Eye care for the intensive care patient

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Authors' objectives
To present the best available evidence related to the effectiveness of eye care within the intensive care unit.

Searching
CINAHL, MEDLINE, Current Contents, the Cochrane Library, Expanded Academic ASAP and TRIP were searched. In addition, three journals were handsearched: Critical Care Nurse, Heart and Lung, Dimensions of Critical Care. In an attempt to identify unpublished studies, Dissertation Abstracts International and Proceedings First were searched, and the conference proceedings of the Australian and New Zealand Annual Scientific Meetings on Intensive Care were handsearched. Reference lists were also searched for relevant studies. A full list of the search terms was presented in the review.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were selected where available. In the absence of RCTs, other research designs such as non-randomised controlled trials and before-and-after studies were considered for inclusion in the review.

Specific interventions included in the review
The interventions of interest were those used to maintain the integrity of the ocular surface in critically ill intensive care patients. In particular, those related to the maintenance of the physiological surface integrity were considered: eye hygiene regimes, prevention of dry eyes, eyelid closure and eye care programmes.

Participants included in the review
The review considered all studies that included patients of all ages who were unconscious, sedated and/or paralysed and mechanically ventilated in an intensive care setting. Studies involving patients with facial burns or eye trauma were excluded from the review.

Outcomes assessed in the review
The outcomes of interest were those related to the incidence and severity of ocular surface injury or disease whilst the patients were in an intensive care setting. These included outcomes such as corneal abrasions, infection and oedema.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection. However, the review was written by a single author, indicating that all the review processes were undertaken by a single person.

Assessment of study quality
The studies were evaluated using a checklist developed by the Joanna Briggs Institute (see Other Publications of Related Interest). The checklist consisted of four items relating to the following: randomisation, equal treatment of participants in each comparison group, measurement of outcomes and follow-up of participants. The author did not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment. It is likely that the validity assessment was carried out by the author alone.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction. It is likely that the data extraction was carried out by the author alone. Data were extracted on study details, methods, population, setting, intervention, outcomes measured and results. For RCTs, where possible, odds ratios (for
categorical outcome data) or weighted mean differences (for continuous data) and their 95% confidence intervals (CIs) were calculated for each included study.

**Methods of synthesis**

How were the studies combined?
Due to the small number of studies with minimal overlap in terms of the interventions and outcomes, quantitative pooling was not possible. Since statistical pooling was inappropriate, the findings were summarised in a narrative form according to the outcome and intervention.

How were differences between studies investigated?
Differences between the studies were discussed in the body of the text.

**Results of the review**

Six studies (n=265) were included in the review: three RCTs, one non-randomised controlled trial, one uncontrolled trial and a before-and-after study.

The only outcome measure of interest used in all three included RCTs was corneal abrasion. Findings from these RCTS indicated the following.

Polyethylene films/covers (Gladwrap) were more effective than regular instillation of methylcellulose drops (Methopte Forte) in reducing the incidence of corneal abrasions (odds ratio, OR 6.05, 95% CI: 1.48, 24.66).

Artificial tear ointment (Duratears) was more effective than passive eyelid closure in reducing the incidence of corneal abrasions (OR 0.20, 95% CI: 0.05, 0.76).

Polyethylene films/covers (Gladwrap) were more effective than regular eye instillations (Methopte Forte drops, Lacrilube ointment) in reducing the incidence of corneal abrasions (OR 6.22, 95% CI: 1.97, 19.63).

All of the RCTs in the review indicated that corneal abrasions were a relatively common occurrence within the intensive care population.

**Authors' conclusions**

Ointments and drops seemed to be better than no eye instillations, although the evidence suggested that they were not as effective as polyethylene (Gladwrap) for preventing corneal abrasions and were more expensive. The author also stated that recommendations for clinical practice could not be made due to the lack of rigorous, research literature on the eye care interventions studied (i.e. eye hygiene regimes, eyelid closure and eye care programmes), and that further quality research should be undertaken. Despite the discovery of RCTs investigating the prevention of dry eyes, more rigorous research is required. This research should replicate existing studies (to support or question their findings) and also investigate how best to implement the interventions.

**CRD commentary**

This review was based on a reasonably well-defined question, which broadly specified the study designs, interventions, participants and outcomes of interest. An attempt was made to identify all the relevant published and unpublished research through searches of electronic databases, handsearching, and the examination of reference lists. The exclusion of non-English language articles may have led to relevant evidence being missed. The validity of the included studies was assessed using a developed checklist and relevant details of these studies were tabulated. The author made it explicit that the studies would be combined using a meta-analysis or narrative methods, depending on which approach was more appropriate in the given situation. The author's conclusions were appropriately cautious given the limited amount of relevant primary research identified, and appeared to follow from the evidence presented.

**Implications of the review for practice and research**
Practice: The author stated that recommendations for clinical practice could not be made.

Research: The author stated that existing RCTs investigating the prevention of dry eyes may require replication, and that research into the implementation of these interventions needs to be conducted. Further research is required to evaluate eye hygiene regimes, eyelid closure and programmes of eye care.

Bibliographic details

Other publications of related interest

Indexing Status
Subject indexing assigned by CRD

MeSH
Eye Infections, Bacterial /prevention & control; Intensive Care Units

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.