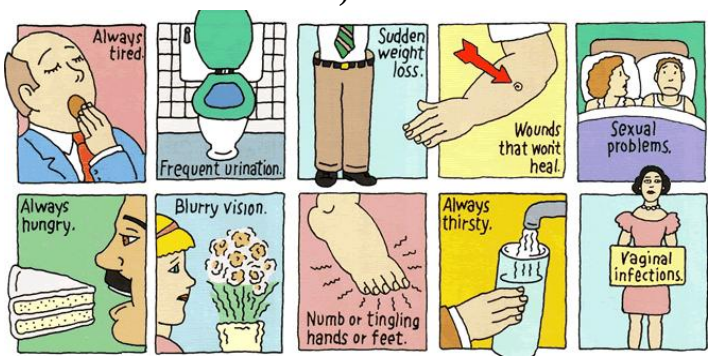
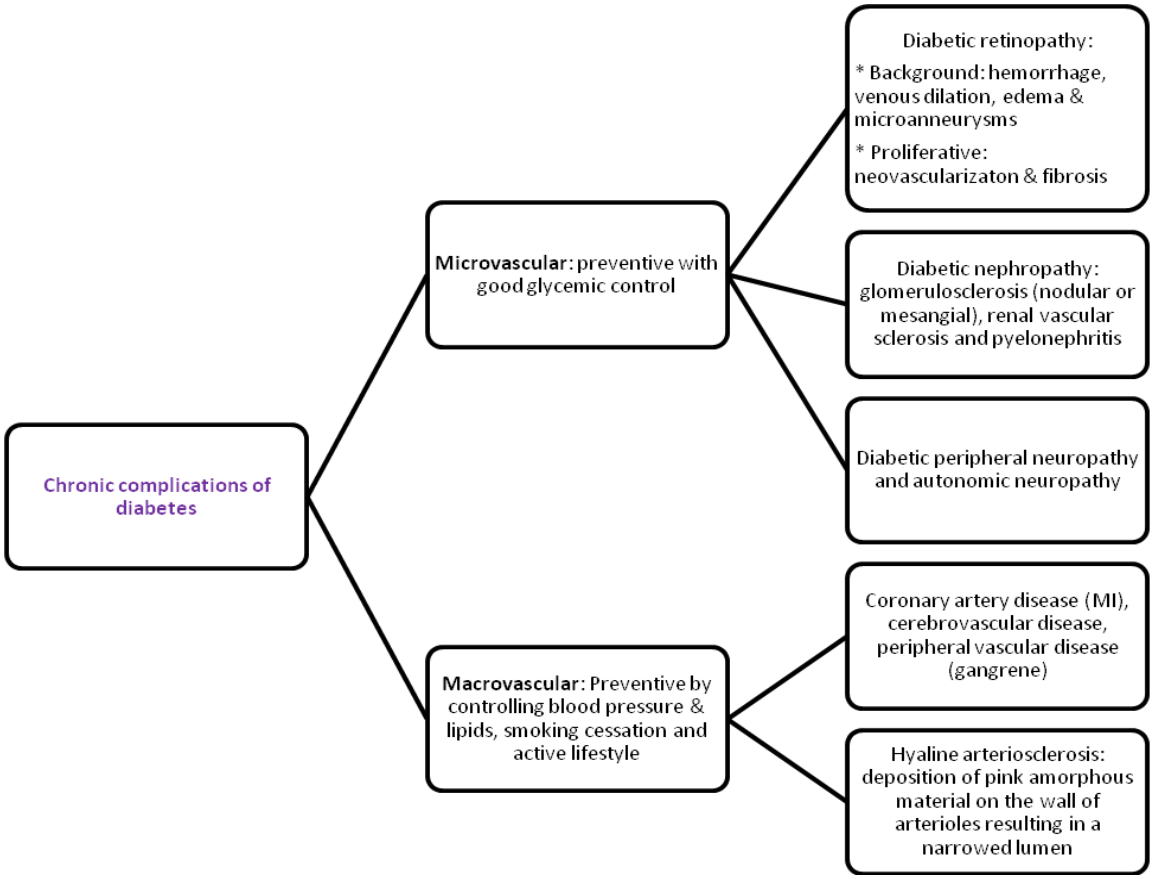
Unit IV – Problem 2 – Clinical: Clinical Presentation of Type-II Diabetes

