

CADTH Reference List

Acute Medical Management Interventions for Children and Youth With Eating Disorders

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Key Messages

- One systematic review, 3 randomized controlled trials, and 13 non-randomized studies were identified regarding the clinical effectiveness of acute medical management interventions for children and youth with eating disorders in inpatient settings.
- One evidence-based guideline regarding the acute medical management of children and youth with eating disorders in inpatient settings was identified.

Research Questions

1. What is the clinical effectiveness of acute medical management interventions for children and youth with eating disorders in inpatient settings?
2. What are the evidence-based guidelines regarding the acute medical management of children and youth with eating disorders in inpatient settings?

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 comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were acute medical management interventions in inpatient settings and children and youth with eating disorders. Search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, or network meta-analyses; any types of clinical trials or observational studies; and guidelines. When possible, retrieval was limited to the human population. The search was also limited to English-language documents published between January 1, 2016, and July 13, 2021. Internet links were provided if 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

Criteria	Description
Population	Hospitalized pediatric patients (0 to 18 years old) with eating disorders (e.g., avoidant/restrictive food intake disorder, anorexia nervosa, bulimia nervosa, compulsive exercise, binge eating disorder, other specified feeding or eating disorder)
Intervention	Inpatient acute medical management interventions used alone or in any combination (e.g., meal support, refeeding, family-based therapy, patient/family education, medical stabilization, psychological therapy, pharmacological therapy)
Comparator	Q1: Alternate inpatient acute medical management interventions or combinations; no treatment Q2: Not applicable
Outcomes	Q1: Clinical effectiveness (e.g., stabilization of vital signs, ability to orally ingest meals, quality of life, change in eating disorder behaviour, length of hospital stay, rehospitalization) and safety (e.g., adverse events) Q2: Recommendations regarding the acute medical management of children and youth with eating disorders in inpatient settings (e.g., best practices, optimal treatments, role of family/caregiver, patient/family education, monitoring parameters, admission/discharge criteria, use of preprinted orders)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines

Results

One systematic review,¹ 3 randomized controlled trials,²⁻⁴ and 13 non-randomized studies⁵⁻¹⁷ regarding the clinical effectiveness of acute medical management interventions for children and youth with eating disorders in inpatient settings were identified. One evidence-based guideline was identified regarding the acute medical management of children and youth with eating disorders in inpatient settings.¹⁸ No relevant health technology assessments were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in Appendix 1.

Overall Summary of Findings

One systematic review,¹ 3 randomized controlled trials,²⁻⁴ and 13 non-randomized studies⁵⁻¹⁷ were identified regarding the clinical effectiveness of acute medical management interventions for children and youth with eating disorders in inpatient settings. The systematic review assessed the impact of inpatient psychological treatment in children and adolescents with eating disorders and found weight gain was the most consistently reported positive outcome; other outcomes varied across studies.¹ The 3 randomized controlled trials focused on patients with anorexia nervosa. The first randomized controlled trial assessed a practical body image therapy with mirror exposure alongside treatment as usual, which saw improved body image compared with patients who only received treatment as usual.² The second and third studies assessed higher-calorie refeeding compared with lower-calorie refeeding and found that weight gain was greater with higher-calorie refeeding, with no increase in complications.^{3,4}

The non-randomized studies assessed patients with various types of eating disorders. Five non-randomized studies also looked at patients with anorexia nervosa and assessed

interventions such as higher-calorie refeeding compared with lower-calorie refeeding,⁵ family-based treatment,⁶⁻⁸ rapid refeeding,⁹ and multicomponent treatment.¹⁰ All treatments had positive outcomes, including weight gain and minimal adverse events⁵⁻¹⁰; specific mental health symptoms improved in some studies, such as reduced anxiety,^{7,9,10} although ongoing suicidality was noted in 1 study.⁷ One study on feeding disorders in children found multidisciplinary inpatient treatment led to improved body mass index scores and reduced dependence on gastrostomy tubes or oral supplements.¹¹ Two studies assessed patients with restrictive eating disorders: 1 study assessed prophylactic oral phosphate supplements and found few adverse events,¹² whereas another study found rapid refeeding also had few adverse events and was associated with weight gain.¹³ Two studies assessed cognitive remediation therapy for patients with severe and complex eating disorders and saw improvements after the therapy sessions were completed.^{14,15} Two studies did not specify the eating disorder^{16,17}: these studies assessed the use of family-based treatment and found reduced readmissions¹⁶ and improved eating disorder symptoms.¹⁷ A detailed summary of the identified studies can be found in Table 2.

