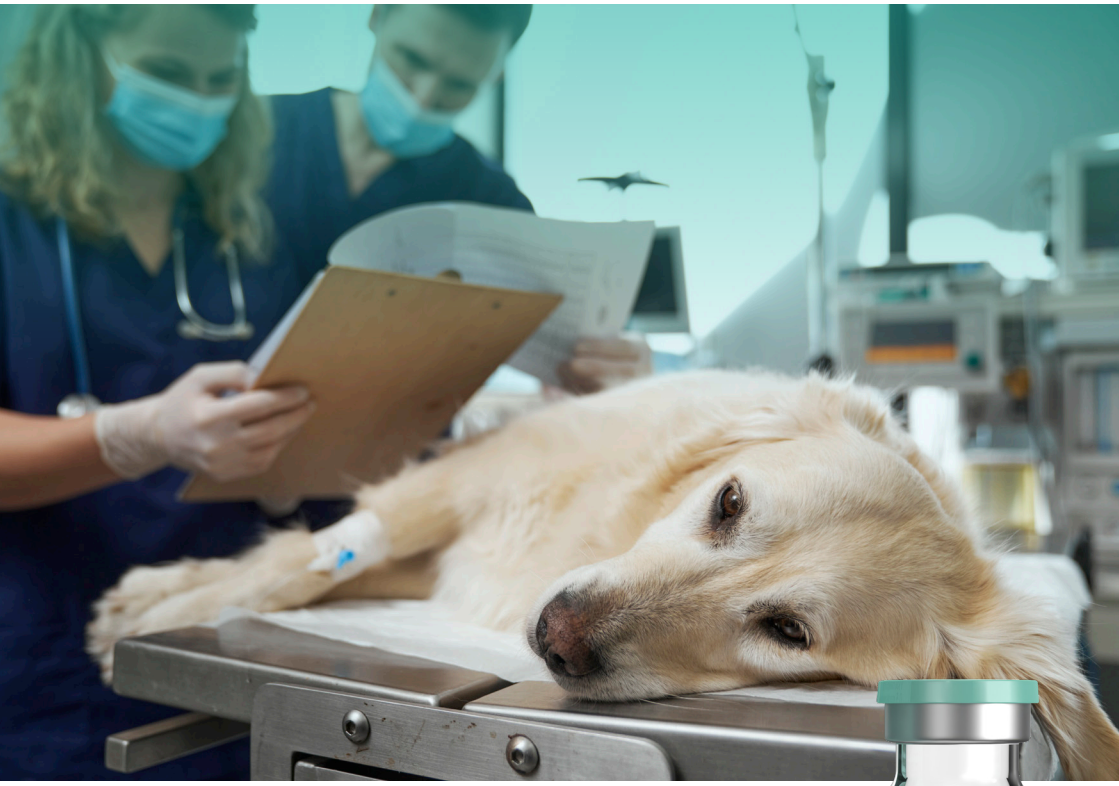
DEXDOMITOR®
dexmedetomidine hydrochloride 0.5 mg/ml

ORION PHARMA
Animal Health





Getting started with Dexdomitor® CRI: A practical guide

New indication: To be administered intravenously as a constant rate infusion (CRI) in dogs and cats as part of a multimodal protocol during inhalation anaesthesia.

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When administered as a constant rate infusion (CRI) in dogs and cats, Dexdomitor provides a smooth, titratable approach to intraoperative anaesthetic management, helping to maintain a stable plane of anaesthesia and reducing reliance on inhalant agents.

Its effects are influenced by the complete anaesthetic protocol—including premedication and the use of opioids or local anaesthesia—which may affect the optimal Dexdomitor CRI dose required for multimodal anaesthesia.

When used as part of a multimodal anaesthetic protocol, dexmedetomidine CRI has been reported to:

- **Reduce inhalant anaesthetic needs in a dose-dependent manner**[1–7]
- **Help maintain steady arterial blood pressure**[2,7–10]
- **Enhance intra- and postoperative analgesia**[7,8,10,11]
- **Support smooth, predictable recovery**[4,7,10–12]

Patient selection

USE IN:
Healthy ASA I–II dogs and cats (most robust clinical data to date)

PROCEDURES:
Moderate to long (typically 30–150 minutes) painful procedures (orthopaedic or major soft tissue surgeries)[2,4,7,9,10]

DO NOT USE IN:
Animals with cardiovascular disorders, severe systemic disease, moribund conditions, or known hypersensitivity to dexmedetomidine or to any of the excipients of Dexdomitor

Dosing and preparing the dilution

STEP 1: Choose the CRI dose (µg/kg/h)

 **Dogs:** 0.5–1 µg/kg/h  **Cats:** 0.5–3 µg/kg/h

Choose based on the patient, expected surgical stimulation, and concurrent analgesic protocol.

