OBSTETRIC ANESTHESIA

Perioperative Intravenous Lidocaine

Intraoperative teaching · CA-2

THE QUESTION

Where the evidence disagrees

This topic was selected because an evidence synthesis beats a textbook on it: the trials disagree, or the guidance has moved recently.

THE EVIDENCE

What each source contributes, and how strong it is

Study design first — a cohort and a randomised trial do not carry the same weight.

Design	Year	Journal	What it found
Meta-analysis	2018	The Cochrane database of systemati	The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine
Randomised trial	2025	JAMA	In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut
Review	2019	British journal of anaesthesia	Systemic lidocaine has antinociceptive effects in both acute and chronic pain
Meta-analysis	2010	Drugs	In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use,
Randomised trial	2012	The Clinical journal of pain	Perioperative lidocaine in breast cancer surgery reduced persistent pain at three
Review	2018	Drugs	At commonly recommended doses lidocaine's therapeutic index is very high and plasma

6 resolved citations behind this deck; every point above traces to one of them.

WHERE THE GUIDANCE SITS

What the guidelines and pooled evidence say

2 findings, each on the slide that follows.

THE COCHRANE DATABASE OF SYSTEMATIC REVIEWS 2018

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine on early postoperative pain very low quality, with infusion…

DRUGS 2010

In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use,

In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use, brought first flatus up to 23 hours earlier and shortened stay…

WHERE THE GUIDANCE SITS

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine

Meta-analysis · The Cochrane database of systemati

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine on early postoperative pain very low quality, with infusion regimens varying from 1 to 5 mg/kg/h and no consistent stopping point.

Continuous Intravenous Perioperative Lidocaine Infusion for Postoperative Pain and Recovery in Adults, The Cochrane database of systematic reviews 2018 · PMID 29864216

WHERE THE GUIDANCE SITS

In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use,

Meta-analysis · Drugs

In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use, brought first flatus up to 23 hours earlier and shortened stay by about 1.1 days, but had no effect in tonsillectomy, hip arthroplasty or coronary bypass.

Impact of Intravenous Lidocaine Infusion on Postoperative Analgesia and Recovery From Surgery: A Systematic Review of Randomized Controlled Trials, Drugs 2010 · PMID 20518581

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WHAT THE TRIALS FOUND

Where randomised evidence moved the question

2 findings, each on the slide that follows.

JAMA 2025

In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut

In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut function at 72 hours after minimally invasive colon resection (57.3%…

THE CLINICAL JOURNAL OF PAIN 2012

Perioperative lidocaine in breast cancer surgery reduced persistent pain at three

Perioperative lidocaine in breast cancer surgery reduced persistent pain at three months from 47.4% to 11.8% and reduced the area of secondary…

WHAT THE TRIALS FOUND

In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut

Randomised trial · JAMA

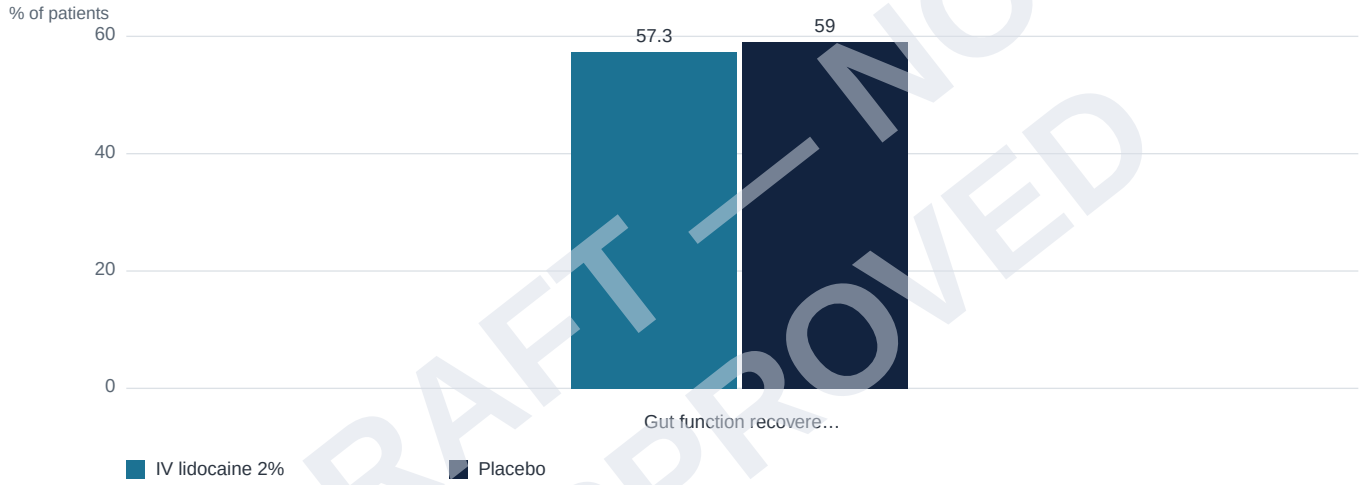
In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut function at 72 hours after minimally invasive colon resection (57.3% versus 59.0%) and none of eleven secondary outcomes differed.

