

It is important to remember that the result is statistically significant if the confidence intervals do not cross the null value, such as 1.0 for relative risk and 0 for absolute risk reduction.

Conclusion

An understanding of the commonly used statistical measures of benefit is necessary if clinicians are to gain an appreciation of the efficacy of different therapies. For the majority of clinical trials, relative risk and odds ratio can be considered interchangeable as a measure of the relative change in the risk of a preventable event. The hazard ratio is a related measure that weights the risk change according to when events occur over time. Absolute risk reduction represents the absolute change in risk (expressed in percentage points) and its reciprocal represents the number of patients who would need to be treated over a given period of time to prevent one event.

References

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Conflict of interest: none declared



On the correct use of eye drops

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Summary

Drops are a common vehicle for administering drugs to the eye, but they must be instilled correctly. To limit wastage and systemic absorption a single drop should usually be prescribed. If the patient needs to use two types of drop their instillation should be separated by at least three minutes. Most eye drops contain a preservative, but they should not be kept beyond the expiry date on the label.

Key words: expiry dates, instillation, ophthalmic solutions.

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Introduction

Patients should be instructed on how to use their eye drops. They need to know about the frequency and the method of administration, and how the drops should be stored.

One drop or two?

Only one drop should be used at a time. A second drop may wash out the first or increase the possibility of systemic absorption and toxicity. A second drop can often end up on the skin of the eyelids and the patient is then more likely to develop a contact allergy. Using two drops also doubles the cost of the medication.

How often?

The type of drug and the patient's condition determine the frequency of instillation. In some serious infective or inflammatory conditions the drops may need to be used as frequently as half hourly (although generally only while the patient is awake). In contrast, the most commonly used treatments for glaucoma only need to be instilled once a day.

How to use eye drops

The method of instilling the drops is important. If it is not done properly, the drops have almost as much chance of landing on the cheek as in the eye.

It is important that patients wash their hands and remove any contact lenses before using the drops. Many eye drops contain the drug in suspension rather than in solution. These drops should always be shaken before use.

The cap should be removed from the bottle but never put down on the table in such a way that it may become contaminated. It should either be put on its side or held carefully in the other hand.

During instillation it is very important that patients do not touch their eye with the tip of the bottle. This could both abrade the cornea and contaminate the remaining drops.

In the traditional method of instilling drops (see Fig. 1) the bottle is held upside down in one hand between the thumb and index finger and with the other hand the lower eyelid is gently pulled

down to form a pouch. The head is tilted back, the patient looks up and, placing the tip of the bottle close to their lower eyelid, gently squeezes the bottle to release one drop into the pouch formed between the eye and lid.

An alternative technique (see Fig. 2) is for the patient to hold the bottle between the thumb and index finger of their dominant hand then rest their little finger below the lower lid and use it to pull the lid out and create a pocket. Then, tilting their head back, they look up and squeeze the bottle. It is almost impossible to miss as the tip of the bottle is within two or three centimetres of the eye.

After entering the eye the drop will pass through the nasolacrimal duct into the nasopharynx. In some cases the amount of systemic absorption can be significant, especially with the beta blocker eye drops used for glaucoma. After the drop is instilled the patient should therefore close their eyes and place their index fingers against the inner corner of the eyes, pressing against the nose for one or two minutes. This punctal pressure will reduce the amount of drug that reaches the nasopharynx and thus reduce any systemic absorption.

If the patient is instilling more than one medication they should wait at least three minutes before putting in the next medication. Generally, they should wait at least 15 minutes before inserting contact lenses if they are worn.

Storage

Eye drops should generally be stored in a cool dry place and for some drugs, especially chloramphenicol, the most commonly used ocular antibiotic in Australia, it is preferable to keep the bottle in the fridge.

Patients should not keep their eye drops beyond the printed expiry date. The current policy is that once eye drops have been opened they should be disposed of after 28 days. This is based on research from earlier times when drops were dispensed in glass bottles with glass pipettes, and many eye drops did not contain preservatives. To my knowledge none of this research is current, using modern dropper-type bottles. This policy seems a terrible waste and causes increased expense to the patients and the health system.

Although evidence is needed to support the practice, some ophthalmologists allow patients who are using drops regularly to keep the bottle for up to two months (although most of them run out after about six weeks). Of course when patients have drops that they use only from time to time, such as artificial tears or other drops used purely for comfort, then these drops should not be kept long term as the risk of contamination may then be significant.

Patients who develop an allergy or other reaction to the preservative in eye drops may need to use a formulation without a preservative. Many eye drops are also available in this form in single-use disposable containers.

Safety

Patients should check the label every time they use their eye drops. Unfortunately, there are some glues and hardeners which are sold in bottles very similar to eye drops. Many doctors have seen patients who have accidentally used these drops in their eye, often with significant resulting morbidity.

Conflict of interest: none declared

Only one drop should be used at a time

Fig. 1

'Traditional' method of instilling eye drops



Fig. 2

'One-handed' method of instilling eye drops

