NEONATAL PHARMACOLOGY

Fentanyl and the "wooden chest"

Chest wall rigidity: how to recognize it, how to reverse it, and how to reach the antagonist in one tap.

REFERENCES

1. Fentanyl. In: Lexicomp. Wolters Kluwer Clinical Drug Information; 2024.
2. Fentanyl. In: Micromedex. Truven Health Analytics; 2022.
3. Taketomo CK, Hodding JH, Kraus DM. Pediatric & Neonatal Dosage Handbook. 30th ed. APhA-Lexicomp; 2023.
4. Fahnenstich H, Steffan J, Kau N, Bartmann P. Fentanyl-induced chest wall rigidity and laryngospasm in preterm and term infants. Crit Care Med. 2000;28:836–9.
5. Gaertner VD, et al. Intrapulmonary tidal volumes in a preterm infant with chest wall rigidity. Front Pediatr. 2022;10:979763.
6. Allen KA. Premedication for neonatal intubation: what medications are recommended and why? Adv Neonatal Care. 2012.

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KNOW THE DRUG

Fentanyl at a glance

CLASS

Opioid analgesic

≈100× morphine: 0.1 mg fentanyl = 10 mg morphine

USES

Analgesia & sedation

Including premedication for intubation

ONSET

Almost immediate

DURATION

30–60 minutes

IV DOSE	MCG/KG/DOSE
Analgesia	**0.5 – 3**
Sedation	**0.5 – 4**
Anesthesia	**5 – 50**

Usual interval 2–4 h. Final concentration up to 10 mcg/mL, given **slowly**.

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SAFETY FIRST

Adverse effects

Chest wall rigidity

± laryngospasm — can make ventilation impossible

Respiratory depression

Anesthetic doses >5 mcg/kg, or unexpectedly by redistribution

Apnea

Have ventilatory support ready

Hypotension

More frequent with neuroleptics

Bradycardia

Especially without anticholinergic

CNS depression

Sedation beyond the target

Urinary retention

With continuous infusion

Tolerance

With prolonged use

Withdrawal

After infusion for ≥5 days

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SPOTLIGHT

Chest wall rigidity

~4% of neonates who received **2.2–6.5 mcg/kg/dose** developed chest wall rigidity, sometimes with laryngospasm.

! **Risk:** rapid bolus and higher doses — but it has been reported even at 1 mcg/kg.

1. Rigid chest and abdomen; little or no chest rise despite bag ventilation.
2. Falling SpO_2, sometimes bradycardia.
3. May also involve limbs, neck and eye muscles during induction.

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THE ANTAGONIST

Reverse it with naloxone

Naloxone

0.1 mg/kg/dose IV

Suggested range 0.05–0.2 mg/kg/dose. Repeat every 2–3 min if needed. Opioid (μ-receptor) antagonist — rigidity is reversible.

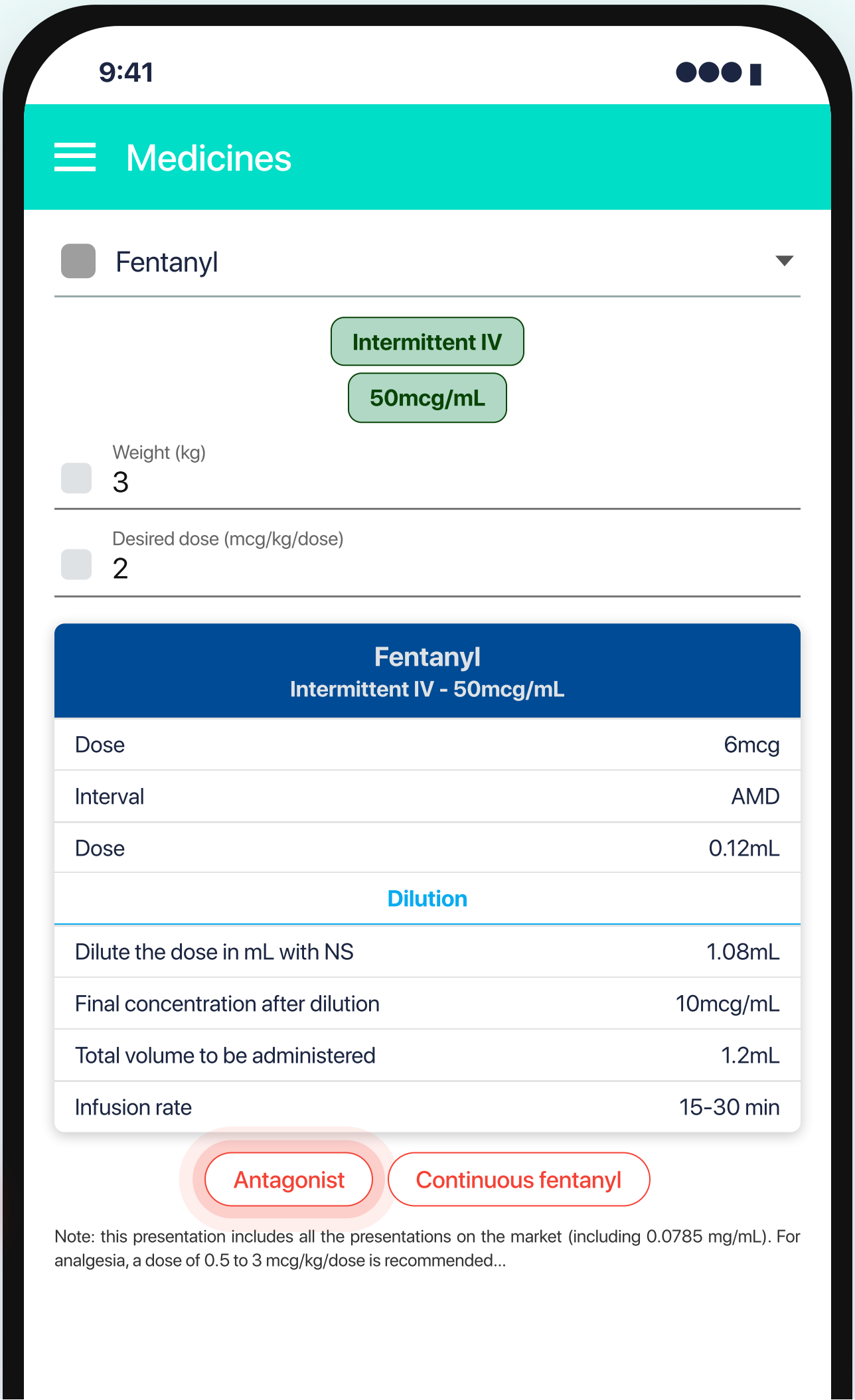
- Keep ventilating; higher pressures may be needed until the chest rises.
- A neuromuscular blocker may be required, with the airway secured.
- **Prevent:** give fentanyl slowly, flush, and have the naloxone dose ready before you start.