Intravenous Lidocaine for Gut Function Recovery in Colonic Surgery, JAMA 2025 · PMID 39602290

THE NUMBERS

ALLEGRO: lidocaine did not speed gut recovery

590 patients, elective minimally invasive colon resection.



The largest trial of the indication lidocaine is most often given for, and it was negative.

Intravenous Lidocaine for Gut Function Recovery in Colonic Surgery, JAMA 2025 · PMID 39602290

WHAT THE TRIALS FOUND

Perioperative lidocaine in breast cancer surgery reduced persistent pain at three

Randomised trial · The Clinical journal of pain

Perioperative lidocaine in breast cancer surgery reduced persistent pain at three months from 47.4% to 11.8% and reduced the area of secondary hyperalgesia.

Perioperative Intravenous Lidocaine Decreases the Incidence of Persistent Pain After Breast Surgery, The Clinical journal of pain 2012 · PMID 22699129

THE NUMBERS

In breast surgery it reduced persistent pain at three months

36 patients randomised.

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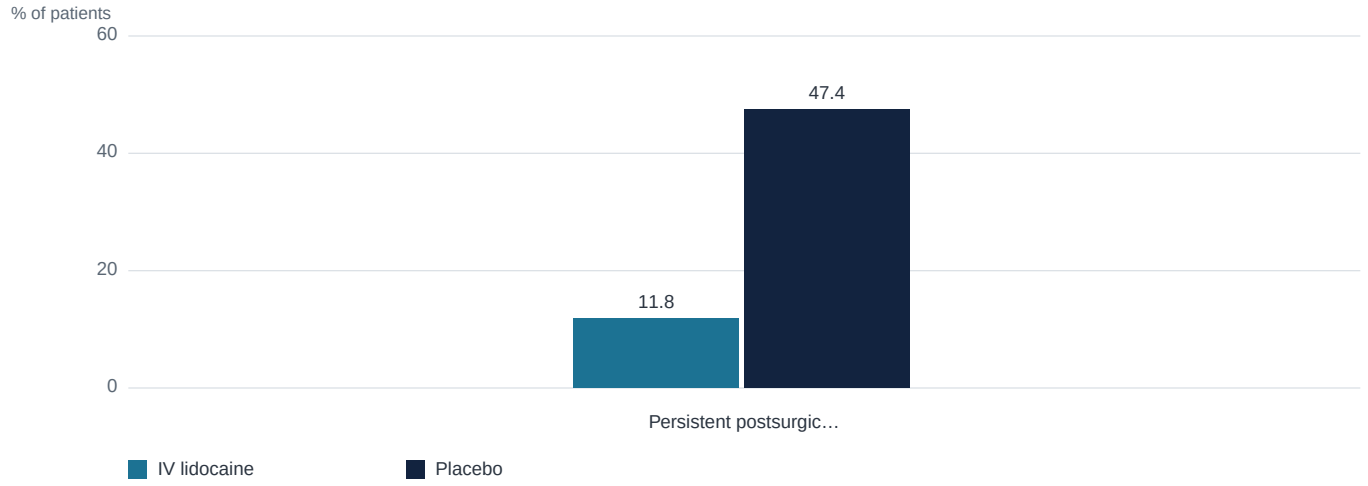

A striking result in a small trial — worth knowing, and worth treating as hypothesis-generating.

Perioperative Intravenous Lidocaine Decreases the Incidence of Persistent Pain After Breast Surgery, The Clinical journal of pain 2012 · PMID 22699129

IN PRACTICE

What the cohorts and reviews add

2 findings, each on the slide that follows.

BRITISH JOURNAL OF ANAESTHESIA 2019

Systemic lidocaine has antinociceptive effects in both acute and chronic pain

Systemic lidocaine has antinociceptive effects in both acute and chronic pain states, acting via multiple mechanisms beyond sodium channel blockade,…

DRUGS 2018

At commonly recommended doses lidocaine's therapeutic index is very high and plasma

At commonly recommended doses lidocaine's therapeutic index is very high and plasma concentrations stay well below cardiotoxic and neurotoxic…

IN PRACTICE

Systemic lidocaine has antinociceptive effects in both acute and chronic pain

Review · British journal of anaesthesia

Systemic lidocaine has antinociceptive effects in both acute and chronic pain states, acting via multiple mechanisms beyond sodium channel blockade, including silencing ectopic discharges and suppressing inflammation.

