

# Diabetic Peripheral Neuropathy: The Forgotten Complication of Diabetes

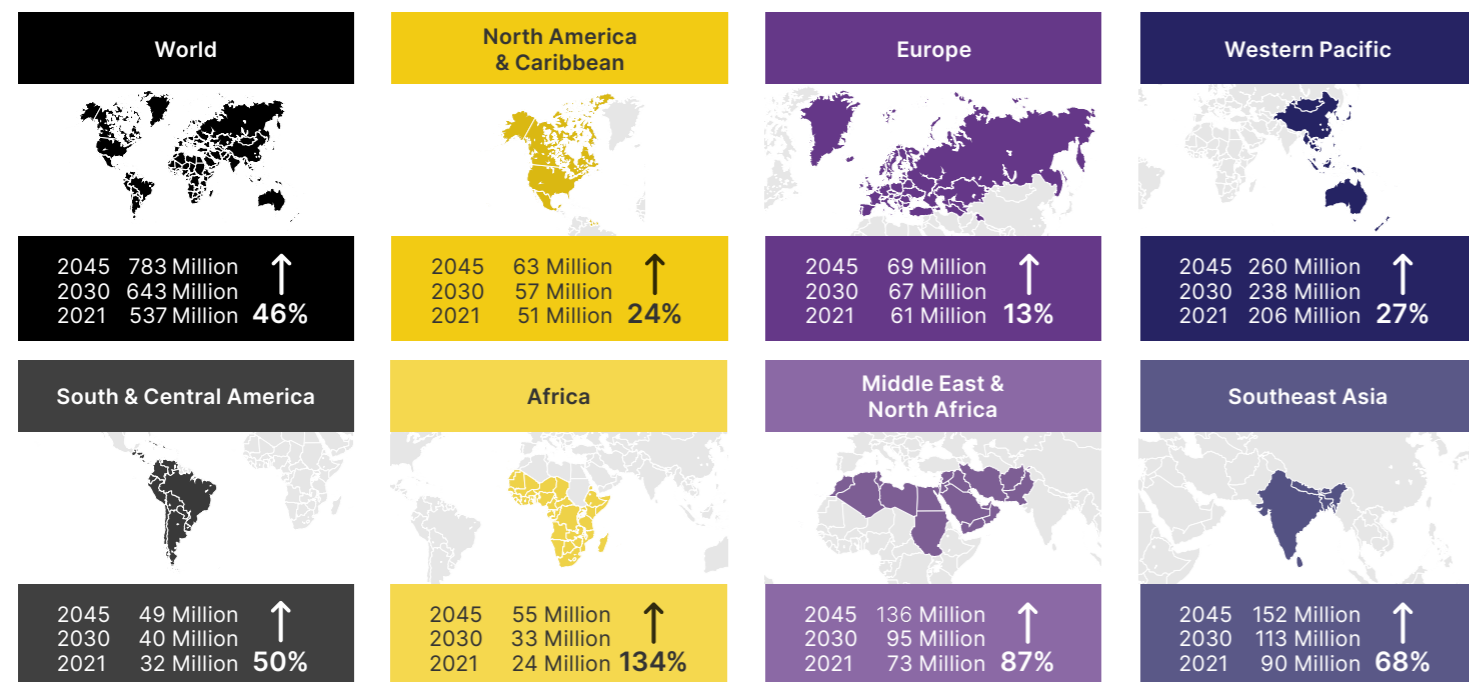
EMJ Diabet. 2023; DOI/10.33590/emjdiabet/10303408. <https://doi.org/10.33590/emjdiabet/10303408>.

## Disease Burden of Diabetes<sup>1,2</sup>

### Diabetes is one of the fastest-growing global health emergencies of the 21<sup>st</sup> century<sup>1</sup>

**Number of People with Diabetes Worldwide and per IDF Region in 2021-2045 (20-79 years)**

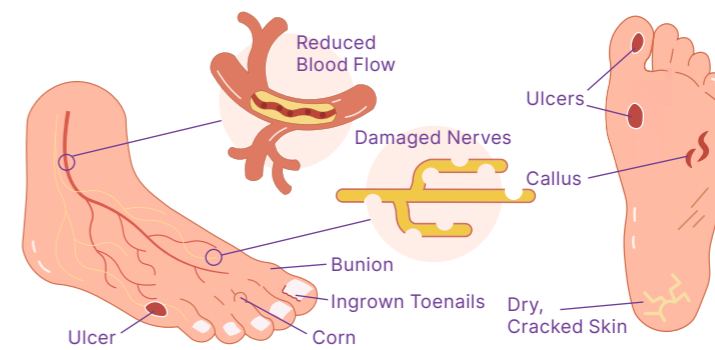
An estimated **537 million** adults (10% of the world's population) aged 20-79 years are currently living with diabetes.<sup>1</sup> The number of people with diabetes is projected to reach **643 million by 2030**, and **783 million by 2045**<sup>1</sup>



