

Eating Disorders

Eating disorders (anorexia, bulimia, binge-eating disorder, ARFID) are brain illnesses—shaped by genes, stress, and culture—that drive people to starve, binge, or purge, leading to slow heart rate, weak bones, dangerous electrolyte crashes, and the highest suicide risk of any mental illness.

THE ONE-LINE TRUTH

Eating disorders are brain-based mental illnesses that twist how someone sees their body and eats, causing serious harm to both the mind and the body.

The chain — how it unfolds

1. Genes, stress, trauma, dieting culture, and co-occurring mental illnesses (anxiety disorders, major depression, obsessive-compulsive disorder, post-traumatic stress disorder) come together in a vulnerable person, usually during adolescence or young adulthood. — why: Eating disorders do not have one single cause. They are the result of genetic risk (inherited traits in serotonin and dopamine systems, perfectionism, anxiety sensitivity) meeting environmental triggers (dieting, peer pressure, social media, sports that emphasize leanness like gymnastics or wrestling, trauma or abuse, family conflict). The brain's reward circuits (driven by dopamine in the nucleus accumbens and ventral tegmental area), emotion regulation circuits (the amygdala, the brain's alarm center, and the prefrontal cortex, which pumps the brakes on big feelings), and body-perception circuits (the insula and parietal cortex) become dysregulated. The person begins to see food and body weight as the problem—and controlling them as the solution to anxiety, sadness, or feeling out of control.
2. The person starts restricting food (anorexia nervosa), binge eating and purging (bulimia nervosa), binge eating without purging (binge-eating disorder), or avoiding foods due to fear or sensory issues (ARFID). — why: Restriction feels like control and safety in a chaotic world. Purging feels like undoing a mistake or relieving guilt. Bingeing temporarily numbs emotional pain. The behavior becomes compulsive—the person cannot stop even when they want to, because the brain has locked into a rigid loop. Serotonin (which steadies mood and reduces anxiety) and dopamine (which drives reward and motivation) pathways are stuck in a dysregulated pattern. This is a mental illness, not a choice, a phase, or a lack of willpower.

3. Caloric restriction or purging depletes the body's fuel and electrolytes, triggering starvation mode. Heart rate drops (bradycardia). Blood pressure falls. Core body temperature drops (hypothermia). Reproductive hormones shut down (no periods in females, low testosterone in males). — why: The hypothalamus senses starvation and orders the body to conserve every calorie. It slows the heart, lowers the thermostat, shuts down the hypothalamic-pituitary-gonadal axis (the reproductive hormone system), and breaks down muscle and fat for fuel. This is why people with anorexia have a slow heart rate (often 40 to 50 beats per minute), low body temperature (95 to 96°F), absent periods (amenorrhea) (no periods), and feel exhausted and freezing cold all the time. The body is trying to survive a famine that is not real.
4. Electrolyte imbalances develop—dangerously low potassium, magnesium, phosphorus, and sodium—from starvation, purging, or laxative abuse. The heart is now at risk for fatal arrhythmias. — why: Potassium and magnesium are critical for heart muscle contraction and electrical signaling. When they drop (from vomiting washing them out, diarrhea from laxatives, or the kidneys failing to hold onto them during starvation), the heart's rhythm becomes unstable. The QT interval lengthens on the EKG. The person is at risk for torsades de pointes (a deadly, fast, twisting heart rhythm) and sudden cardiac arrest. Phosphorus drops dangerously low during refeeding (when eating resumes after a period of starvation). This causes refeeding syndrome—cells suddenly suck phosphorus, potassium, and magnesium out of the blood to restart metabolism, the heart and lungs fail from fluid overload, the brain seizes, and the person can die within 48 to 72 hours if phosphorus and other electrolytes are not replaced carefully and slowly in a hospital.
5. Bones lose calcium and density, leading to osteopenia and osteoporosis, even in teenagers, because low estrogen and low body weight stop bone rebuilding. — why: Bones are living tissue. They constantly break down old bone and build new bone. Estrogen (in females), testosterone (in males), and adequate body weight send signals to build bone. When periods stop (from starvation shutting down estrogen) and weight is very low, bone breakdown outpaces rebuilding. The body also pulls calcium from bones to keep blood calcium in the normal range (calcium is needed for nerves and heart function). The result is weak, brittle bones that fracture easily—spinal compression fractures, wrist fractures, hip fractures—sometimes causing chronic pain and permanent disability. This bone damage often cannot be fully reversed, even after full weight restoration and resumption of periods.

