



# EATING DISORDERS

PHAR-432

LECTURE: 6

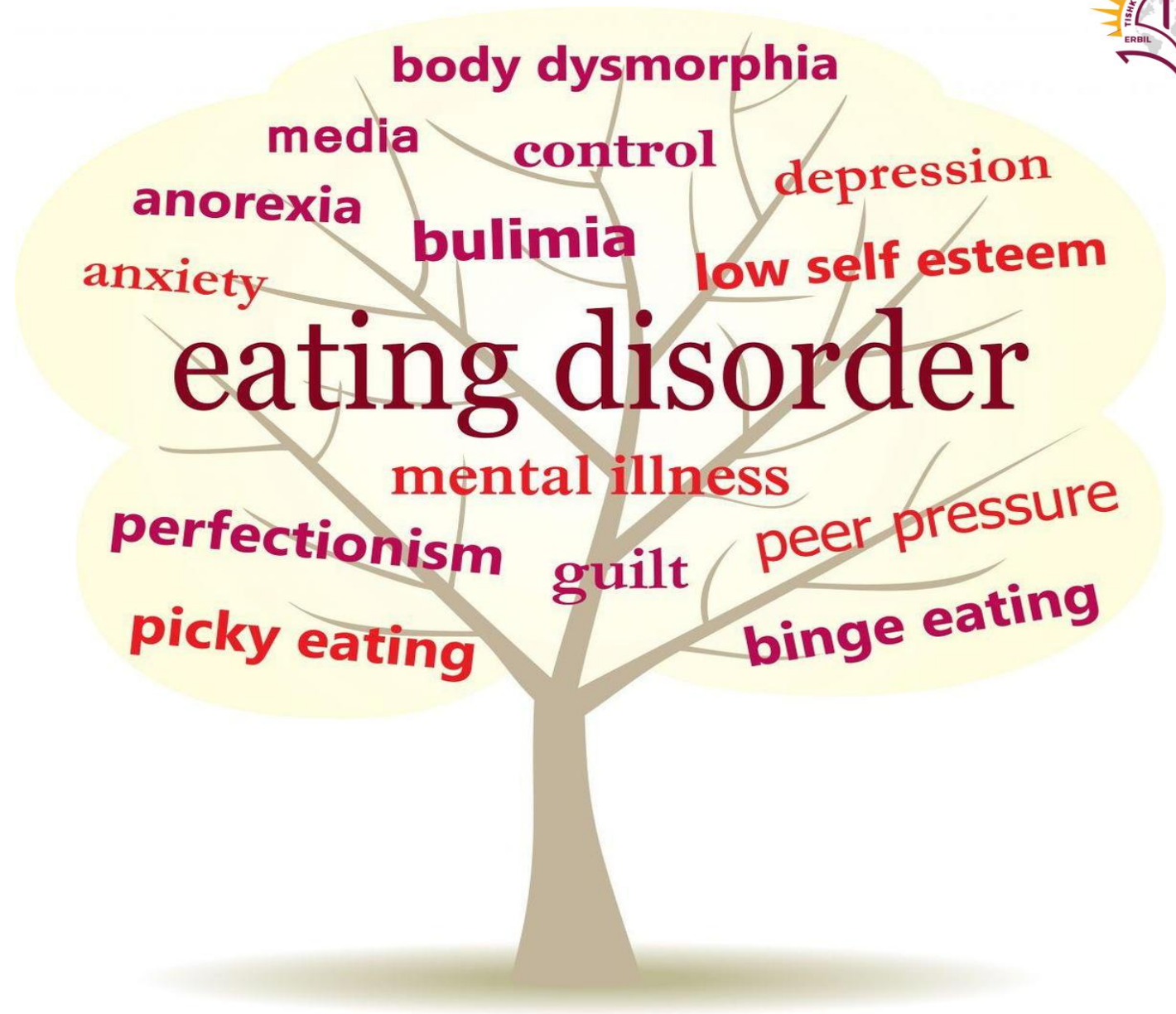
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Spring Semester (2025-2026)

# Outline

- ✓ Cachexia
- ✓ Anorexia nervosa
- ✓ Binge eating disorder
- ✓ Bulimia nervosa



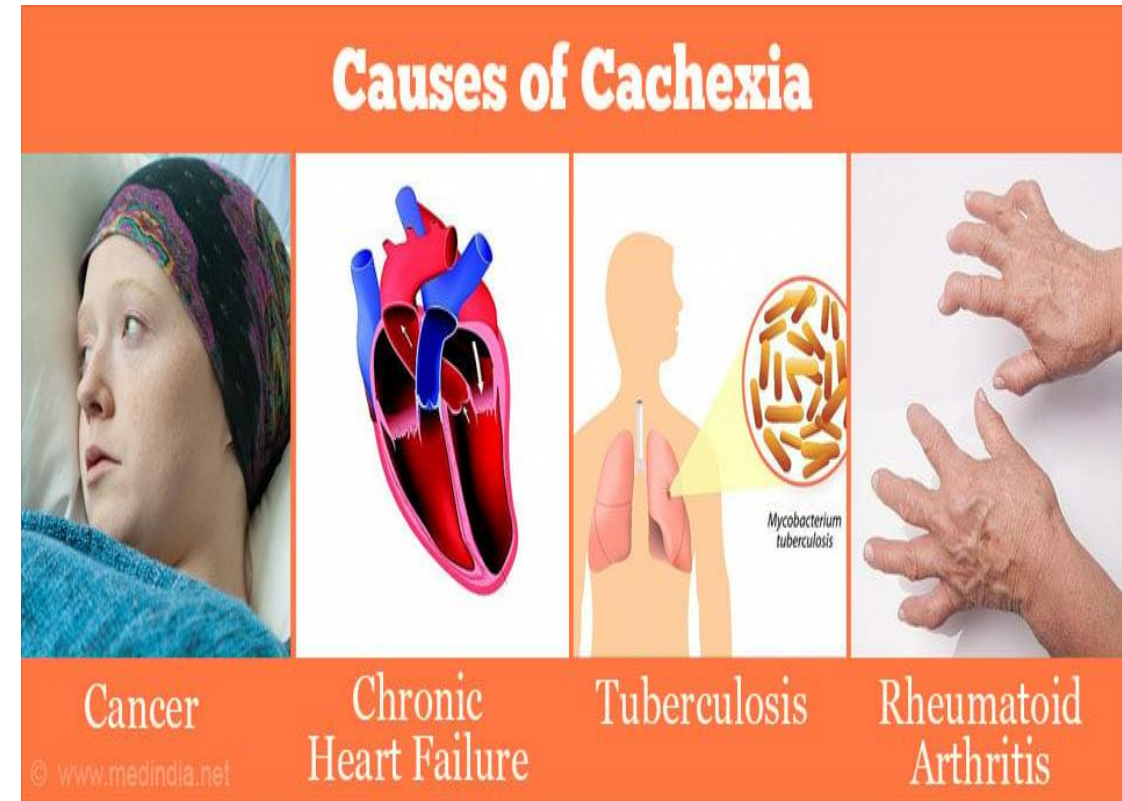
# Cachexia

- **Cachexia** is a complicated metabolic syndrome related to underlying illness and characterized by **muscle mass loss** with or without fat mass loss that is often associated with **anorexia**, an **inflammatory process**, **insulin resistance**, and **increased protein turnover**.



