

Eating Disorders

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THE STORY IN ONE SENTENCE

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“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.”

Normal anatomy — the body's job

Normally, eating gives the body fuel (calories) to power every cell, build and repair tissue, make hormones, and keep the brain and heart running. The hypothalamus (a small control center deep in the brain) watches how much energy is stored as fat and sends signals to make you feel hungry or full so your weight stays steady. Hormones like leptin (from fat cells, telling the brain 'we have enough fuel') and ghrelin (from the stomach, saying 'time to eat') talk to the hypothalamus to balance food in and energy out. Body image—the mental picture you have of your own body—is usually accurate and flexible. Most people see themselves as they really are and can handle small changes in weight or shape without panic.

BODY'S JOB

The hypothalamus acts like a thermostat for energy. It senses how much fuel (glucose, fat) is in the blood and stored in the body, then it adjusts hunger, metabolism (how fast you burn calories), and hormone release to keep everything balanced. When fuel is plentiful, the body grows, repairs itself, maintains bone density, and keeps reproduction on track (so menstrual cycles run normally in females and testosterone stays steady in males). Body image forms in the visual cortex (the part of the brain that processes what you see) and the limbic system (the emotional center). It is supposed to match reality—you look in the mirror, see your true size, and feel okay about it.

1. You eat food. The stomach and intestines break it down into glucose (sugar), amino acids (protein building blocks), and fatty acids (fat fuel).
2. Glucose enters the bloodstream. The pancreas releases insulin to push glucose into cells for energy or storage.
3. Extra energy is stored as glycogen (short-term, in the liver and muscles) and fat (long-term, in fat tissue all over the body).
4. Fat cells release leptin (a hormone). Leptin travels through the blood to the hypothalamus and says 'we have enough fuel stored, you can stop eating and keep metabolism normal.'
5. When the stomach is empty, it releases ghrelin (another hormone). Ghrelin travels to the hypothalamus and says 'we need fuel, time to eat.'
6. The hypothalamus balances these signals and sets your hunger level, metabolic rate (how fast you burn calories), body temperature, and reproductive hormones (like estrogen in females and testosterone in males).
7. Steady fuel supply leads to a normal heart rate (60 to 100 beats per minute), normal body temperature (around 98.6°F), regular periods (in girls and women), strong bones (calcium and vitamin D keep building bone), and stable mood and focus.
8. Body image: The visual cortex and limbic system create a mental picture of your body that matches what you see in photos and mirrors. Most people can look at themselves and say 'that's me' without feeling distressed.

What breaks

In eating disorders, the brain's control centers for hunger, body image, and emotion stop working the way they should. Genes load the gun (some people inherit a higher risk for these illnesses), and then stress, trauma, dieting, or cultural pressure to be thin pulls the trigger. The result is a distorted body image. The person sees themselves as fat even when they are dangerously thin. They also have obsessive, rigid thoughts about food, weight, and control. The person restricts food, binges, purges (forces vomiting or abuses laxatives), or avoids eating—

not because they want to hurt themselves, but because their brain is sending false alarm signals that eating or gaining weight is dangerous. This is a true mental illness, not a choice or a lack of willpower.

CLINICAL TERM

Eating disorders are multifactorial psychiatric illnesses with strong genetic heritability (50 to 80 percent). They often occur alongside anxiety disorders, major depressive disorder, obsessive-compulsive disorder, and post-traumatic stress disorder. In the brain, there is dysregulation of serotonin (a brain chemical that steadies mood, anxiety, and impulse control) and dopamine (the brain's reward and motivation chemical). Leptin and ghrelin signaling becomes abnormal. Brain regions like the insula (which senses internal body states and shapes how you perceive your body), the anterior cingulate cortex (which flags errors and generates anxiety), and the prefrontal cortex (the front part of the brain that handles decision-making, planning, and putting the brakes on impulses) show altered activity. The distorted body image is not simply vanity or insecurity. It is a fixed, delusional belief that is resistant to correction by mirrors, photographs, or reassurance. Behaviorally, the person engages in restriction (as in anorexia nervosa), binge-purge cycles (bulimia nervosa), binge eating without compensatory behaviors (binge-eating disorder), or avoidance of foods based on sensory issues or fear unrelated to weight or shape (ARFID). These behaviors trigger a cascade of serious medical consequences.