6. Medical complications pile up across every organ system. Tooth enamel erodes and cavities form (from stomach acid in bulimia). The esophagus tears and bleeds (Mallory-Weiss tear). The stomach and intestines slow down severely (gastroparesis, severe constipation). Kidneys fail. The immune system weakens. Hair falls out. Skin gets dry, pale, and bruises easily. Thinking becomes slow and foggy. — why: Every organ suffers when fuel runs out. Repeated vomiting brings stomach acid up into the mouth, destroying tooth enamel (perimolysis) and causing cavities, gum disease, and tooth sensitivity. The esophagus (the muscular tube from throat to stomach) can tear from the violent force of vomiting, causing a Mallory-Weiss tear, which leads to vomiting blood and can be life-threatening. The stomach and intestines slow way down because there is no food to move, leading to severe constipation, bloating, pain, and gastroparesis (the stomach cannot empty properly). The person often misinterprets this discomfort as proof that they should not eat. Kidneys fail without enough blood flow and become unable to filter waste. The immune system cannot make enough white blood cells without protein, so infections become common. Hair falls out because hair growth is a luxury the body cannot afford during starvation. Skin becomes dry, pale, and bruises easily because there is not enough fat under the skin and not enough nutrients to repair it. Brain fog and slow thinking happen because the brain is starving—glucose is the brain's only fuel, and when it runs low, concentration, memory, and decision-making all suffer.
7. Mental health worsens. Depression deepens. Anxiety spikes. Obsessive thoughts about food and weight become all-consuming. Social isolation increases. Suicide risk becomes very high. — why: Starvation itself causes depression, irritability, obsessive thinking, and emotional numbness. This was proven in the famous Minnesota Starvation Experiment in the 1940s, where healthy men were semi-starved for months and developed severe depression, food obsessions, and social withdrawal—all of which reversed when they were refed. The eating disorder traps the person in a vicious cycle: the behaviors (restricting, bingeing, purging) temporarily relieve anxiety, but then cause shame, guilt, and despair, which drive more disordered eating. Co-occurring depression and anxiety disorders (which are very common) make everything worse. Serotonin (the brain chemical that steadies mood) and GABA (the brain's main calming signal) are dysregulated. Suicide risk in anorexia nervosa is 18 to 31 times higher than in the general population. In bulimia nervosa it is also greatly elevated. Many people say 'I do not want to die, but I cannot keep living like this.'

8. Without treatment, the trajectory is toward death: sudden cardiac arrest (from arrhythmia or refeeding syndrome), multi-organ failure (heart, kidneys, liver all shutting down), suicide, or death from overwhelming infection. With comprehensive treatment—medical stabilization, nutritional rehabilitation, psychotherapy (cognitive-behavioral therapy, dialectical behavior therapy, family-based treatment for adolescents), and often medication (SSRIs for co-occurring depression and anxiety)—many people recover fully, though relapse risk remains high and lifelong vigilance is often needed. — why: Eating disorders are among the deadliest mental illnesses. Anorexia nervosa has the highest mortality rate of any psychiatric disorder. The body can only compensate for starvation for so long—eventually the heart stops, or the person ends their own life. Recovery requires treating both the medical side and the psychiatric side at the same time. This means restoring weight and nutrition (to heal the body and reverse the effects of brain starvation), plus therapy to change the thoughts and behaviors that drive the illness. Family-based treatment (FBT, also called the Maudsley approach) is the gold standard for adolescents—parents take charge of refeeding at home with close medical and therapist support. For adults, cognitive-behavioral therapy (CBT-E, enhanced for eating disorders) and dialectical behavior therapy (DBT, which teaches emotion regulation and distress tolerance) are effective. Medications like SSRIs (fluoxetine, sertraline) can help treat co-occurring depression, anxiety, and obsessive-compulsive symptoms, but they do not treat the core eating disorder itself—therapy and nutritional rehabilitation do that. Recovery is possible. Many people go on to live full, healthy lives free of the eating disorder. But it requires early intervention, a skilled multidisciplinary treatment team (therapist, physician, dietitian), family support, and long-term follow-up. Relapse is common, especially during times of stress, so ongoing therapy and monitoring are key to staying well.