One evidence-based guideline from the National Institute for Health and Care Excellence was identified, which provides recommendations for children and young people with an eating disorder being admitted for inpatient care.¹⁸ A detailed summary of the included guideline and recommendation can be found in Table 3.

Table 2: Summary of Included Studies

First author, year	Study characteristics and population	Intervention and comparator(s) of interest	Relevant outcome(s)	Authors' conclusions
Systematic reviews				
Isserlin (2020) ¹	<p>Study design: Systematic review</p> <p>Population: Children and adolescents with eating disorders</p> <p>N = NR</p>	<p>Intervention: Inpatient psychological treatment</p> <p>Comparator(s): NR</p>	Weight gain, symptom change, motivation	Weight gain is the most consistently reported positive outcome of inpatient psychological treatment; symptom change and motivation vary across studies.
Randomized controlled trials: Patients with anorexia nervosa				
Biney (2021) ²	<p>Study design: RCT</p> <p>Population: Adolescent girls (aged 11 to 17 years) with AN</p> <p>N = 40 assigned, 31 completed study</p>	<p>Intervention: 10-week manualized Practical Body Image therapy with mirror exposure as an adjuvant to intensive treatment package</p> <p>Comparator(s): Intensive treatment package (treatment as usual)</p>	Body image	Practical Body Image therapy led to reduced self-reported body weight concern, body image avoidance, and body image anxiety. Mirror exposure improved self-reported body image avoidance.
Golden (2021) ³	<p>Study design: RCT</p> <p>Population: Adolescents with AN</p> <p>N = 120 enrolled, 111 in analysis</p>	<p>Intervention: HCR</p> <p>Comparator(s): LCR</p>	Clinical remission, medical rehospitalization	Clinical remission and medical hospitalization did not differ over 1 year between HCR and LCR groups.
O'Connor (2016) ⁴	<p>Study design: RCT</p> <p>Population: Adolescents (aged 10 to 16 years) with AN</p> <p>N = 36</p>	<p>Intervention: High-energy intake (refeeding starting at 1,200 kcal/day) over 10 days</p> <p>Comparator(s): Refeeding starting at 500 kcal/day</p>	Energy intake, weight gain, BMI	The intervention group had greater weight gain and did not have an increase in complications compared with the control group.

First author, year	Study characteristics and population	Intervention and comparator(s) of interest	Relevant outcome(s)	Authors' conclusions
Non-randomized studies: Anorexia nervosa				
Davis (2021) ⁵	<p>Study design: Retrospective case-control study</p> <p>Population: Asian adolescents with AN</p> <p>N = 125</p>	<p>Intervention: HCR</p> <p>Comparator(s): LCR</p>	Weight gain as measured by median BMI, refeeding hypophosphatemia	The HCR group had a greater increase in weight compared with the LCR control group. HCR was also associated with increased risk of mild hypophosphatemia but not moderate to severe hypophosphatemia.
Matthews (2019) ⁶	<p>Study design: Non-randomized study with historical control</p> <p>Population: Youth with AN in intensive treatment settings</p> <p>N = 93</p>	<p>Intervention: FBT in intensive treatment settings</p> <p>Comparator(s): Historical control; youth who were hospitalized before FBT was provided</p>	Change in weight	Youth who received the FBT intervention gained more weight at 3 and 6 months after discharge compared with the historical control.
Spettigue (2019) ⁷	<p>Study design: Retrospective cohort study</p> <p>Population: Female adolescent (< 18 years) patients with severe AN</p> <p>N = 153</p>	<p>Intervention: Family-based intensive inpatient program</p> <p>Comparator(s): Pre-post comparison</p>	Weight change, psychological indicators of health (depression, anxiety, ED psychopathology)	The intervention was associated with significant weight gain and small to medium improvements in mood, anxiety, and ED psychopathology. Patients continued to show high rates of body dissatisfaction and some ongoing suicidality at discharge.
Halvorsen (2018) ⁸	<p>Study design: Pre-post comparison</p> <p>Population: Adolescents with AN</p> <p>N = 37</p>	<p>Intervention: Inpatient FBT at a tertiary adolescent eating disorder unit</p> <p>Comparator(s): NR</p>	Normal body weight (BMI \geq 18.5), fully recovered (BMI \geq 18.5, ED examination questionnaire global \leq 2.5, no binge eating/purging over past 3 months)	After receiving inpatient FBT, 65% achieved a normal body weight and 36% were classified as fully recovered.
Kezelman (2018) ⁹	<p>Study design: Pre-post comparison</p> <p>Population: Female adolescents with AN</p> <p>N = 31</p>	<p>Intervention: Rapid refeeding in a specialist inpatient unit</p> <p>Comparator(s): Pre-post comparison</p>	Anxiety, weight restoration	Anxiety reduced over the course of hospitalization, although there was no relationship between anxiety change and weight restoration.