How the body compensates

The body does not give up easily. When calories drop, it shifts into survival mode to stretch the fuel as long as possible. Heart rate slows. Temperature drops. Periods stop. The brain becomes obsessed with food (trying to make the person eat). Vital signs can look stable for weeks or months while the body is quietly breaking down muscle, bone, and organ tissue to keep blood sugar and blood pressure from crashing. This is the dangerous middle zone—the patient looks not that sick on the outside, but inside they are on the edge of collapse. The crash point is sudden. The heart stops (from low potassium or from refeeding syndrome, a deadly complication when eating resumes), seizures hit, or the person attempts suicide. Once the body tips into crisis, the window to reverse the damage closes fast.

1. {'what': 'Heart rate drops (bradycardia) to 40 or 50 beats per minute. Blood pressure falls. Core body temperature drops to 95 or 96°F.', 'why': 'The hypothalamus senses starvation and orders the body to burn fewer calories to survive. Slowing the heart, lowering temperature, and shutting down non-essential systems (like reproduction) saves energy. This is why people with anorexia feel cold all the time. They often grow soft, downy hair called lanugo on their face, arms, and back—the body is trying to insulate itself because it cannot generate enough heat.'}

2. {'what': 'Periods stop (amenorrhea in females). Testosterone drops (in males). Sex drive disappears.', 'why': 'The hypothalamus senses starvation and shuts down the hypothalamic-pituitary-gonadal axis (the hormone pathway that controls reproduction). Pregnancy and reproduction require huge amounts of energy. No periods means no ovulation. The body is saying 'we cannot afford a baby right now; we are just trying to survive.'"} }
3. {'what': 'Bones lose calcium and become fragile. Osteopenia (low bone density) and osteoporosis (very weak, brittle bones) develop, even in teenagers.', 'why': 'Low estrogen (from stopped periods) and low body weight mean bones are not getting the signals or the fuel to rebuild. The body pulls calcium from bones to keep blood calcium normal (calcium is critical for the heart and nerves). Bones weaken. Fracture risk soars—spinal compression fractures, wrist fractures, hip fractures—sometimes causing permanent disability. This bone damage often cannot be fully reversed, even after recovery.'} }
4. {'what': 'Electrolytes (potassium, sodium, magnesium, phosphorus) drop dangerously low, especially after purging.', 'why': 'Vomiting and laxatives wash minerals out of the body. Low potassium causes dangerous heart rhythms—a long QT interval on the EKG, ventricular arrhythmias, and sudden cardiac arrest. Low phosphorus during refeeding (when the person starts eating again) causes refeeding syndrome. In refeeding syndrome, phosphorus, potassium, and magnesium suddenly shift into cells, causing fluid overload, heart failure, lung failure, seizures, and death within days if not caught and treated immediately.'} }
5. {'what': 'The brain becomes obsessed with food. The person has constant thoughts about eating, recipes, grocery shopping, and cooking for others (but not eating themselves).', 'why': 'This is the brain's last-ditch attempt to make the person eat. Starvation increases activity in dopamine and serotonin pathways around food cues, making food thoughts intrusive and impossible to ignore. Paradoxically, some people feel a high or a sense of control from restricting—this is the brain's reward system misfiring, reinforcing the eating disorder behavior even though it is harmful.'} }
6. {'what': 'Lab results may look normal (normal blood glucose, normal sodium, normal hemoglobin and white blood cell count) for a long time.', 'why': 'The body prioritizes keeping blood values steady by borrowing calcium from bone, breaking down muscle for protein, and tightly regulating glucose and sodium. Normal labs do NOT mean the patient is safe. They mean the body is still compensating. Once labs start to crash, the patient is often already in crisis and the window for safe treatment is very narrow.'} }
7. {'what': 'Sudden collapse: cardiac arrest (from arrhythmia or refeeding syndrome), seizure (from low sodium or phosphorus), or suicide attempt.', 'why': 'The body's compensation runs out. The heart cannot pump with no fuel and wrecked electrolytes. The brain cannot function. Suicide risk is extremely high in eating disorders (especially anorexia nervosa and bulimia nervosa) because of despair, impulsivity, and co-occurring depression. This is the crash point. It can happen in hours to days once triggered, and it is often fatal if not caught and treated immediately in a hospital.'} }