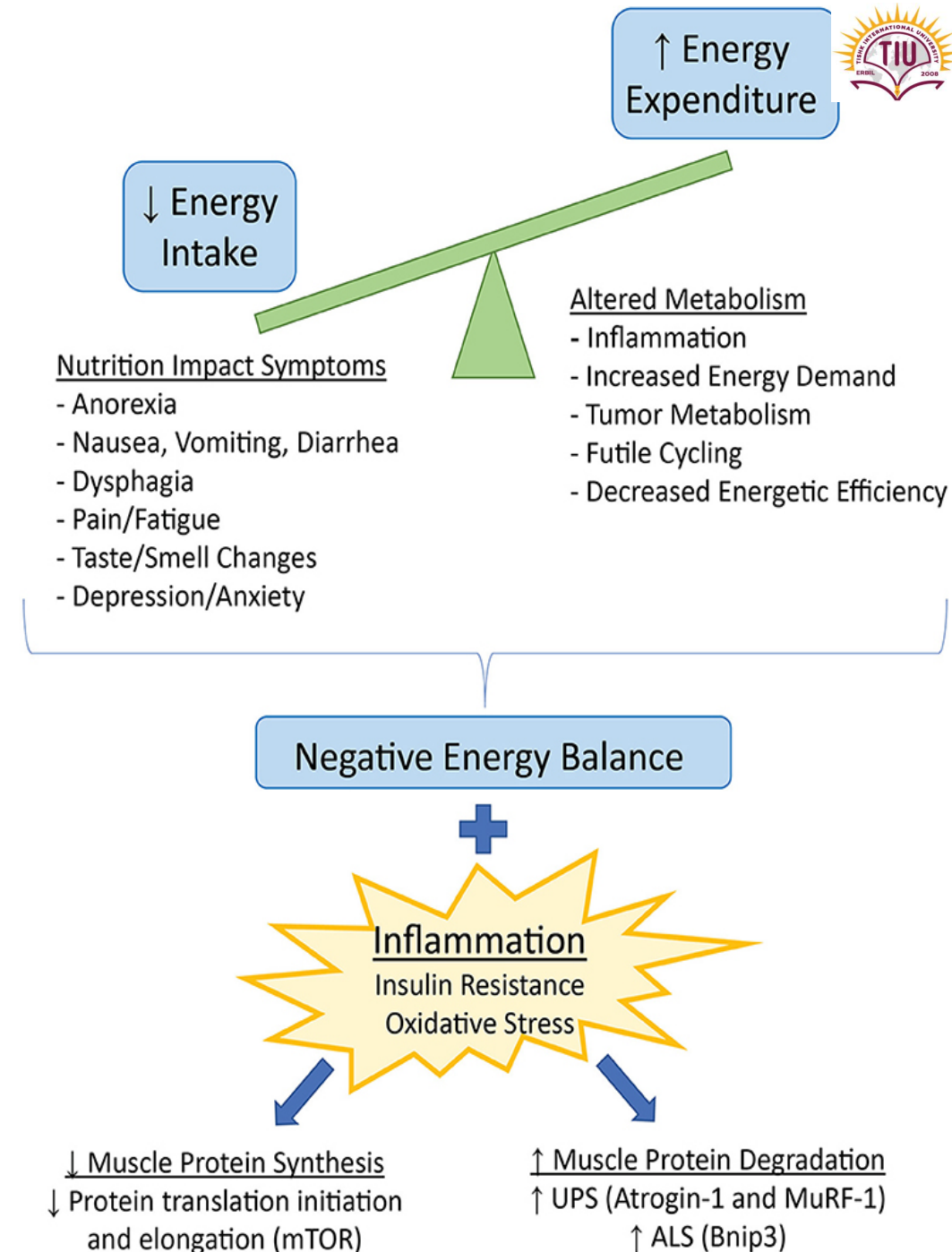
# Cachexia

Cachexia is associated with cancer and other chronic diseases including chronic obstructive pulmonary disease (COPD), chronic heart failure, chronic kidney disease, and chronic infectious and inflammatory diseases including AIDS.



# Etiology of cachexia

- Cachexia is characterized by a persistent increase in basal metabolic rate that is not compensated by increased caloric/protein intake.
- Factors involved in this abnormal metabolic cascade include digestive factors, tumor factors and hormonal responses to the **primary disease**.



# Etiology of cachexia

Cachexia causes weight loss and increased mortality.

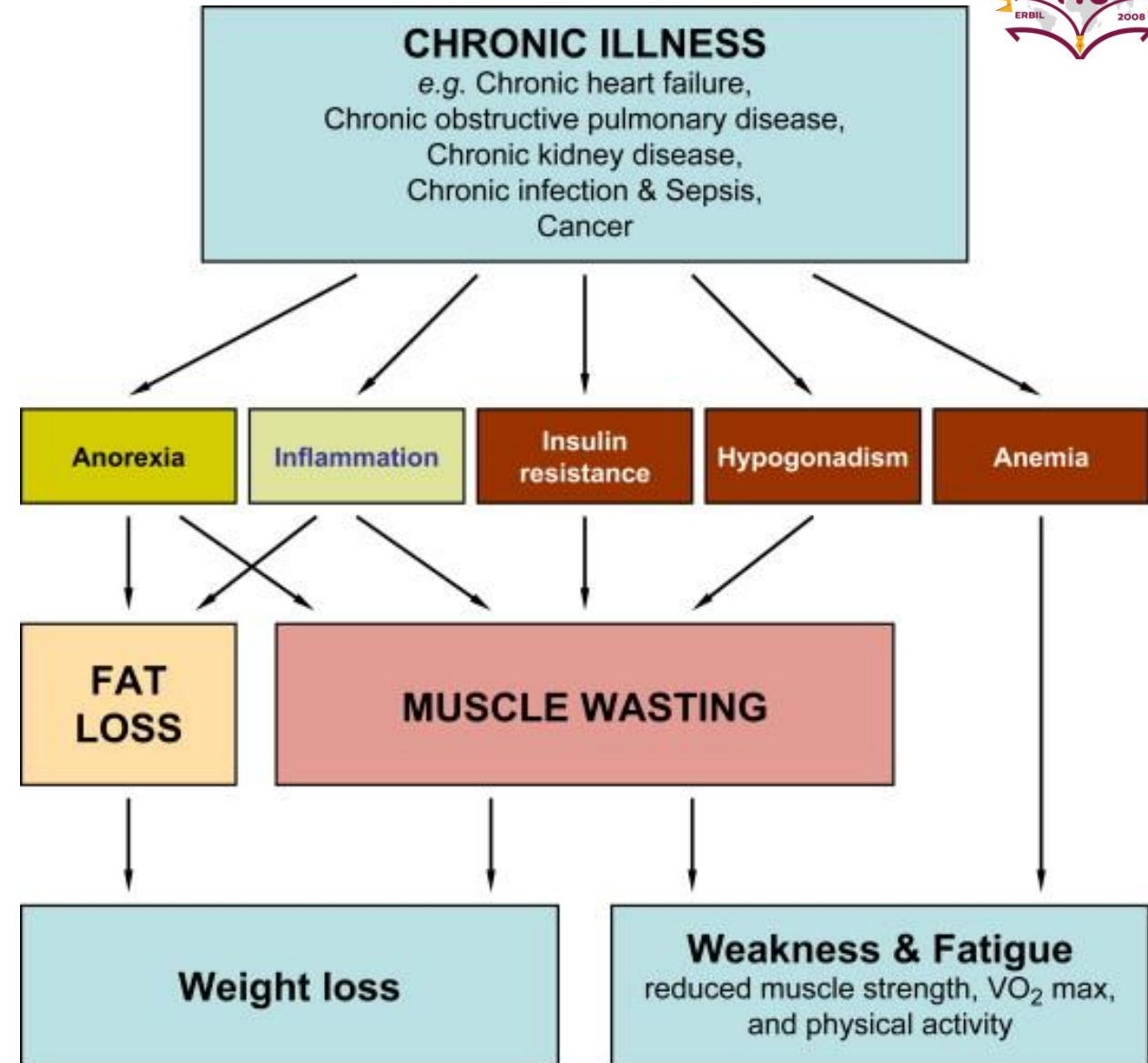
- The major cause is **cytokine excess**.

