a cascade of events

DIABETIC FOOT ULCERS

EVIDENCE-BASED MEDICINE
OBESITY IN AMERICA

Obesity in the U.S. has reached epidemic levels and poses a continued threat to public health. For millions of Americans this condition leads to dangerous comorbidities and costly treatments. Because there is no single cause of obesity, the condition remains difficult to both prevent and treat.

About 1/3 of U.S. adults are OBESE

Obesity related conditions include:

- HEART DISEASE
- STROKE
- TYPE 2 DIABETES
- HIGH CHOLESTEROL
- SLEEP APNEA
- OSTEOARTHRITIS
- certain types of CANCER

More than 85% of people who have TYPE 2 DIABETES are OVERWEIGHT

In 2010, obesity prevalence was 30% or more in 12 states

OBESITY TRENDS

Among US Adults, BRFSS

*BMI ≥ 30, or ~30 lbs. overweight for 5' 4" person

1989

2001

2010
There is a strong correlation between people who suffer from obesity and people who develop type 2 diabetes. Consequently, as the obesity epidemic has grown in recent years, the incidence of type 2 diabetes has also increased across populations. Those who develop this condition can be affected by debilitating complications, and higher health care costs.

AN EPIDEMIC OF DIABETES

Diabetes was the 7th LEADING CAUSE OF DEATH in the U.S. in 2007.

In 2010, there were approximately 26 MILLION PEOPLE in the U.S. WITH DIABETES & nearly 7 MILLION of those were UNDIAGNOSED.

In 2011, in adults (20-79 years), diabetes caused at least $465 BILLION in HEALTHCARE EXPENDITURES 11% of TOTAL HEALTHCARE EXPENDITURES.

BY 2030 the number of PEOPLE WITH DIABETES GLOBALLY WILL RISE to an estimated 552 MILLION.

Complications of diabetes include, but are not limited to:

- HEART DISEASE & STROKE: Both the risk for stroke and heart disease related deaths are 2 to 4 times higher in adults with diabetes
- HYPERTENSION: In 2005-2006, 67% of adults with diabetes had high blood pressure or used prescription medications for hypertension
- BLINDNESS & EYE PROBLEMS: Diabetes is the leading cause of new cases of blindness among adults aged 20-74 years
- KIDNEY DISEASE: Diabetes was the leading cause of kidney failure, accounting for 44% of all new cases of kidney failure in 2008
- NERVOUS SYSTEM DISEASE: About 60% to 70% of diabetics have some form of nervous system damage
- LOWER-LIMB AMPUTATIONS: Nearly 30% of all people with diabetes 80 years or older have impaired sensation in their feet

Patients with diabetes take an average of 4-5 MEDICINES A DAY.

Diabetes greatly compounds A POOR QUALITY OF LIFE associated with other diseases.

A person with diabetes has about TWICE THE RISK OF DYING as a person of similar age without diabetes.

More than 60% of all non-traumatic LIMB AMPUTATIONS in the U.S. occur in people WITH DIABETES.

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More than 60% of all non-traumatic LIMB AMPUTATIONS in the U.S. occur in people WITH DIABETES.
Nearly a quarter of people with diabetes will develop a diabetic foot ulcer (DFU). Despite the prevalence and disabling consequences of a DFU, many lack awareness of this serious diabetic complication. DFUs open the door for infection; the longer the DFU persists, the greater the risk of hospitalization and infections like MRSA. Diabetic patients with a DFU are at significantly increased risk for amputation and loss of life.

**A serious complication**

A non-healing DFU carries an:

- Increased risk of infection
- Which leads to an increased risk of hospitalization
- & an increased risk of amputation
- & increased cost

Among all people with diabetes, up to 4% annually will develop a DFU & will develop a DFU in their lifetime. DFUs that persist are predisposed to MRSA & other difficult-to-treat infections. Presence of a DFU for 30 days or longer carries 4-fold risk of infection.

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85% of lower limb amputations in patients with diabetes are preceded by ulceration. In patients with diabetes, history of a foot ulcer alone increased mortality risk by 47%.

64% of patients with diabetes and peripheral vascular disease (PAD) are preceded by ulceration. 5-year mortality rates in patients with diabetes are higher than the general population for all causes of death. The highest mortality rates are for pancreatic cancer (97%), lung cancer (98%), and colon cancer (85%).

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**In patients with diabetes, history of a foot ulcer alone increased mortality risk by 47%.**

**5-year mortality rates in patients with diabetes are higher than the general population for all causes of death.**
The magnitude of the challenge is reflected in the high cost of treatment. The economic burden of DFUs and the complications arising from them are enormous. One of the most important cost-saving considerations in caring for the patient with a DFU is expeditious and complete wound healing to avoid serious complications.

Costs to Treat a Diabetic Foot Ulcer

Over a 2-Year Period Following Detection

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THE CHRONIC ULCER

Diabetic foot ulcers often fail to heal because persistently high concentrations of pro-inflammatory cytokines in the wound induce high concentrations of proteases, which degrade multiple growth factors, receptors, and matrix proteins that are essential for wound healing. Even with good, standard wound care, healing neuropathic ulcers in patients with diabetes continues to be a challenge.

Cellular senescence

Growth factor/Cytokine deficiency

Diminished angiogenesis

MMP/TIMP imbalance

Matrix degradation and turnover

The larger, longer lasting DFU takes longer to heal & presents a greater opportunity for infection &

BECOMING A CHRONIC NON-HEALING WOUND

Healing of Neuropathic Ulcers

Results of a Meta-analysis

A meta-analysis of 10 control groups in clinical trials evaluating treatments for diabetic neuropathic foot ulcers revealed that approximately 70% of DFUs are slow to heal (only 24% and 31% of ulcers heal after 12 and 20 weeks of good wound care, respectively).

CONSENSUS RECOMMENDATIONS

“Expeditious and complete wound healing is the definitive goal in treating diabetic foot ulcers.”

“The panel recognizes the prognostic value of 50% area reduction of the wound at four weeks and recommends utilization of this parameter as a clinical decision point.”