Spot it — what you see, and why

- Weight much lower than expected for age and height: The person severely limits food or burns far more energy than they eat, so the body runs out of fuel and breaks down its own fat and muscle to survive.
- Intense fear of gaining weight or being fat, even when underweight: The amygdala (the brain's alarm center that flags danger) and insula (the part that reads body signals) get stuck in a pattern where thinness feels safe and any weight gain triggers panic, even though the body desperately needs more fuel.
- Distorted view of body shape or weight (seeing self as fat when actually thin): The parietal cortex (the brain region that builds a map of your body) and visual processing areas misread signals, so the person truly sees a heavier body in the mirror than others see, and self-worth becomes tied entirely to weight.

- Missing periods in girls and women who used to have regular cycles: When the body does not have enough energy from food, the hypothalamus (the brain's control center for hormones) shuts down the signal to the ovaries to save energy for survival, so the ovaries stop releasing eggs and periods stop.
- Binge eating (eating a very large amount in a short time) followed by guilt or shame: Extreme hunger from restricting food can trigger loss of control as the brain's reward circuits (driven by dopamine, a brain messenger that makes things feel good) override willpower, and then the person feels overwhelming guilt and may try to undo the eating by purging (forcing vomiting, misusing laxatives, or doing extreme exercise).
- Purging behaviors like self-induced vomiting, misuse of laxatives, diuretics, or extreme exercise to undo eating: The person tries to get rid of food or calories to avoid weight gain, driven by intense fear and the false belief that purging will erase the food they ate; this becomes a compulsive loop controlled by anxiety circuits in the orbitofrontal cortex (the part of the brain that gets stuck on worries).

Red flags — act now

- Heart rate below 50 beats per minute or blood pressure dropping when standing (sign the heart muscle is too weak from starvation and cannot pump enough blood)
- Fainting, dizziness, or chest pain (the heart may develop dangerous rhythm problems from low potassium, magnesium, or phosphorus caused by purging or starvation)
- Vomiting blood, black or bloody stools, or severe stomach pain (purging can tear the esophagus or stomach lining, causing life-threatening bleeding)
- Thoughts of suicide or an active plan to hurt oneself (eating disorders have the highest death rate of any mental illness, so any suicidal thinking is an emergency)
- Severe dehydration, confusion, muscle weakness, or inability to stand (medical emergency requiring hospital care because electrolytes are dangerously out of balance)

Treat it — in this order

1. Hospital admission with continuous heart monitoring (telemetry) for anyone with BMI under 15 kg/m², heart rate under 50 beats per minute, systolic blood pressure under 90 mmHg, orthostatic low blood pressure (hypotension) (systolic drop over 20 mmHg or diastolic drop over 10 mmHg when standing), temperature under 96°F (35.6°C), QTc over 450 ms, or dangerous electrolyte levels (potassium under 3.0 mEq/L, phosphate under 2.0 mg/dL, magnesium under 1.5 mg/dL) → Prevents sudden death from heart arrhythmias (such as ventricular a fast heart rate (tachycardia) or torsades de pointes) by watching the heart rhythm second by second and correcting dangerous electrolyte levels with intravenous fluids and supplements before they stop the heart. Stops the body from shutting down further by providing immediate medical stabilization, controlled refeeding with careful monitoring for refeeding syndrome, and treatment of any infections or organ failure.
2. Start refeeding at 1,000 to 1,500 kilocalories per day (or even lower, 400 to 800 kilocalories per day, if severely malnourished with BMI under 14 or weight loss over 15% in three months), then increase by 200 to 300 kilocalories every few days. Give phosphate (oral or intravenous to keep level above 3.0 mg/dL), magnesium (oral or intravenous to keep level above 2.0 mg/dL), potassium (oral or intravenous to keep level above 4.0 mEq/L), and thiamine (vitamin B1, 100 to 300 mg daily) supplements before and during refeeding. → Prevents refeeding syndrome by giving the body time to adjust as food comes back. When eating restarts after long starvation, cells suddenly use phosphate, magnesium, and potassium to make energy (ATP) again, and blood levels of these minerals crash dangerously low within hours to days. Insulin rises with carbohydrate intake and pushes even more electrolytes into cells. Thiamine is needed to process carbohydrates; without it, the brain swells (Wernicke encephalopathy) and the heart fails. Slow refeeding and mineral replacement keep the heart, brain, and muscles working safely.
3. Family-Based Treatment (FBT, also called Maudsley therapy) for adolescents and young adults (typically under age 25) with anorexia nervosa → Puts parents temporarily in charge of all meals and snacks to interrupt the restriction behavior at home, where most eating happens. Empowers the family to re-nourish the patient and take control away from the eating disorder voice that says not to eat. The therapist coaches parents to stay calm, firm, and united while the teen eats. Studies show this approach leads to faster weight restoration and higher recovery rates than individual therapy alone in young patients, especially when started early.