Domino effect

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. — 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). — 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). — 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. — 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. — 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. — 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. — 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. — 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.

Symptoms · what the patient feels, 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).
- Preoccupation with food, calories, and eating rituals (cutting food into tiny pieces, eating very slowly, hiding food, avoiding meals with others): The prefrontal cortex (the front of the brain that plans and controls behavior) becomes hyper-focused on control around food as a way to manage anxiety, and rituals feel safer than spontaneous eating.
- Social withdrawal and avoiding situations involving food: Eating in front of others triggers shame and fear of judgment because the amygdala (the brain's alarm center) flags social eating as a threat, so the person pulls away from friends, family meals, and social events to avoid eating pressure.
- Feeling cold all the time, dry skin, brittle hair and nails, fine downy body hair growth called lanugo: Without enough fuel, the thyroid gland slows metabolism (the body's energy-burning engine) to conserve energy, so body temperature drops; the skin and hair suffer from lack of nutrients, and the body grows soft hair to try to stay warm.
- Thoughts of self-harm or wishing to die: Eating disorders often occur alongside depression and anxiety; starvation itself lowers serotonin (a brain messenger that steadies mood) and disrupts other brain chemicals, worsening mood and hopelessness, and the person may feel trapped and see no way out.

Focused exam

- Measure body mass index (BMI), heart rate, blood pressure (lying down and standing up), and temperature. Ask how much weight was lost and over how many weeks or months.: A BMI under 15, a heart rate under 50 beats per minute, a systolic blood pressure drop of more than 20 mmHg when standing, or a temperature under 96°F (35.6°C) means the body is in danger. These numbers tell you the heart, blood vessels, and metabolism are failing from starvation. The person may need hospital care right away to prevent sudden heart stoppage, dangerous fainting falls, or organ shutdown.
- Ask whether menstrual periods have stopped for three or more months in girls and women who had already started menstruating.: When the body does not get enough food energy, the hypothalamus (the part of the brain that controls hormones) shuts down the signals to the ovaries so the body does not waste energy on reproduction. No periods for three or more months (called hypothalamic absent periods (amenorrhea)) tells you the starvation is severe enough to affect the entire hormone system and weaken the bones, not just cause weight loss.
- Look at the skin for lanugo hair (soft, fine, baby-like hair on the arms, back, or face) and check the hands for calluses or scars on the knuckles (Russell sign).: Lanugo grows when the body is so cold and starved it tries to keep itself warm with extra hair, like a newborn. Knuckle calluses or scars come from pushing fingers down the throat repeatedly to force vomiting. Both signs show the eating disorder is active and the body is fighting to survive.
- Feel the parotid glands (the saliva glands just in front of the ears, below the cheekbones) to see if they are swollen or tender.: The parotid glands swell when someone vomits over and over. Stomach acid and the repeated act of throwing up irritate the glands and make them puffy and sore. This sign points to bulimia nervosa or anorexia nervosa with purging (binge/purge subtype).
- Press on the shins and ankles to check for swelling (edema) (swelling from fluid trapped in the tissues).: Severe starvation lowers albumin (the main protein in the blood), so water leaks out of blood vessels into the tissues and causes swelling in the legs and feet. Swelling (Edema) in a starved person is a red flag that the liver is not making enough protein and the body's fluid balance is breaking down.
- Listen to the heart for irregular rhythm (arrhythmia) and check pulses in the wrists, neck, and feet for strength and regularity.: Low potassium, magnesium, or phosphate from starvation or purging can make the heart beat in a chaotic, dangerous way (ventricular arrhythmia) that can cause sudden death. Finding an irregular heartbeat, a very slow pulse (bradycardia under 50 bpm), or a weak pulse means urgent hospital admission with continuous heart monitoring (telemetry) is needed.

