TITLE: Celecoxib versus Non-selective Non-Steroidal Anti-Inflammatory Drugs and Proton Pump Inhibitors: Clinical Effectiveness, Safety, and Cost Effectiveness

DATE: 22 September 2011

RESEARCH QUESTIONS

1. What is the comparative clinical effectiveness of celecoxib versus combination non-selective non-steroidal anti-inflammatory drugs (NSAIDs) and proton pump inhibitors (PPIs) for pain management in adult patients?

2. What is the evidence for the safety of celecoxib compared with combination non-selective NSAIDs and PPIs for pain management in adult patients?

3. What is the cost-effectiveness of celecoxib compared with combination non-selective NSAIDs and PPIs for pain management in adult patients?

KEY MESSAGE

The evidence suggests that treatment with celecoxib is associated with fewer gastrointestinal adverse events and is more cost-effective versus combination non-selective NSAIDs and PPIs for pain management in adult patients. Insufficient evidence was identified regarding the safety of celecoxib; therefore, no clear conclusions can be made.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2011, Issue 9), 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, 2001 and September 8, 2011. Internet links were provided, where available.

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The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and economic evaluations.

The literature search identified one health technology assessment, five randomized controlled trials, one non-randomized study, and six economic evaluations. No systematic reviews regarding the clinical effectiveness, cost-effectiveness, and safety of celecoxib versus combination non-selective NSAIDs and PPIs for pain management in adult patients were identified. Additional articles of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One health technology assessment\(^1\) evaluated the clinical and cost-effectiveness of specific COX-2 selective NSAIDs for osteoarthritis and rheumatoid arthritis. The review found no significant difference in adverse gastrointestinal (GI) events when celecoxib was compared with a non-selective NSAID and PPI. The authors indicated that all COX-2 selective NSAIDs were associated with nominal cost-effectiveness compared with non-selective NSAIDs due to higher costs and small increases in the quality adjusted life years (QALYs).

Five randomized-controlled trials\(^2\)\(^-\)\(^6\) were identified. The overall study findings suggest that treatment with celecoxib was associated with the fewest risks of GI adverse versus other similar treatment interventions. Furthermore, celecoxib prevented GI adverse events similarly or greater than non-selective NSAIDS and PPIs in patients with previous GI complications. A summary of their characteristics and conclusions with respect to efficacy and safety are provided in Table 1.

One non-randomized study\(^7\) assessed the efficacy of gastroprotective strategies used for reducing GI events in long term NSAID users. The authors reported that GI complications were significantly reduced with the use of both non-selective NSAIDs with PPIs and COX-2 inhibitors. Furthermore, COX-2 inhibitors used in combination with a PPI reduced the greatest risk of upper GI events.

Six economic evaluations\(^8\)\(^-\)\(^13\) were identified. Overall, the main study findings suggest that celecoxib should be offered as treatment before combination non-selective NSAIDS with PPIs as the most cost-effective therapy for treatment of arthritis in adult patients. A summary of the study characteristics and conclusions are provided in Table 1.
Table 1. Summary of included studies

