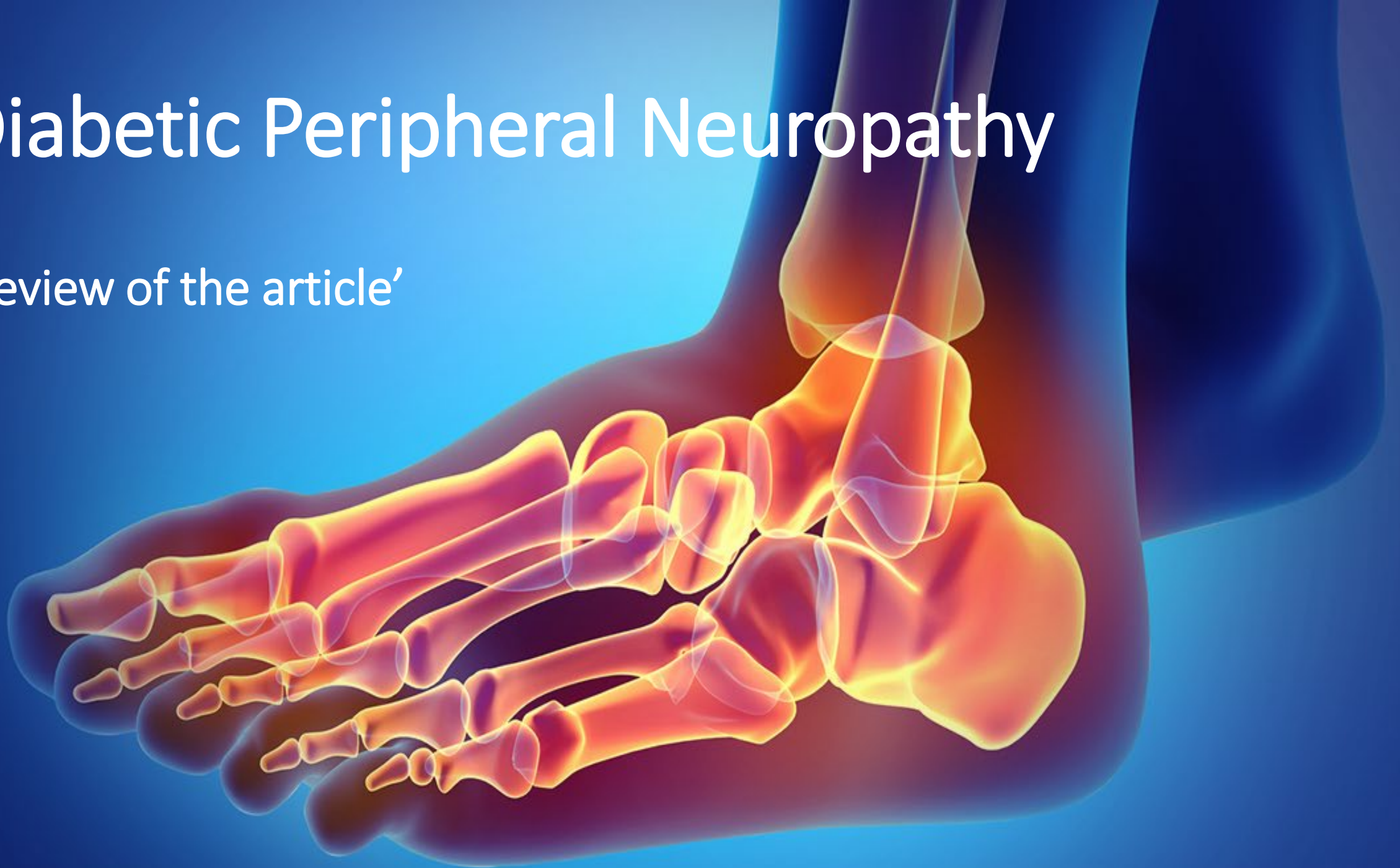


# Diabetic Peripheral Neuropathy

'Review of the article'





