

Smarter Foot Care with AI in Diabetes Management

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People with diabetes often care about control of blood sugars. However, many of them neglect the care they must provide for their feet. Foot care is one of the important aspects of diabetes management. Artificial intelligence (AI) has placed its foot prints even in diabetes foot care. AI can detect possibilities of foot infections or inflammations. AI technologies help an individual with diabetes to make informed decisions about his or her foot care even in the early stages.

Why is foot care important?

Individuals who have diabetes are prone to different kinds of complications, among which foot related complications are among the most common. When blood sugars are high for a prolonged period of time, blood vessels and nerves in the legs get affected. Diabetic neuropathy and peripheral vascular diseases are the diseases that occur when blood vessels and nerves are affected.

Damaged nerves make the feet numb. Patients cannot feel any pain or any slight variations in their feet. Some may not feel the sense of hot and cold. This leads to injuries and wounds not being noticed by the patient. They keep walking on the

injured foot and the wound becomes larger and infected. When there is decreased blood flow to the foot, even small wounds fail to heal. Untreated foot wounds can lead to gangrene and may necessitate amputation of the toes, the entire foot or even part or whole of the limb.

Foot related tests and regular foot examinations are imperative in diabetes management. At home, as a practice you can touch and feel your feet or use a mirror to see any colour changes, cuts, calluses (corns) or ulcers. However, AI has become a boon in foot care technology for finding feet at risk of neuropathy and peripheral vascular disease (PVD).

Traditional treatment regimens require a patient to visit the clinic in person to show their feet to the doctor or a podiatrist. But today, one can get a personalised foot care counselling even when he or she is miles away from the clinic. Technology has transformed the way our feet are examined and monitored.

Smart wearables- Real boon for diabetes foot health:

In recent years, smart wearables have taken a prominent place in diabetes care by providing real time monitoring, early alerts and personalised analysis. Let us see, how they can make a difference.

1. Temperature Sensing Wearables:

Inability to sense outside temperature can be an early sign of inflammation or infection. Nowadays, smart socks and insoles that are built with thermal sensors can detect temperature variations. They can also send alerts to the wearers and doctors. This can help to prevent foot ulcers before they develop.

2. Pressure Mapping Insoles:

These special insoles are embedded with the micro sensors. This innovative technology tracks foot pressure all through the day. Pressure hotspots show high risk for infections. Moreover, the insoles send data to a smartphone or wearable device. This enables the user or health care provider to detect early changes before they become visible.

Some advanced models provide gait analysis too. Based on this analysis, individuals can make improvements in their walking pattern to prevent stress and strain to the feet.

3. Smart Shoes:

Smart shoes have sensors equipped within them to monitor the pressure points in real time. Abnormal pressure distribution may lead to callus, blisters or ulcers. The users get an alert through a connected mobile App. These alerts help doctors or patients to take informed decisions about their foot treatment.

4. Foot Rehabs:

Smart exercise bands, vibration therapy tools and more such rehabilitation techniques can help to restore mobility. These devices help individuals to recover from foot ulcers or surgery. Online physiotherapy combined with smart trackers helps to make sure the exercises are done correctly and regularly.

Role of AI in Foot Care:

AI makes foot care smart and feasible for people with diabetes. By analysing large sensor data, AI projects a trend for predicting infections early. Telemedicine platforms transfer this large data and trends to the doctor or a podiatrist. Podiatrist is able to make speedy interventions which are time and energy conserving.

To conclude, smart foot solutions are innovative and encourage people with diabetes to move with confidence. Regular check up when combined with smart wearables and healthy lifestyle can help individuals lead an active lifestyle despite diabetes.

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