

2022 SAMBA ANNUAL MEETING
MAY 11 – 14, 2022

Every Patient should receive Midazolam

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Midazolam is a super drug

- Amnesia
- Sedation
- Less Pain
- Less nausea
- Synergy, decreased need for other drugs
- Lower costs
- Easier airway
- Reversibility
- No additional cognitive dysfunction

Without a significant downside!!!

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Right Dose

Too much of a good thing isn't always good...

Safety and Benefit with proper dosing

(but even at higher doses it doesn't do the harm you may think it would....)

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Evidence the Naysayers ignore

- Procedural sedation (conscious sedation) has shown great benefits of midazolam with minimal side effects
- Larger doses of midazolam administered during conscious sedation than we usually use
- If the midazolam doesn't cause problems in those cases, then isn't it **something else** that anesthesiologists give that is the problem?

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Avoiding a Terrible Event

Woman Wakes up During Surgery, Sues Hospital: 'I Could Feel Everything'

IOW: SHE REMEMBERED EVERYTHING!!

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Amnesia is good

- Pts desire anxiolysis prior to surgery - BMC Psych 2022
- Anterograde and Retrograde amnesia
- Doesn't necessarily impair memory (brain connectivity)
 - Functional MRI - Anesthesiology 2021
 - Midaz \uparrow functional activity 20 areas, \downarrow 8 areas
 - Ketamine \uparrow 2 areas, \downarrow 17 areas

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Sedation

- Clin Respir J 2017: EBUS under **midazolam alone** did not reduce diagnostic yield compared to Propofol +/- midaz, w lower costs
- Colonoscopy
 - A&A 2009: Effect of Adding Midazolam +/- Fentanyl to Propofol -- better operating conditions, No increase in rate of complications, No prolongation of early recovery times
 - Am J Gastroenterol 2006: Propofol + fentanyl and/or midazolam and **moderate** levels of sedation - no loss of satisfaction and shorter recovery times compared with propofol alone (titrated to deep sedation)

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Pain reduction

J Orthop Surg Res 2017: The effect of midazolam on pain control after knee arthroscopy

Systematic review and meta-analysis

- Substantially reduced pain scores
- Decreased number of patients requiring analgesics
- Decreased analgesic consumption
- Longer time to first analgesic

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Pain reduction

A&A 2004: Sedation with Midazolam Leads to Reduced Pain After Dental Surgery

- Midaz until sedated (up to 10mg) vs. local only
- Lower pain scores at 8 hours, longer time to first analgesic, less analgesic consumption, better pt global assessment

Hernia 2011: Midazolam enhances postoperative analgesic effects of diclofenac when used before the onset of pain

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Less PONV after GA

A & A March 2016 – 2 articles + Editorial

- 2 reviews/meta-analysis (12 RCTs, 16 RCTs)
- Midazolam given preop, or preop + intraop
- Administration of IV midazolam significantly reduced nausea, vomiting and rescue antiemetic administration during first 24 hours
- Similar for women, high risk surgeries, use of N2O, different anti-emetic drug prophylaxis

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Less PONV after GA: Editorial

Greene, Nathaniel H.; Habib, Ashraf S.

- Midazolam has a clinically relevant antiemetic effect
- Additional work is needed before we confidently use midazolam **solely(??)** for its prophylactic antiemetic effect
- We should continue to use midazolam as appropriate for its anxiolytic effect; we might be killing 2 birds with 1 stone!

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Decreased need for other drugs

A & A 2009: Mixed-Effects Modeling of the Influence of Midazolam on Propofol Pharmacokinetics

In the presence of midazolam:

- Propofol concentrations are increased (by 25%)
- But also decrease more rapidly after termination of the propofol infusion than when propofol is given as sole drug
- Clinical significance unknown (!!)

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Lower Costs with Midazolam

- Quicker wake up
- Less Pain
- Less Nausea and Vomiting
- No increase in LOS
- Need lesser amounts of other drugs
 - Which also speeds wakeup!!!



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Easier Airway !!!!

A&A 2019: Midazolam Premedication Facilitates Mask Ventilation During Induction of General Anesthesia

- RCT: Midaz (0.035 mg/kg, max 3mg) 3 min before transfer to OR vs. placebo (97 pts, 49 Midaz) ---- OR team blinded
- Significantly lower mask ventilation difficulty score
- Significantly lower incidence of difficult mask in Midaz pts



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Reversibility

Dig Dis Sci 2014: Significant and safe shortening of the recovery time after flumazenil-reversed midazolam sedation

- After 5mg Midazolam +/- fentanyl (887/1506)
- Median dose flumazenil: 0.2mg on arrival to RR
- Recovery time decreased from 2 hours to 64 min
- >98% Pts pleased with shorter recovery time



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No ↑ in Cognitive Dysfunction

A&A 2021: Midazolam Premedication Immediately Before Surgery Is Not Associated With Early Postoperative Delirium

- Retrospective analysis of data from 3 studies using Confusion Assessment Method
- Age >65 yrs, 1266 pts, 909 Midaz vs 357 none
- No association was found between premedication with midazolam and incident delirium on the morning of the first postoperative day in the matched dataset



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No ↑ in Cognitive Dysfunction

A&A 2009: Early Cognitive Impairment After Sedation for Colonoscopy: The Effect of Adding Midazolam and/or Fentanyl to Propofol

- 200 pts, elective colonoscopy, CogState testing before sedation, at discharge
- All pts had ↓ cognitive function at D/C – but level of changes between baseline and discharge were not significantly different between the two groups.



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No ↑ in Cognitive Dysfunction

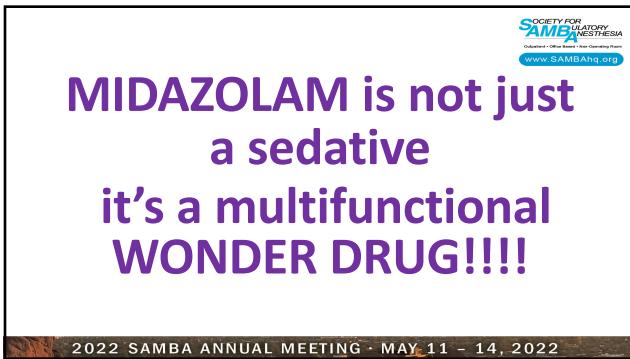
A&A 2020: Effect of Midazolam in Addition to Propofol and Opiate Sedation on the Quality of Recovery After Colonoscopy

- RCT: Midaz or placebo w Propofol +/- opiate
- Outcome: Postoperative Quality of Recovery Scale (PostopQRS), day 3 post colonoscopy
- No evidence of any significant differences in recovery in the cognitive domain of the PostopQRS, overall quality of recovery as measured by the PostopQRS, or emergence and hospital discharge times



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