soiling of lenses due to accumulated transparent surface slime is not always evident although the lack of wetting can be a clue. The format for explain-