Other mediators include:

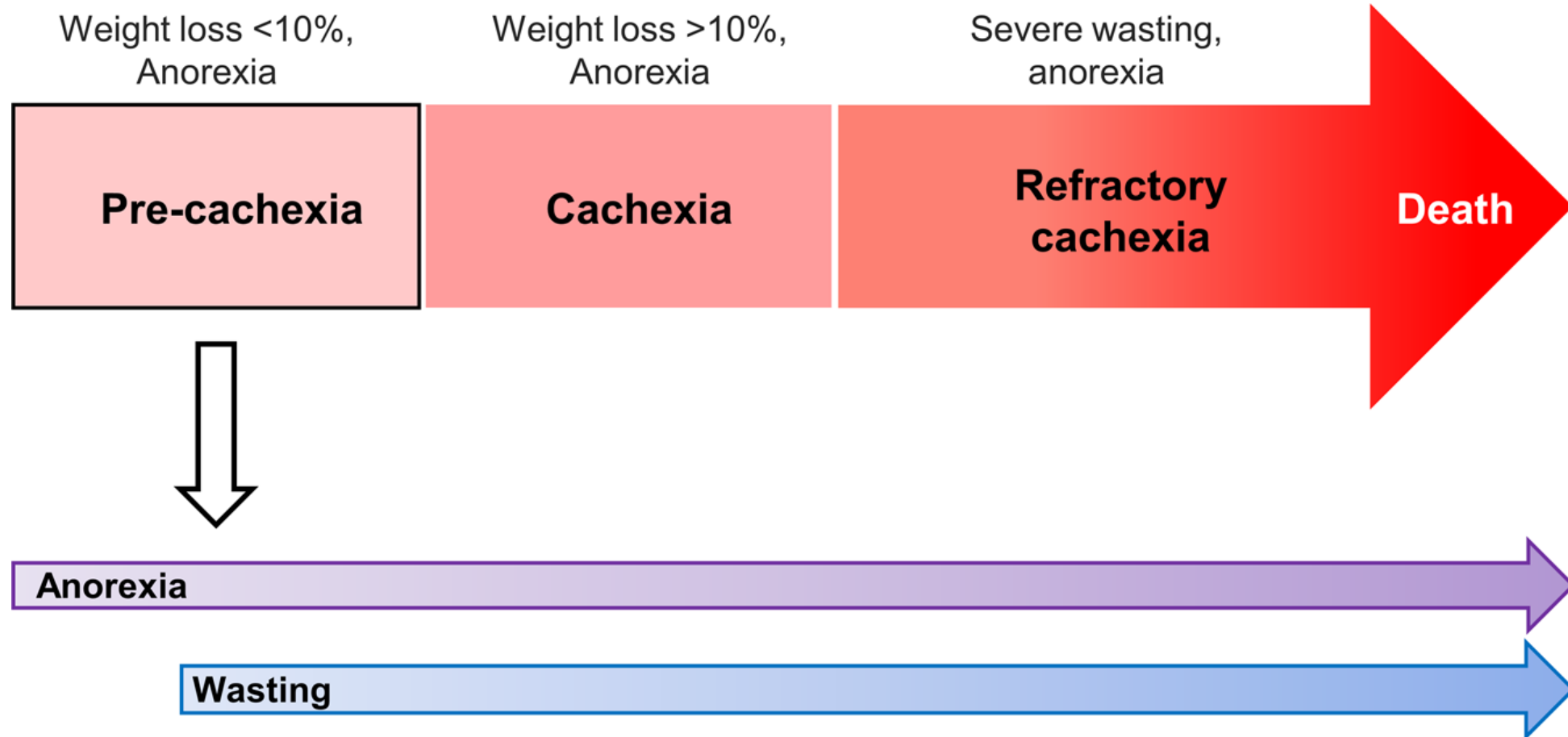
- Hormonal anabolic mediators such as growth hormone, insulin-like growth factor-1 (IGF-1), testosterone, and ghrelin are **reduced**
- **Excess** myostatin, and increased glucagon, cortisol, and catecholamines produce a catabolic, hypermetabolic state.

# Sign and symptoms

- ✓ Significant weight loss
- ✓ Lack of appetite
- ✓ Reduction of quality of life
- ✓ Increased fatigue
- ✓ Poor tolerance to activity.

