

**2022 SAMBA ANNUAL MEETING**  
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**Midazolam for No One**

Dawn Schell, MD  
Director of Anesthesia  
Cole Eye Institute  
Cleveland Clinic  
Cleveland, OH



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**Midazolam**

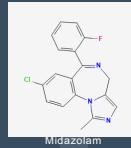
- Anxiolytic introduced into practice 1982
- Short-acting benzodiazepine
  - Enhances the effect of GABA on the GABA-A receptors producing sedation/anxiolysis
- Elimination half-life of 1.8-6.4 hours
- Onset 1-5 minutes, up to 9-11 minutes to reach full clinical effect
- Poor oral absorption-50% bioavailability



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**Disadvantages/Side Effects**

- Anterograde amnesia, sometimes profound
- Respiratory depression
- Psychomotor dysfunction, especially in elderly
- Increased time to discharge
- Delirium/post-operative cognitive dysfunction (POCD)



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**Anterograde Amnesia**

- Some patients relate amnestic periods of hours to days. Is it good for patients to be amnestic for the better part of a day?
- We know that few patients follow our directions about having someone stay with them for 24 hours
- Will patients forget perioperative instructions given to them, undertake a task where recall is critical?
- Some patients uncomfortable with not remembering the entire events of the day



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**Respiratory Depression**

- Even with low doses, some hypopnea and low saturations in patients administered midazolam
- Doses of 0.5 mg or 2 mg pre-op increased incidence of O<sub>2</sub> sats <94% in pre-op period
- Respiratory depression exacerbated by intra- or post-op opioids

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**Psychomotor Dysfunction**

- Psychomotor function impaired by midazolam in young healthy volunteers for up to 60 min
  - Impaired driving ability
- Persistent decrease in alertness in 36% of study subjects 60 min after administration
- Benzodiazepine use in elderly increases risk for falls, hip fractures

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## Alternatives to Midazolam

- Propofol/Lidocaine
- Dexmedetomidine
- Non-pharmacologic therapies
- Remimazolam?



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## Propofol

- Inadequate doses of propofol often used
- Propofol 20 mg as effective as midazolam for premedication/anxiolysis
- Psychomotor reflexes for driving return to baseline 60 min after discontinuation of propofol infusions

Published online first in *Epub 2021 Dec 16*.  
**Propofol versus midazolam for premedication: a placebo-controlled, randomized double-blind study**  
 Author(s): Toshiyuki Yamada, Toshiaki Yamada, Naoko Nakayama, Shigenobu Ohmori, Yasuyuki Ichiba, Naoki Terada  
**Comparative Study** | *J. Gastrointest.* 2008;78(4):190-4. doi: 10.1159/000157118. Epub 2008 Dec 18.  
**Safety and driving ability following low-dose propofol sedation**  
 Atsushi Horie<sup>1</sup>, Yoshiko Nakayama<sup>1</sup>, Yoshihiko Katayama<sup>1</sup>, Shigenobu Ohmori<sup>1</sup>, Yasuyuki Ichiba<sup>1</sup>, Naoki Terada<sup>1</sup>

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## Lidocaine

- IV lidocaine 1.5 mg/kg improves success of LMA placement and decreases coughing and airway obstruction
- During bronchoscopy, IV lidocaine 1.5 mg/kg suppresses cough better than LT lidocaine
- Decreases dose of propofol needed for sedation in endoscopies



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## Dexmedetomidine

- Anxiolysis without respiratory depression
- May be organ protective
- Associated with less POCD
- Especially useful in children
  - Can be given intranasally, orally, IM or IV
  - May also prevent emergence delirium
- Can cause bradycardia and rare sinus arrest, hypotension
- Longer time of onset and offset

Published online first in *Epub 2003 Aug 16*.  
**Dexmedetomidine in anaesthesia**  
 Andrea Petic<sup>1</sup>, Peter H. Terrell<sup>2</sup>  
**Review** | *Br J Anaesth.* 2015 Aug;115(2):177-82. doi: 10.1093/bja/aeu226.  
**Dexmedetomidine: review, update, and future considerations of paediatric perioperative and periprocedural applications and limitations**  
 J. Anesthesiol Clin Pharmacol. Jan-Mar 2019;33(1):36-40. doi: 10.4103/jacp.jacp\_20\_18.  
**A comparison of oral dexmedetomidine and oral midazolam as premedicants in children**  
 Olayinka Salau<sup>1</sup>, Yassin Mohamed<sup>2</sup>, M. Jamiludeen<sup>3</sup>

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## Non-pharmacologic Therapies

- Verbal reassurance/distraction
- Relaxation techniques
  - Cognitive behavioral therapy
  - Biofeedback
  - Hypnosis
- Acupuncture
- Music



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## Remimazolam?

- Ultra-short acting benzodiazepine
- Faster time of onset and recovery profile than midazolam
- Organ-independent metabolism to inactive metabolites
- Whether better than propofol remains to be seen

Published online first in *Epub 2020 Aug 31*.  
**Remimazolam for anaesthesia or sedation**  
 Robert Sneyd<sup>1</sup>, Ann E. Righty-Snow<sup>2</sup>  
**Review** | *Curr Opin Anesthesiol.* 2020 Sep;33(5):508-511. doi: 10.1097/ACO.0000000000000877.  
**Remimazolam: Pharmacologic Considerations and Clinical Role in Anesthesia**  
 Alessandro Di Mambro<sup>1</sup>, Michael J. Zecoglio<sup>2</sup>, Raymond J. Malgano<sup>2,3</sup>, Alan D. Kaye<sup>4,5</sup>, William D. Orringer<sup>6,7</sup>

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Sometimes it's better to keep  
it simple...



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 **Cleveland Clinic**

Every life deserves world class care.

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