



Anorexia Nervosa

Epidemiology

- Prevalence in Australia: F:1%, M: <0.5%
- Highest risk of onset during ages 15-24 (younger than bulimia)
- Incidence is increasing.

Definition / DSM-V Criteria

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:

- If aged >20 years old: BMI <18.5kg/m²
- If aged <20 years old: weight <10th percentile

B. Intense fear of gaining weight or becoming fat, or persistent behaviour that interferes with weight gain, even though at 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 current low body weight.

Types

Restricting type	Purging type	Atypical anorexia nervosa
During the last 3 months the individual has not engaged in recurrent episodes of binge eating or purging behaviour .	During the last 3 months, the individual has engaged in recurrent episodes of purging behaviour without binge-eating behaviours .	Patients usually at or above a normal weight but meet all the other criteria for anorexia nervosa.
Weight loss is accomplished primarily through dieting, fasting, and or excessive exercise	Weight-loss is accomplished primarily through self-induced vomiting or misuse of laxatives, diuretics or enemas.	Susceptible to the complications of anorexia due to the velocity of their weight loss.

Severity

Severity is graded in terms of BMI:

- Healthy: 18.5-24.9
- Mild: <18.5
- Moderate:<17
- Severe: <16
- Extreme: <15

Protective Factors

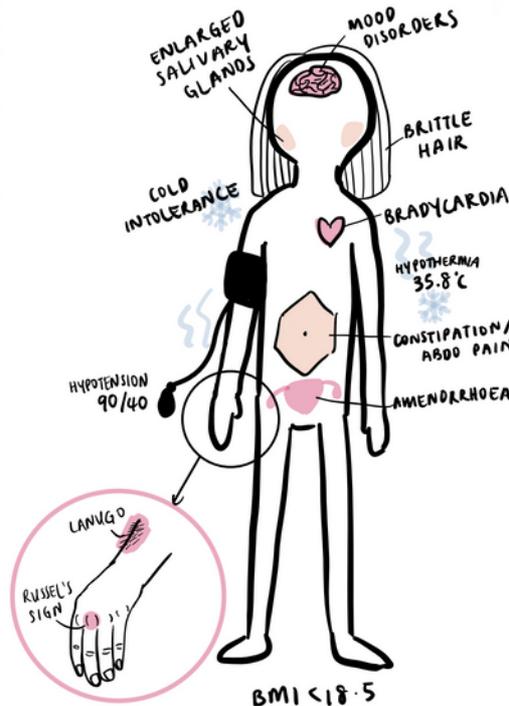
- High-self esteem, positive body image
- Media literacy (ability to be critical of media images)
- Healthy eating behaviours/regular family meals
- Family connectedness
- Relationships with people who do not overvalue weight or physical appearance

Risk Factors

BIO 🌿	PSYCHO 💬	SOCIAL ❤️
<ul style="list-style-type: none"> • First degree relatives • Comorbid diabetes • Pre-morbid obesity • Weight loss secondary to organic cause 	<ul style="list-style-type: none"> • Bipolar, depression, anxiety, and OCD • Low self-esteem • Need for approval + control • Perfectionism 	<ul style="list-style-type: none"> • Higher in settings where being thin is valued (Western world) • Occupations that encourage thinness: ballet dancing, modelling, extreme athletics • Most prevalent in highly industrialised countries

SYMPTOMS

- Distorted body perception (frequent mirror checks) 🪞
- Poor eating habits +/- purging behaviours
- Physical symptoms of malnutrition
 - Fainting, lightheadedness
 - Abdominal pain, constipation
 - Weakness, fatigue
 - Cold intolerance
 - Amenorrhoea
 - Hair-loss
- Psychiatric co-morbidities
 - Depression
 - Anxiety
 - OCD
 - PTSD
- Cognitive changes
 - Slowed thought process
 - Impaired short term memory
 - Decreased attention, concentration
- History of abuse, conflict, trauma



SIGNS

VITAL SIGNS:

- Hypothermia
- Bradycardia: often why they are admitted
- Hypotension

General appearance:

- Emaciation
- Lanugo
- Dehydrated: may be restricting water
- Brittle hair
- BMI <18.5

If they purge though vomiting:

- Halitosis
- Enlargement of the salivary glands
- Enamel erosion
- Russel's sign: roughening of the dorsal hand (due to repeat abrasion by front teeth when self induced vomiting)

Differential Diagnoses

Organic 🐱

- Hyperthyroidism
- Malabsorptive disease: Inflammatory bowel disease, coeliac
- Diabetes

