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CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Antidepressants Administered using Weight-Based Dosing Strategies for Depression: Clinical Effectiveness and Guidelines

Service Line:	Rapid Response Service
Version:	1.0
Publication Date:	December 14, 2020
Report Length:	9 Pages

CADTH

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Cite As: *Antidepressants Administered using Weight-Based Dosing Strategies for Depression: Clinical Effectiveness and Guidelines*. Ottawa: CADTH; 2020 Dec. (CADTH rapid response report: summary of abstracts).

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

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Research Questions

1. What is the clinical effectiveness of selective serotonin reuptake inhibitors and other antidepressants administered using weight-based dosing strategies for the treatment of individuals with depression?
2. What are the evidence-based guidelines regarding the use of weight-based dosing strategies for selective serotonin reuptake inhibitors and other antidepressants for the treatment of individuals with depression?

Key Findings

No evidence was identified regarding the clinical effectiveness of selective serotonin reuptake inhibitors and other antidepressants administered using weight-based dosing strategies for the treatment of individuals with depression. One evidence-based guideline was identified regarding the use of weight-based dosing strategies for selective serotonin reuptake inhibitors and other antidepressants for the treatment of individuals with depression.

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were antidepressants and weight-based drug dosing. No search filters were applied to limit retrieval by study type. An additional search on antidepressant dosing was limited to guidelines only. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and November 30, 2020. Internet links were provided, where available.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications. Open access full-text versions of evidence-based guidelines were reviewed when abstracts were not available, and relevant recommendations were summarized.

Table 1: Selection Criteria

Population	Individuals with depression (any type)
Intervention	Selective serotonin reuptake inhibitors (SSRIs) or other antidepressants administered using weight-based dosing strategies
Comparator	Q1: SSRIs or other antidepressants administered using alternative dosing strategies (e.g., fixed-dose strategies) Q2: Not applicable
Outcomes	Q1: Clinical effectiveness (e.g., severity of depressive symptoms, quality of life, pharmacokinetic outcomes, safety [e.g., adverse events]) Q2: Recommendations regarding best practices (e.g., guidance regarding when weight-based dosing strategies should be used)
Study Designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines

Results

One evidence-based guideline was identified regarding the use of SSRIs and other antidepressants administered using weight-based dosing strategies for the treatment of individuals with depression.[1] No relevant health technology assessments, systematic reviews, randomized controlled trials, or non-randomized studies were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in the appendix.

Overall Summary of Findings

No relevant literature was found regarding the clinical effectiveness of SSRIs and other antidepressants administered using weight-based dosing strategies for the treatment of individuals with depression; therefore, no summary can be provided. One evidence-based guideline[1] from the National Institute for Health and Care Excellence was identified which considered the weight of pediatric patients when prescribing antidepressants. The guideline recommends that clinicians prescribing fluoxetine or non-fluoxetine antidepressants consider lower starting doses for children with lower body weights, and higher doses for older children with higher body weights.[1]

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Guidelines and Recommendations

1. National Institute for Health and Care Excellence. Depression in children and young people: identification and management. *(NICE guideline NG134)*; 2019. https://www.nice.org.uk/guidance/ng134/resources/depression-in-children-and-young-people-identification-and-management-pdf-66141719350981
   See: How to use antidepressants in children and young people – 1.6.19 (p.23); 1.6.25 (p.24-25)

Appendix — Further Information

Non-Randomized Studies

Alternative Intervention – Association Between Weight and Clinical Effectiveness or Pharmacokinetics

2. Dale RM, Bryant KA, Thompson NR. Metabolic Syndrome Rather Than Body Mass Index Is Associated With Treatment Response to Ketamine Infusions. *J Clin Psychopharmacol*. 2020 Jan/Feb;40(1):75-79.
   PubMed: PM31834094

3. Warrings B, Samanski L, Deckert J, Unterecker S, Scherf-Clavel M. Impact of Body Mass Index on Serum Concentrations of Antidepressants and Antipsychotics. *Ther Drug Monit*. 2020 Sep 04.
   PubMed: PM32910098

4. Greenblatt DJ, Harmatz JS, Chow CR. Vortioxetine Disposition in Obesity: Potential Implications for Patient Safety. *J Clin Psychopharmacol*. 2018 Jun;38(3):172-179.
   PubMed: PM29596146

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   PubMed: PM29522941

6. Schoretsanitis G, Haen E, Hiemke C, et al. Sex and body weight are major determinants of venlafaxine pharmacokinetics. *Int Clin Psychopharmacol*. 2018 11;33(6):322-329.
   PubMed: PM30028351

7. Findling RL, Groark J, Tourian KA, et al. Pharmacokinetics and Tolerability of Single-Ascending Doses of Desvenlafaxine Administered to Children and Adolescents with Major Depressive Disorder. *J Child Adolesc Psychopharmacol*. 2016 12;26(10):909-921.
   PubMed: PM27428303

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   PubMed: PM27749681

9. Sigurdsson HP, Hefner G, Ben-Omar N, et al. Steady-state serum concentrations of venlafaxine in patients with late-life depression. Impact of age, sex and BMI. *J Neural Transm*. 2015 May;122(5):721-729.
   PubMed: PM25257248

