Perioperative Ophthalmic Eye Drops for Cataract Surgery: Clinical and Cost-Effectiveness and Guidelines
Authors: Camille Dulong, Aleksandra Grobelna


Acknowledgments:

Disclaimer: The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners’ own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein are those of CADTH and do not necessarily represent the views of Canada’s federal, provincial, or territorial governments or any third party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user’s own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian Copyright Act and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.
Research Questions

1. What is the clinical effectiveness of perioperative ophthalmic eye drops for the prevention of infection and adverse events associated with cataract surgery?

2. What is the cost-effectiveness of perioperative ophthalmic eye drops for the prevention of infection and adverse events associated with cataract surgery?

3. What are the evidence-based guidelines regarding the use of perioperative ophthalmic eye drops during cataract surgery?

Key Findings

Two systematic reviews\(^1\)\(^,\)\(^2\) and one non-randomized\(^3\) study were identified regarding the clinical and cost-effectives of perioperative ophthalmic drops for patients undergoing cataract surgery.

Methods

A limited literature search was conducted on key resources including PubMed, the Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search.

No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2013 and November 13, 2018. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
</tr>
<tr>
<td><strong>Comparator</strong></td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
</tr>
<tr>
<td><strong>Study Designs</strong></td>
</tr>
</tbody>
</table>
Results

Two systematic reviews\(^1, 2\) and one non-randomized\(^3\) study were identified regarding the clinical and cost effectiveness of perioperative ophthalmic drops for patients undergoing cataract surgery. No relevant health technology assessments randomized controlled trials and guidelines were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

The first systematic review\(^1\) evaluated whether or not perioperative antibiotics lowered the chance of endophthalmitis, inflammation of the eye chambers caused by infection. Studies included preoperative or postoperative antibiotic drops and intracameral, subconjunctival and systemic forms. The five studies included compared: the antibiotics vancomycin or gentamycin with irrigating solution to standard saline solution, perioperative intracameral cefuroxime with or without topical levofloxacin, periocular penicillin injections and topical chloramphenicol-sulfadimidine drops compared with topical antibiotics alone. Overall, the researchers found that antibiotic ophthalmic drops in conjunction with antibiotic injections lowers the risk of endophthalmitis compared to injections or ophthalmic drops alone.\(^1\)

The second systematic review\(^2\) compared non-steroidal anti-inflammatory drugs (NSAIDs) in combination with corticosteroids to corticosteroids alone to determine the importance of NSAIDs for controlling inflammation after cataract surgery. Outcomes assessed were best-corrected visual acuity (BCVA), patient-reported discomfort, complications or symptoms as well as cost-effectiveness of using NSAIDs and corticosteroids. Of the 48 randomized controlled trials included, 19 of these compared NSAIDs with corticosteroids to corticosteroids alone.\(^2\) Overall, researchers could not definitively conclude that NSAIDs with corticosteroids reduced inflammation, including cystoid macular edema (CME), or resulted in better BCVA compared to corticosteroids alone.\(^2\)

One non-randomized study\(^3\) identified aimed to determine the effect of using NSAIDs to reduce postoperative macular edema (PME) after cataract surgery. Patients using perioperative NSAIDs and steroids were compared to those patients who were taking steroids alone. Overall, the researchers found that NSAIDs were associated with a lower risk of PME for patients undergoing cataract surgery although the patient population was small and the treatment benefit was minimal for the study.\(^3\)

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials

No literature identified.

Non-Randomized Studies


Economic Evaluations

No literature identified.

Guidelines and Recommendations

No literature identified.
Appendix — Further Information

Randomized Controlled Trials - Alternative Patient Population

PubMed: PM28268098

Alternative Intervention

PubMed: PM28603408

Non-randomized studies

Alternative Comparator

PubMed: PM29502618

Alternative Intervention

PubMed: PM29807771

PubMed: PM27513223

Review Articles

PubMed: PM27966271

PubMed: PM27897120

PubMed: PM26569521

Additional Articles