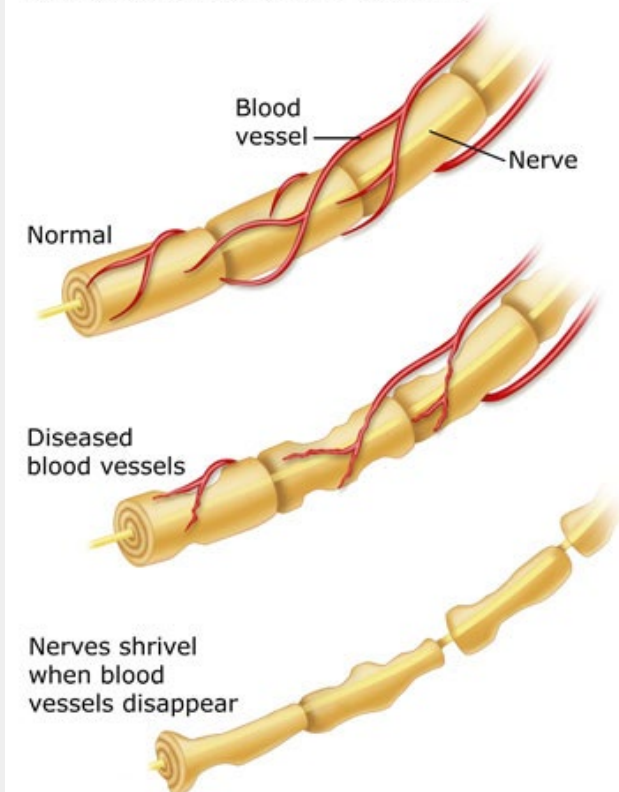
# Abstract

- Diabetes mellitus is one of the most common medical disorders often associated with neurological complications.
- Peripheral neuropathy is the most common neurological complication of diabetes with a prevalence of 10–26% of newly diagnosed adult diabetes.
- Diabetic neuropathy might present as polyneuropathy, mononeuropathy, mononeuropathy multiplex, radiculopathy, and/or plexopathy.
- Diabetic neuropathies may also be associated with foot ulcers and infections in 5–24% of patients, translating into 5:1000 diabetics ending with an amputation. Therefore, screening diabetic patients for early recognition and management of diabetic neuropathies is essential.

