Canadian Agency for Drugs and Technologies in Health

RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

TITLE: Slow-Release Opioids for Postoperative Pain: Clinical Effectiveness

DATE: 5 November 2014

RESEARCH QUESTION

What is the clinical effectiveness of slow-release opioids for postoperative pain following elective hip or knee arthroplasty?

KEY FINDINGS

Four randomized controlled trials (RCTs) and three non-randomized studies were identified regarding the clinical effectiveness of slow-release opioids for post-operative pain following elective hip or knee arthroplasty.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 10), 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, 2009 and October 27, 2014. Internet links were provided, where available.

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.

SELECTION CRITERIA

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

Table 1: Selection Criteria	
Population	Patients who have undergone elective hip or knee arthroplasty (total, revision, or partial)
Intervention	Long-acting (slow-release) opioids (e.g., oxycodone slow-release, hydromorphone slow-release, morphine slow-release)
Comparator	• Immediate-release opioids (e.g., oxycodone, hydromorphone, or morphine) • No comparator
Outcomes	• Benefits(including adequate pain relief) • Harms (including inadequate pain relief, drowsiness, confusion, dyspnea, sedation, delirium)
Study Designs	Health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies

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 and non-randomized studies.

Four RCTs and three non-randomized studies were identified regarding the clinical effectiveness of slow-release opioids for post-operative pain following elective hip or knee arthroplasty. No relevant health technology assessments, systematic reviews, or meta-analyses were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Four RCTs and three non-randomized studies were identified regarding the clinical effectiveness of slow-release opioids for post-operative pain following elective hip or knee arthroplasty.

Some studies comparing treatment with slow release opioids to various alternate interventions (e.g., conventional opioid treatment, placebo) reported positive outcomes including improvements in pain scores,[1-7] reduced supplemental opioid consumption,[1,2] increased mobility,[6] and reduced adverse events.[5] Other authors reported negative or neutral outcomes including no change in mobility[1,2] or pain scores[7] and increased supplemental opioid consumption.[6] Study details and findings are presented in depth in Table 2.

Table 2. Summary of Findings				
Author, Year	**Surgery**	**Intervention**	**Comparator**	**Outcome**
Randomized Controlled Trials				
Abrisham, 2014[1]	Knee arthroplasty	TFP (2 x 25 µg)	Placebo	• Reduced pain scores. • Decreased morphine consumption in TFP group. • No differences in side-effects. • No differences in post-operative knee flexion.
Sathikarnmanee, 2014[2]	Knee arthroplasty	TFP (50 µg)	Placebo	• Reduced pain scores and decreased morphine consumption in TFP group. • No differences in side-effects or ambulation.
Kuusniemi, 2012[3]	Knee arthroplasty	Prolonged-release O/N	O/N	• No difference in pain intensity at rest scores.
Johnson, 2011[4]	Knee arthroplasty	EREM	CFNB	• Good tolerance in both groups. • Prolonged analgesia in EREM group.
Non-Randomized Retrospective Studies				
Blackshear, 2010[5]	Hip and knee arthroplasty	EREM (5 to 15 mg)	Other treatment (unspecified)	• Fewer pulmonary embolisms and improved pain control in EREM group.
Vanterpool, 2010[6]	Hip and knee arthroplasty	EREM	EPID	• Reduced pain scores. • Higher use of supplemental opioids. • Greater distance ambulated in EREM group.
Schmidt, 2009[7]	Knee athroplasty	EREM	Perineural infusion	• No difference in pain scores before and immediately after surgery, and at 48 hours. • Reduced pain scores at 12 and 24 hours in EREM group.

TFP = transdermal fentanyl patch; O/N = oxycodone/naloxone; CFNB = continuous femoral nerve block; EREM = extended release epidural morphine; EPID = continuous epidural infusion of morphine.

REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials

1. Abrisham SM, Ghahramani R, Heiranizadeh N, Kermani-Alghoraishi M, Ayatollahi V, Pahlavanhosseini H. Reduced morphine consumption and pain severity with transdermal fentanyl patches following total knee arthroplasty. Knee Surg Sports Traumatol Arthrosc. 2014 Jul;22(7):1580-4.
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Non-Randomized Studies

5. Blackshear RH, Crosson KC. Reduction in pulmonary embolism after total joint arthroplasty: three years of experience with extended-release epidural morphine. Pain Pract. 2010 May-Jun;10(3):235-44.
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APPENDIX – FURTHER INFORMATION:

Randomized Controlled Trials – Alternate or Unspecified Surgery Type

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PubMed: PM23809446

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Non-Randomized Studies – Alternate or Unspecified Surgery Type

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