TRAUMA ANESTHESIA

Preventing Postoperative Delirium

Intraoperative teaching · CA-2

THE QUESTION

Where the evidence disagrees

Prevention of Postoperative Delirium in Older Surgical Patients: A Comprehensive Evidence Review Postoperative delirium (POD) affects 15–25% of older adults after major surgery and is independently associated with prolonged hospitalization, institutionalization, cognitive decline, and mortality. NEJM + 1 Multicomponent nonpharmacologic interventions remain the only strategy with consistent, high-quality evidence of…

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
Guideline	2015	Journal of the American Geriatrics	The American Geriatrics Society guideline puts multicomponent non-pharmacologic
Meta-analysis	2023	British journal of anaesthesia	Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not
Randomised trial	2016	England)	In patients over 65 admitted to intensive care after non-cardiac surgery, a low-dose
Cohort	2026	Anaesthesia	Dexmedetomidine's effect on delirium is dose-dependent
Review	2021	British journal of anaesthesia	Whether deep anaesthesia is deliriogenic remains unsettled
Meta-analysis	2019	PloS one	Pooled across six trials in older non-cardiac surgical patients, dexmedetomidine

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

3 findings, each on the slide that follows.

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY 2015

The American Geriatrics Society guideline puts multicomponent non-pharmacologic

The American Geriatrics Society guideline puts multicomponent non-pharmacologic intervention first for preventing delirium in at-risk older surgical…

BRITISH JOURNAL OF ANAESTHESIA 2023

Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not

Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not reach significance (P=0.054), with substantial heterogeneity…

PLOS ONE 2019

Pooled across six trials in older non-cardiac surgical patients, dexmedetomidine

Pooled across six trials in older non-cardiac surgical patients, dexmedetomidine reduced delirium and lowered tachycardia, hypertension, stroke and…

WHERE THE GUIDANCE SITS

The American Geriatrics Society guideline puts multicomponent non-pharmacologic

Guideline · Journal of the American Geriatrics

The American Geriatrics Society guideline puts multicomponent non-pharmacologic intervention first for preventing delirium in at-risk older surgical patients, with pharmacologic measures secondary.

American Geriatrics Society Abstracted Clinical Practice Guideline for Postoperative Delirium in Older Adults, Journal of the American Geriatrics Society 2015 · PMID 25495432

WHERE THE GUIDANCE SITS

Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not

Meta-analysis · British journal of anaesthesia

Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not reach significance (P=0.054), with substantial heterogeneity between the nine trials.

Processed Electroencephalography-Guided General Anaesthesia to Reduce Postoperative Delirium: A Systematic Review and Meta-Analysis, British journal of anaesthesia 2023 · PMID 35183345

WHERE THE GUIDANCE SITS

Pooled across six trials in older non-cardiac surgical patients, dexmedetomidine

Meta-analysis · PloS one

Pooled across six trials in older non-cardiac surgical patients, dexmedetomidine reduced delirium and lowered tachycardia, hypertension, stroke and hypoxaemia — but increased bradycardia.

Dexmedetomidine for the Prevention of Postoperative Delirium in Elderly Patients Undergoing Noncardiac Surgery: A Meta-Analysis of Randomized Controlled Trials, PloS one 2019 · PMID 31419229

WHAT THE TRIALS FOUND

In patients over 65 admitted to intensive care after non-cardiac surgery, a low-dose

Randomised trial · England)

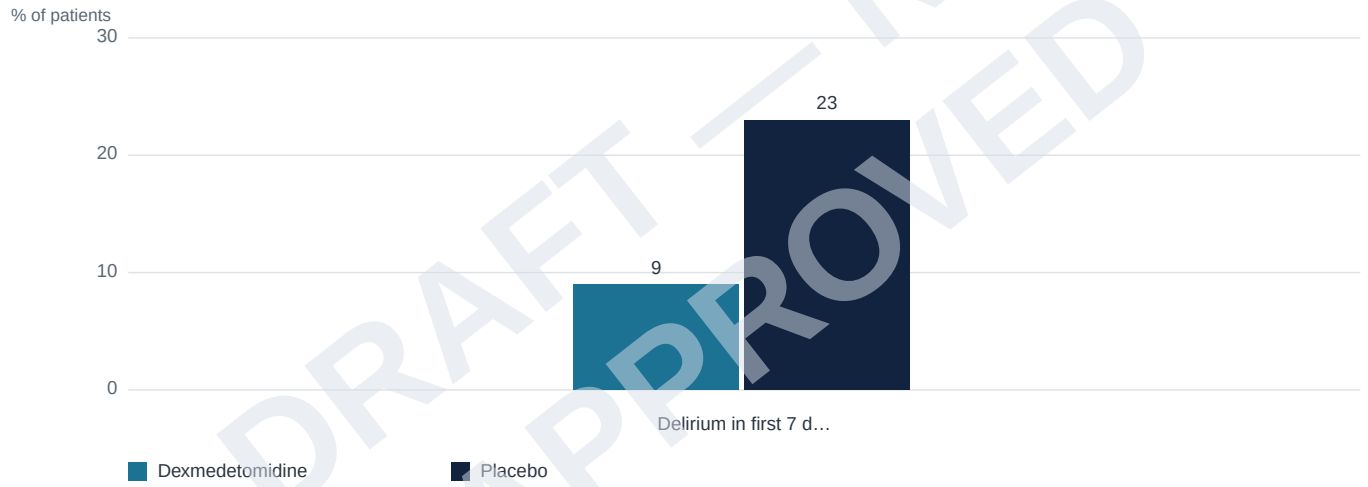
In patients over 65 admitted to intensive care after non-cardiac surgery, a low-dose dexmedetomidine infusion reduced delirium over the first seven days from 23% to 9%.