# Diabetic peripheral neuropathy

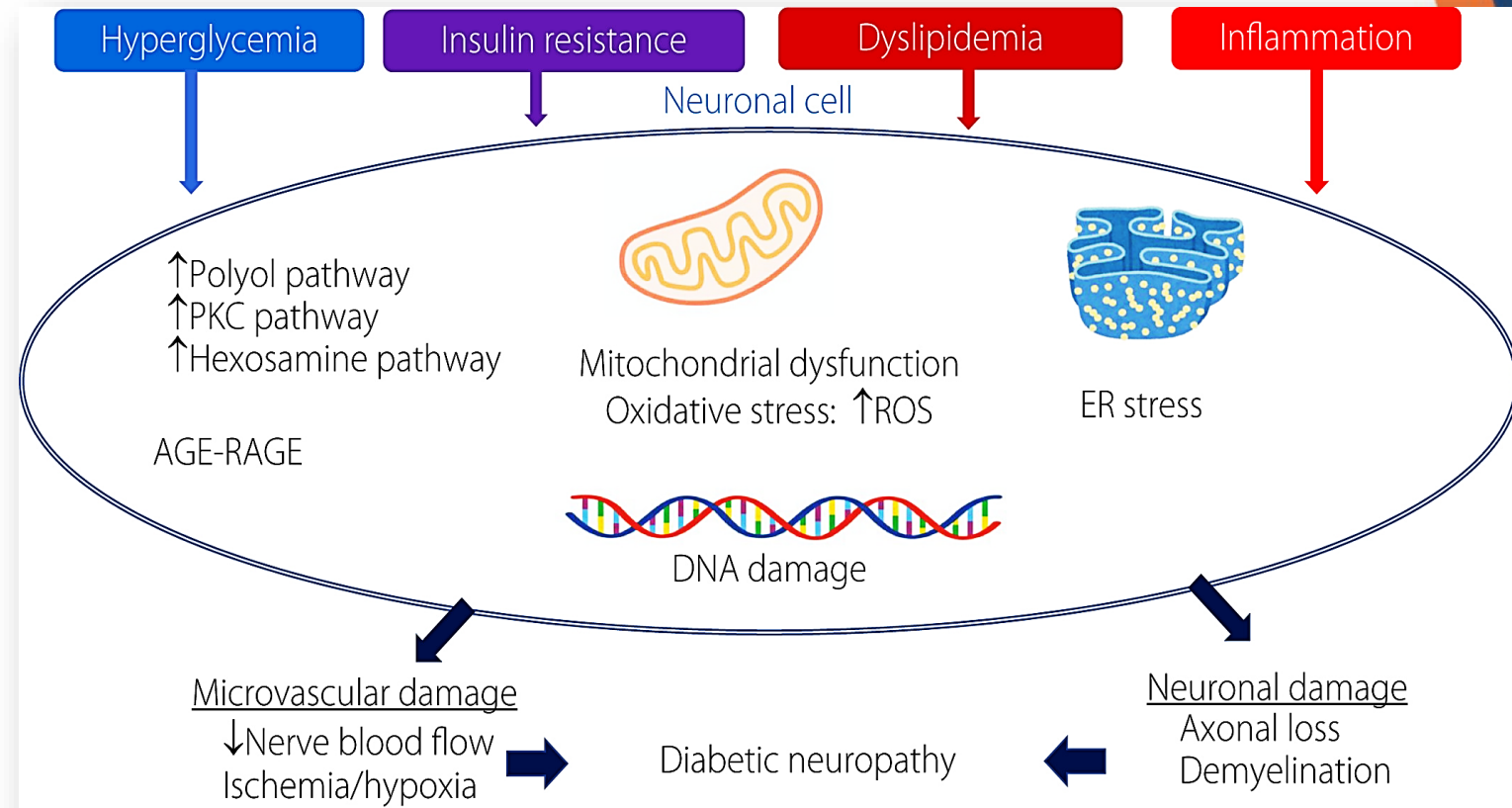
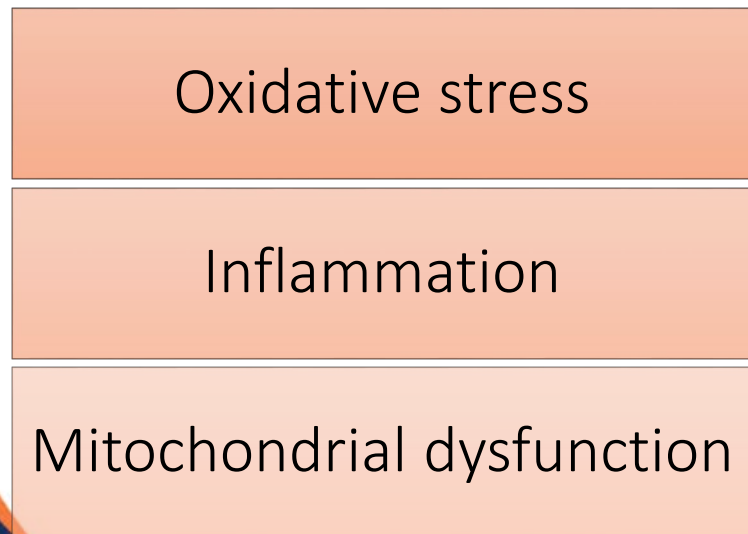
- DPN is a well-known microvascular complication of type 2 diabetes mellitus resulting from chronic hyperglycemia and is defined by a peripheral nerve dysfunction in a diabetic patient after other etiologies have been excluded. Neuropathy develops in about 5–10% of diabetic patients in the first year, and 60–70% of diabetic patients experience some type of diabetic peripheral neuropathy after 20 years of the duration of diabetes [12,13].
- The progression of DPN is related to poor glycemic control, aging, long diabetes duration, visceral obesity, hypertension, smoking, hyperinsulinemia, and dyslipidemia [11].
- Improved glycemic control, early detection, and preventive care can avoid adverse outcomes.