STEP 2: Decide on a loading dose

Quick overview:

- Dexmedetomidine (Dex) used in premedication
  → No loading dose given
- No Dex premedication
  → Consider a loading dose of 0.5–1 µg/kg IV over ≥10 min
- No Dex in premedication, no loading dose
  → Slower onset of effect after infusion begins (~30 minutes[9])

Loading dose: A loading dose is **not given** if Dexdomitor has already been administered as part of premedication (see also the section "**Timing**"). If dexmedetomidine is used only for anaesthetic maintenance, a loading dose may be given to achieve the desired plasma concentration more rapidly. However, rapid administration may cause strong transient hypertension and reflex bradycardia.[4,9,13]

For this reason, the **loading dose is administered *slowly*** over at least 10 minutes.

- **Dose:** 0.5–1 µg/kg IV (both dogs and cats) over ≥10 min
- **Practical tip:** The loading dose can be administered using the same syringe pump or infusion pump prepared for the CRI. Start the infusion at a temporarily higher rate so that the total dose delivered during the first 10 minutes equals the intended loading dose (0.5–1 µg/kg). After 10 minutes, *reduce the infusion to the selected CRI rate*.[1,6,13]
- Infusion **without a loading dose** may be preferred when a slow onset is desirable (e.g., to maximise cardiovascular stability). In this case, the onset of clinical effects is more gradual (~30 minutes from the start of the infusion[9]).

STEP 3: Choose a practical CRI concentration and infusion rate

- Dexdomitor 0.5 mg/ml needs to be **diluted** for administration as a CRI.
- It is compatible with **0.9% NaCl** and **Ringer's lactate solution**, and dilution stability has been studied for up to **6 hours** at room temperature.
- Use a **syringe pump** or an **infusion pump** to run the CRI accurately and separate from the maintenance fluids.
- Be prepared to **adjust the maintenance fluid rate** to avoid overhydration and to maintain the total volume administered, especially if the CRI is adjusted or stopped.
- **Syringe pump accuracy may be reduced at very low infusion rates**, especially in small patients. Use rates that support reliable pump function (preferably ≥ 1 ml/h; or ~5 ml/h when feasible) and *follow manufacturer guidance* for minimum flow rates and syringe size, as performance varies between devices.

You may use the following table to guide dilution concentration based on the selected Dexdomitor CRI dose and preferred hourly infusion rate.

Infusion rates with different Dexdomitor CRI dilution concentrations

DEX CRI DOSE	DEX CRI DILUTION CONCENTRATION		
	1 µg/ml	2.5 µg/ml	5 µg/ml
Dogs and cats			
0.5 µg/kg/h	0.5 ml/kg/h	0.2 ml/kg/h	0.1 ml/kg/h
1 µg/kg/h	1 ml/kg/h	0.4 ml/kg/h	0.2 ml/kg/h
Cats only			
1.5 µg/kg/h	—*	0.6 ml/kg/h	0.3 ml/kg/h
2 µg/kg/h	—	0.8 ml/kg/h	0.4 ml/kg/h
2.5 µg/kg/h	—	1 ml/kg/h	0.5 ml/kg/h
3 µg/kg/h	—	1.2 ml/kg/h	0.6 ml/kg/h

Formula: Infusion rate (ml/kg/h) = CRI dose (µg/kg/h) ÷ CRI concentration (µg/ml).
* To achieve doses ≥ 1.5 µg/kg/h with 1 µg/ml, infusion rates would need to be 1.5–3 ml/kg/h, which is impractically high for CRI and risks fluid overload.

STEP 4: Choose the syringe size

Choose the syringe size and the total volume you plan to prepare, considering patient size and expected anaesthetic duration. (If you use an infusion pump instead, you may choose a mini-bag of 100 ml.)