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IN NEOFAST · STEP 1

Calculate fentanyl

The **Antagonist** button appears right below the result.

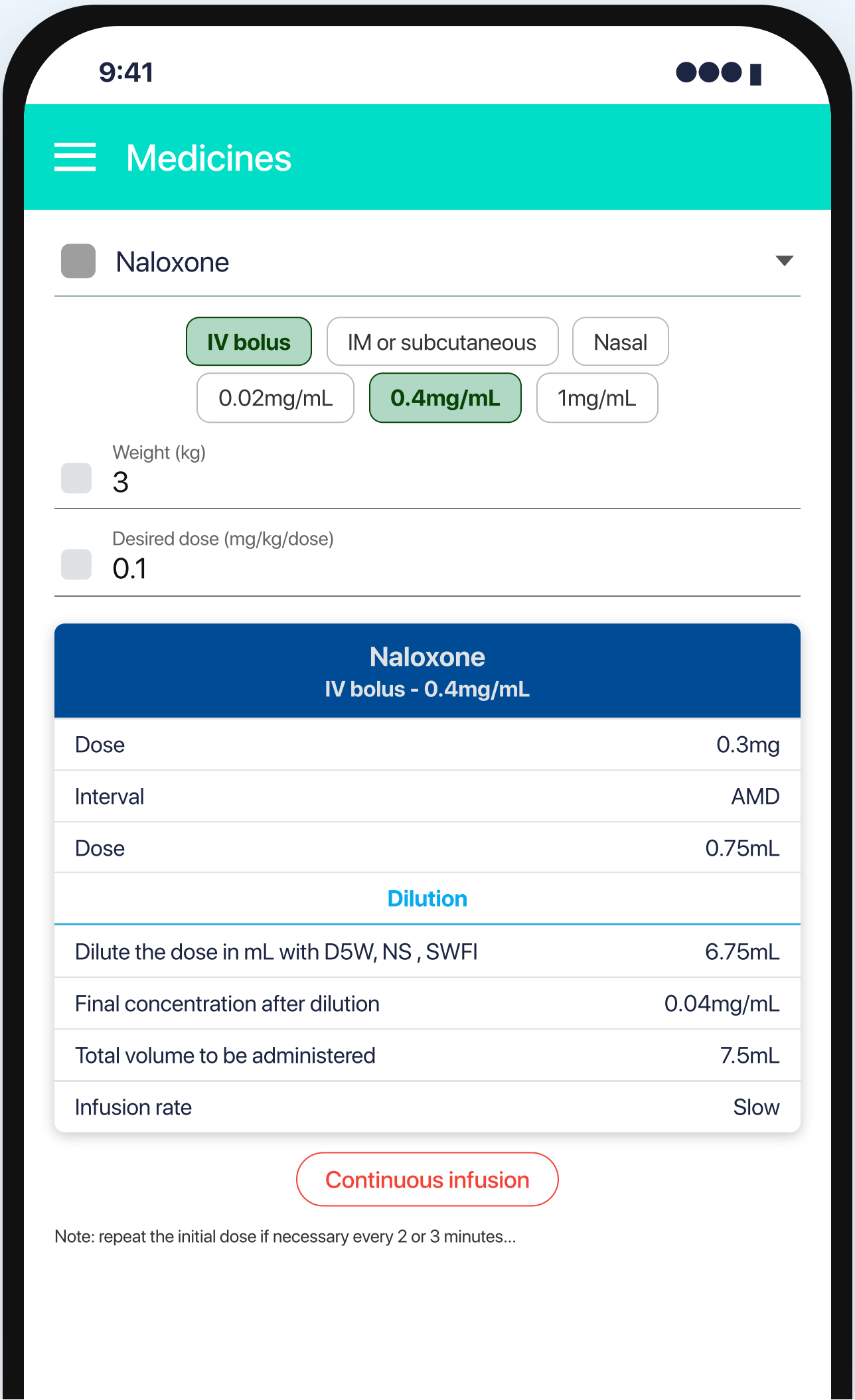


Tap here ➜

IN NEOFAST · STEP 2

Naloxone opens instantly

Pick the vial, enter weight and dose — dilution is ready.



ONE APP, EVERY ANTAGONIST

The antidote is always one tap away

Fentanyl	→	Naloxone
Midazolam · Lorazepam	→	Flumazenil
Rocuronium · Vecuronium	→	Neostigmine
Digoxin	→	Digoxin immune Fab
Acetaminophen	→	Acetylcysteine
Magnesium sulfate	→	Calcium gluconate

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