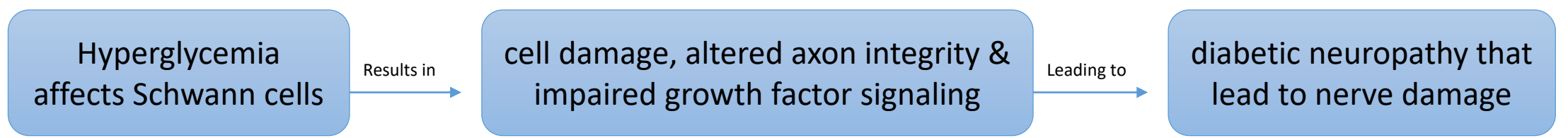
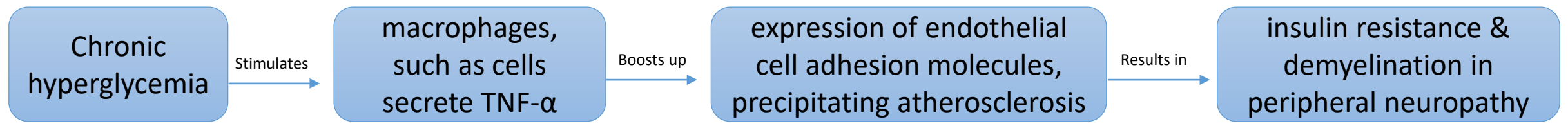
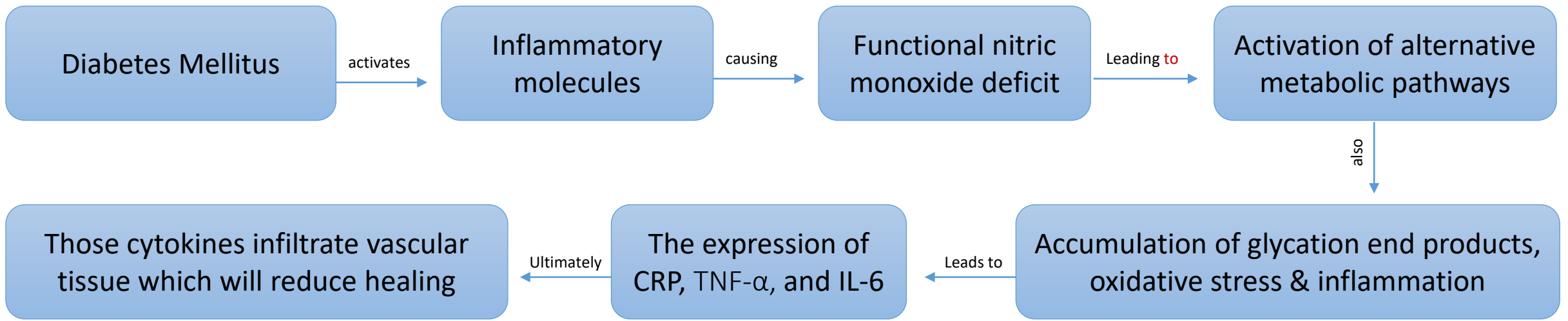
Diabetes Affects the Nerves