4. Cognitive Behavioral Therapy for Eating Disorders (CBT-E, enhanced version) for adolescents and adults with any eating disorder (anorexia nervosa, bulimia nervosa, binge-eating disorder, or other specified feeding or eating disorder) → Breaks the rigid thought patterns that say 'I am only safe or worthy if I am thin' or 'I must control food to control my life.' Teaches the person to notice and challenge distorted body image, face feared foods step by step (exposure therapy), tolerate uncomfortable feelings without restricting or purging, and solve problems in healthier ways. Reduces both eating disorder behaviors (restriction, bingeing, purging, compulsive exercise) and the thoughts and core beliefs driving them. Studies show CBT-E cuts symptoms by about 60% and helps many people recover fully.
5. Fluoxetine 60 mg daily (taken in the morning) for bulimia nervosa, started after nutritional rehabilitation if the person is underweight → Raises serotonin (the brain messenger that steadies mood, controls impulses, and reduces anxiety) in the gaps between nerve cells in the brain. In bulimia nervosa, fluoxetine at 60 mg per day (higher than the usual 20 mg depression dose) cuts binge-eating and purging episodes by about half. It works best when combined with CBT. The full effect takes four to six weeks.

Your top priorities at the bedside

1. Place patient on continuous cardiac telemetry monitoring and check orthostatic vital signs every 4 hours (blood pressure and heart rate lying down, then after standing 1 to 3 minutes) — why: Malnutrition shrinks the heart muscle and depletes electrolytes, causing a slow heart rate (bradycardia) (heart rate under 60), low blood pressure (hypotension) (low blood pressure), and fatal arrhythmias like torsades de pointes (twisting heartbeat pattern); orthostatic changes over 20 mmHg systolic or 10 mmHg diastolic with heart rate rise over 30 beats per minute signal severe dehydration and autonomic dysfunction (nervous system cannot regulate blood pressure)
2. Check electrolytes, phosphate, magnesium, and glucose levels daily during refeeding, and replace electrolytes before starting nutrition if phosphate is under 3.0 mg/dL, potassium under 3.5 mEq/L, or magnesium under 1.8 mg/dL — why: Refeeding syndrome occurs when insulin (hormone that moves sugar into cells) rises during refeeding and pulls phosphate, potassium, and magnesium into cells, dropping blood levels dangerously low; hypophosphatemia (low phosphate) causes respiratory failure, heart failure, seizures, and death; replacing electrolytes first prevents this shift
3. Supervise all meals and bathroom use for 60 minutes after eating; stay with patient in bathroom or lock bathroom immediately after meals — why: Patients purge within the first hour after eating to prevent calorie absorption; vomiting depletes potassium and chloride causing metabolic alkalosis (the blood turning too alkaline) (blood too basic) and low potassium (hypokalemia) (low potassium) that trigger fatal arrhythmias; supervision prevents purging and allows accurate assessment of intake versus output