First author, year	Study characteristics and population	Intervention and comparator(s) of interest	Relevant outcome(s)	Authors' conclusions
Fennig (2017) ¹⁰	<p>Study design: Pre-post comparison</p> <p>Population: Adolescents with AN</p> <p>N = 44</p>	<p>Intervention: Weight restoration by structured supervised meals with individual and group cognitive-behavioural therapy, parental training/ family intervention, and educational activities followed by halfway day-treatment weight-stabilizing phase and progressive reintroduction to community</p> <p>Comparator(s): Pre-post comparison</p>	Core anorexic thoughts, severity of eating disorder symptoms, depression, suicidal ideation	Treatment did not significantly modify core anorexic thoughts and perceptions. Reduced general severity of eating disorder symptoms was seen. Levels of depression decreased but remained in pathological range. Increase in suicidal ideation was seen.
Non-randomized studies: Feeding disorders				
Kim (2021) ¹¹	<p>Study design: Longitudinal observational study</p> <p>Population: Children with pediatric feeding disorders</p> <p>N = 50</p>	<p>Intervention: Multidisciplinary inpatient treatment</p> <p>Comparator(s): Pre-post comparison</p>	Caloric intake by mouth for GT-dependent patients, oral supplement dependence, BMI	Caloric intake by GT increased, 81% were discharged without GT support and 65% remained off GT support at 12 months. Oral supplement dependence for non-GT patients decreased up to 12-month follow-up. BMI scores improved during and after treatment.
Non-randomized studies: Restrictive eating disorders				
Leitner (2016) ¹²	<p>Study design: Retrospective cohort</p> <p>Population: Children and adolescents (< 18 years) with restrictive eating disorders</p> <p>N = 70</p>	<p>Intervention: Prophylactic oral phosphate supplementation with standardized treatment</p> <p>Comparator(s): Pre-post comparison</p>	Hyperphosphatemia	Over the 4-year study period, 11 patients became mildly hyperphosphatemic with no associated clinical consequences before refeeding. With supplementation, no further episodes of refeeding hyperphosphatemia occurred during initial refeeding.

First author, year	Study characteristics and population	Intervention and comparator(s) of interest	Relevant outcome(s)	Authors' conclusions
Parker (2016) ¹³	<p>Study design: Retrospective cohort study</p> <p>Population: Hospitalized adolescents with restrictive eating disorders</p> <p>N = 162</p>	<p>Intervention: Rapid refeeding for > 48 hours</p> <p>Comparator(s): Pre-post comparison</p>	Weight gain, complications (cardiac signs of refeeding syndrome or delirium, peripheral edema, hypophosphatemia, hypomagnesemia, hypokalemia)	Patients had an average weekly weight gain of 2.1 kg; 4% had a peripheral edema, 1% hypophosphatemia, 7% hypomagnesemia, 2% hypokalemia. No patients developed cardiac signs of refeeding syndrome or delirium.
Non-randomized studies: Severe and complex eating disorders				
Harrison (2020) ¹⁴	<p>Study design: Prospective cohort study</p> <p>Population: Adolescent inpatients with severe and complex eating disorders</p> <p>N = 39</p>	<p>Intervention: Adolescent adaptation of the Cognitive Remediation and Emotion Skills Training in individual and group formats</p> <p>Comparator(s): Pre-post comparison</p>	Social and emotional functioning using the Work and Social Adjustment Scale, the Toronto Alexithymia Scale, and the Revised Social Anhedonia Scale	Patients from the individual and group formats reported medium-sized improvements in social emotional functioning.
Harrison (2018) ¹⁵	<p>Study design: Cohort study</p> <p>Population: Adolescents with severe and complex AN</p> <p>N = 125</p>	<p>Intervention: Individual and group cognitive remediation therapy</p> <p>Comparator(s): Pre-post comparison</p>	Bigger picture thinking, set-shifting, switching-related initiation and inhibition skills, motivation to recover, global information processing, self-reported cognitive flexibility	In individual cognitive remediation therapy, there were varying levels of improvement in bigger picture thinking, set-shifting, switching-related initiation and inhibition skills, and motivation to recover. In group cognitive remediation therapy, there were small- to medium-sized improvements in global information processing and self-reported cognitive flexibility.

