



Clinical Tool for Continuous Subcutaneous Fentanyl Infusion in Palliative Care

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Introduction



- In recent years, we have observed an increased use of continuous subcutaneous fentanyl infusion (CSCI) in palliative care across the province of Quebec.
- Subcutaneous administration is an advantageous alternative that avoids the placement of an intravenous access device and its potential complications.
- Substantial variability in prescribing practices between institutions
 - Equianalgesic dosing and opioid conversions
 - Optimal titration strategies and adjustment frequency
 - Breakthrough dosing recommendations

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Aims

To develop a clinically applicable tool addressing key knowledge gaps and supporting safer, more consistent use of CSCI fentanyl in palliative care.

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Method

Development process

- Exhaustive literature review: MEDLINE, Embase, manual reference screening, grey literature
- Developed by 3 pharmacists specializing in palliative care
- External review by a palliative care physician, Dr. Courteau
- Validated by 18 pharmacists members of the RPE*
- Divergent recommendations resolved through consensus

*Members of the **Regroupement de pharmaciens experts (RPE) en soins palliatifs** of the A.P.E.S., a professional group of clinical pharmacists experts in palliative care.
From left to right: Amélie Chouinard, Martine Bouchard, Marie-Josée Veilleux, Rolande Poirier, Michèle Plante, Janie Rioux, Isabelle Beaulieu, Sarah Girard, Mathieu Berteau

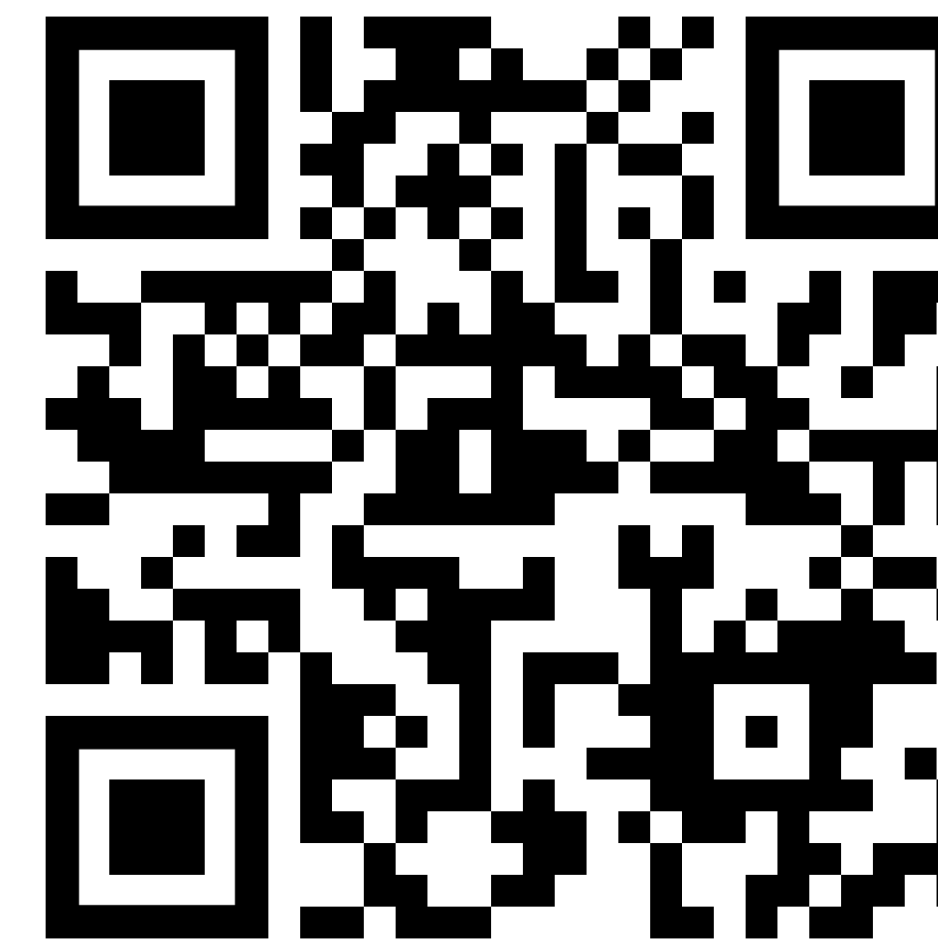


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Results



- Data from 36 references were used to develop the tool.
- After review and validation, the tool was published in August 2026 and integrates pharmacological principles, available pharmacokinetic evidence, and clinically relevant considerations to improve the prescribing of continuous fentanyl infusions in palliative care.



Original version in French : apesquebec.org/fentanylpscc

Indications for CSCI fentanyl

- Opioid-induced neurotoxicity**
 - Fentanyl lacks known active metabolites and demonstrates minimal intrinsic psychomimetic effects. Opioid rotation to fentanyl may therefore be beneficial with 30-50% equianalgesic dose reduction in cases of suspected opioid-induced delirium¹.
- Renal impairment**
 - Population pharmacokinetic studies show no clinically meaningful changes in fentanyl disposition, even in severe renal impairment².
 - Routine dose adjustment is not needed.
- Need for rapid dose titration**
 - Transdermal fentanyl requires ~6 days to reach steady-state; absorption is variable at end-of-life (fever, poor perfusion). CSCI enables rapid, flexible dose adjustments³.
- Opioid allergy or histamine-mediated intolerance**

Equianalgesic Conversion Ratio⁴

Morphine 1 mg SC ↔ Fentanyl 15 mcg SC

Optimal dose titration intervals

- Remain uncertain
- Some protocols advocate rapid dose adjustments
- But pharmacokinetic data suggest that steady state requires more than 36 hours⁵
- In most clinical contexts, reassessment and dose adjustments every 24 hours appear reasonable, with earlier dose reductions or downward adjustments in cases of toxicity or excessive sedation.

Caution:

Consider reducing the initial fentanyl dose in the presence of at least one of the following criteria^{2,6}:

- Advanced age
- Low body weight/ cachexia
- Hepatic impairment
- Cardiac failure
- Concomitant use of a CYP3A4 inhibitor

Conversion: transdermal ↔ CSCI

- Transdermal → CSCI: ratio 1:1; start CSCI 4–8 h after patch removal
- CSCI → Transdermal: ratio 1:1; apply patch and stop CSCI (no overlap)⁵

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Conclusion



Continuous subcutaneous fentanyl infusions represent a valuable and versatile strategy in palliative care. This clinical tool synthesizes available evidence and practical guidance to reduce prescribing variability and enhance medication safety.

Further studies are warranted to:

- Refine dosing strategies
- Increase pharmacokinetic understanding
- Define optimal titration intervals

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