10. Taurines R, Burger R, Wewetzer C, et al. The relation between dosage, serum concentrations, and clinical outcome in children and adolescents treated with sertraline: a naturalistic study. *Ther Drug Monit*. 2013 Feb;35(1):84-91.
    PubMed: PM23318280

11. Calarge CA, Miller DD. Predictors of risperidone and 9-hydroxyrisperidone serum concentration in children and adolescents. *J Child Adolesc Psychopharmacol*. 2011 Apr;21(2):163-169.
PubMed: PM21486167

12. Unterecker S, Deckert J, Pfuhlmann B. No influence of body weight on serum levels of antidepressants. *Ther Drug Monit*. 2011 Dec;33(6):730-734.
PubMed: PM22105590

Alternative Intervention – Before and After Bariatric Surgery

13. Monte SV, Russo KM, Mustafa E, Caruana JA. Impact of Sleeve Gastrectomy on Psychiatric Medication Use and Symptoms. *J Obes*. 2018;2018:8532602.
PubMed: PM30410796

14. Krieger CA, Cunningham JL, Reid JM, et al. Comparison of Bioavailability of Single-Dose Extended-Release Venlafaxine Capsules in Obese Patients Before and After Gastric Bypass Surgery. *Pharmacotherapy*. 2017 Nov;37(11):1374-1382.
PubMed: PM28845898

15. Marzinke MA, Petrides AK, Steele K, et al. Decreased Escitalopram Concentrations Post-Roux-en-Y Gastric Bypass Surgery. *Ther Drug Monit*. 2015 Jun;37(3):408-412.
PubMed: PM25970510

Unspecified Intervention – Safety Issues of Weight-Based Dosing

16. Hirata KM, Kang AH, Ramirez GV, Kimata C, Yamamoto LG. Pediatric Weight Errors and Resultant Medication Dosing Errors in the Emergency Department. *Pediatr Emerg Care*. 2019 Sep;35(9):637-642.
PubMed: PM28976456

Guidelines and Recommendations

Unclear Methodology

17. Canadian Paediatric Society. Medication safety for children with medical complexity. 2020. https://www.cps.ca/en/documents/position/medication-safety-for-children-with-medical-complexity
See: Factors that contribute to risk of medication errors in CMC

18. Medicine.com. FLUoxetine. 2020. https://www.medicine.com/drug/fluoxetine/hcp
See: Dosing: Pediatric – Depression

19. WellRx. Fluoxetine DR. 2020. https://www.wellrx.com/fluoxetine%20dr/pediactric-monographs/
See: For the treatment of major depression; Special Populations – Pediatrics – Children and Adolescents

20. Elsevier. Major Depressive Disorder. 2019.
https://www.elsevier.com/__data/assets/pdf_file/0018/1010277/Major-depressive-disorder_CO_300419.pdf
See: Treatment Options – Fluoxetine (p. 6); Amitriptyline (p. 7)

21. New Hampshire Department of Health and Human Services. FDA approvals for psychotropic medications used in children with mental health disorders. [2017]. https://www.dhhs.nh.gov/dcyf/adoption/documents/fda-apprv-psych-meds.pdf
See: Prozac/Sarafem, fluoxetine (p.1)

Review Articles

Alternative Intervention – Ketamine for Depression

22. Andrade C. Oral Ketamine for Depression, 2: Practical Considerations. *J Clin Psychiatry*. 2019 04 09;80(2):09.
PubMed: PM30997961

Alternative Intervention – Antidepressants Not Specified

23. Pan SD, Zhu LL, Chen M, Xia P, Zhou Q. Weight-based dosing in medication use: what should we know? *Patient Prefer Adherence*. 2016 Apr 12;10:549-60.
PubMed: PM27110105

24. Kendrick JG, Carr RR, Ensom MH. Pediatric Obesity: Pharmacokinetics and Implications for Drug Dosing. *Clin Ther*. 2015 Sep 1;37(9):1897-923.
PubMed: PM26361823

25. Pai MP. Drug dosing based on weight and body surface area: mathematical assumptions and limitations in obese adults. *Pharmacotherapy.* 2012 Sep;32(9):856-68.
PubMed: PM22711238

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PubMed: PM21087295
See: Scaling for function, not for size

27. Mulla H, Johnson TN. Dosing dilemmas in obese children. *Arch Dis Child Educ Pract E*d. 2010 Aug;95(4):112-7.
PubMed: PM20585055

Bariatric Surgery and Pharmacokinetics of Antidepressants

28. Bland CM, Quidley AM, Love BL, Yeager C, McMichael B, Bookstaver PB. Long-term pharmacotherapy considerations in the bariatric surgery patient. *Am J Health Syst Pharm*. 2016 Aug 15;73(16):1230-1242.
PubMed: PM27354038

29. Stein J, Stier C, Raab H, Weiner R. Review article: The nutritional and pharmacological consequences of obesity surgery. *Aliment Pharmacol Ther*. 2014 Sep;40(6):582-609.
PubMed: PM25078533

30. Yska JP, van der Linde S, Tapper VV, et al. Influence of bariatric surgery on the use and pharmacokinetics of some major drug classes. *Obes Surg*. 2013 Jun;23(6):819-825.
PubMed: PM23430479

Additional References

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