APPENDIX 1. Typical Disordered Eating Laboratory/Investigations and Interpretation of Results

Laboratory Tests	If High *may indicate*	If Low *may indicate*	Investigations
Full Blood Count	Neutrophils high with excessive exercise	Leucopenia, anemia (check ferritin and B12), or thrombocytopenia	**ECG** abnormal findings: • Bradycardia and/or arrhythmias • Prolonged QTc interval (> 450 msec) • T wave inversion • Non-specific ST-T wave changes including ST segment depression • U waves with hypokalemia or hypomagnesemia
Ferritin	Inflammatory marker	Poor iron intake	
To include: electrolytes, renal function tests and liver enzymes			
Glucose		Poor Nutrition	
Sodium	Dehydration	Water loading or laxative use	
Potassium	Dehydration	Vomiting, laxative or diuretic use, refeeding	
Chloride	Laxative use	Vomiting, laxative use	
Blood Bicarbonate	Vomiting	Laxative use	
Blood Urea Nitrogen*	Dehydration		
Creatinine**	Dehydration, renal dysfunction	Low protein intake or muscle mass	
Calcium		Poor nutrition	
Phosphate		Poor nutrition or re-feeding syndrome	
Magnesium		Poor nutrition, laxative use, or re-feeding syndrome	
Total Protein/Albumin	Early malnutrition (expense of muscle mass)	Seen in later malnutrition	
Liver Function Tests (ALT/AST)	Starvation		
Additional Tests to Consider:			
TSH	Sick euthyroid syndrome (reassess when Eating Disorder stable)		**DEXA Scan** • Osteoporosis is seen in almost 40% of patients with Anorexia • Consider in patients with Anorexia Nervosa and Amenorrhea > 6 months
25OH Vitamin D		Risk poor bone health	
Vitamin B12		Restrictive diet (often Vegan)	
Zinc		Poor nutrition	
Pancreatic enzymes	Vomiting, pancreatitis		

Indications for Acute Medical/Psychiatric Hospitalisation, Consultation with Eating Disorder Programme		
	Adolescent	**Adult**
Temperature	< 35.6 °C	< 35.5 °C
Heart Rate	< 45 bpm or symptomatic postural tachycardia	< 40 bpm or symptomatic postural tachycardia
Blood Pressure	Systolic < 90 mmHg, or orthostatic change of > 20 mmHg coupled with signs of hypovolemia	< 90/60 mmHg, or orthostatic change of > 20 mmHg coupled with signs of hypvolemia
Weight	< 75 % of ideal body weight, or ongoing weight loss; < 10 % body fat.	Rapid and progressive weight loss
Laboratory:		
Sodium	< 130 mmol/L	< 127 mmol/L
Potassium	< 3.2 mmol/L	< 2.3 mmol/L
Magnesium	< 0.7 mmol/L	< 0.6 mmol/L
Phosphate	< 0.8 mmol/L	Below normal on fasting
Serum Chloride	< 88 mmol/L	
Blood Glucose	< 3.0 mmol/L	< 2.5 mmol/L

Additional Signs and Symptoms:

- Suicide Risk
- Dehydration that does not reverse within 48 hours
- Acute refusal to eat
- Intractable vomiting
- Oesophageal tears, Haematemesis
- Syncope
- Severe acrocyanosis
- Muscular weakness or diaphragmatic wasting not accounted for by a correctable deficiency
- Signs of inadequate cerebral perfusion (confusion, syncope, loss or altered level of consciousness etc.
- Poorly controlled diabetes
- Pregnancy with an at-risk fetus
- Failure to respond to outpatient treatment

Note: *high urea and creatinine may indicated excessive use of protein powder with body building; **Normal results may be considered "relatively elevated" given low muscle mass; AN= anorexia nervosa; bpm = beats per minute; ED=eating disorder. **Adapted from**: **1)** Lamoureux M CJ. Eating Disorders Toolkit for Primary Care Practitioners in BC. 2018; https://cfe.keltyeatingdisorders.ca/resource-type/reporttoolkit (see page 7); **2)** Academy for Eating Disorders' Medical Care Standards Committee. Eating Disorders. A Guide to Medical Care. AED Report 2016. 3rd Edition. http://www.nyeatingdisorders.org/pdf/AED%20Medical%20Management%20Guide%203rd%20Edition.pdf.

