

CADTH Reference List

Route of Administration of Sufentanil and Fentanyl for Patients in Palliative Care

December 2022

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Cite As: *Route of Administration of Sufentanil and Fentanyl for Patients in Palliative Care*. (CADTH reference list). Ottawa: CADTH; 2022 Dec.

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

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Key Messages

- We did not find any studies about the clinical effectiveness of administering synthetic opioids (i.e., fentanyl, sufentanil) subcutaneously versus sublingually or intranasally for patients in palliative care.
- We found 2 non-randomized studies about the clinical effectiveness of administering synthetic opioids (i.e., fentanyl, sufentanil) sublingually versus intranasally for patients in palliative care.
- We did not find any evidence-based guidelines about the route of administration for synthetic opioids (i.e., fentanyl, sufentanil) for patients in palliative care.

Research Questions

1. What is the clinical effectiveness of administering synthetic opioids (i.e., fentanyl, sufentanil) subcutaneously versus sublingually or intranasally for patients in palliative care?
2. What is the clinical effectiveness of administering synthetic opioids (i.e., fentanyl, sufentanil) sublingually versus intranasally for patients in palliative care?
3. What are the evidence-based guidelines regarding the route of administration for synthetic opioids (i.e., fentanyl, sufentanil) for patients in palliative care?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, Embase, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were fentanyl, sufentanil, and subcutaneous, sublingual, and intranasal drug administration. No filters were applied to limit the retrieval by study type. Conference abstracts, comments, newspaper articles, editorials, and letters were excluded. Where possible, retrieval was limited to humans. The search was completed on December 6, 2022, and limited to English-language documents published since January 1, 2017. Internet links were provided, where available.

Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. Open access full-text versions of evidence-based guidelines were reviewed when available.

Table 1: Selection Criteria

Criteria	Description
Population	Patients in palliative care
Intervention	Q1: Synthetic opioids (limited to fentanyl and sufentanil) administered subcutaneously Q2: Synthetic opioids (limited to fentanyl and sufentanil) administered sublingually Q3: Synthetic opioids (limited to fentanyl and sufentanil)
Comparator	Q1: Synthetic opioids (limited to fentanyl and sufentanil) administered sublingually or intranasally Q2: Synthetic opioids (limited to fentanyl and sufentanil) administered intranasally Q3: Not applicable
Outcomes	Q1 and Q2: Clinical benefits (e.g., pain relief, time to pain relief, relief of breathlessness, quality of life) and harms (e.g., adverse events) Q3: Recommendations regarding the route of administration for synthetic opioids (i.e., fentanyl, sufentanil) for patients in palliative care (e.g., preferred route of administration, dosages by route)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines

Results

Two non-randomized studies were identified regarding the clinical effectiveness of administering synthetic opioids (i.e., fentanyl, sufentanil) sublingually versus intranasally for patients in palliative care.^{1,2} No relevant health technology assessments, systematic reviews, randomized controlled trials, or evidence-based guidelines were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

References

Health Technology Assessments

No literature identified.

Systematic Reviews

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

1. Piotrowska W, Leppert W, Majkovicz M. Comparison of analgesia, adverse effects, and quality of life in cancer patients during treatment of procedural pain with intravenous morphine, fentanyl nasal spray, and fentanyl buccal tablets. *Cancer Manag Res*. 2019;11:1587-1600. [PubMed](#)
2. Verdu Masia R, De Diego Aliques B, Jimenez AJ, Sanz Yague A, Soler Lopez B. Symptoms control in terminally ill patients: effectiveness of opioid treatment for breakthrough dyspnea. *Rev Soc Esp Dolor*. 2017 July-August;24(4):161-168.

Guidelines and Recommendations

No literature identified.