To estimate how long your syringe will last:

Duration (hours) = Container volume (ml) ÷ [Infusion rate (ml/kg/h) × Bodyweight (kg)]

Practical examples (CRI dose and infusion rate chosen in the previous steps)

Dog, 8 kg
CRI dose **1 µg/kg/h** → infusion rate **1 ml/kg/h** (1 µg/ml dilution)

- 20 ml syringe = **2.5 hours**
- 50 ml syringe = **6.25 hours** (>6 hours)

For small dogs, a 20–50 ml syringe is usually sufficient.

Cat, 5 kg
CRI dose **2 µg/kg/h** → infusion rate **0.8 ml/kg/h** (2.5 µg/ml dilution)

- 20 ml syringe = **5 hours**
- 50 ml syringe = **12.5 hours** (>6 hours)

For cats, a 20 ml syringe is usually sufficient.

Dog, 25 kg
CRI dose **1 µg/kg/h** → infusion rate **0.4 ml/kg/h** (2.5 µg/ml dilution)

- 20 ml syringe = **2 hours**
- 50 ml syringe = **5 hours**
- 60 ml syringe = **6 hours**

For medium-sized dogs, syringe choice is based on the hours needed.

Dog, 60 kg
CRI dose **1 µg/kg/h** → infusion rate **0.2 ml/kg/h** (5 µg/ml dilution)

- 20 ml syringe = **~1.7 hours**
- 50 ml syringe = **~4.2 hours**
- 60 ml syringe = **5 hours**

For very large dogs, syringe choice is based on the hours needed.

TIP:

*Use the **Dexcalculator.com** tool to easily calculate **patient-specific** dilution volumes and infusion rates!*

STEP 5: Dilution instructions

- **Accurate dilution** is essential given the small drug volumes involved. Appropriately graduated syringes should be used.
- Refer to the table below for **Dexdomitor and diluent volumes.**
- **Adjust the fluid volume first:**
  - If using a syringe, draw the correct amount of diluent into the syringe.
  - If using a ready-filled fluid bag, remove a volume equal to the amount of Dexdomitor you will add.
- **Then add Dexdomitor:** Add the calculated volume of Dexdomitor to the syringe or bag and mix gently.
- This ensures the total volume stays correct and the drug concentration is accurate.
- **Dilutions** of Dexdomitor 0.5 mg/ml with 0.9% NaCl or Ringer's lactate solution have been studied to be **chemically and physically stable for 6 hours** at room temperature.

Dilution table, examples:

Target concentration of Dexdomitor in CRI fluid (µg/ml)	Total volume of CRI fluid / container type	Dexdomitor (0.5 mg/ml) volume (ml)	0.9% NaCl or Ringer's lactate solution volume (ml)
1	20 ml syringe	0.04	19.96
	50 ml syringe	0.1	49.9
	60 ml syringe	0.12	59.88
	100 ml mini-bag	0.2	99.8
2.5	20 ml syringe	0.1	19.9
	50 ml syringe	0.25	49.75
	60 ml syringe	0.3	59.7
	100 ml mini-bag	0.5	99.5
5	20 ml syringe	0.2	19.8
	50 ml syringe	0.5	49.5
	60 ml syringe	0.6	59.4
	100 ml mini-bag	1.0	99.0

If calculated volumes are impractical to measure accurately, use a more concentrated dilution or a larger volume container.



Timing

Starting the CRI

- **If dexmedetomidine was used for premedication:**
  - Start the CRI shortly before or after induction and intubation.[2,7,8,10,12] Whether a loading dose is required depends primarily on the premedication dose and the time elapsed since IM administration.
- **If dexmedetomidine was <u>not</u> used for premedication:**
  - Administer a loading dose (0.5–1 µg/kg IV over ≥10 minutes) and start the CRI immediately after, or
  - Start the CRI without a loading dose (recognising slower onset; ~30 minutes to clinical effect in dogs at 1 µg/kg/h[9]).
- **Practical principle:**
  - *Time is a guide, but the patient is the priority.* Always base the loading dose decision on the current depth of sedation, cardiovascular stability, concurrent analgesics, and expected surgical stimulation.
  - If the premedication dose appears largely eliminated when the CRI is initiated, consider a loading dose over at least 10 minutes. This bridges the plasma concentration gap while minimising abrupt hypertension and reflex bradycardia.

Stopping the CRI

- Discontinue the infusion at the end of anaesthesia (when inhalant administration is stopped).