Diagnostics · every test answers a question

- Complete blood count (CBC) → Are red blood cells, white blood cells, and platelets low because the bone marrow has stopped making them from lack of nutrition?
- Basic metabolic panel (sodium, potassium, chloride, bicarbonate, blood urea nitrogen, creatinine, glucose) → Are electrolytes dangerously out of balance from vomiting, laxative or diuretic use, or starvation?
- Magnesium and phosphate levels → Are magnesium and phosphate so low that starting to eat again could trigger refeeding syndrome and stop the heart?
- Electrocardiogram (ECG) → Is the heart rhythm normal, or is a dangerous arrhythmia starting because of low electrolytes or starvation damage to the heart muscle?
- Thyroid-stimulating hormone (TSH) and free thyroxine (free T4) → Is the thyroid gland slowing down to save energy because the body thinks it is starving?
- Bone density scan (dual-energy X-ray absorptiometry, or DEXA scan) if restricting food or missing periods for six or more months → Are the bones losing calcium and becoming weak and fragile because estrogen and nutrition are too low?
- Pregnancy test (urine or serum human chorionic gonadotropin, hCG) in all females of childbearing age → Is the person pregnant, which would change the danger level and the treatment plan?
- Liver function tests (alanine aminotransferase [ALT], aspartate aminotransferase [AST], bilirubin, albumin) → Is the liver being damaged by starvation, refeeding, or repeated purging?

Treatment logic

- 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.

- 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.
- 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.
- 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.
- 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.

- Lisdexamfetamine 50 to 70 mg daily (taken in the morning) for binge-eating disorder in adults → Increases dopamine (the brain messenger that drives motivation, reward, and impulse control) and norepinephrine (which increases alertness and focus) in the prefrontal cortex (the front of the brain that pumps the brakes on impulses). This improves impulse control and reduces the number of binge-eating episodes per week by about 40% compared to placebo. Lisdexamfetamine is the only medication approved by the FDA specifically for binge-eating disorder. Full effect appears in three to four weeks.
- Treat co-occurring depression, anxiety, or obsessive-compulsive disorder with selective serotonin reuptake inhibitors (such as sertraline 50 to 200 mg daily, escitalopram 10 to 20 mg daily, or fluoxetine 20 to 40 mg daily for depression and anxiety) or with cognitive behavioral therapy for the specific condition (CBT for depression, exposure and response prevention for OCD) → Reduces the sadness, hopelessness, constant worry, panic attacks, obsessive thoughts, or compulsive rituals that often fuel and worsen eating disorder behaviors. About 50 to 75% of people with eating disorders also have major depression, generalized anxiety disorder, social anxiety disorder, panic disorder, or OCD at some point. Treating these makes it easier to engage in eating disorder therapy, stick with meal plans, and build a life worth recovering for.

Medications

Fluoxetine (Prozac) · SSRI (selective serotonin reuptake inhibitor)

Fluoxetine blocks a pump on brain nerve cells so that serotonin—a messenger chemical that helps steady mood and control impulses—stays longer in the tiny gap between nerve cells instead of being sucked back in. When serotonin levels stay higher in the circuits that manage impulses and emotions, the overwhelming urge to binge (eat a huge amount very quickly) and then purge (throw up or misuse laxatives) becomes weaker. It's like turning up the volume on the brain's natural 'stop' signal for out-of-control eating.