Dexmedetomidine for Prevention of Delirium in Elderly Patients After Non-Cardiac Surgery: A Randomised, Double-Blind, Placebo-Controlled Trial, Lancet (London, England) 2016 · PMID 27542303

THE NUMBERS

Low-dose dexmedetomidine more than halved delirium

700 patients over 65 admitted to intensive care after noncardiac surgery.



The largest single effect on delirium in this deck, in a specific population.

Dexmedetomidine for Prevention of Delirium in Elderly Patients After Non-Cardiac Surgery: A Randomised, Double-Blind, Placebo-Controlled Trial, Lancet (London, England) 2016 · PMID 27542303

IN PRACTICE

What the cohorts and reviews add

2 findings, each on the slide that follows.

ANAESTHESIA 2026

Dexmedetomidine's effect on delirium is dose-dependent

Dexmedetomidine's effect on delirium is dose-dependent: cumulative doses at or below 0.49 micrograms per kilogram were associated with less delirium

BRITISH JOURNAL OF ANAESTHESIA 2021

Whether deep anaesthesia is deliriogenic remains unsettled

Whether deep anaesthesia is deliriogenic remains unsettled: the effect in the BALANCED delirium substudy appeared to rest on outcomes in patients…

IN PRACTICE

Dexmedetomidine's effect on delirium is dose-dependent

Cohort · Anaesthesia

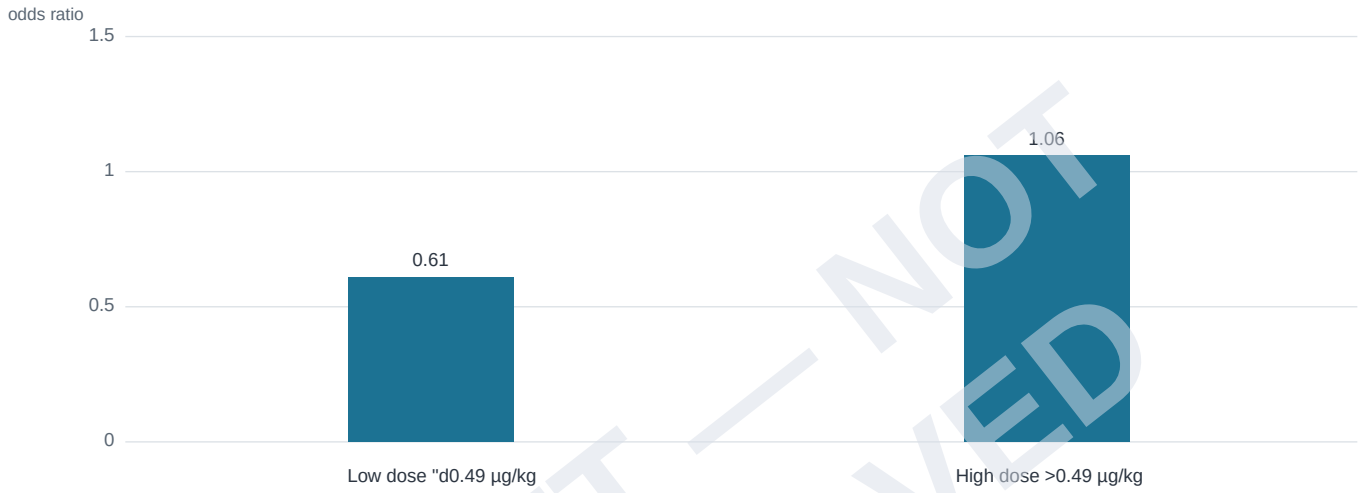
Dexmedetomidine's effect on delirium is dose-dependent: cumulative doses at or below 0.49 micrograms per kilogram were associated with less delirium, while higher doses were not, with the lowest risk between 0.25 and 0.35.