Drugs/Alcohol 🍷

- Stimulant abuse
- Alcohol abuse leading to vitamin deficiency
- Abuse of substances for weight loss: laxatives, thyroxine, withholding insulin

Psychotic disorders 🧠

- Schizophrenia: Check their beliefs about food are not delusional

Anxiety and mood disorders 😞

- Major depressive disorder: often lose appetite
- Social anxiety disorder
- Generalised anxiety disorder
- OCD
- Body dysmorphic disorder

Other eating disorders 🍴

- Bulimia nervosa: are at or above a healthy BMI
- PICA
- Avoidant/ restrictive food intake disorder: restriction is not due to body image concerns

Neurodevelopmental disorder 🧠

- Autism spectrum disorder: often associated with picky eating

Investigations

Bedside	Blood		Imaging
ECG: QT prolongation, sinus bradycardia, arrhythmias Urinalysis: (ketonuria from starvation) Urine bHCG: rule out pregnancy from amenorrhoea Blood glucose	FBC	pancytopenia	DEXA scan: bone mineral density decreases the longer the starvation continues Order if underweight for >6 months, and repeat every 2 years the patient is still underweight Pelvic Ultrasound: consider if the patient is amenorrhoeic to rule out additional/ other causes Consider Echo if BMI <14
	UEC/ CMP	↓ potassium, sodium, chloride, phosphate, magnesium ↑ urea and nitrogen if dehydrated ↓ creatinine from muscle mass loss	
	ABG	↑ bicarbonate (metabolic alkalosis if vomiting)	
	LFT	↑ AST/ALT ↓ albumin	
	Endocrine panel	↑ GH ↓ TFTs ↑ Cortisol ↑ Glucose	
	Vitamins/ Minerals	↓ Vitamin D ↓ B12 ↓ Folate ↓ Iron	
	Other	↑ Amylase ↑ LDL	

Management

Admit to hospital if:



- Uncontrollable compensatory behaviours
- Suicidality
- Several days with no oral intake
- BMI <14
- HR <40bpm, or standing tachycardia of >20bpm increase
- BP <90/60mmhg, or with >20mmhg drop on standing
- Temperature <35.5
- Low K, Mg, phosphate

In hospital observations:



- 4-6 hourly obs
- Daily fluid and bowel chart (+ supervision for meals)
- Daily UEC, electrolytes and ECG

BIOLOGICAL

1. Medical stabilisation

- Unstable vitals
 - HR <50
 - Postural tachycardia (>20bpm increase when standing)
 - BP <80/50
 - Postural hypotension (>20mHg drop when standing)
- Unstable ECG
 - Arrhythmias
 - Prolonged QTc
- Severe electrolyte + vitamin deficiencies
- Concerning behaviours
 - Uncontrollable eating disorder
 - High suicide risk
 - Failure to respond to outpatient mx

2. Multi-disciplinary team

- Psychiatry
- Dietician
- Psychologist
- GP
- Outpatient services

3. Treat complications

4. Treat co-morbidities

PSYCHOLOGICAL

1. Psychoeducation

2. **Family based therapy** (1st line for adolescents)
3. **CBT** with eating disorder focus

SOCIAL

1. **Support for carers/family**
2. Liaise with **schools**

Major Complications

Refeeding Syndrome

- Occurs in starved patients when there is a sudden introduction of a large amount of food
- In starvation, fat and protein is the main source of energy, hence the muscles use less ketone bodies and use fatty acids as the main source of energy
- Once the patient eats, glycaemia increases insulin, which results in a rapid intracellular uptake of **potassium, phosphate, magnesium**
- Results in: hypokalaemia, hypomagnesemia, hypophosphatemia, thiamine deficiency, salt & water retention / oedema
- Serious: seizures + sudden death

Prognosis

- Highest mortality rate of any mental illness
- Mean mortality: 5% in adults, 2% in teens
- 32x more likely to die by suicide
- Relapse rate is 41%

Other Complications

Muscle loss 	Low creatinine Fatigue Diaphragmatic weakness: difficulty breathing
Cardiac muscle loss 	Bradycardia Hypotension Congestive cardiac failure
Nutritional deficiency 	Cardiac arrhythmias Dry scaly skin, brittle hair Osteoporosis
Feeding disturbance 	Bloating, nausea, constipation
Bone marrow suppression 	Low RBC: anaemia and fatigue Low WBC: frequent infection Low platelets: bleeding
Brain atrophy 	Ataxia, confusion, peripheral neuropathy, loss of brain volume
Reproduction 	Infertility
Renal 	Renal calculi and renal failure
Bone 	Osteoporosis, Osteopenia
Complications common in paediatric populations	Growth retardation Alterations in brain development + cognitive impairment