APPENDIX 2. Diagnostic Criteria for Anorexia Nervosa, Bulimina Nervosa, and Binge Eating Disorder

Diagnostic and Statistical Manual of Mental Health Disorders – 5th Edition (DSM-5)

Anorexia Nervosa

A. Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health. *Significantly low weight* is defined as a weight that is less than minimally normal or, for children and adolescents, less than that minimally expected.
B. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain, even though at a significantly low weight.
C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

Severity* Mild: BMI $\geq$ 17 kg/m^2 Moderate: BMI > 16–16.99 kg/m^2 Severe: BMI > 15–15.99 kg/m^2 Extreme: BMI < 15 kg/m^2	**Restricting subtype:** not engaged in recurrent episodes binge eating or purging in past 3 months. **Binge-eating/purging subtype:** has engaged in recurrent binge eating or purging behavior.	After full criteria for Anorexia Nervosa were previously met: **Partial remission:** Criterion A has not been met for sustained period, but either Criterion B or Criterion C is still met. **Full remission**: none of the criteria have been met for a sustained period of time.

Bulimia Nervosa

A. Recurrent episodes of binge eating. An episode of binge eating is characterised by both of the following:
   1. Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances.
   2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).
B. Recurrent inappropriate compensatory behaviors in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise.
C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months.
D. Self-evaluation is unduly influenced by body shape and weight.
E. The disturbance does not occur exclusively during episodes of anorexia nervosa.

Severity

Mild: An average of 1–3 episodes of inappropriate compensatory behaviors per week.
Moderate: An average of 4–7 episodes of inappropriate compensatory behaviors per week.
Severe: An average of 8–13 episodes of inappropriate compensatory behaviors per week.
Extreme: An average of 14 or more episodes of inappropriate compensatory behaviors per week.

Binge-Eating Disorder

A. Recurrent episodes of binge eating. An episode of binge eating is characterised by both of the following:
   1. Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than what most people would eat in a similar period of time under similar circumstances.
   2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).
B. The binge-eating episodes are associated with three (or more) of the following:
   1. Eating much more rapidly than normal.
   2. Eating until feeling uncomfortably full.
   3. Eating large amounts of food when not feeling physically hungry.
   4. Eating alone because of feeling embarrassed by how much one is eating.
   5. Feeling disgusted with oneself, depressed, or very guilty afterward.
C. Marked distress regarding binge eating is present.
D. The binge eating occurs, on average, at least once a week for 3 months.
E. The binge eating is not associated with the recurrent use of inappropriate compensatory behavior as in bulimia nervosa and does not occur exclusively during the course of bulimia nervosa or anorexia nervosa.

Severity

Mild: 1–3 binge-eating episodes per week.
Moderate: 4–7 binge-eating episodes per week.
Severe: 8–13 binge-eating episodes per week.
Extreme: 14 or more binge-eating episodes per week.

*Level of severity for adults is based on current body mass index (BMI), and for children/adolescents on BMI percentile. Ranges derived from World Health Organisation categories for thinness in adults. **Note:** Levels may increase to reflect clinical symptoms, degree of functional disability, and the need for supervision.

APPENDIX 3. Medical Complications Associated with Eating Disorders

Medical Complication	Anorexia Nervosa	Bulimia Nervosa	Binge Eating Disorder Complications due to Obesity
Cardiovascular	• Bradycardia/Hypotension • Mitral valve prolapse • Sudden death related to QT prolongation • Peripheral oedema	• Arrhythmias • Diet pill toxicity: palpitations, hypertension • Cardiomyopathy • Mitral valve prolapse	• Hypertension • Hyperlipidemia; also secondary to diet
Gastrointestinal	• Constipation related to poor intake/gastrointestinal stasis • Hepatitis • Dysphagia • Result of re-feeding: acute pancreatitis; acute gastric dilatation; delayed emptying	• Constipation (laxative use) • Gastroesophageal reflux • Acute gastric dilatation • Dental erosion • Parotid gland swelling • Barrett's esophagus • Oesophageal rupture	• Bloating • Abdominal pain
Endocrine/ Metabolic	• Amenorrhoea • Infertility • Osteoporosis/osteopenia • Thyroid abnormalities • Hypercortisolemia, hypercholesterolaemia (impaired cholesterol metabolism) • Hypoglycaemia, neurogenic diabetes insipidus • Impaired temperature regulation • Fluid/electrolyte abnormalities and dehydration • Arrested growth	• Irregular menses • Hyoglycaemia • Mineralocorticoid excess • Electrolyte imbalances • Dehydration • Nephropathy	• Type 2 Diabetes
Dermatological *Notably apparent when BMI drops below 16	• Lanugo hair • Dry skin, fissures • Acrocyanosis • Carotenaemia • Pruritis (starvation associated) • Alopecia	• Lanugo hair • Alopecia • Xerosis • Hypertrichosis • Pruritis (starvation associated) • Nail fragility	• Skin changes due to diabetes and morbid obesity
Hematological	• Pancytopenia (due to starvation) • Decreased sedimentation rate		
Pulmonary/ Mediastinal	• Respiratory failure • Aspiration pneumonia • Spontaneous pneumothorax • Emphysema	• Aspiration pneumonitis • Pneumomediastinum with weight loss/precipitated with vomiting • Pneumothorax/rib fractures	