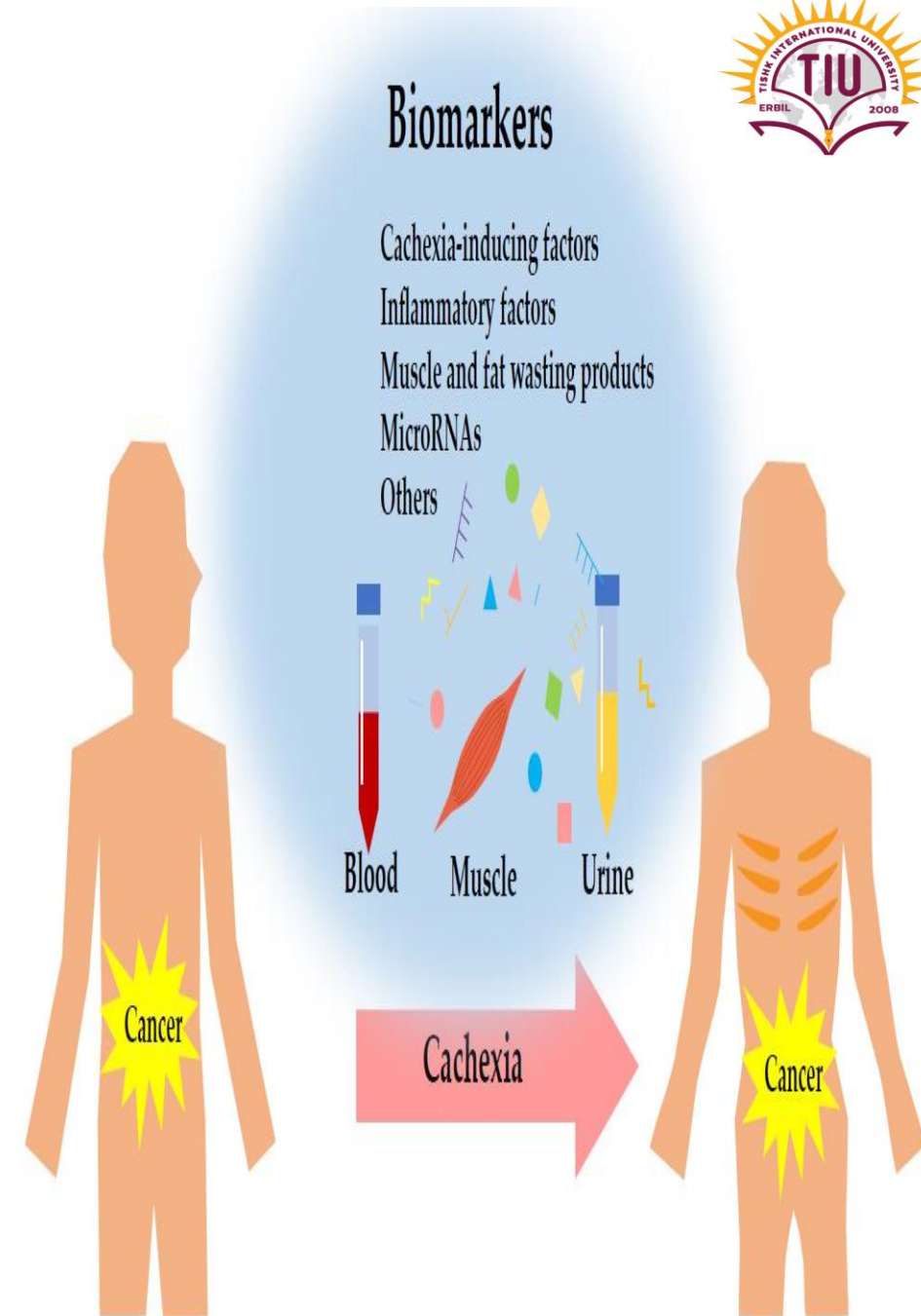


# Disease stages



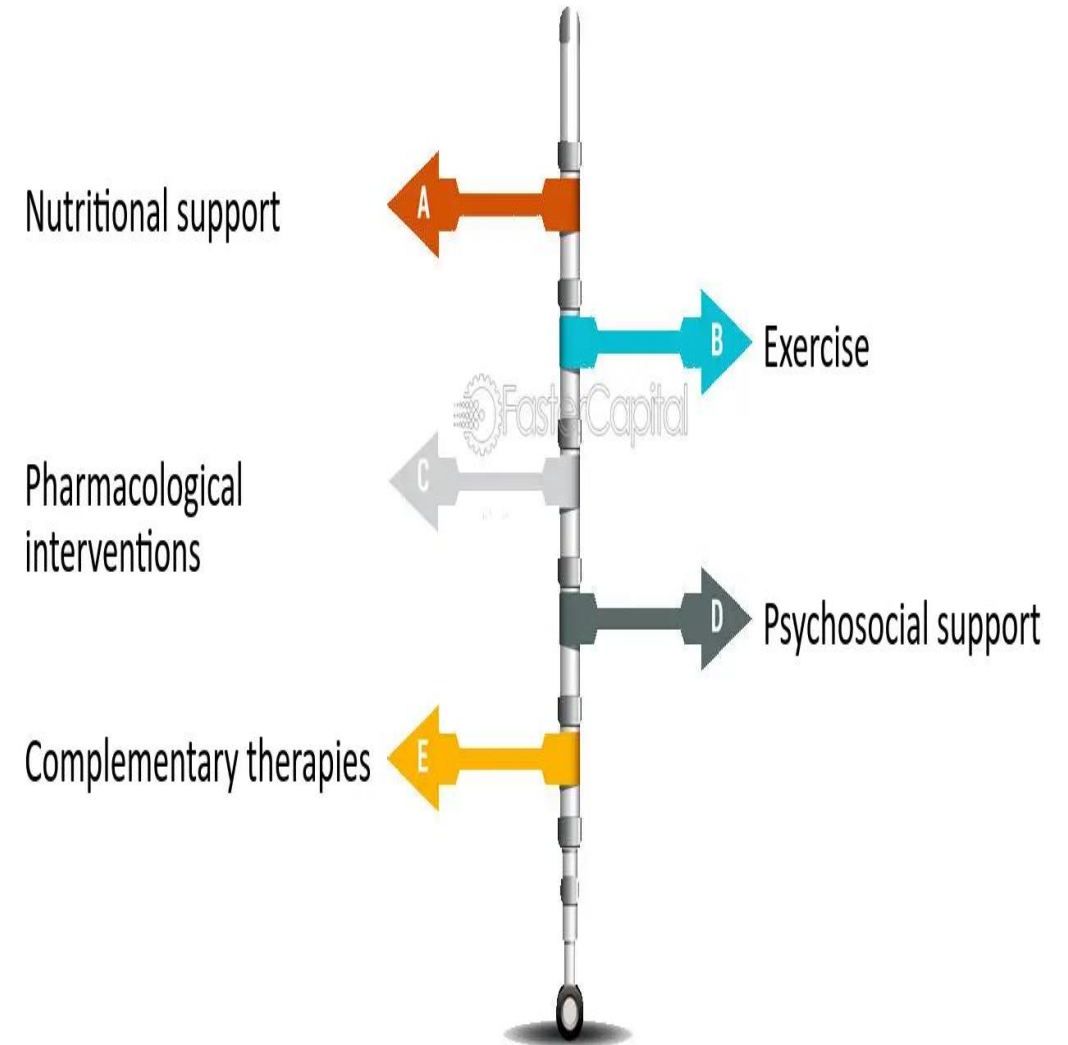
# Diagnosis

- Diagnostic criteria for cachexia are a 5% weight loss in 12 months or a body mass index of less than 20 kg/m<sup>2</sup> in the presence of a known chronic disease with at least 3 of the following factors:
- Loss of muscle mass,
- Asthenia
- Loss of body fat,
- In the presence of inflammation as evidenced by albumen less than 3.2 g/dL or increased C–reactive protein.



# Treatment & management

- ✓ Megestrol acetate
- ✓ Corticosteroid
- ✓ Cannabinoids (only effective in AIDS)
- ✓ NSAIDs
- ✓ Omega-3 fatty acids.
- ✓ Physical activity



