CADTH

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Blunt Needles for Withdrawing from Multi-dose Vials: Safety and Guidelines

Service Line:	Rapid Response Service
Version:	1.0
Publication Date:	April 25, 2019
Report Length:	6 Pages

CADTH

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Cite As: *Blunt Needles for Withdrawing from Multi-dose Vials: Safety and Guidelines*. Ottawa: CADTH; 2019 Apr. (CADTH rapid response report: summary of abstracts).

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.

Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

Questions or requests for information about this report can be directed to **requests@cadth.ca**

Research Questions

1. What is the clinical evidence regarding the safety of using blunt needles to withdraw medication or vaccines from multi-dose vials or ampules?
2. What are the evidence-based guidelines regarding needles to withdraw medication or vaccines from multi-dose vials or ampules?

Key Findings

No relevant clinical evidence was identified regarding the safety of using blunt needles to withdraw medication or vaccines from multi-dose vials or ampules. In addition, no relevant evidence-based guidelines were identified.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, guidelines, and safety data. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2016 and April 17, 2019.

Selection Criteria

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

Table 1: Selection Criteria

Population	Patients in any clinical setting where multi-dose vials or ampules are used
Intervention	Blunt needles, with or without filters, for withdrawing medication or vaccines from multi-dose vials or ampules
Comparator	Q1: Other needle types (e.g., sharp needles); no comparator Q2: No comparator required
Outcomes	Q1: Safety (e.g., adverse events related to contamination risk, harms due to cap fragmentation) Q2: Evidence-based guidelines and recommendations (e.g., what type of needle should be used for withdrawing from multi-dose vials)
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, evidence-based guidelines

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 evidence-based guidelines.

No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, or evidence-based guidelines were identified.

References of potential interest are provided in the appendix.

Overall Summary of Findings

No relevant literature was found regarding the safety of using blunt needles to withdraw medication or vaccines from multi-dose vials or ampules; therefore, no summary can be provided.

References Summarized

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.

Guidelines and Recommendations

No literature identified.

Appendix — Further Information

Previous CADTH Reports

1. Blunt needles for withdrawing from multidose vials: safety and guidelines (*CADTH Rapid response report: summary of abstracts*).Ottawa (ON): CADTH; 2016 Dec 13: https://cadth.ca/blunt-needles-withdrawing-multi-dose-vials-safety-and-guidelines-0 Accessed 2019 Apr 25.

Non-Randomized Studies

Ex Vivo Study

2. Joo GE, Sohng KY, Park MY. The effect of different methods of intravenous injection on glass particle contamination from ampules. *SpringerPlus*. 2016;5:15. PubMed: PM26759754

Intervention Insufficiently Described

3. Bhatia M, Mishra B, Loomba PS, Dogra V. A pilot study for evaluation of knowledge and common practises of nursing staff regarding use of multidose injection vials and their microbial contamination rate in a super-specialty hospital. *J Educ Health Promot.* 2018;7:120. PubMed: PM30271805

4. Leback C, Hoang Johnson D, Anderson L, Rogers K, Shirley D, Safdar N. Barriers and facilitators to injection safety in ambulatory care settings. *Infect Control Hosp Epidemiol*. 2018 Jul;39(7):841-848. PubMed: PM29970202

Clinical Practice Guidelines

Intervention Insufficiently Described

5. Jensen C, Moore D, Mah C, Baclic O, Marchant-Short S. New vaccine administration practice recommendations from the Canadian Immunization Guide. *Can Commun Dis Rep*. 2017 Nov 2;43(11):242-244. PubMed: PM29770054

Unspecified Methodology

6. Province-wide Immunization Program Standards and Quality. Standard for the administration of immunizations. Edmonton (AB): Alberta Health; 2018 May 1: https://www.albertahealthservices.ca/assets/info/hp/cdc/if-hp-cdc-ipsm-standard-administration-immunization-06-100.pdf Accessed 2019 Apr 25.
   Note: Blunt fill needles discussed on page 3.

7. Drawing up medications. Sudbury (ON): Health Sciences North; 2018 Jan: https://www.hsnsudbury.ca/portalen/Portals/23/Drawing%20Up%20Medications.pdf Accessed 2019 Apr 25.

8. Central venous access devices: practice guideline. Sydney (AU): The Sydney Children's Hospital Network; 2017 Aug 28: http://www.schn.health.nsw.gov.au/_policies/pdf/2013-9037.pdf Accessed 2019 Apr 25.

9. Dolan SA, Meehan Arias K, Felizardo G, et al. APIC position paper: safe injection, infusion, and medication vial practices in health care. Washington (DC): APIC; 2016: https://www.apic.org/Resource_/TinyMceFileManager/Position_Statements/2016APICSIPPositionPaper.pdf Accessed 2019 Apr 25.
Note: Filter needles discussed on page 9.

Review Articles

10. Lyng JW, White CC 4th, Peterson TQ, et al. Non-auto-injector epinephrine administration by basic life support providers: A literature review and consensus process. *Prehosp Emerg Care*. 2019 Mar 27:1-11.
PubMed: PM30917719

11. Kordi R, White BF, Kennedy DJ. Possibility and risk of medication vial coring in interventional spine procedures. *PM & R.* 2017 Mar;9(3):289-293.
PubMed: PM27639650

12. Merry AF, Gargiulo DA, Fry LE. What are we injecting with our drugs? *Anaesth Intensive Care*. 2017 Sep;45(5):539-542.
PubMed: PM28911282

13. Clinical review: blunt drawing up devices with and without filter. London (GB): NHS Business Services Authority; 2016 Dec: https://www.nhsbsa.nhs.uk/sites/default/files/2017-04/Clinical%20review%20blunt%20drawing%20up%20devices%20with%20and%20without%20filter%20-%20Final%20%28V1.0%29%2012%202016.pdf Accessed 2019 Apr 25.