Dose-Dependent Relationship Between Intra-Operative Dexmedetomidine and Delirium After Non-Cardiac Surgery: A Retrospective Cohort Study, Anaesthesia 2026 · PMID 41717663

THE NUMBERS

The dexmedetomidine effect is dose-dependent, and reverses

114,786 adults; cumulative intraoperative dose.



A retrospective dose-response association: lower delirium at doses at or below 0.49 µg/kg, and no significant difference at higher doses rather than evidence of harm.

Dose-Dependent Relationship Between Intra-Operative Dexmedetomidine and Delirium After Non-Cardiac Surgery: A Retrospective Cohort Study, Anaesthesia 2026 · PMID 41717663

IN PRACTICE

Whether deep anaesthesia is deliriogenic remains unsettled

Review · British journal of anaesthesia

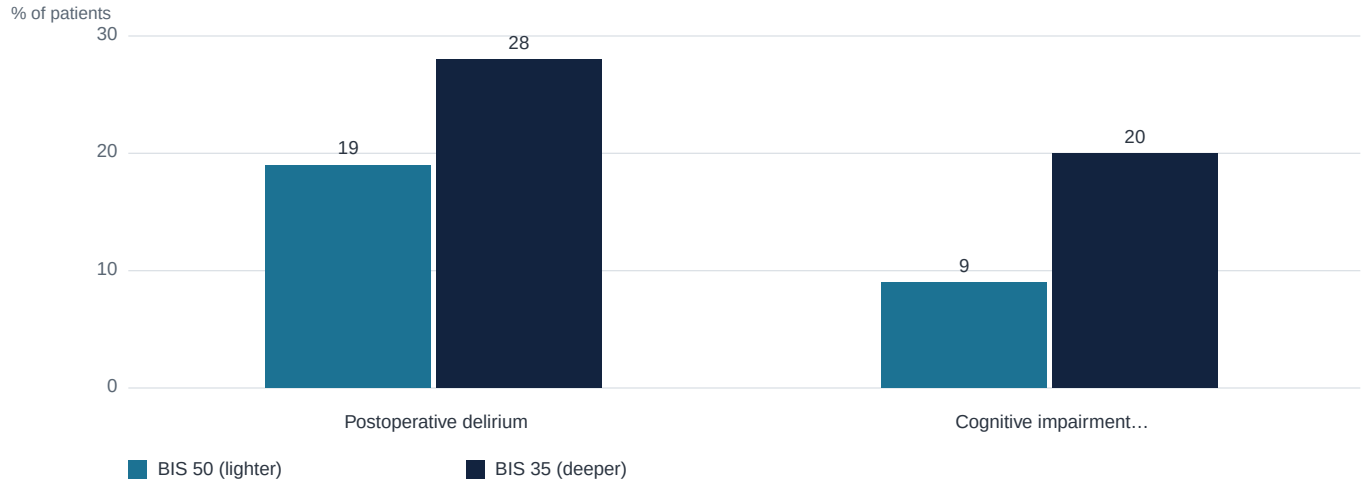
Whether deep anaesthesia is deliriogenic remains unsettled: the effect in the BALANCED delirium substudy appeared to rest on outcomes in patients from East Asia.

Anaesthetic Depth and Delirium: A Challenging Balancing Act, British journal of anaesthesia 2021 · PMID 34503835

THE NUMBERS

Lighter anaesthesia reduced delirium and one-year cognitive impairment

655 at-risk patients, BIS 50 versus BIS 35.



Both the early and the one-year outcome favoured the lighter target.

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 American Geriatrics Society guideline puts multicomponent non-pharmacologic intervention first for preventing delirium in at-risk older surgical patients, with pharmacologic measures secondary.
2. **2**
   Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not reach significance (P=0.054), with substantial heterogeneity between the nine trials.
3. **3**
   Pooled across six trials in older non-cardiac surgical patients, dexmedetomidine reduced delirium and lowered tachycardia, hypertension, stroke and hypoxaemia — but increased bradycardia.
4. **4**
   In patients over 65 admitted to intensive care after non-cardiac surgery, a low-dose dexmedetomidine infusion reduced delirium over the first seven days from 23% to 9%.
5. **5**
   Dexmedetomidine's effect on delirium is dose-dependent: cumulative doses at or below 0.49 micrograms per kilogram were associated with less delirium, while higher doses were not, with the lowest risk between 0.25 and 0.35.