# Anorexia nervosa

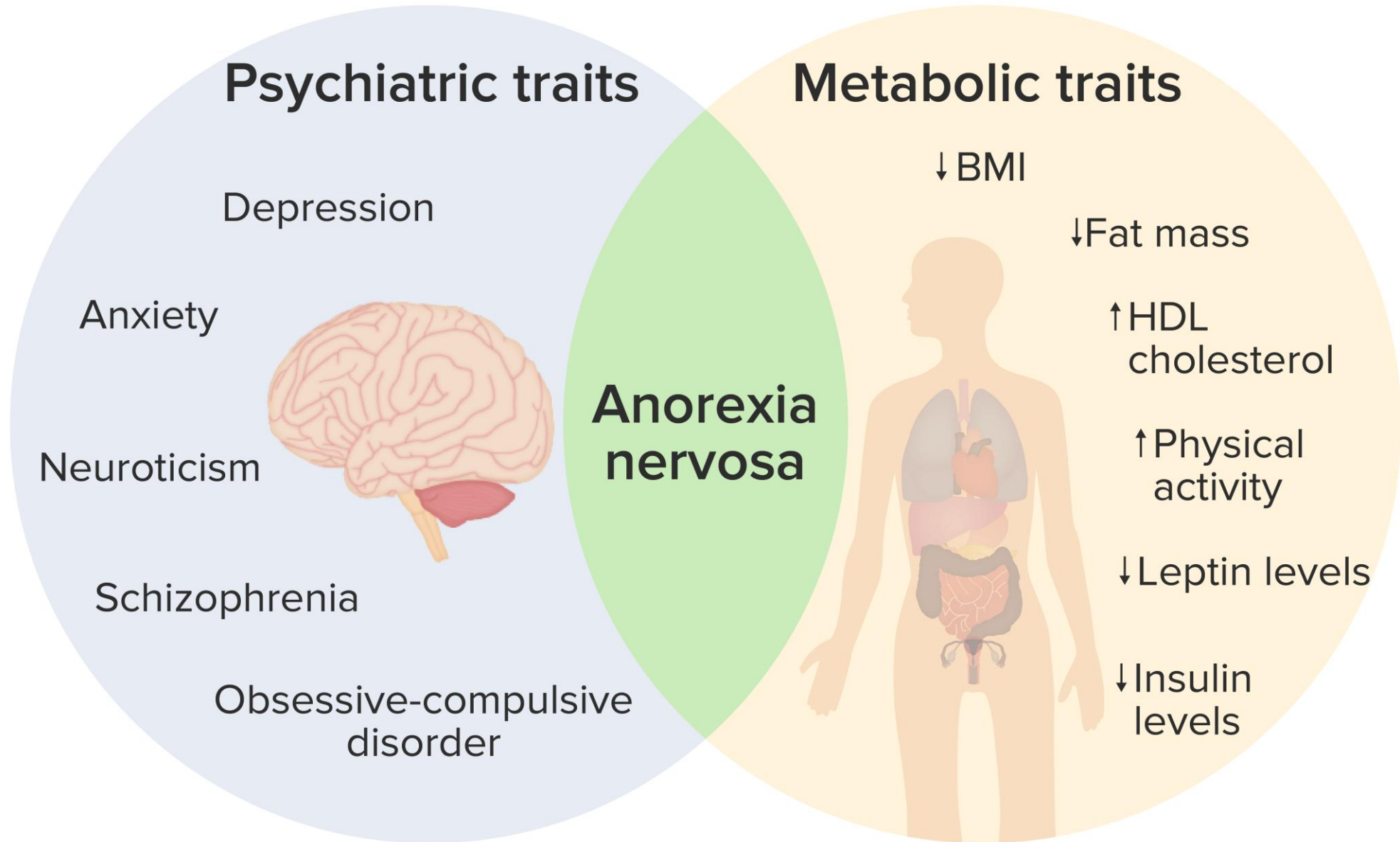
- Anorexia nervosa is an eating disorder defined by **restriction of energy intake** relative to requirements, **leading to a significantly low body weight**.
- Patients will have an **intense fear of gaining weight** and **distorted body image** with the inability to recognize the seriousness of their significantly low body weight.



# Etiology

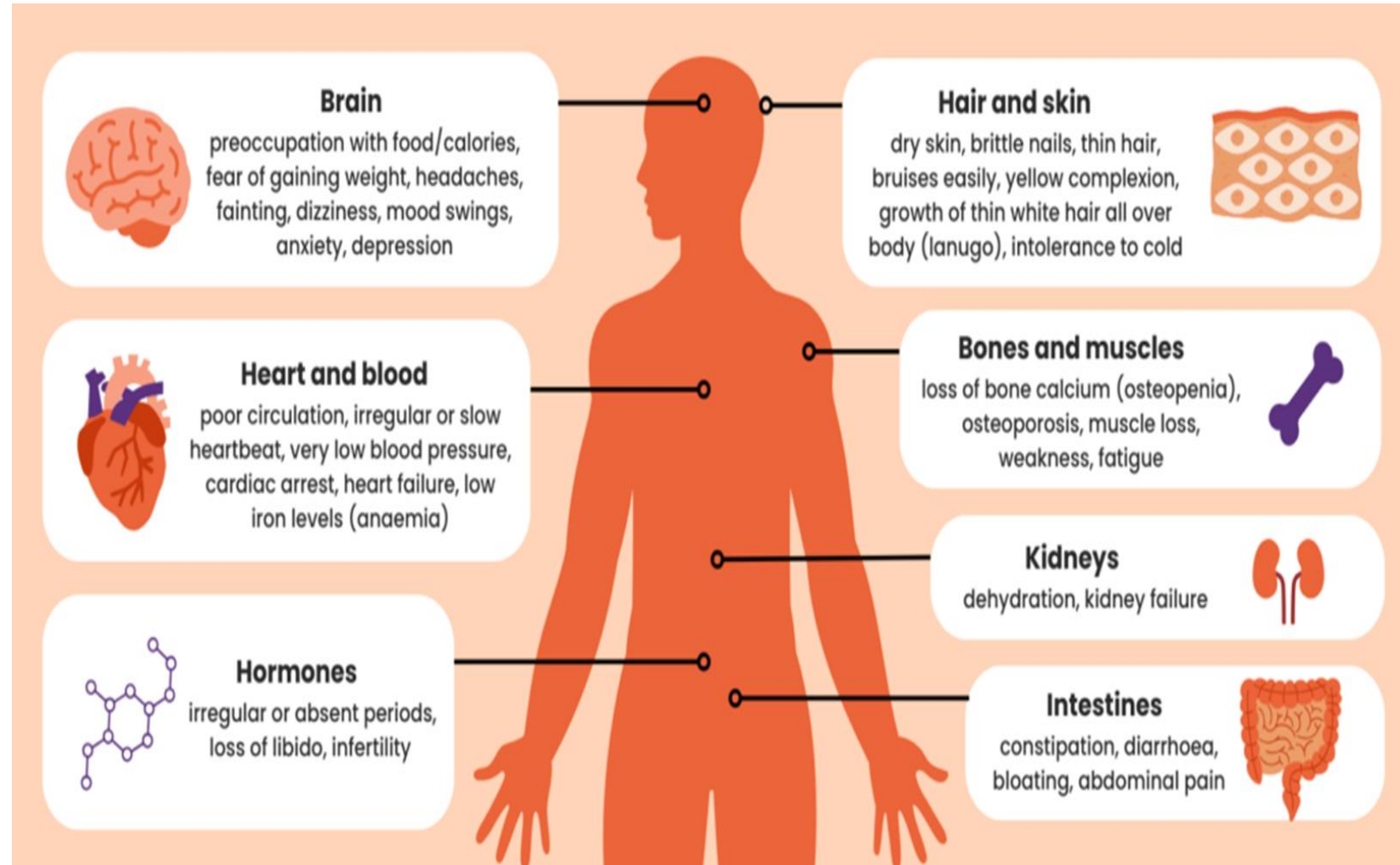


- Biological factors play a role in the development of anorexia nervosa in addition to environmental factors.
- Genetic correlations exist between educational attainment, neuroticism, and schizophrenia.
- Patients are deficient in neurotransmitters dopamine and serotonin differential activation of the corticolimbic system (appetite and fear).
- Patients have co-morbid psychiatric disorders such as major depressive disorder and generalized anxiety disorder.



# Sign and symptoms

- ✓ Amenorrhea,
- ✓ Cold intolerance,
- ✓ Constipation,
- ✓ Extremity edema,
- ✓ Fatigue,
- ✓ Irritability.



# Diagnosis

- ✓ Coagulation panel,
- ✓ Complete blood count,
- ✓ Complete metabolic profile,
- ✓ Vitamin D,
- ✓ Testosterone (males),
- ✓ Thyroid-stimulating hormone,
- ✓ Urine testing (beta-hcg [females])
- ✓ An electrocardiogram is recommended to assess for life-threatening arrhythmias.



