A Higher-Calorie Refeeding Protocol Does Not Increase Adverse Outcomes in Adult Patients with Eating Disorders

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ABSTRACT

Background Patients with eating disorders (EDs) are often considered a high-risk population to refeed. Current research advises using “start low, go slow” refeeding methods (~1,000 kcal/day, advancing ~500 kcal/day every 3 to 4 days) in adult patients with severe EDs to prevent the development of refeeding syndrome (RFS), typically characterized by decreases in serum electrolyte levels and fluid shifts.

Objective To compare the incidence of RFS and related outcomes using a low-calorie protocol (LC) (1,000 kcal) or a higher-calorie protocol (HC) (1,500 kcal) in medically compromised adult patients with EDs.

Design This was a retrospective pre-test–post-test study.

Participants/setting One hundred and nineteen participants with EDs, medically admitted to a tertiary hospital in Brisbane, Australia, between December 2010 and January 2017, were included (LC: n=26, HC: n=93). The HC refeeding protocol was implemented in September 2013.

Main outcome measures Differences in prevalence of electrolyte disturbances, hypoglycemia, edema, and RFS diagnoses were examined.

Statistical analysis performed χ² tests, Kruskal-Wallis H test, analysis of variance, and independent t tests were used to compare data between the two protocols.

Results Descriptors were similar between groups (LC: 28±9 years, 96% female, 85% with anorexia nervosa, 31% admitted primarily because of clinical symptoms of exacerbated ED vs HC: 27±9 years, 97% female, 84% with anorexia nervosa, 44% admitted primarily because of clinical symptoms of exacerbated ED, P>0.05). Participants refed using the LC protocol had higher incidence rates of hypoglycemia (LC: 31% vs HC: 10%, P=0.012), with no statistical or clinical differences in electrolyte disturbances (LC: 65% vs HC: 45%, P=0.079), edema (LC: 8% vs HC: 6%, P=0.722) or diagnosed RFS (LC: 4% vs HC: 1%, P=0.391).

Conclusions A higher-calorie refeeding protocol appears to be safe, with no differences in rates of electrolyte disturbances or clinically diagnosed RFS and a lower incidence of hypoglycemia. Future research examining higher-calorie intakes, similar to those studied in adolescent patients, may be beneficial.
outcomes, patients were also more likely to gain weight and have shorter lengths of stay.10,11,13

Interpretation of the current literature is complicated by the use of a range of outcome measures. Although hypophosphatemia is often considered a hallmark of RFS,4 various signs and symptoms have been employed in different studies. In an attempt to ensure accuracy in the diagnosis of RFS, Rio and colleagues15 have created a three-facet diagnostic tool, integrating at least one episode of a severely low serum electrolyte level (potassium, phosphate, and/or magnesium), edema, and organ dysfunction; however, this tool has only been used in two published studies focusing on patients with anorexia nervosa.13,16 Parker and colleagues13 used the tool to examine prevalence in adolescent patients fed a high-calorie diet, whereas Hofer and colleagues16 examined adult patients consuming a diet in which calorie intake was conservative. No episodes of RFS were identified in either study. Similarly, only low rates (<3%) of associated adverse outcomes, including severe electrolyte decreases and edema, were observed.

In other studies examining the incidence of RFS in adult patients with EDs, investigators have found rates varying from 0%1,17-20 to 10%.21 However, the incidence of hypophosphatemia ranges from <10%1,20 to 45%.17,21-25 No study, to the authors’ knowledge, has examined higher-calorie intakes in medically compromised adult patients with EDs and the incidence of RFS and RFS-related outcomes. Hence, the aim of this study was to compare the incidence of RFS and RFS-related outcomes in a low-calorie refeeding protocol with current recommended feed rates (1,000 kcal/day) than those commenced on a higher-calorie refeeding method. This protocol was replaced in September 2013 by a higher-calorie (1,500 kcal) refeeding protocol for comparison with patients treated with the higher-calorie protocol (1,500 kcal/day) than those commenced on a protocol with current recommended feed rates (1,000 kcal/day)?

Key Findings: One hundred nineteen participants were included in this observational study. No significant differences were found in the incidence of refeeding syndrome, electrolyte disturbances, or edema. No cases of refeeding syndrome were observed in either group.

Eligibility Criteria
Patients admitted to medical units were eligible for inclusion in this study if they were 18 years of age or older at the time of admission, diagnosed with an ED (confirmed by a psychiatrist), and treated with the specified refeeding protocols. Patients with multiple admissions were included when there had been at least 12 months between subsequent admissions. Patients were excluded from the study if they were admitted from a psychiatric unit because the refeeding process may have already commenced or if they were admitted to an intensive care unit at any time during their medical admission because patients admitted to intensive care units are typically commenced on a feeding protocol specific to the intensive care unit. Patients were also excluded if they had renal conditions because of the possibility of preexisting issues with electrolyte levels or if they were pregnant. Patients whose hospital stay was less than 5 days were excluded because days 2 to 5 of admission are considered the period associated with the greatest risk for the development of RFS.2

Protocol Descriptions. From December 2010 to August 2013, refeeding protocols were based on a low-calorie (1,000 kcal) refeeding method. This protocol was replaced in September 2013 by a higher-calorie (1,500 kcal) refeeding method, based on the updated literature regarding treatment of adolescent patients.10,14,27-29 The protocol was also updated to incorporate a continuous nasogastric feed, commencing within 24 hours of admission. The previous protocol provided for an oral diet, only allowing an upgrade to enteral feeds if a patient was not consuming an adequate intake.

Eating Disorder Inpatient Rffeeing Protocol—Low Calorie (2010 to August 2013). In place from December 2010 to August 2013, the low-calorie protocol dictated that nutritional intake should be provided via oral intake (15% to 20% protein, 45% to 55% carbohydrate, and 30% to 35% fat). Nasogastric feeding (with the predominant feed composed of 16% protein, 50% carbohydrate, and 34% fat) was to be used if oral feeding was deemed unsuccessful. An initial oral diet, incorporating three meals and three snacks, of 875 to 1,000 kcal or an enteral feed with a rate of 1,000 kcal (no more or
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