Chapter 6

# Insulin Therapy Among People with Diabetic Foot Ulcer

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## INTRODUCTION

Diabetes is a major health issue in India, affecting an estimated 101.3 million people, making it the second-highest prevalence country worldwide.[1] Among its numerous complications, diabetic foot ulcers (DFUs) stand out as a major cause of morbidity and healthcare costs, resulting from the interplay of diabetic peripheral neuropathy (DPN)[2] and peripheral arterial disease (PAD). These conditions impair wound healing, increase infection risks, and often lead to amputations. Socioeconomic factors, such as inadequate foot care awareness and cultural practices like walking barefoot, further exacerbate the burden in India. Effective management of DFIs requires stringent glycemic control, where insulin therapy plays a vital role in promoting wound healing, reducing inflammation, and preventing severe outcomes like amputations. Guidelines from the ADA and IDF recommend insulin therapy to maintain optimal glycemic control and improve wound healing outcomes.[3,4]

## PATHOPHYSIOLOGY

Diabetic foot ulcers (DFUs) result from a multifaceted interplay of hyperglycemia, immune dysfunction,[5] and impaired wound healing mechanisms.[6] Chronic hyperglycemia disrupts normal immune responses by impairing neutrophil chemotaxis and macrophage activity[7] and impaired wound healing mechanisms, thereby reducing the ability to clear necrotic tissue and defend against microbial invasion.[6] Additionally, insulin resistance and persistent hyperglycemia compromise vascular function, leading to reduced perfusion, oxygenation, and nutrient delivery essential for tissue repair. Hyperglycemia also inhibits fibroblast activity and collagen synthesis[8] critical components of wound healing, further