Physical exam



Mental health questionnaire



Lab work to check overall health



X-ray to check bone density



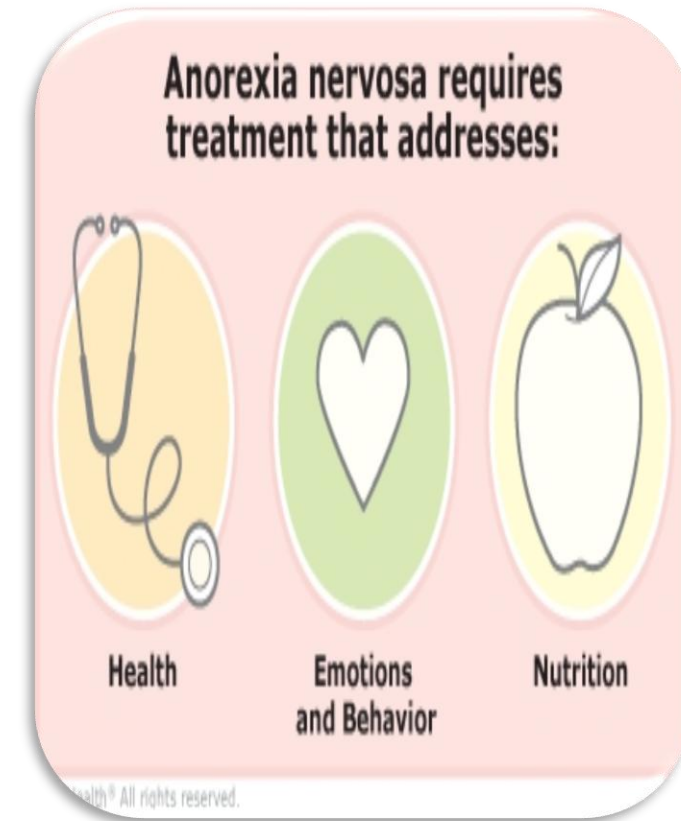
Electrocardiogram to check heart rhythm



Differential diagnosis

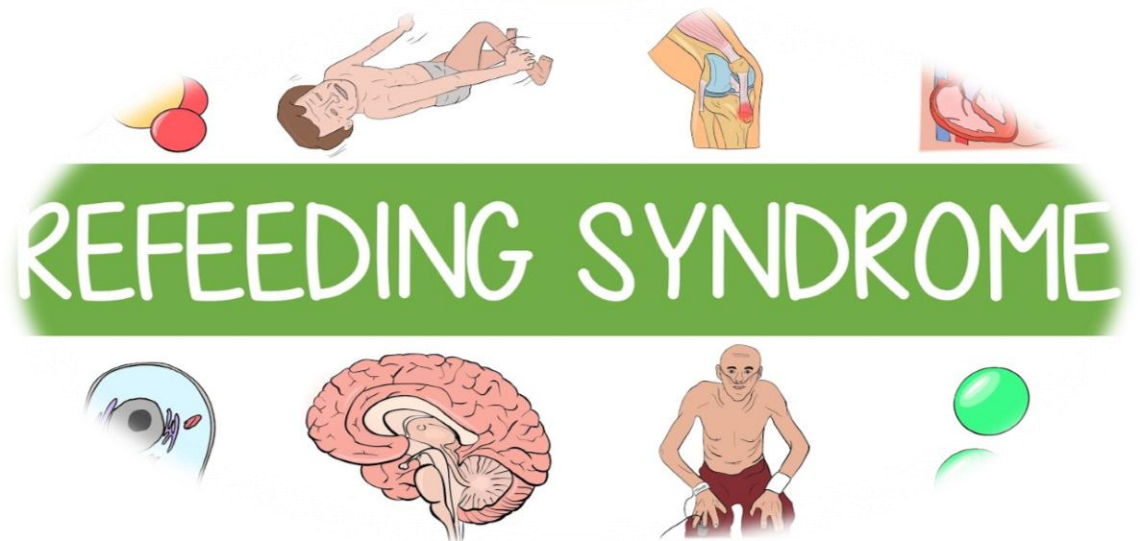
# Treatment & management

- Treatment for anorexia nervosa is centered on nutrition therapy and psychotherapy.
- Outpatient treatment includes intensive therapy and partial hospitalization (6 hours per day).
- Refeeding syndrome can occur following prolonged starvation.

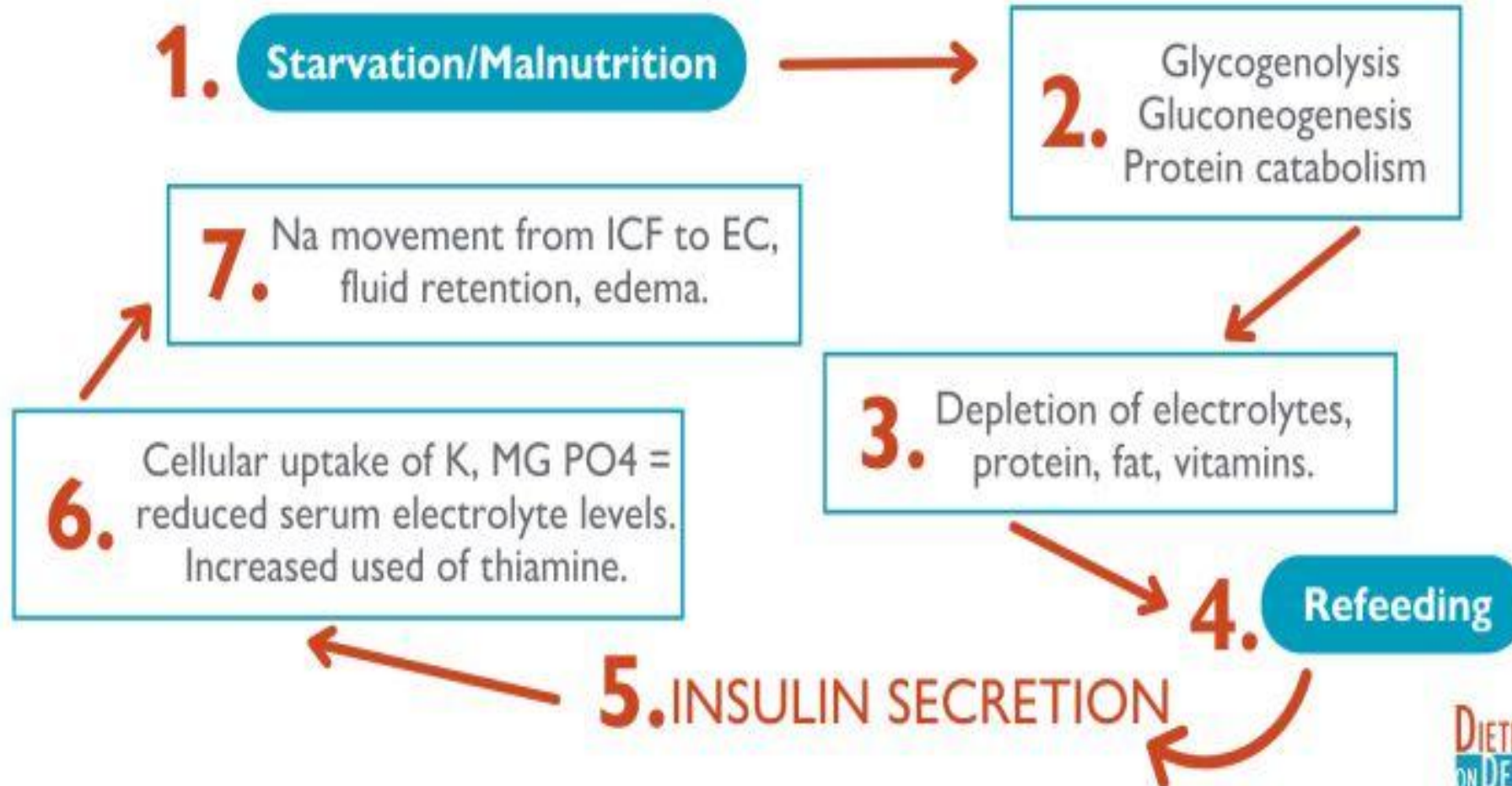


# How does refeeding syndrome develop?

- Rapid refeeding is caused by metabolic and hormonal changes, whether enteral or parenteral.
- The net result of metabolic and hormonal changes in early starvation is that the body switches from using carbohydrate to using fat and protein as the main source of energy, and the basal metabolic rate decreases by as much as 20-25%.



