

No sex differences in hospitalized male and female risk of developing refeeding electrolyte abnormalities among adolescents and young adults with eating disorders.

Table: Factors associated with refeeding hypophosphatemia, hypokalemia, hypomagnesemia, and combined refeeding syndrome risk

Independent variables	Unadjusted		Adjusted for % mBMI	
	OR (95% CI) ^a	p	OR (95% CI) ^b	p
Refeeding hypophosphatemia (low phosphorus)				
Male sex	0.37 (0.11, 1.22)	.103	0.37 (0.11, 1.22)	.101
Age, years	1.18 (1.06, 1.30)	.001	1.15 (1.03, 1.27)	.009
White (vs. non-White)	1.39 (0.73, 2.64)	.321	1.29 (0.67, 2.47)	.442
Anorexia nervosa (vs. non-anorexia nervosa)	1.31 (0.68, 2.53)	.415	0.96 (0.48, 1.90)	.906
Duration of illness	1.01 (1.00, 1.02)	.104	1.01 (1.00, 1.02)	.158
Percent median BMI	0.96 (0.94, 0.99)	.004	--	--
Weight suppression at admission ^c	1.04 (1.01, 1.07)	.003	1.04 (1.00, 1.07)	.024
Refeeding hypokalemia (low potassium)				
Male sex	0.72 (0.31, 1.63)	.427	0.72 (0.32, 1.65)	.437
Age, years	0.95 (0.85, 1.05)	.285	0.94 (0.85, 1.04)	.230
White (vs. non-White)	1.06 (0.61, 1.85)	.824	1.04 (0.60, 1.81)	.895
Anorexia nervosa (vs. non-anorexia nervosa)	1.49 (0.83, 2.70)	.184	1.44 (0.77, 2.69)	.257
Duration of illness	0.99 (0.97, 1.01)	.332	0.99 (0.97, 1.01)	.325
Percent median BMI	0.99 (0.97, 1.01)	.431	--	--
Weight suppression at admission ^c	1.01 (0.98, 1.03)	.540	1.01 (0.98, 1.03)	.652
Refeeding hypomagnesemia (low magnesium)				
Male sex	0.51 (0.25, 1.02)	.057	0.51 (0.26, 1.03)	.060
Age, years	1.10 (1.02, 1.18)	.012	1.09 (1.02, 1.18)	.018
White (vs. non-White)	1.42 (0.91, 2.21)	.118	1.39 (0.89, 2.17)	.149
Anorexia nervosa (vs. non-anorexia nervosa)	1.31 (0.84, 2.05)	.237	1.23 (0.76, 1.98)	.396
Duration of illness	0.99 (0.98, 1.01)	.327	0.99 (0.98, 1.01)	.311
Percent median BMI	0.99 (0.98, 1.01)	.257	--	--
Weight suppression at admission ^c	1.00 (0.98, 1.02)	.966	1.00 (0.98, 1.02)	.824
Combined refeeding syndrome risk ^d				
Male sex	0.64 (0.36, 1.13)	.125	0.65 (0.37, 1.14)	.134
Age, years	1.09 (1.02, 1.16)	.012	1.08 (1.01, 1.16)	.025
White (vs. non-White)	1.30 (0.88, 1.91)	.192	1.25 (0.84, 1.84)	.271
Anorexia nervosa (vs. non-anorexia nervosa)	1.24 (0.83, 1.84)	.286	1.10 (0.73, 1.68)	.645
Duration of illness	1.00 (0.99, 1.01)	.423	1.00 (0.98, 1.01)	.391
Percent median BMI	0.99 (0.97, 1.00)	.063	--	--
Weight suppression at admission ^c	1.01 (0.99, 1.03)	.159	1.01 (0.99, 1.03)	.260

Boldface indicates p<0.05

^aUnadjusted represents outputs from logistic regression analyses with the listed independent variable and refeeding hypophosphatemia, hypokalemia, hypomagnesemia, or combined refeeding risk as the dependent variable.

^bAdjusted represents outputs from logistic regression analyses with the listed independent variable and refeeding hypophosphatemia, hypokalemia, hypomagnesemia, or combined refeeding risk as the dependent variable, adjusted for percent median BMI.

^cWeight suppression is expressed as a percentage.

^dA variable indicating hypomagnesemia (low magnesium) or hypophosphatemia (low phosphorus) or hypokalemia (low potassium)

Sex Differences in Electrolyte Abnormalities Indicating Refeeding Syndrome Risk Among Hospitalized Adolescents and Young Adults with Eating Disorders

Anthony Nguyen, Jason M. Nagata, Ruben Vargas, Amanda E. Downey, Anita V. Chaphekar, Kyle T. Ganson, Sara M. Buckelew, and Andrea K. Garber



University of California
San Francisco

Background:

- Refeeding syndrome is the gravest possible medical complication in malnourished patients undergoing refeeding in the hospital.
- Males with malnutrition secondary to eating disorders require more calories and have longer hospital stays than females.
- Sex differences in electrolyte abnormalities indicating refeeding syndrome risk remain unknown.

Objective:

- To determine the prevalence of refeeding hypophosphatemia, hypokalemia, and hypomagnesemia among a sample of male and female adolescents and young adults hospitalized for eating disorders.
- To compare sex differences in electrolyte abnormalities indicating refeeding syndrome risk.

Methods:

- Retrospective electronic medical record review of 558 patients aged 9-25 years admitted to UCSF Eating Disorders Program for medical instability between May 2012 and August 2020. Participants included 86 (15.4%) males and 472 (84.6%) females, mean (SD) age of 15.5 (2.8) years.
- Serum was drawn per standard of care between 5-7 am each morning.
- Electrolyte abnormalities indicating refeeding syndrome risk defined as: hypophosphatemia (<3.0 mg/dL), hypokalemia (<3.5 mEq/L), and hypomagnesemia (<1.8 mg/dL).
- Logistic regression used to assess factors associated with electrolyte abnormalities indicating refeeding syndrome risk.

Results:

- Rates of refeeding hypophosphatemia (3.5%), hypokalemia (8.1%), and hypomagnesemia (11.6%) in males with eating disorders were low, with no statistically significant differences from females.
- Older age associated with higher odds of refeeding hypophosphatemia and hypomagnesemia (Table).
- Lower %median BMI and greater weight suppression at admission associated with higher odds of refeeding hypophosphatemia (Table).

Conclusion:

- Rates of electrolyte abnormalities indicating refeeding risk were low in males hospitalized for eating disorders. Rates did not significantly differ from females.
- Together with finding that males have higher caloric requirements and longer hospital length of stay, the finding that electrolyte abnormalities indicating refeeding syndrome risk were not greater in males than females supports future research to evaluate the safety and efficacy of higher calorie and/or faster advancing refeeding protocols for males.

Acknowledgements: Support in part by grants from the National Heart, Lung, and Blood Institute (K08HL159350), the National Institute of Mental Health (R01MH135492) and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD082166).