First author, year	Study characteristics and population	Intervention and comparator(s) of interest	Relevant outcome(s)	Authors' conclusions
Non-randomized studies: Not specific to a single eating disorder				
Huryk (2020) ¹⁶	Study design: Retrospective cohort study Population: Youth with ED N = 326	Intervention: FBT incorporated into partial hospitalization programs Comparator(s): Patients before FBT was introduced	Readmission rates	Rates of readmissions were lower for those who received FBT-based programming, compared to those who received the previous traditional partial hospitalization program.
Depestele (2017) ¹⁷	Study design: Non-randomized study Population: Female adolescent inpatients with ED N = 112	Intervention: Adjunctive multi-family group with patient participant Comparator(s): Adjunctive multi-parent group without patient participation	ED symptoms	ED symptoms improved in both groups.

AN = anorexia nervosa; BMI = body mass index; ED = eating disorder; FBT = family-based treatment; GT = gastrostomy tube; HCR = higher-calorie refeeding; LCR = lower-calorie refeeding; NR = not reported; RCT = randomized controlled trial.

Table 3: Summary of Included Guidelines

Recommendation	Strength of recommendation
National Institute for Health and Care Excellence¹⁸	
Children and young people with an eating disorder who are admitted for day or inpatient care should be cared for in an age-appropriate facility (e.g., pediatric wards or adolescent mental health services) that are near their home and that are able to provide appropriate educational activities during extended admissions.	Not reported

References

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-Analyses

1. Isserlin L, Spettigue W, Norris M, Couturier J. Outcomes of inpatient psychological treatments for children and adolescents with eating disorders at time of discharge: a systematic review. *J Eat Disord.* 2020;8:32. [PubMed](#)

Randomized Controlled Trials

Anorexia Nervosa

2. Biney H, Astbury S, Haines A, et al. A novel 'practical body image' therapy for adolescent inpatients with anorexia nervosa: a randomised controlled trial. *Eat Weight Disord.* 2021;26(6):1825-1834. [PubMed](#)
3. Golden NH, Cheng J, Kapphahn CJ, et al. Higher-calorie refeeding in anorexia nervosa: 1-year outcomes from a randomized controlled trial. *Pediatrics.* 2021 Apr;147(4). [PubMed](#)
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Non-Randomized Studies

Anorexia Nervosa

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Feeding Disorders

11. Kim C, Brown S, Brown J, Ornelas E. Long-term outcomes of children with pediatric feeding disorders treated in an inpatient multidisciplinary program. *J Pediatr Gastroenterol Nutr.* 2021 03 01;72(3):388-391. [PubMed](#)

Avoidant/Restrictive Eating Disorders

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Severe and Complex Eating Disorders

14. Harrison A, Stavri P, Tchanturia K. Individual and group format adjunct therapy on social emotional skills for adolescent inpatients with severe and complex eating disorders (CREST-A). *Neuropsychiatry.* 2020 Nov 30. Online ahead of print. [PubMed](#)
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Not Specific to a Single Eating Disorder

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Guidelines and Recommendations

18. Eating disorders: recognition and treatment. NICE guideline [NG69]. London (UK): National Institute for Health and Care Excellence; 2017; updated Dec 2020: <https://www.nice.org.uk/guidance/ng69/resources/eating-disorders-recognition-and-treatment-pdf-1837582159813>. Accessed 2021 Jul 16.
See: 1.11 Inpatient and Day Patient Treatment (p. 32-33)

Appendix 1: References of Potential Interest

Previous CADTH Reports

Mixed Population: Not Specific to Pediatric Patients

19. Li Y, Butcher R. Group-based eating disorder treatment program for binge eating disorder: clinical effectiveness and guidelines. CADTH rapid response report: summary of abstracts. Ottawa (ON): CADTH; 2019: <https://cadth.ca/sites/default/files/pdf/htis/2019/RB1416%20Inpatient%20Treatment%20for%20BED%20Final.pdf>. Accessed 2021 Jul 20.

Systematic Reviews and Meta-Analyses

Mixed Population: Not Specific to Pediatric Patients

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Alternative Intervention: Meal Supervision

21. Kells M, Schubert-Bob P, Nagle K, et al. Meal supervision during medical hospitalization for eating disorders. *Clin Nurs Res*. 2017 08;26(4):525-537. [PubMed](#)

Mixed Intervention: Not Specific to Inpatient Care

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Mixed Intervention and Population: Inpatient and Day Treatment, Adults and Pediatric Patients

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Randomized Controlled Trials

Mixed Population: Not Specific to Pediatric Patients

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Mixed-Methods Studies

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Non-Randomized Studies

Mixed Population: Not Specific to Pediatric Patients

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Alternative Setting: Pediatric Long-Term Care Facilities

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Mixed Intervention: Not Specific to Inpatient Treatment

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Unclear Intervention

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