



Avoiding the void? Mirabegron for overactive bladder

CLINICAL QUESTION

What are the benefits and harms of mirabegron for patients with overactive bladder (OAB)?

BOTTOM LINE

Versus placebo, mirabegron reduces voids by 3-5 per week and incontinence episodes by 3 per week with similar adverse effects at 12 weeks. Compared to anticholinergics, mirabegron has similar efficacy. Fewer patients on mirabegron experience dry mouth (~3% versus 8%) or tachycardia (~1% versus 2%) at 12-52 weeks. Mirabegron costs ~\$30/month more than lower-cost anticholinergics.

EVIDENCE

- 7 systematic reviews [8-14 randomized controlled trials (RCTs), 5500-10,774 non-neurogenic OAB patients].¹⁻⁷ Results statistically different unless indicated.
- Versus placebo (at 12 weeks):
 - Voids: Reduced by 3-5/week versus placebo^{1,3,4} (example: Baseline 80 voids/week to 62-68 for mirabegron versus 66-73 for placebo).⁸⁻¹⁰

- Incontinence episodes: Reduced by 3/week versus placebo^{1,3,4} (example: Baseline 14-24 episodes/week to 6-12 for mirabegron versus 9-14 for placebo).⁸⁻¹⁰
- Adverse events:
 - Hypertension, urinary tract infection (UTI), dry mouth, constipation: no difference.^{1,3,6,7}
 - Nasopharyngitis: Inconsistent; increased in 2/3 reviews [2.5-6.4% versus 1.6-3.2% (placebo)].^{1,3,6}
- Versus anticholinergics (at 12-52 weeks):
 - Voids/week: No difference.^{2,4}
 - Incontinence episodes/week: No difference.^{2,4}
 - Adverse events:
 - Dry mouth:^{2,5} 3.1-3.6% versus 7.6-9% (anticholinergics), number needed to treat (NNT)=20.
 - Tachycardia (reported in 1 review):⁵ 1.5% versus 2.3%, (anticholinergics), NNT=125.
 - Hypertension, UTI, constipation, withdrawals due to adverse events: No difference.^{2,5,7}
- Limitations: Short duration for serious adverse events (examples: cardiovascular, falls); most RCTs industry funded; mean age usually 55-60, minimizing generalizability to older adults.

CONTEXT

- Non-invasive therapies:
 - Guidelines recommend interventions like bladder training, pelvic floor muscle therapy, weight loss if appropriate, and caffeine reduction.^{11,12}
 - Efficacy similar for non-invasive therapies versus anticholinergics;¹³ no comparisons exist for non-invasive therapies versus mirabegron.
 - Guidelines recommend anticholinergics or mirabegron after non-invasive therapies.^{11,14}
- Anticholinergic within-class comparisons:
 - Similar efficacy:¹⁵ 58% reporting cure/improvement versus 42% (placebo), NNT=7.
 - Similar adverse events with few exceptions [example: oxybutynin versus tolterodine:¹⁶ Dry mouth number needed to harm (NNH)=6; withdrawal NNH=17].
 - Extended release (ER) and immediate release formulations similar in efficacy and tolerability, except less dry mouth with ER (NNT=12).^{16,17}
- Cost (30 days):¹⁸ Solifenacin 5-10mg daily \$10; Tolterodine LA 2-4mg daily \$16; Mirabegron 25-50mg daily \$46.

REFERENCES

1. He W, Huang G, Cui W, *et al.* Int Braz J Urol. 2023 Sep-Oct;49(5):535-563.
2. Sartori LGF, Nunes BM, Farah D, *et al.* Rev Bras Ginecol Obstet. 2023; 45(6):337-346.
3. He W, Zhang Y, Huang G, *et al.* Low Urin Tract Symptoms. 2023 May;15(3):80-88.

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4. Liu P, Li Y, Shi B, *et al.* Front Med (Lausanne). 2022 Oct 20;9:1014291.
5. Yi W, Yang Y, Yang J. Medicine (Baltimore). 2021 Oct 15;100(41):e27469.
6. Hou J, Xu F, Du H, *et al.* Prog Urol. 2021 Sep;31(11):627-633
7. Lozano-Ortega G, Walker DR, Johnston K, *et al.* Drugs Aging. 2020 Nov;37(11):801-816.
8. Herschorn S., Chapple CR, Abrams P, *et al.* BJU Int. 2017 Oct;120(4):562-575.
9. Khullar V, Amarenco G, Angulo JC, *et al.* Eur Urol. 2013 Feb;63(2):283-95.
10. Yamaguchi O, Marui E, Kakizaki H, *et al.* BJU Int. 2014 Jun;113(6):951-60.
11. Dufour D, Wu M. J Obstet Gynaecol Can. 2020 Apr;42(4):510-522.
12. Cameron AP, Chung DE, Dielubanza EJ, *et al.* J Urol. 2024 Jul;212(1):11-20
13. Todhunter-Brown A, Hazelton C, Campbell P, *et al.* Cochrane Database Syst Rev. 2022 Sep 2;9(9):CD012337.
14. Corcos J, Przydacz M, Campeau L, *et al.* Can Urol Assoc J. 2017 May;11(5):E142-173.
15. Stoniute A, Madhuvrata P, Still M, *et al.* Cochrane Database Syst Rev. 2023 May 9;5(5):CD003781.
16. Madhuvrata P, Cody JD, Ellis G, *et al.* Cochrane Database Syst Rev. 2012 Jan 18; 1:CD005429.
17. Reynolds WS, McPheeters M, Blume J, *et al.* Obstet Gynecol. 2015 Jun;125(6):1423-32.
18. Price Comparison of Commonly Prescribed Medications in Manitoba (2024); <https://medsconference.org/wp-content/uploads/2024/11/price-comparison-commonly-rx-drugs-mb-november-8-2024.pdf>; Accessed Nov 27, 2024

Authors do not have any conflicts of interest to declare.

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