# Pathogenetic mechanisms

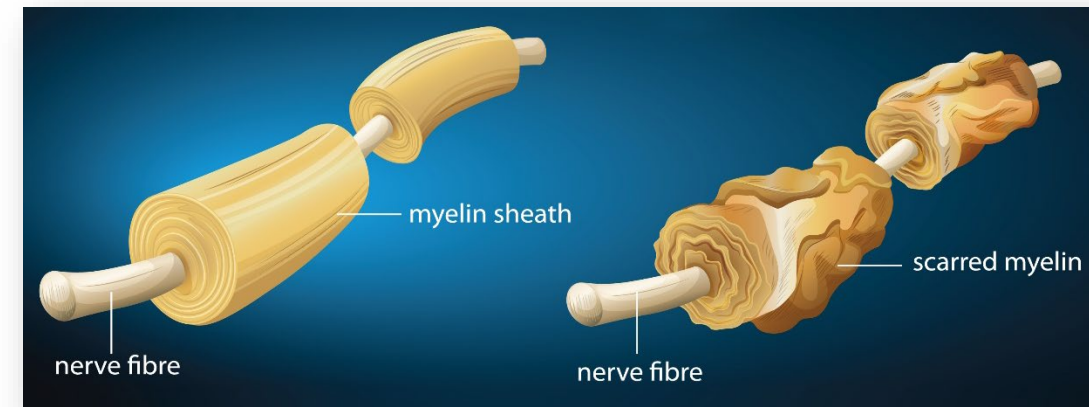
- Peripheral nerve damage in diabetic peripheral neuropathy is caused by a variety of mechanisms; the most important are:-





# Clinical manifestations

- Diabetes can damage different parts of the peripheral nervous system with **distal symmetric polyneuropathy (DSP)** being the most common presentation with predominant **sensory** symptoms.
- Sensory symptoms such as **numbness**, **tingling**, and **pain** are common in DSP patients. These characteristics begin in the feet and spread proximally known as a **stocking-and-glove distribution** [24].
- Other patterns of injury include small-fiber predominant neuropathy, radiculo-plexopathy, and autonomic neuropathy, among others.
- DSP is one of the major risk factors for falls in diabetic patients along with retinopathy and vestibular dysfunction.
- Diabetes is the leading cause of lower extremity amputations, **> 80,000** lower extremity amputations are performed each year in patients with diabetes [25, 26, 27].



# Screening or diagnostic assessment

Stage of diabetic peripheral neuropathy		Characteristics
<b>Stages 0/1</b>	No clinical neuropathy	Asymptomatic
<b>Stage 2</b>	Chronic painful	Positive symptomatology nocturnal pain, burning, shooting, stabbing pains ± pins, and needles
		It may have absent sensation to several modalities and reduced or absent reflexes
	Acute painful	Less common
		It may be associated with initiation of glycemic therapy in poorly control diabetes
Painless with complete/partial sensory loss	Normal or minor sensory features in the peripheral neurological examination	
	No symptoms or numbness/deadness of feet; reduced thermal sensitivity; painless injury	
<b>Stage 3</b>	Late complications of clinical neuropathy	Signs of reduced or absent sensation with absent of reflexes
		Foot lesions, e.g., ulcers
		Neuropathic deformity, e.g., Charcot joint
		Non-traumatic amputation

# Management

- Ideally, a multidisciplinary team approach is essential which includes input from nutritionists, endocrinologists, neurologists, pain specialists, nurse practitioners, podiatrists, psychologists, physiotherapists, and others [53].
- There is a general consensus that good glucose control should be the first step in managing any form of diabetic neuropathy. Hypertension and hyperlipidemia, which are risk factors for large vessel diseases, are also commonly seen in DPN, and it is also important to address them.
- According to the European Federation of Neurological Societies' recommendations, first-line therapies could include TCAs, SNRIs, Opioids, Gabapentin, or Pregabalin.
- Only 3 medications are currently approved by the FDA for DPN, Pregabalin, Tapentadol & Duloxetine.



# Alternative management

- There is a wide range of alternative therapies available for DPN pain, which include
  1. Acupuncture [60].
  2. Near-infrared phototherapy [61].
  3. Low-intensity laser therapy [62].
  4. Transcutaneous electrical stimulation [63].
  5. Frequency-modulated electromagnetic neural stimulation therapy [64].
  6. High-frequency external muscle stimulation [65].
  7. Implantation of an electrical spinal cord stimulator [66].
- The reduction of tissue stress is considered the main goal of interventions in patients with neuropathy. Those are achieved by prescribing shoes and custom-made insoles, and orthotics with rocker soles.

# Conclusion

The screening of symptoms and signs of diabetic peripheral neuropathy is essential in all diabetic patients for an early recognition and management of diabetic neuropathies.

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