# REFEEDING SYNDROME



Abbreviations: ICF, intracellular fluid; EC, extracellular; CHO, carbohydrates

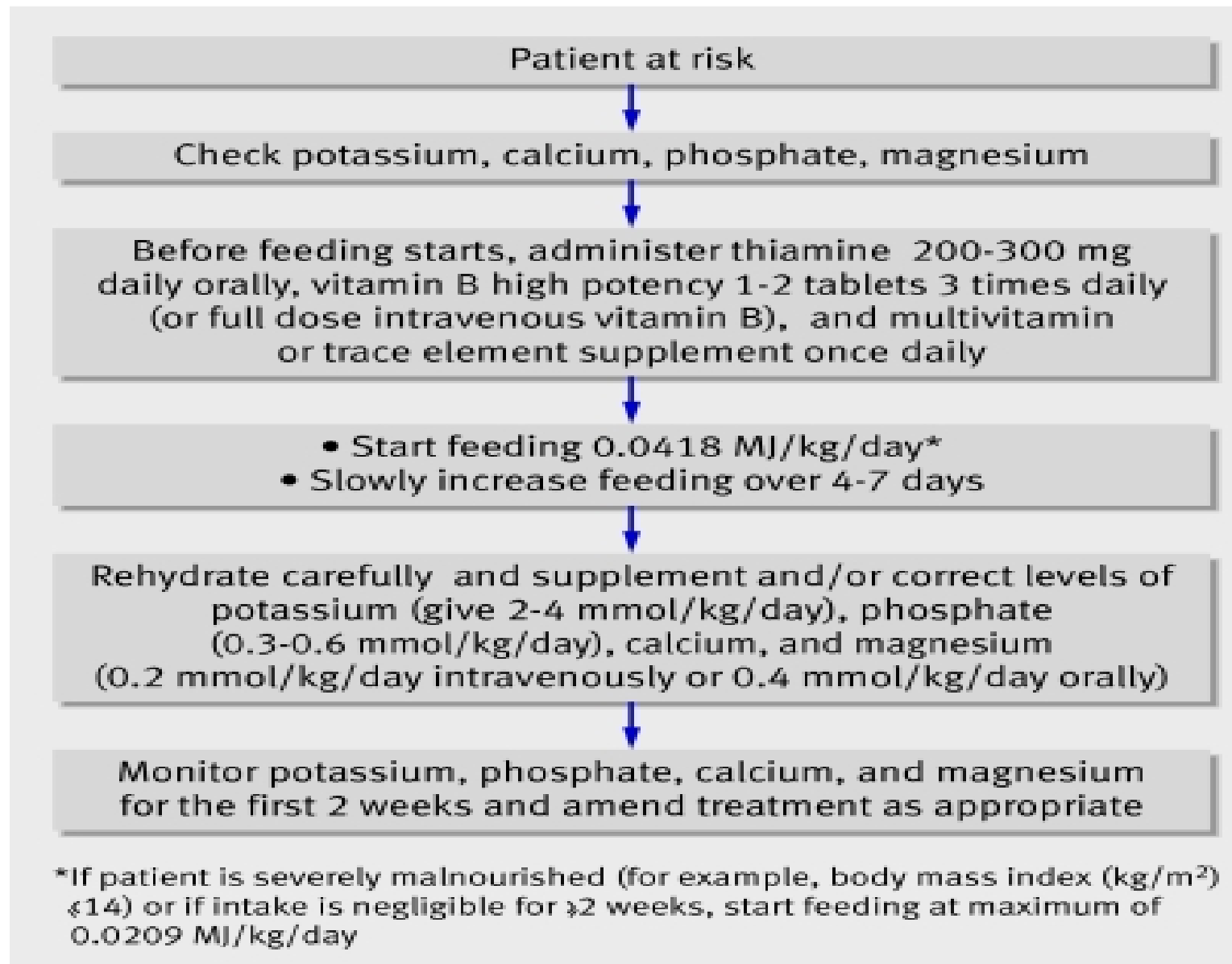
# NICE guidelines for identifying patients at high risk of refeeding problems

Either the patient has one or more of the following:

- ✓ Body mass index ( $\text{kg}/\text{m}^2$ )  $<16$
- ✓ Unintentional weight loss  $>15\%$  in the past three to six months
- ✓ Little or no nutritional intake for  $>10$  days
- ✓ Low levels of potassium, phosphate, or magnesium before feeding



# NICE guidelines to prevent and treat refeeding syndrome.



# Binge eating disorder (BED)

- Binge eating disorder (BED) is a condition marked by episodes of consuming food in a larger amount than is normal in a short time. These episodes occur every week over three months.
- It is associated with various psychological and non-psychological issues.
- Individuals with high impulsivity and reward sensitivity experience an addictive response to certain foods, for example, high sugar and high-fat foods. Still, they do not develop tolerance or show withdrawal symptoms

