TITLE: Intranasal and Intramuscular Naloxone for Opioid Overdose in the Pre-Hospital Setting: Comparative Clinical Effectiveness and Cost-Effectiveness

DATE: 07 September 2016

RESEARCH QUESTIONS

1. What is the comparative clinical effectiveness of pre-filled intranasal naloxone versus intramuscular naloxone?

2. What is the comparative clinical effectiveness of pre-filled intranasal naloxone versus naloxone administered intranasally using a mucosal atomizer?

3. What is the comparative clinical effectiveness of naloxone administered intranasally using a mucosal atomizer versus intramuscular naloxone?

4. What is the cost-effectiveness of naloxone administered intranasally or intramuscularly?

KEY FINDINGS

No relevant literature was identified regarding pre-filled intranasal naloxone versus intramuscular naloxone or intranasal administration using an atomizer.

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 retrieval for questions 1, 2 and 3. A filter was used to limit retrieval to economic studies for question 4. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2006 and August 31, 2016. 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>
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<tr>
<th>Table 1: Selection Criteria</th>
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<td><strong>Population</strong></td>
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<td>Q1 to 4: Patients (of any age) suspected of opioid overdose in the pre-hospital setting</td>
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<td><em>Subgroups of interest:</em> pediatric (≤ 18 years of age) and adult (&gt; 18 years of age) populations</td>
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<td><strong>Intervention</strong></td>
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<td>Q1 and 2: Pre-filled brand name intranasal naloxone spray (e.g., Narcan)</td>
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<td>Q3: Naloxone administered intranasally using a mucosal atomizer</td>
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<td>Q4: Pre-filled brand name intranasal naloxone spray, naloxone administered intranasally using a mucosal atomizer, or intramuscular naloxone</td>
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<td><strong>Comparator</strong></td>
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<td>Q1 and 3: Intramuscular naloxone</td>
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<td>Q2: Naloxone administered intranasally using a mucosal atomizer</td>
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<td>Q4: Any of the following alternative modes of naloxone administration (i.e., Pre-filled brand name intranasal naloxone spray, naloxone administered intranasally using a mucosal atomizer, intramuscular naloxone)</td>
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<td><strong>Outcomes</strong></td>
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<td>Q1 to 3: Clinical effectiveness (e.g., proportion of patients with an adequate response within 10 minutes of administration [i.e., based on effective and spontaneous respirations and Glasgow Coma Score], change in level of consciousness, time to adequate response, hospitalization, adverse event rate, requirement for rescue naloxone due to inadequate primary response, vital signs [e.g., blood pressure, heart rate and respiratory rate], arterial blood oxygen saturation);</td>
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<td>Harms (e.g., drug-related adverse events, administration-related adverse events, study-related side-effects [e.g., agitation], opioid withdrawal effects, length of hospital stay, needle site injury)</td>
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<td>Q4: Cost-effectiveness outcomes (e.g., cost per benefit or clinical outcome, cost per quality adjusted life year)</td>
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<td><strong>Study Designs</strong></td>
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<tr>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations</td>
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</table>

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.

No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, or economic evaluations were identified regarding pre-filled intranasal naloxone versus intramuscular naloxone or intranasal administration using an atomizer.

References of potential interest are provided in the appendix.

**Health Technology Assessments**

No literature identified.
Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies
No literature identified.

Economic Evaluations
No literature identified.

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APPENDIX – FURTHER INFORMATION:

Previous CADTH Reports


Systematic Reviews – Method of Nasal Delivery Not Specified


Randomized Controlled Trials

Method of Nasal Delivery Not Specified


Emergency Department, Alternate Comparator


Simulation Studies

Simulations Studies, Alternate Comparator

PubMed: PM22953064

Non-Randomized Studies

Alternate Comparator

PubMed: PM19731165

Method of Nasal Delivery Not Specified, Alternate Comparator

PubMed: PM20223386

Emergency Department, Alternate Comparator

PubMed: PM25987910

Non-Comparative

PubMed: PM27218446

PubMed: PM26346210

Pharmacokinetic Studies

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Guidelines and Recommendations


Review Articles


Additional References