1. A nerve cell in the brain releases serotonin into the synapse to send a message to the next cell.
2. Normally, a pump called the serotonin transporter on the sending cell quickly pulls leftover serotonin back inside to recycle it.
3. Fluoxetine blocks that transporter pump, so serotonin stays in the synapse longer.
4. The receiving nerve cell gets a stronger, longer signal, which helps improve mood and tamp down the intense craving to binge and purge.
5. Over four to six weeks, the brain adjusts to these higher serotonin levels, and binge-purge episodes usually become less frequent and less severe.

SAFETY WATCH

Can increase suicidal thoughts or behavior in people under age 25 during the first few weeks; watch mood closely and call your doctor immediately if you feel worse, more anxious, or have thoughts of hurting yourself. · May cause nausea, headache, trouble sleeping, feeling jittery, or loss of appetite, especially in the first week. · Can lower sex drive or make it hard to reach orgasm. · Rarely causes serotonin syndrome (too much serotonin) if combined with other drugs that raise serotonin—signs include confusion, fast or irregular heartbeat, heavy sweating, shaking, stiff muscles, fever, and agitation; get emergency help immediately if this happens. · Takes four to six weeks to see full benefit; do not stop suddenly without talking to your doctor, because stopping cold can cause withdrawal symptoms like dizziness, electric-shock feelings, or mood swings.

Lisdexamfetamine (Vyvanse) · Stimulant (amphetamine prodrug)

Lisdexamfetamine is the only medication FDA-approved specifically for moderate to severe binge eating disorder in adults. It is a stimulant (the same family used for ADHD) that raises two brain chemicals—dopamine (the brain's reward and motivation messenger) and norepinephrine (which helps with focus and impulse control)—in the circuits that manage cravings and self-control. In binge eating disorder, the brain's reward system gets hijacked, and eating large amounts feels like the only way to feel relief or pleasure. Lisdexamfetamine rebalances that system so the intense urge to binge becomes less overwhelming and easier to resist. It's like recalibrating a stuck thermostat so the alarm doesn't fire every time you see food.

1. After you swallow the pill, enzymes in your red blood cells break lisdexamfetamine down into dextroamphetamine, the active form.
2. Dextroamphetamine enters nerve cells and pushes more dopamine and norepinephrine out into the synapse.
3. It also blocks the transporters (pumps) that pull these chemicals back into the cell, so they stay in the synapse longer.
4. Higher dopamine in the reward circuit makes normal, everyday activities feel more satisfying, so the brain no longer craves huge amounts of food just to feel okay.
5. Higher norepinephrine in the prefrontal cortex strengthens impulse control, making it easier to resist the urge to binge when it arises.

SAFETY WATCH

Can raise blood pressure and heart rate; your doctor will check these before you start and regularly during treatment. · May cause trouble sleeping (insomnia), dry mouth, fast or pounding heartbeat, feeling jittery or anxious, or decreased appetite. · Has potential for misuse and dependence (people may try to take it to lose weight or get high), so it is a Schedule II controlled substance; never share your medication with anyone. · Rarely causes serious heart problems (heart attack, stroke, or sudden death), especially in people who already have heart disease, high blood pressure, or structural heart defects. · Can worsen anxiety or panic, and may trigger manic or hypomanic episodes in people with bipolar disorder. · Not safe if you have taken an MAOI antidepressant in the past 14 days, because the combination can cause a dangerous spike in blood pressure. · Tell your doctor right away if you have chest pain, shortness of breath, fainting, severe headache, or new or worsening mental health symptoms (like hallucinations, aggression, or paranoia).

Olanzapine (Zyprexa) · Atypical antipsychotic

Olanzapine is NOT FDA-approved for eating disorders, but doctors sometimes prescribe it off-label for severe, treatment-resistant anorexia nervosa, especially when someone is hospitalized and extremely underweight. It blocks certain docking stations (receptors) for serotonin (especially the 5-HT_{2A} receptor) and dopamine (especially the D₂ receptor) in the brain's emotion and fear circuits. Blocking these receptors can quiet the intense anxiety, obsessive thoughts, and rigid rules about food and body shape that make it nearly impossible for someone with anorexia to eat. It also increases appetite and leads to weight gain, which is actually needed when someone is dangerously underweight. Think of it as turning down the volume on the panic alarm that fires every time food or weight gain feels threatening.