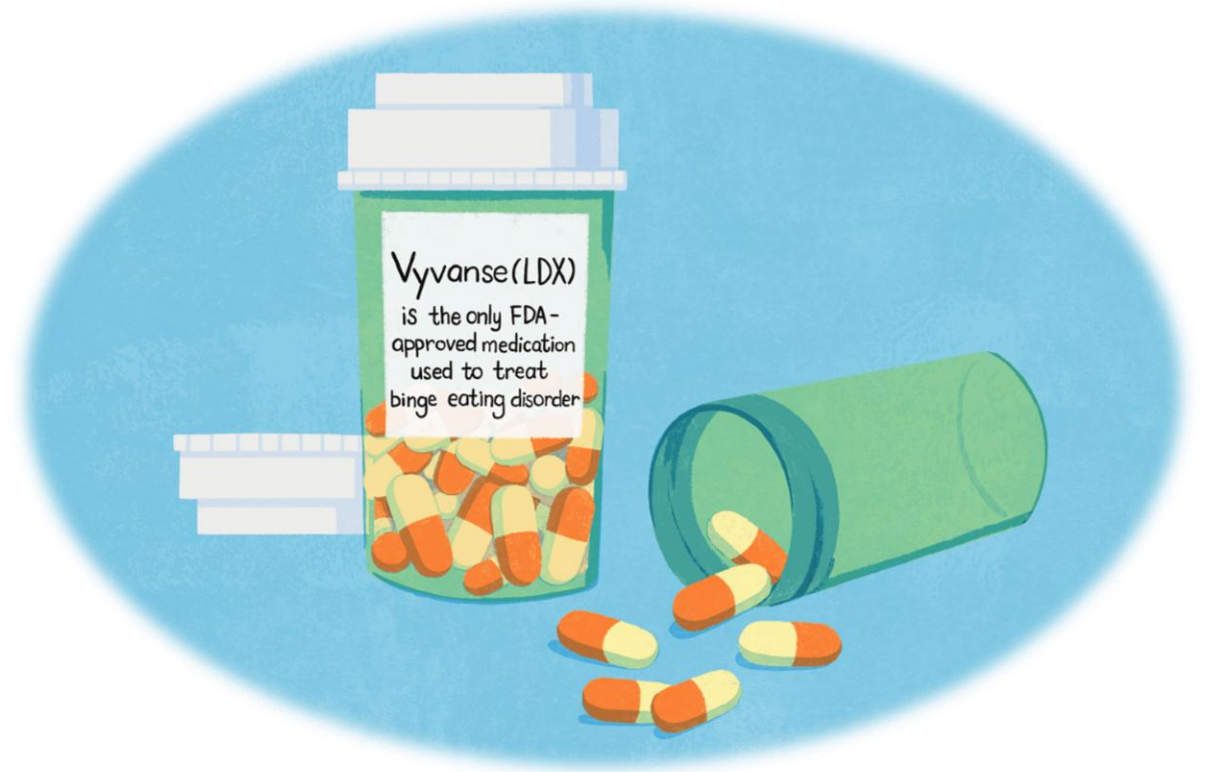
# Risk factors for binge eating disorder include:

- 1) Childhood obesity
- 2) Loss of controlled eating in childhood
- 3) Perfectionism
- 4) Conduct problems
- 5) Substance abuse
- 6) Family weight concerns and eating problems
- 7) Family conflicts and parenting problems
- 8) Parental psychopathology
- 9) Physical and sexual abuse
- 10) Mental health impairment
- 11) Mu-opioid (e.g., OPRM1) receptor and dopamine (e.g., DRD2) receptors genes involvement
- 12) Distorted body image perception
- 13) Intestinal microbiota alteration

# Treatment

Available treatment options for binge eating disorder include:

- 1) Psychotherapy
- 2) Pharmacotherapy
- 3) Weight loss treatment



# Bulimia nervosa

Bulimia nervosa is the episodic uncontrolled ingestion of large quantities of food followed by recurrent inappropriate compensatory behavior to prevent weight gain

## Episodes of binge eating:

- ✓ Patients are eating portions more significant than what most people would consume in a similar period (usually less than 2 hours) and under comparable conditions.
- ✓ During eating episodes, the patient loses control and is unable to limit the servings they consumes.

# Bulimia nervosa

Binging episodes are followed by inappropriate compensatory behavior to prevent weight gain:

- ✓ Self-induced vomiting
- ✓ Laxatives abuse
- ✓ Diuretic use
- ✓ Extreme physical activity
- ✓ Fasting

The episodes should occur at least once a week for three months to establish a diagnosis.



# Medical complications

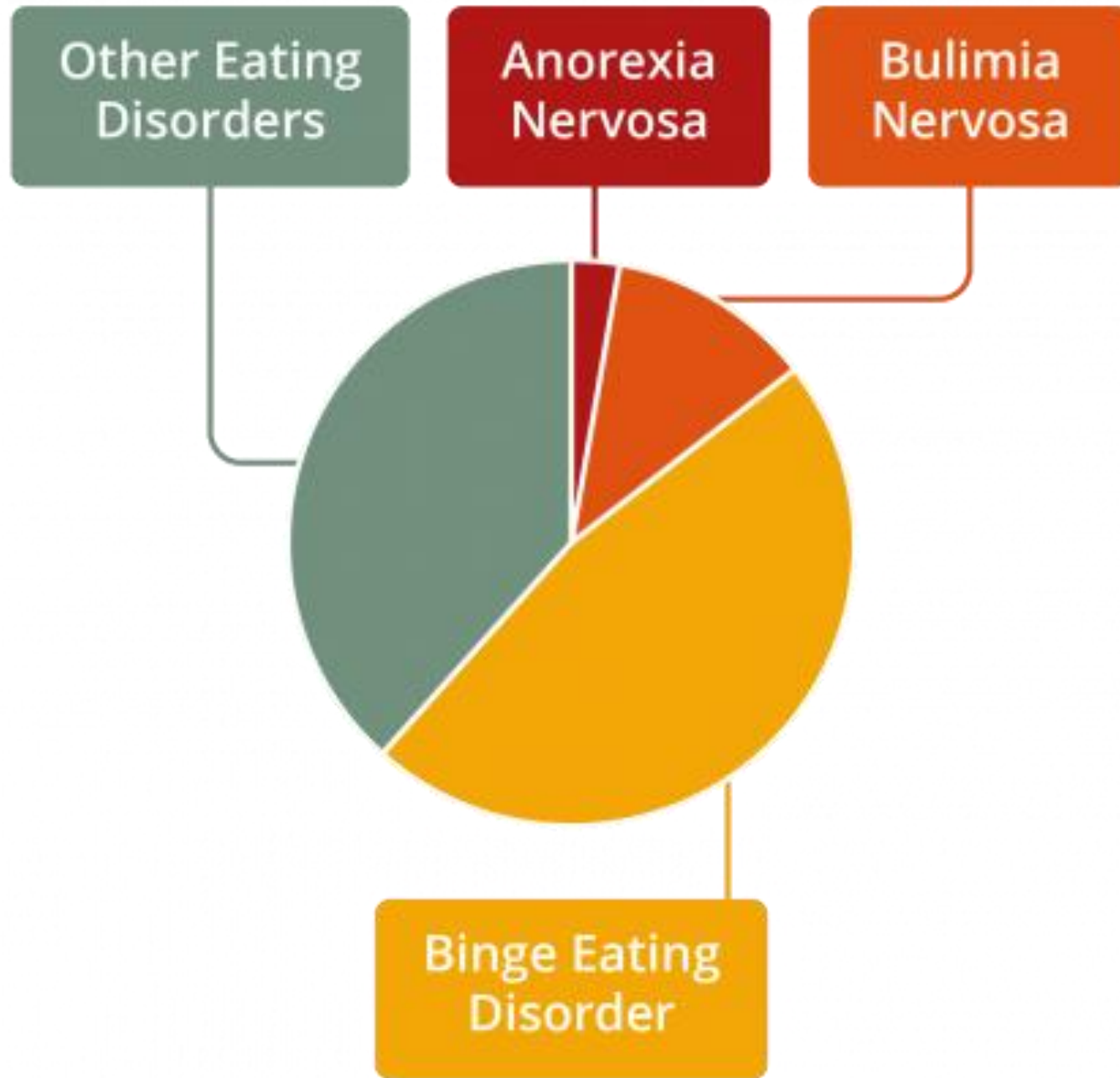
Patients with bulimia nervosa demonstrates

- ✓ Sore throat
- ✓ Irregular menstruation
- ✓ Constipation, headache
- ✓ Fatigue
- ✓ Lethargy
- ✓ Abdominal pain, and bloating

# Treatment / Management

- The primary objective of treatment is a cessation of the binging and purging behavior.
- Selective serotonin reuptake inhibitors.
- Clinical trials of cognitive-behavioral therapy and interpersonal psychotherapy





# References

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