Monitoring and intraoperative management

General principles

- **Provide multimodal analgesia as needed.** Dexdomitor CRI may enhance the analgesic effects of locoregional anaesthesia and reduce intra- and postoperative opioid requirements.[7,8,10,11] Use additional analgesics as appropriate for the expected pain level and surgical procedure.
- **Adjust inhalant anaesthetic to effect.** Within the recommended dosing range, Dexdomitor CRI provides a *dose-dependent inhalant-sparing effect* of approximately 20–30%.[1-4,6,7] Avoid excessive inhalant concentrations causing cardiorespiratory depression. Titrate isoflurane or sevoflurane concentration downward to achieve an appropriately adapted anaesthetic depth.

PARAMETER	NOTES
Heart rate & rhythm (ECG)	Bradycardia is very commonly observed in dogs during dexmedetomidine CRI and is often a physiological response mediated by baroreflex activation and reduced sympathetic tone.[12,14] Intervention is generally unnecessary if arterial blood pressure and tissue perfusion are sufficient.[2,14] Treat if bradycardia or conduction disturbances are severe, or if accompanied by hypotension or poor perfusion.[8,10,11] In cats, heart rate may be less predictably affected; emphasis should be placed on overall perfusion rather than numeric heart rate alone.[7,15]
Arterial blood pressure (SAP/MAP)	In dogs, dexmedetomidine CRI at 0.5–1 µg/kg/h often maintains and stabilises MAP within a clinically acceptable range by reducing inhalant requirements and counteracting inhalant-induced vasodilation.[2,3,6,8,9] In cats, arterial pressure may be unchanged at 0.5–2 µg/kg/h[4,7,15]; vasoconstriction-related increases are more consistent at ~3 µg/kg/h.[7] Monitor trends with perfusion and prioritise perfusion over blood pressure values alone; treat if MAP <60–70 mm Hg or if hypertension is sustained and clinically relevant.
Tissue perfusion	Assess using mucous membrane colour, capillary refill time (CRT), peripheral pulse quality, arterial blood pressure, and lactate (if available). Tissue perfusion is best evaluated using a combination of parameters together with overall clinical assessment. The pulse oximeter plethysmogram waveform may provide additional qualitative information.
End-tidal inhalant concentration	If available, monitor to guide inhalant dose reduction. In all cases, **actively** titrate vaporiser settings to avoid excessive anaesthetic depth, using clinical signs to guide adjustment.
End-tidal CO_2 and ventilation	Maintain normocapnia. Spontaneous ventilation is often sufficient[4,7,12,13,15,16], but the inhalant anaesthetic may contribute to respiratory depression[17–19]. Monitoring $ETCO_2$ helps detect hypoventilation early.
Temperature	Both inhalant anaesthetics[19] and dexmedetomidine[12,20] may impair thermoregulation. Monitor body temperature regularly and use active warming to prevent hypothermia, including during recovery.
Fluid balance (urine output)	Maintain sufficient hydration. Dexmedetomidine may increase diuresis[14]; monitor bladder filling and empty the bladder during prolonged procedures and recovery as needed to support patient comfort. Account for total fluid delivery when CRI and maintenance fluids are used concurrently.

The choice of monitoring modalities depends on available equipment and clinical setting.



Dexdomitor CRI dose management

Published clinical studies in dogs and cats have investigated fixed dexmedetomidine CRI rates within the ranges of **0.5–1 µg/kg/h in dogs and 0.5–3 µg/kg/h in cats.**[2,4,7–11] In clinical settings, adjustments within these ranges—often in steps of about 0.5 µg/kg/h—are typically associated with observable changes in clinical effects within approximately 10 minutes.