<table>
<thead>
<tr>
<th>First Author, Year</th>
<th>Patient population</th>
<th>Objective of study</th>
<th>Results/ author's conclusions</th>
</tr>
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<tbody>
<tr>
<td><strong>Randomized controlled trials</strong></td>
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<tr>
<td>Chan, 2010*</td>
<td>Patients with OA or RA ≥18 yrs of age with previous GI ulceration or ≥60 yrs of age testing negative for Helicobacter pylori</td>
<td>Compare the risk of GI events with celecoxib vs. diclofenac + omeprazole use</td>
<td>Risk of GI tract AEs was lower in celecoxib group</td>
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<tr>
<td>Goldstein, 2007*</td>
<td>Patients with normal baseline capsule endoscopy</td>
<td>Review the incidence of SB injury with celecoxib vs. ibuprofen + omeprazole or PL</td>
<td>Celecoxib was associated with significantly fewer mean numbers of SB mucosal breaks</td>
</tr>
<tr>
<td>Chan, 2007*</td>
<td>Patients taking non-selective NSAIDS for arthritis with previous GI bleeding</td>
<td>Test which therapy best prevents recurrent GI bleeding Celecoxib vs. celecoxib + esomeprazole</td>
<td>Celecoxib/ esomeprazole was significantly more effective for prevention of GI bleed than celecoxib monotherapy</td>
</tr>
<tr>
<td>Lai, 2005*</td>
<td>Patients recovered from ulcer events related to NSAID use</td>
<td>Test which therapy best prevents recurrent ulcer complications celecoxib vs. naproxen + lansoprazole</td>
<td>Celecoxib was non-inferior to the co-therapy treatment. Both treatment were associated with high rates of ulcer recurrence</td>
</tr>
<tr>
<td>Chan, 2004*</td>
<td>High Risk arthritis patients recovered from ulcer bleeding related to NSAID use</td>
<td>Determine the incidence and factors of ulcer recurrence with celecoxib + PL vs. diclofenac + omeprazole</td>
<td>Both celecoxib or diclofenac + omeprazole effectively prevented ulcer recurrence</td>
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<tr>
<td><strong>Economic evaluations</strong></td>
<td></td>
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<tr>
<td>Bessette 2009*</td>
<td>Adult patients with osteoarthritis or rheumatoid arthritis</td>
<td>Assess the cost-utility of celecoxib for arthritis</td>
<td>Celecoxib as treatment before NSAID + PPI is most cost-effective</td>
</tr>
<tr>
<td>Inotai &amp; Meszaros 2009*</td>
<td>Adult patients with rheumatoid arthritis</td>
<td>Compare cost-effectiveness of celecoxib vs. NSAIDS vs. NSAIDS + PPI</td>
<td>NSAID + PPI are most cost-effective. Celecoxib should be offered for specific conditions because of high price and risk of CV AEs</td>
</tr>
<tr>
<td>Al et al. 2008*</td>
<td>Adult patients with osteoarthritis or rheumatoid arthritis</td>
<td>Compare cost-effectiveness of various analgesic treatments</td>
<td>Diclofenac + misoprostol is most cost-effective. Celecoxib should be offered to high risk patients</td>
</tr>
<tr>
<td>Brown et al. 2008*</td>
<td>Adult patients receiving long term NSAIDs</td>
<td>Compare cost-effectiveness of various analgesic treatments</td>
<td>COX-1 + H2RA or COX-1 + PPI are most cost-effective</td>
</tr>
</tbody>
</table>
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<tr>
<td>Chancellor et al. 2001&lt;sup&gt;12&lt;/sup&gt;</td>
<td>Adult patients with arthritis</td>
<td>Predict the cost-effectiveness of celecoxib vs. other similar analgesic treatments</td>
<td>Celecoxib was predicted to be most cost-effective</td>
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<tr>
<td>Zabinski et al. 2001&lt;sup&gt;13&lt;/sup&gt;</td>
<td>Adult patients with osteoarthritis or rheumatoid arthritis</td>
<td>Determine an economic model to compare cost-effectiveness of celecoxib vs. NSAIDs + various gastprotective therapies</td>
<td>Celecoxib was cost-effective for patients ≥ 65 yrs. Celecoxib was associated with fewest GI events</td>
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AE=adverse events; CV=cardiovascular; GI=gastrointestinal; H2RA=histamine-2 receptor agonist; NR=not reported; NSAID=non-steroidal anti-inflammatory drug; PL=placebo; PPI=proton pump inhibitor; SB=small bowel; WDAE=withdraw due to adverse events
REFERENCES SUMMARIZED

Health Technology Assessments


Systematic Reviews and Meta-analyses
No literature identified

Randomized Controlled Trials


Non-Randomized Studies

Economic Evaluations


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APPENDIX – FURTHER INFORMATION:

Randomized Controlled Trials (Placebo-controlled)


Additional References