- **What is diabetes?**
  - A group of metabolic disorders characterized by hyperglycemia.
- **There are two major classes of diabetes:**
  - **Type-I (insulin-dependent):** autoimmune destruction of β-cells of islet of Langerhans resulting in lack of insulin. More common in children. Clinical manifestations appear all of a sudden. Most common complication is diabetic ketoacidosis.
  - **Type-II (insulin-independent):** characterized by insulin resistance. More common in adults. Clinical manifestations appear gradually. There is no ketoacidosis (because there is still some residual insulin which is still secreted and preventing the formation of ketone bodies) but instead, patient might suffer from hyperosmolar hyperglycemic state. Initially, patients with type-II diabetes will not need insulin for survival, but as there is progressive failure of β-cells, they will need insulin at the end. Notice that majority of patient with type-II diabetes are asymptomatic!
- **Pathophysiology of type-II diabetes:**
  - **It is a metabolic syndrome which is characterized by:**
    - ✓ Central obesity.
    - ✓ Dyslipidemia: ↓ HDL (good cholesterol), ↑ TAG
    - ✓ Insulin resistance: this starts years before diagnosing the patient with the disease but it is kept normal by a hyperinsulinemic state until there is a dysfunction in β-cells.
    - ✓ Glucose intolerance.
    - ✓ Hypertension.
    - ✓ Microalbumenemia
    - ✓ Fatty liver.
    - ✓ High levels of uric acid.
- **Clinical manifestations of type-II diabetes include:**
  - Polyuria (increased urination).
  - Polydepsia (thirst resulting from dehydration due to increased urination).
  - Polyphagia (hunger).
  - Fatigue.



- **Risk factors for developing type-II diabetes:**
  - Obesity.
  - Family history.
  - Ethnic group.
  - Increased age.
  - Polycystic ovarian syndrome.
  - Sedentary lifestyle.
  - Personal history of gestational diabetes (in case of females).
- **Diagnosis of type-II diabetes:**
  - Fasting blood glucose ≥ 7 mmol/L
  - Random blood glucose ≥ 11.1 mmol/L
  - Oral glucose tolerance test (OGTT) ≥ 11.1 mmol/L
  - HbA_{1c} ≥ 6.5 %
  - **Patient is considered to be pre-diabetic when:**
    - ✓ Fasting blood glucose is more than 5.5 mmol/L but less than 7 mmol/L
    - ✓ Blood glucose after 2 hours of having a meal is more than 7.8 mmol/L but less than 11.1 mmol/L



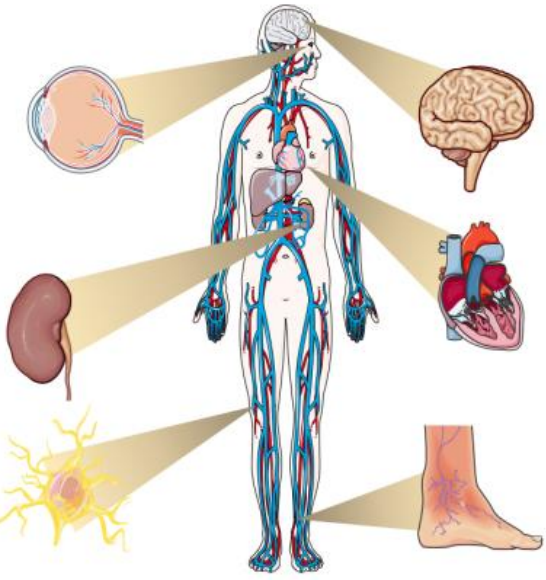
Major Complications of Diabetes

Microvascular

Eye
High blood glucose and high blood pressure can damage eye blood vessels, causing retinopathy, cataracts and glaucoma

Kidney
High blood pressure damages small blood vessels and excess blood glucose overworks the kidneys, resulting in nephropathy.

Neuropathy
Hyperglycemia damages nerves in the peripheral nervous system. This may result in pain and/or numbness. Feet wounds may go undetected, get infected and lead to gangrene.



Macrovascular

Brain
Increased risk of stroke and cerebrovascular disease, including transient ischemic attack, cognitive impairment, etc.

Heart
High blood pressure and insulin resistance increase risk of coronary heart disease

Extremities
Peripheral vascular disease results from narrowing of blood vessels increasing the risk for reduced or lack of blood flow in legs. Feet wounds are likely to heal slowly contributing to gangrene and other complications.