The selected CRI dose should reflect **species, anticipated surgical stimulation, and other analgesic agents used** (e.g., opioids, local blocks). For most surgical procedures, rates around **0.5–1 µg/kg/h in dogs and 2–3 µg/kg/h in cats** have been associated with effective sedation, adjunctive analgesia, and MAC reduction, and are generally well tolerated without excessive cardiovascular compromise.[2,7–11,13]

In cases of suspected **overdose or clinically significant adverse effects** (e.g., severe bradycardia, severe 2º AV block, bradycardia with concurrent hypotension, excessive vasoconstriction, or poor perfusion), **reduce or stop the infusion**. First, lighten inhalant depth and address reversible contributors (e.g., excessive anaesthetic load, hypothermia, hypovolaemia). If bradycardia or 2º AV block is severe, or persists with hypotension or poor perfusion despite low inhalant doses, an **anticholinergic** (atropine or glycopyrrolate) may be used to increase heart rate.[8,10,11] Avoid anticholinergics in hypertensive patients.[22]

Recovery

Dogs

- Effects typically wane within **30 minutes** after stopping the CRI.[11,12]
- At **0.5 µg/kg/h**, recovery times are similar to inhalant-only anaesthesia.[3]
- At **1 µg/kg/h**, mild and clinically modest delays (minutes) in extubation or sternal recumbency may occur.[11]
- Recoveries are generally **calm and smooth**, with good quality.[10–12]

Cats

- Effects usually diminish within **30 minutes** after discontinuing the CRI.[7]
- At **0.5–2 µg/kg/h**, recovery times are similar to inhalant-only maintenance.[4,7]
- At **3 µg/kg/h**, time to standing may be prolonged.[7]
- Residual mild sedation can reduce **agitation and dysphoria**, resulting in smoother and more comfortable recoveries.[7]

Reversal with atipamezole

- **Routine reversal is usually unnecessary.**
- Most patients recover smoothly without intervention.
- If reversal is required, administer atipamezole **during recovery**, and only after the inhalant and dexmedetomidine infusion have been discontinued.

Reversal is **rarely needed** in dogs. If considered necessary during the recovery period, the rapid clearance of dexmedetomidine in dogs[12] warrants careful selection of atipamezole dose and timing, to avoid administering more antagonist than clinically necessary.

Cats may take **longer to recover** due to their longer dexmedetomidine elimination half-life[21], particularly when the highest infusion rate (3 µg/kg/h)[7] or high premedication doses have been used. The residual sedation can improve recovery quality, but if rapid recovery is desired (e.g., early discharge), intramuscular atipamezole may be administered.

Summary guidance

STEP	ACTION
Before starting CRI	Establish IV access and baseline monitoring (ECG, BP, SpO_2). Ensure airway management, ventilation, and $ETCO_2$ monitoring are available when indicated.
Starting CRI	Start dexmedetomidine CRI early enough before inhalant maintenance.
After starting CRI	Expect lower inhalant requirements; adjust vaporiser setting downward gradually.
During maintenance	Maintain adequate perfusion and ventilation; provide additional analgesics if signs of nociception appear.
If adverse effects occur	Lower or stop CRI; support with fluids, oxygen, and patient warming as needed. Reassess. Use atropine or glycopyrrolate if severe bradycardia/2º AV block persists, or if bradycardia/2º AV block is accompanied by hypotension or poor perfusion, preferably after stopping the CRI (if not already stopped).[8,10,11]
During recovery	Continue monitoring until the animal is fully awake; dexmedetomidine effects typically wane within ~30 minutes after stopping the CRI.[7,11,12] During early recovery, assess bladder filling and empty the bladder as needed.

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DEXDOMITOR® 0.5 MG/ML SOLUTION FOR INJECTION
ACTIVE SUBSTANCE: Dexmedetomidine hydrochloride. **TARGET SPECIES:** Dogs and cats. **INDICATIONS FOR USE:** Sedation and analgesia, premedication, and constant rate infusion during inhalation anaesthesia. **ADMINISTRATION:** IM or IV (cats: IV for CRI only); see SPC for dosage. **CONTRAINDICATIONS:** Cardiovascular disorders, severe systemic disease, moribund animals, hypersensitivity. **ADVERSE REACTIONS:** Include bradycardia, arrhythmia, heart block, pale/cyanotic mucosa, vomiting; see SPC for the full information. **PREGNANCY/LACTATION:** Not recommended. **INTERACTIONS:** CNS depressants may enhance effects; caution with anticholinergics. **LEGAL STATUS:** Prescription-only veterinary medicine. **COMPLETE PRODUCT INFORMATION:** https://medicines.health.europa.eu/veterinary/en/600000003547. **FURTHER INFORMATION AVAILABLE ON REQUEST:** Orion Pharma Animal Health, Orion Corporation, Espoo, Finland.

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This document was developed with input from, and reviewed by, independent veterinary anaesthesia specialists to ensure scientific accuracy and clinical relevance.

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