SOURCES: **1)** Sangvai D. Eating Disorders in the Primary Care Setting. *Primary care.* 2016;43:301-12. *Original source (#16):* Walthc JME, Wheat ME, Freund K. Detection, evaluation, and treatment of eating disorders. J Gen Intern Med 2000; 15:577-90; **2)** Mehler PS, Brown C. Anorexia nervosa – medical complications. J Eat Disord 2015;3: 1-11; Mehler PS, Rylander M. Bulimia Nervosa – medical complications. J Eat Disord 2015;3(12):1-12; **3)** Strumia R., Eating disorders and the skin. Clin Dermatol. 2013;31:80-5.

APPENDIX 4. Eating Disorder Guidelines and Resources for Health Providers and Patients

There are many organisations that support people with anorexia and their families, including:
- Anorexia and Bulimia Care
- Beat: eating disorders
- Mental Health Foundation
- Mind: for better mental health

Joining a self-help support group, such as the Beat online support group for people with anorexia, may also be helpful.

Online advice
- B-eat (formerly the Eating Disorders Association): Helpline adults: 0845 634 1414; beat youth helpline (under 25): 0845 634 7650. B-eat is the UK's leading charity supporting anyone affected by eating disorders or issues with food, including families and friends.
- DWED (Diabetics with eating disorders website)
- NHS 111: NHS Choices: Call 111 when you need medical help fast but it's not a 999 emergency. Available 24 hours a day, 365 days a year, calls are free from landlines and mobile phones.
- Youth health talk: has a section focusing on young people with Eating Disorders.

Online CBT resources
- Overcoming Bulimia

Further reading
- Breaking free from anorexia nervosa: a survival guide for families, friends and sufferers by Janet Treasure (Psychology Press).
- Anorexia nervosa and bulimia: how to help by M. Duker & R. Slade (Open University Press).
- Eating Disorders: A parents' guide by Rachel Bryant-Waugh and Brian Lask (Penguin Books).
- Skills-based learning for caring for a loved one with an Eating Disorder: The New Maudsley Method. Janet Treasure, Grainne Smith and Anna Crane.
- Bulimia Nervosa and Binge eating: A guide to recovery by P. J. Cooper and Christopher Fairbairn (Constable and Robinson).
- Overcoming binge eating by Christopher Fairburn (Guildford Press).
- Getting better BITE by BITE: A survival kit for sufferers of bulimia nervosa and binge eating disorders by Janet Treasure and Ulrike Schmidt (Hove Psychology Press).
- Anorexia Nervosa and Related Eating Disorders (ANRED).
- Self-help tips: http://www.anred.com/slf_hlp.html
- YoungMinds Crisis Messenger: This provides free, 24/7 crisis support across the UK if you are experiencing a mental health crisis. If you need urgent help text YM to 85258. All texts are answered by trained volunteers, with support from experienced clinical supervisors. Texts are free from EE, O2, Vodafone, 3, Virgin Mobile, BT Mobile, GiffGaff, Tesco Mobile and Telecom Plus.
- Families Empowered and Supporting Treatment of Eating Disorders (FEAST) – an international organisation for parents and carers of people with an eating disorder
- Information leaflets and guidance on working with carers – compiled and developed by CAUSE
- MindEd for Families – a free learning resource about the mental health of children, young people and older adults
- The Triangle of Care – a guide to best practice in mental health care in England (developed by the Carers Trust)
- The Triangle of Care for Young Carers and Adult Carers
- Yorkshire Centre for Eating Disorders: An Information Pack for Carers 2016