1. Olanzapine blocks serotonin 5-HT_{2A} receptors in the prefrontal cortex and limbic system, which reduces anxiety and the rigid, obsessive thinking about food, calories, and body weight.
2. It also blocks dopamine D₂ receptors, which calms the brain's alarm system (especially the amygdala) and can make eating and weight gain feel less threatening.
3. Blocking these receptors in the hypothalamus increases appetite and shifts metabolism in a way that leads to weight gain.
4. Over days to weeks, the overwhelming fear and distress around eating may ease enough for the person to begin eating and re-nourishing their body.
5. Weight gain is a common side effect, but in severe anorexia nervosa it is actually a desired and medically necessary outcome because the person's life is at risk from being dangerously underweight.

SAFETY WATCH

Often causes significant weight gain and increased appetite; this is expected and medically necessary in severe anorexia, but weight and metabolic markers must be monitored closely. · Can raise blood sugar (increasing risk of diabetes) and raise cholesterol and triglycerides; your doctor will check blood sugar and lipid panels regularly. · May cause extreme drowsiness or sedation, especially when you first start; do not drive or operate machinery until you know how it affects you. · Can increase the risk of developing type 2 diabetes, especially with long-term use. · Rarely causes neuroleptic malignant syndrome (NMS), a life-threatening emergency with high fever, stiff muscles, confusion, fast heartbeat, and sweating; get emergency help immediately if these symptoms happen. · Can cause a movement disorder called tardive dyskinesia (involuntary movements of the face or body) with long-term use, though this is less common with atypical antipsychotics than older ones. · Not a first-choice medication; usually reserved for severe, hospitalized cases of anorexia nervosa when other treatments (like therapy and nutritional rehabilitation) have not been enough.

Nutritional supplementation (phosphate, magnesium, thiamine, potassium, and multivitamin) · Vitamins, minerals, and electrolyte replacement

These are NOT psychiatric drugs; they are essential nutrients—vitamins and minerals—that every cell in the body needs to run, especially the heart, brain, and muscles. When someone has been starving, purging, or severely restricting food, their body runs dangerously low on these nutrients. Phosphate helps cells make ATP (the energy molecule that powers everything, like fuel for a car). Magnesium keeps the heart's electrical rhythm steady and muscles relaxed. Thiamine (vitamin B1) protects the brain and nerves from permanent damage. Potassium keeps the heart beating regularly. If someone starts eating or receiving IV nutrition again too quickly without replacing these nutrients first, the body cannot handle the sudden load of food—a life-threatening emergency called refeeding syndrome can happen, where the heart stops, lungs fill with fluid, or the brain swells. Giving these nutrients BEFORE and during careful re-feeding is like priming the engine with oil and coolant before you start the car after it's been sitting empty.

1. When someone is starving or purging, the body shifts into survival mode—insulin levels drop, and key minerals like phosphate, magnesium, and potassium shift out of the blood into cells or are lost through urine or vomit.
2. When eating or IV nutrition starts again, insulin rises sharply and tells cells to take in sugar (glucose) and start making energy (ATP), a process that requires phosphate, magnesium, and thiamine.

3. If these minerals and vitamins are low, cells cannot make energy properly; the heart's electrical rhythm can become dangerously unstable (causing fatal arrhythmias); fluid shifts into the wrong places (like the lungs or brain, causing swelling); and potassium, magnesium, and phosphate levels in the blood drop even further (called refeeding hypophosphatemia, low potassium (hypokalemia), and low magnesium (hypomagnesemia)).
4. Giving phosphate, magnesium, thiamine, and potassium by mouth or IV BEFORE refeeding and continuing them during the first week of refeeding prevents this metabolic crash.
5. A multivitamin replaces other micronutrients that are also depleted from malnutrition—like zinc (needed for immune function and wound healing), B vitamins (needed for nerve and blood cell health), vitamin D (needed for bone and immune health), and folate (needed to make new red blood cells).