KEY TAKEAWAYS

What to carry into the next case

> **The American Geriatrics Society guideline puts multicomponent non-pharmacologic**
> Journal of the American Geriatrics Society 2015

> **Processed EEG guidance gave a pooled odds ratio of 0.78 for delirium that did not**
> British journal of anaesthesia 2023

> **In patients over 65 admitted to intensive care after non-cardiac surgery, a low-dose**
> England) 2016

> **Dexmedetomidine's effect on delirium is dose-dependent**
> Anaesthesia 2026

The American Geriatrics Society guideline puts multicomponent non-pharmacologic

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

> *An 82-year-old with mild cognitive impairment presents for hemiarthroplasty after a fall. The family asks what you will do to stop her becoming confused afterwards.*

BOARD QUESTIONS

1. The American Geriatrics Society published a clinical practice guideline on postoperative delirium in older adults. In one sentence, state which category of intervention that guideline places first for preventing delirium in at-risk older surgical patients, and where pharmacologic measures sit relative to it.
2. A randomised, double-blind, placebo-controlled trial gave a low-dose dexmedetomidine infusion to patients over 65 admitted to intensive care after non-cardiac surgery. State the effect on delirium over the first seven days, giving both rates.
3. A meta-analysis pooled six randomized trials of dexmedetomidine in older patients undergoing noncardiac surgery. Name the outcomes that were reduced in that pooled analysis and the one adverse outcome that increased.
4. A resident states that deep anaesthesia causes postoperative delirium and cites the delirium substudy of the BALANCED trial. According to published commentary on anaesthetic depth and delirium, what is the status of that question, and what feature of the BALANCED delirium substudy result is the reason for caution?

ANSWER KEY

1. The guideline puts multicomponent non-pharmacologic intervention first for preventing delirium in at-risk older surgical patients, with pharmacologic measures secondary.

When a family asks what you will do to prevent delirium, the guideline-concordant first answer is the multicomponent non-pharmacologic bundle, with drugs as a secondary measure.

American Geriatrics Society Abstracted Clinical Practice Guideline for Postoperative Delirium in Older Adults, Journal of the American Geriatrics Society 2015 · PMID 25495432

2. Low-dose dexmedetomidine infusion reduced delirium over the first seven days from 23% to 9%.

That trial is the strongest single-trial signal for dexmedetomidine and delirium, but note the setting it was done in: patients over 65 admitted to intensive care after non-cardiac surgery.

Dexmedetomidine for Prevention of Delirium in Elderly Patients After Non-Cardiac Surgery: A Randomised, Double-Blind, Placebo-Controlled Trial, Lancet (London, England) 2016 · PMID 27542303

3. Pooled across the six trials, dexmedetomidine reduced delirium and lowered tachycardia, hypertension, stroke and hypoxaemia, but increased bradycardia.

Dexmedetomidine buys you less delirium plus fewer haemodynamic and hypoxaemic events in this pooled analysis, and the price you pay for it is bradycardia.

Dexmedetomidine for the Prevention of Postoperative Delirium in Elderly Patients Undergoing Noncardiac Surgery: A Meta-Analysis of Randomized Controlled Trials, PloS one 2019 · PMID 31419229

4. The commentary holds that whether deep anaesthesia is deliriogenic remains unsettled, because the effect seen in the BALANCED delirium substudy appeared to rest on outcomes in patients from East Asia.

You cannot yet tell a resident that depth causes delirium: the substudy effect appeared to hinge on outcomes in patients from East Asia, which is why the question is still open.

Anaesthetic Depth and Delirium: A Challenging Balancing Act, British journal of anaesthesia 2021 · PMID 34503835

The American Geriatrics Society guideline puts multicomponent non-pharmacologic

SOURCES

[1] American Geriatrics Society Abstracted Clinical Practice Guideline for Postoperative Delirium in Older Adults, Journal of the American Geriatrics Society 2015 · PMID 25495432

[2] Processed Electroencephalography-Guided General Anaesthesia to Reduce Postoperative Delirium: A Systematic Review and Meta-Analysis, British journal of anaesthesia 2023 · PMID 35183345

[3] Dexmedetomidine for Prevention of Delirium in Elderly Patients After Non-Cardiac Surgery: A Randomised, Double-Blind, Placebo-Controlled Trial, Lancet (London, England) 2016 · PMID 27542303

[4] Dose-Dependent Relationship Between Intra-Operative Dexmedetomidine and Delirium After Non-Cardiac Surgery: A Retrospective Cohort Study, Anaesthesia 2026 · PMID 41717663

[5] Anaesthetic Depth and Delirium: A Challenging Balancing Act, British journal of anaesthesia 2021 · PMID 34503835

[6] Dexmedetomidine for the Prevention of Postoperative Delirium in Elderly Patients Undergoing Noncardiac Surgery: A Meta-Analysis of Randomized Controlled Trials, PloS one 2019 · PMID 31419229