Molecular Mechanisms of Action of Systemic Lidocaine in Acute and Chronic Pain: A Narrative Review, British journal of anaesthesia 2019 · PMID 31303268

IN PRACTICE

At commonly recommended doses lidocaine's therapeutic index is very high and plasma

Review · Drugs

At commonly recommended doses lidocaine's therapeutic index is very high and plasma concentrations stay well below cardiotoxic and neurotoxic thresholds, which is the basis for judging its benefit-risk against other analgesic strategies.

Perioperative Use of Intravenous Lidocaine, Drugs 2018 · PMID 30117019

THE NUMBERS

In spinal surgery the analgesic effect is consistent

Eight trials, 692 patients, mean difference in pain score.

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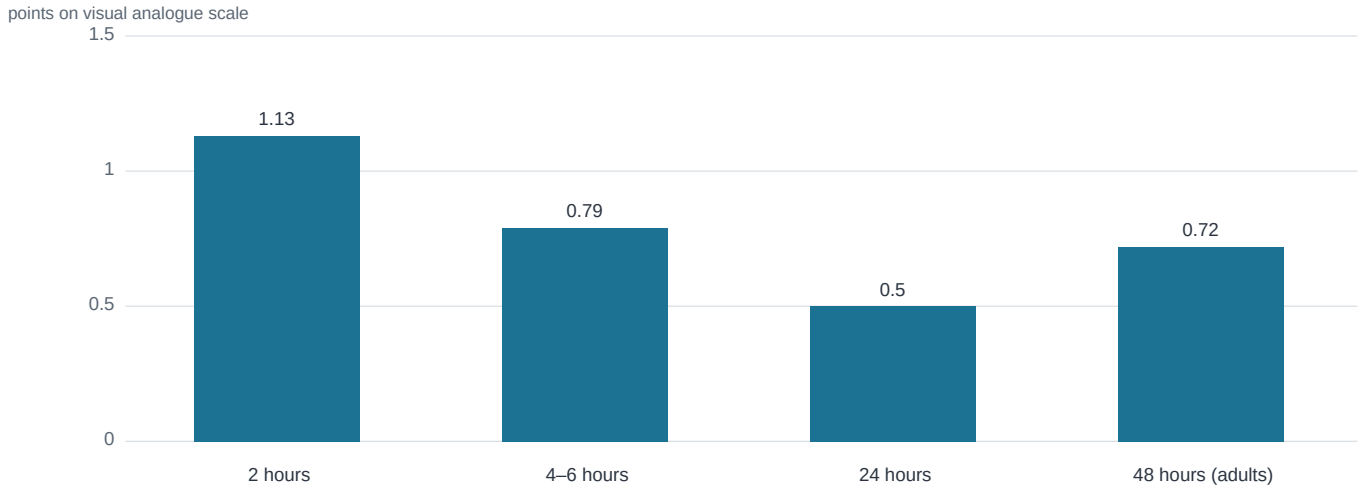

Benefit is procedure-specific: present in spine and abdominal surgery, absent after hip arthroplasty.

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IN THE ROOM

What this changes about the next case

Colour is the strength of the evidence behind each step, not the urgency.

1. **1**
   The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine on early postoperative pain very low quality, with infusion regimens varying from 1 to 5 mg/kg/h and no consistent stopping point.
2. **2**
   In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use, brought first flatus up to 23 hours earlier and shortened stay by about 1.1 days, but had no effect in tonsillectomy, hip arthroplasty or coronary bypass.
3. **3**
   In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut function at 72 hours after minimally invasive colon resection (57.3% versus 59.0%) and none of eleven secondary outcomes differed.
4. **4**
   Perioperative lidocaine in breast cancer surgery reduced persistent pain at three months from 47.4% to 11.8% and reduced the area of secondary hyperalgesia.
5. **5**
   Systemic lidocaine has antinociceptive effects in both acute and chronic pain states, acting via multiple mechanisms beyond sodium channel blockade, including silencing ectopic discharges and suppressing inflammation.

KEY TAKEAWAYS

What to carry into the next case

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine
The Cochrane database of systematic reviews 2018

In the ALLEGRO trial, 2% intravenous lidocaine did not improve return of gut
JAMA 2025

Systemic lidocaine has antinociceptive effects in both acute and chronic pain
British journal of anaesthesia 2019

In abdominal and ambulatory surgery, lidocaine infusion reduced pain and opioid use,
Drugs 2010

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine

QUESTIONS I'LL ASK YOU IN THE ROOM

1. How does your plan change if the patient is not optimised?
2. What is the physiology behind what we just did?
3. Talk me through the trade-off you made there.
4. What would make you abandon this plan and do something else?