## Complications of Neuropathy<sup>12-16</sup>

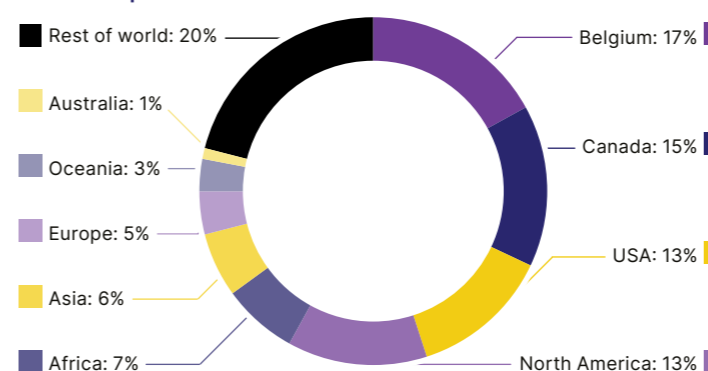
Diabetic neuropathy is a highly prevalent, disabling condition, the management of which is associated with significant complications that come with substantial human burden and financial costs<sup>12</sup>

Diabetic foot is a leading cause of global burden of disability and poor quality of life<sup>21</sup>



**14-24%** of diabetic foot patients require a major or minor lower limb amputation<sup>15</sup>

### Foot ulcer prevalence<sup>13</sup>



In the UK, the cost of healthcare for ulceration and amputation in diabetes from 2014-2015:<sup>14</sup>

**£837-962 million**

The cost of diabetic foot management in the USA from 2007-2011:<sup>21</sup>

**\$9-13 billion**

**30%** five-year survival rate of diabetic foot patients with major amputations<sup>15</sup>

The earlier a diagnosis is made, the more opportunities there are to improve patient outcomes

## Microvascular Complications in Diabetes<sup>3-7</sup>

### Microvascular?

Neuronal damage and structural damage

**Eye**  
Diabetic retinopathy

**Kidney**  
Diabetic nephropathy

**Peripheral nerves**  
Peripheral neuropathy

Microvascular damage is an important potential complication of diabetes<sup>3</sup>

Diabetes is the most common cause of neuronal damage, blindness, and renal failure in the non-geriatric population<sup>3</sup>



of DPNs may be asymptomatic, emphasising the need for extensive screening, as a lack of preventative foot care increases risk of injury<sup>4</sup>

### Diabetic neuropathy

Diabetic neuropathy can be classified according to:

- Nerve type affected (sensory vs. motor vs. autonomic)
- Site of nerve injury (focal vs. multi-focal vs. generalised)
- Disease time course (acute vs. chronic)

Clinically, small fibre neuropathy must be promptly diagnosed and treated to avoid pain, debility, or possible large nerve fibre involvement<sup>6</sup>

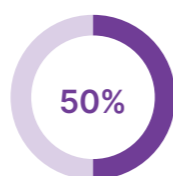
Large-fibre neuropathies can be distinguished from small-fibre neuropathies during neurologic testing.

Large fibres carry sensation for vibration and proprioception, while small fibres carry sensation for pain and temperature<sup>7</sup>

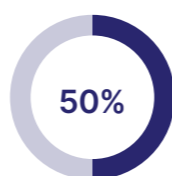
Sensation for light touch is carried by both large and small nerve fibres<sup>7</sup>



Neuropathy most commonly presents in the feet initially, and progresses in a distal to proximal manner as the microvascular complication worsens<sup>5</sup>



of patients with diabetes will eventually develop diabetic neuropathy (DN)<sup>2</sup>



of patients with DN will develop foot ulcers during their lifetime<sup>2</sup>



Sleep disturbances and Mood disorder

### The patient can experience:

Reduced quality of life through the direct consequences of pain. Significant negative effects on sleep and mood<sup>11</sup>

Pain and numbness are common positive and negative symptoms of neuropathy, associated with a significant human burden<sup>8</sup>

Pain that is associated with nerve damage is described as neuropathic, and is commonly described by terms such as burning/tingling/electric shock-like/shooting/pins and needles in a stocking-glove pattern (peripheral neuropathy)<sup>9,10</sup>



Once a patient has been recognised as having diabetic neuropathy that is accompanied by pain, ADA guidelines recognise that only pharmacotherapy is considered as being useful<sup>4</sup>

No compelling evidence exists in support of glycaemic control or lifestyle management as therapies for symptomatic treatment of neuropathic pain or prevention of disease progression, leaving only pharmaceutical interventions.<sup>4</sup>

### For diabetes generally:



Intensive glucose control and CV risk intervention



Lifestyle modifications (exercise, weight loss, and reduced sedentary behaviour)

### For the screening and management of diabetic neuropathy:

It is recognised as the most difficult of the microvascular complications to diagnose, as there is currently no diagnostic gold standard

However, there are a range of tests that can be employed, including the following:<sup>18</sup>

- Composite scoring systems (LANSS, DN4, PainDETECT)
- Thermal and vibration perception thresholds
- Corneal confocal microscopy
- Evoked potentials
- Microneurography
- DPN Check
- Skin biopsy
- Sudoscans
- Neuropad



Co-ordinated screening programmes for measuring diabetic microvascular complications and monitoring risk factors are pivotal to effective diabetes management.<sup>19</sup>

For more information for your patients on the challenges of living well with diabetes and diabetic neuropathy, consider patient-centric resources, including **IDEAL Diabetes**<sup>20</sup>

## References: see below

### Key

ADA: American Diabetes Association; CV: cardiovascular; DN: diabetic neuropathy; DPN: diabetic peripheral neuropathy; DSPN: distal symmetric polyneuropathy; HCP: healthcare professional; LANSS: Leeds Assessment of Neuropathic Symptoms Scale; T1D: Type 1 diabetes; T2D: Type 2 diabetes.

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