Appendix 1: References of Potential Interest

Non-Randomized Studies

No Comparator

Rodriguez AT, Viejo MN, Maradey P, et al. Low-dose sublingual fentanyl improves quality of life in patients with breakthrough cancer pain in palliative care. *Future Oncol*. 2022 May;18(14):1717-1731. [PubMed](#)

Alternative Population – Patients Being Transported to the Emergency Department

Tanguay A, Lebon J, Hebert D, Begin F. Intranasal fentanyl versus subcutaneous fentanyl for pain management in prehospital patients with acute pain: a retrospective analysis. *Prehosp Emerg Care*. 2020 Nov-Dec;24(6):760-768. [PubMed](#)

Guidelines and Recommendations

Unclear Methodology

NH Medical Advisory Committee, Northern Health Palliative Care Consultation Team. Clinical Resource: palliative care program symptom guidelines, 4th edition. Prince George (BC): Northern Health; 2019: https://www.northernhealth.ca/sites/northern_health/files/health-professionals/palliative-care/documents/symptom-guidelines-4th-edition.pdf. Accessed 2022 Dec 07.

See: Recommendation 7, Parental routes, p. 54; Appendix D, p. 122-127

Pharmacy & Hospital Palliative Care Team, P&T Committee. Fentanyl subcutaneous and nasal - palliative care (adult). (*Medicines & Infusion Protocols (Adults)/ 1d Palliative Care*). Auckland (NZ): Waitemata District Health Board; 2017: <https://www.waitemataadhb.govt.nz/assets/Documents/health-professionals/palliative-care/FentanylSubcutaneous-PalliativeCareFeb17.pdf>. Accessed 2022 Dec 07.

See: 4.1 Subcutaneous Fentanyl, p. 2-3; 4.2 Dose Conversion, p. 2; 4.3 Fentanyl Nasal Spray (transmucosal fentanyl), p. 4; 5.4 Administration Procedure, p. 5

Expert Consensus

Medicine information sheets: fentanyl nasal spray (PecFent). (*Scottish Palliative Care Guidelines*). Edinburgh (UK): NHS Scotland; 2022: [https://www.palliativecareguidelines.scot.nhs.uk/guidelines/medicine-information-sheets/fentanyl-nasal-spray-\(pecfent\).aspx](https://www.palliativecareguidelines.scot.nhs.uk/guidelines/medicine-information-sheets/fentanyl-nasal-spray-(pecfent).aspx). Accessed 2022 Dec 07.

See: Dose and Administration

Pain: choosing and changing opioids. (*Scottish Palliative Care Guidelines*). Edinburgh (UK): NHS Scotland; 2021: <https://www.palliativecareguidelines.scot.nhs.uk/guidelines/pain/choosing-and-changing-opioids.aspx>. Accessed 2022 Dec 07.

See: Fentanyl sublingual/buccal/intranasal; Dose Conversions, the penultimate bullet point

Medicine information sheets: fentanyl sublingual (Abstral). (*Scottish Palliative Care Guidelines*). Edinburgh (UK): NHS Scotland; 2019: [https://www.palliativecareguidelines.scot.nhs.uk/guidelines/medicine-information-sheets/fentanyl-sublingual-\(abstral\).aspx](https://www.palliativecareguidelines.scot.nhs.uk/guidelines/medicine-information-sheets/fentanyl-sublingual-(abstral).aspx). Accessed 2022 Dec 07.

See: Dose and Administration

Guidelines & Protocols Advisory Committee. Palliative care for the patient with Incurable cancer or advanced disease - part 2: pain and symptom management. Victoria (BC): BCGuidelines.ca; 2017: <https://www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/bc-guidelines/palliative-pain-management>. Accessed 2022 Dec 07.

See: Appendix B, p. 2-3

Review Article

Oswicka M, Janowiak P, Gorzewska A, Lichodziejewska-Niemierko M. Inhaled opioids for cancer pain relief: a narrative review. *Medicine (Baltimore)*. 2022 24 Jun;101(25):E28921. [PubMed](#)