SAFETY WATCH

Must be dosed very carefully by a medical team; giving phosphate too quickly or in too high a dose can cause dangerous drops in calcium, leading to seizures, or can deposit in the kidneys and cause kidney damage. · Magnesium given by mouth can cause diarrhea if the dose is too high; IV magnesium must be given slowly to avoid dangerous drops in blood pressure or heart rate. · Thiamine is very safe and has almost no side effects, but it MUST be given BEFORE starting IV dextrose (sugar water) in someone who is malnourished, because giving sugar first can trigger Wernicke encephalopathy (a brain emergency that causes confusion, vision problems, and unsteady walking and can become permanent if not treated immediately). · Potassium must be replaced carefully; too much potassium too fast (especially IV) can stop the heart. · Blood levels of phosphate, magnesium, potassium, calcium, and glucose must be checked daily (sometimes twice daily) during the first week of refeeding, especially in the hospital, to catch dangerous drops early. · Refeeding must be supervised by a medical and nutrition team in a hospital or specialized eating disorder program; trying to 'catch up' by eating large amounts at home after a period of starvation is dangerous and can be fatal.

Red flags

- 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)

Nursing priorities

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) — 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 — 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 — 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
4. Start refeeding at 1,000 to 1,500 kilocalories per day using meal plan with balanced macronutrients (not liquid supplements alone), and increase calories by 200 per day only if phosphate stays above 3.0 mg/dL and patient remains hemodynamically stable — Aggressive refeeding over 1,500 kilocalories in severely malnourished patients triggers refeeding syndrome by overwhelming the body's depleted phosphate stores needed for cellular energy; slow calorie increase allows the body to adapt and rebuild muscle without cardiac decompensation (heart failure) or respiratory failure from diaphragm weakness

5. Weigh patient daily at the same time in a gown only, with the scale facing away from patient, and do not discuss the number with the patient unless ordered by the treatment team — Consistent weighing in minimal clothing tracks fluid retention and refeeding swelling (edema) (swelling from nutrition restart) versus true weight gain; showing the number increases anxiety and eating disorder behaviors; sudden weight gain over 2 pounds per day suggests fluid overload (too much IV fluid) or refeeding swelling, not fat gain, and may require diuretic adjustment
6. Monitor core body temperature every 4 hours and provide warm blankets, keeping room temperature above 72°F, because hypothermia under 96°F signals need for slower refeeding — Starvation lowers basal metabolic rate (energy burned at rest) and destroys brown fat (heat-generating tissue), causing hypothermia (body temperature under 96°F or 35.6°C); the body cannot generate heat during refeeding until metabolism recovers; hypothermia under 95°F increases cardiac arrest risk and signals severe malnutrition requiring ICU-level care
7. Assess skin every shift for pressure ulcers over bony prominences (sacrum, heels, elbows, hips) and reposition every 2 hours, using foam padding or air mattress — Muscle wasting and loss of subcutaneous fat (fat under skin) from malnutrition eliminate cushioning over bones; patients develop stage 3 and 4 pressure ulcers (deep wounds through skin into muscle) within hours because poor nutrition prevents wound healing and immune function is suppressed
8. Collaborate with psychiatric team to implement one-to-one observation if patient expresses suicidal ideation, and remove all sharps, belts, cords, and breakable items from the room — Eating disorders carry a suicide mortality rate of 1 in 5 deaths due to comorbid depression (co-occurring major depressive disorder) and impulsivity from malnutrition affecting the prefrontal cortex (brain area controlling decision-making); constant observation prevents self-harm during high-risk refeeding period when mood may worsen before improving

Sources

- American Psychiatric Association DSM-5-TR 2022
- Academy for Eating Disorders (AED) 2023 guidelines
- National Eating Disorders Association (NEDA)
- American Academy of Pediatrics clinical report on identification and management of eating disorders 2021

Last reviewed: 2026-07-07