ORAL BOARDS STEM

> *A 62-year-old is having an open right hemicolectomy on an enhanced recovery pathway without an epidural, and the resident asks whether to run intravenous lidocaine.*

BOARD QUESTIONS

1. For intravenous lidocaine given at commonly recommended perioperative doses, describe its therapeutic index and where plasma concentrations sit relative to cardiotoxic and neurotoxic thresholds, and state what that comparison is used for.

2. In the ALLEGRO trial, 2% intravenous lidocaine was studied after minimally invasive colon resection. State the primary outcome, the result including both group rates, and what happened to the trial's secondary outcomes.

3. A systematic review of randomised trials of intravenous lidocaine infusion found benefit in some operations and not others. Name the surgical settings where benefit was seen, quantify the effect on first flatus and on length of stay, and name the three operations in which no effect was found.

4. A Cochrane review of 68 trials and 4,525 patients assessed continuous perioperative intravenous lidocaine infusion for early postoperative pain. State the quality of evidence it assigned, describe how much the infusion regimens varied, and explain what that combination prevents you from specifying at the bedside.

ANSWER KEY

1. At commonly recommended doses lidocaine's therapeutic index is very high and plasma concentrations stay well below cardiotoxic and neurotoxic thresholds, which is the basis for judging its benefit-risk against other analgesic strategies.

The safety case for perioperative lidocaine is a margin argument: at recommended doses plasma levels sit well below the cardiotoxic and neurotoxic thresholds, which is what lets you weigh it against other analgesic strategies.

Perioperative Use of Intravenous Lidocaine, Drugs 2018 · PMID 30117019

2. The primary outcome was return of gut function at 72 hours, and lidocaine did not improve it: 57.3% versus 59.0%. None of the eleven secondary outcomes differed either.

ALLEGRO is a clean negative trial: no improvement in 72-hour gut function and no difference in any of eleven secondary outcomes.

Intravenous Lidocaine for Gut Function Recovery in Colonic Surgery, JAMA 2025 · PMID 39602290

3. In abdominal and ambulatory surgery lidocaine infusion reduced pain and opioid use, brought first flatus up to 23 hours earlier and shortened stay by about 1.1 days, but it had no effect in tonsillectomy, hip arthroplasty or coronary bypass.

Lidocaine is not a general-purpose analgesic: in this review the benefit sat in abdominal and ambulatory surgery and vanished in tonsillectomy, hip arthroplasty and coronary bypass.

Impact of Intravenous Lidocaine Infusion on Postoperative Analgesia and Recovery From Surgery: A Systematic Review of Randomized Controlled Trials, Drugs 2010 · PMID 20518581

4. The Cochrane review found the evidence for lidocaine on early postoperative pain very low quality, with infusion regimens varying from 1 to 5 mg/kg/h and no consistent stopping point. Very low quality evidence plus that spread of regimens means the review cannot specify an infusion rate or a stopping point to use.

Sixty-eight trials and 4,525 patients still left this at very low quality evidence, with rates from 1 to 5 mg/kg/h and no consistent stopping point, so whatever regimen you run is not one the evidence pins down.

Continuous Intravenous Perioperative Lidocaine Infusion for Postoperative Pain and Recovery in Adults, The Cochrane database of systematic reviews 2018 · PMID 29864216

The Cochrane review of 68 trials and 4,525 patients found the evidence for lidocaine

SOURCES

[1] Continuous Intravenous Perioperative Lidocaine Infusion for Postoperative Pain and Recovery in Adults, The Cochrane database of systematic reviews 2018 · PMID 29864216

[2] Intravenous Lidocaine for Gut Function Recovery in Colonic Surgery, JAMA 2025 · PMID 39602290

[3] Molecular Mechanisms of Action of Systemic Lidocaine in Acute and Chronic Pain: A Narrative Review, British journal of anaesthesia 2019 · PMID 31303268

[4] Impact of Intravenous Lidocaine Infusion on Postoperative Analgesia and Recovery From Surgery: A Systematic Review of Randomized Controlled Trials, Drugs 2010 · PMID 20518581

[5] Perioperative Intravenous Lidocaine Decreases the Incidence of Persistent Pain After Breast Surgery, The Clinical journal of pain 2012 · PMID 22699129

[6] Perioperative Use of Intravenous Lidocaine, Drugs 2018 · PMID 30117019

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