Avoiding Amputations for Diabetics

“How Podiatry Care Changes Your Life”
Introduction

When Things Get Complicated

Individuals currently suffering from type 2 diabetes mellitus are prone to numerous complications as a result of their disease. Patients themselves are often unaware of the potential risks as well as what sorts of consequences can ensue with poor management of the disease. Specifically, diabetics are threatened by lower extremity hardships such as skin changes, decreased circulation, foot deformity, neuropathy, development of ulcers, and in the worst case scenario, amputation. Several studies have found that primary care physicians unfortunately fail to perform any sort of foot examination on diabetic patients during routine office visits. In 2005, there were more than 71,000 lower extremity amputations performed due to untreated foot complications, all of which could have been avoided. (“Diabetes”, 2010) The Diabetic Foot Research Group of San Antonio, Texas claims, “Early detection and appropriate treatment of [these] ulcers may prevent up to 85 percent of amputations,” as well as drastically reduce inflated health care costs (Armstrong & Lavery, 1998). By educating diabetic patients and their families on the risk of complications, daily foot monitoring, proper footwear, and healthy living habits, amputation rates will be drastically reduced. This inexpensive, yet effective manner can be achieved through a variety of outlets such as advertising, podiatry care, and diabetic educational courses. In this manner, masses of individuals will be reached and the amputation epidemic within the diabetes epidemic will retard.

Informing diabetics on the serious problems that can result from diabetes will drastically reduce the number of hospitalizations.

What is Type II Diabetes?

In type 2 diabetes, either the body does not produce enough insulin or the cells ignore the insulin. Insulin is necessary for the body to be able to use glucose for energy. When you eat food, the body breaks down all of the sugars and starches into glucose, which is the basic fuel for the cells in the body. Insulin takes the sugar from the blood into the cells. When glucose builds up in the blood instead of going into cells, it can lead to diabetes complications(ADA).
as well as skyrocketing expenses related to lower extremity conditions. Spreading knowledge constitutes that key aspects of diabetic foot care are covered. For instance, patients should be educated on the implications of neuropathy, which is defined as nerve damage that causes the loss of protective sensation. This loss of feeling means that seemingly harmless injuries to the foot can transition into ulcers, or open wounds, which eventually result in infection. Patients should come to understand that foot monitoring on a daily basis is essential, and they should be advised on the appearance of erythema, callus, infections, and nail problems” (O’Loughlin, McIntosh, Dineen, & O’Brien, 2010). Moreover, diabetic footwear is necessary to avoid excessive pressure and force on the foot, both of which can lead to ulcers and/or deformities. Lastly, avoiding cigarette smoking, exercising regularly, following a low fat diet, and maintaining target levels for lipids, glucose, and blood pressure are all crucial in preventing the progression of diabetic symptoms (O’Loughlin et al., 2010). Stressing this information to the family as well as to the medical team involved with treatment will ultimately solidify the potential dangers to the patient. Unless widespread education of diabetic lower extremity risks is not achieved, patients will continue to lose unnecessary limbs and America will continue to fork over billions in unnecessary surgical procedures.

The advantages of educating diabetics are profound and will undoubtedly reverse the condition for a vast group of individuals. Is it possible to create a widespread, yet effective method, idea, or tool to prevent further health complications for diabetic patients?
Diabetes Through Time

Diabetes mellitus has been recognized as a devastating and deadly disease for over a thousand years. Before the time of modern medicine, doctors could only prescribe a diet change to cope with the illness and many were told they had a year to live once diagnosed. Throughout medicinal revolutions however, new methods in treating and managing the disease have developed. In the 1920’s, two Canadian doctors developed the first production of insulin. Forty years later, a home test was created to assess blood glucose levels. Today, this disease is controllable if the proper care is given at the appropriate stages. Having 1.6 million additional diagnoses each year, however, indicates that diabetics are failing to handle their condition at the appropriate time or through an appropriate approach.

Since 1980, diabetes diagnoses have more than quadrupled from 5.6 million cases to 23.6 million current cases. With the presence of the obesity epidemic in the United States, those who are overweight or obese now account for over 83% of the diabetic population (“Diabetes Data,” 2007). This challenge was not previously addressed as the influence of inactive lifestyle and harmful fast-food was never this prevalent. The United States has truly lost its grasp on keeping its individuals from reaching an unhealthy human status. This status has contributed to the majority of diagnosed diabetics and will do the same for nearly 60 million more that are in pre-diabetic stages.

The issue here is that we have moved from pharmaceutical control of the disease into the ultimate last resort which is surgery. Diabetic amputations have increased from 33,000 in 1980 to over 71,000 in 2005, proving a reliance on surgery instead of more primitive forms of prevention. Exercising regularly and eating healthy are effective educational aspects that need to hold more of an impact during physician diagnosis and treatment of diabetes. A growing trend of diabetic cases has also led to a mounting number of complications that we are still attempting to fully understand from an anatomical and physiological standpoint. Hospital discharges as a result of neuropathy have risen from 39,000 in 1980 to an astounding 66,000 discharges in 2003. Hospital discharges stemming from ulcers have also been on the rise, with 39,000 discharges in 1980 to a shocking 111,000 in 2003. Another complication known as Peripheral Arterial Disease (PAD) which causes reduced blood flow in the lower extremities, accounted for 40,000 hospital discharges in 1980 and an inflated 92,000 discharges in 2003 (“Diabetes Data,” 2007). It is clear that medicine, topical treatment, and surgery are not the
### Neuropathy:
An abnormal and usually degenerative state of the nervous system or nerve that can lead to loss of feeling in the feet or other extremities, especially in the diabetic patient.

### Ulcer:
A circumscribed inflammatory and often suppurating lesion on the skin or an internal mucous surface resulting in necrosis of tissue.

### Blood Glucose:
The concentration of glucose in the blood. Measured in milligrams per deciliter (mg/dL) in the US. High levels can indicate diabetes.

### Diabetes Mellitus:
A condition characterized by hyperglycemia resulting from the body's inability to use blood glucose for energy. In Type 1 diabetes, the pancreas no longer makes insulin and therefore blood glucose cannot enter the cells to be used for energy. In Type 2 diabetes, either the pancreas does not make enough insulin or the body is unable to use insulin correctly.

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**DIABETES THROUGH TIME CONTINUED:**

primary solutions to controlling diabetes and its complications.

Prevention routines have been instilled, however, and many diabetics do make an effort in battling their disease. For instance, in 2008 67.2% of diagnosed diabetics reported having a foot examination within the past year, 63.5% reported examining their feet on a daily basis, and 56.3% reported ever attending a diabetes self-management course (“Diabetes Data,” 2007). On the other hand, taking just 30% of the rest of the diabetic population means that over 7 million individuals took no part in any of these kinds of prevention means. These 7 million are more than enough to place severe strain on America’s healthcare costs. If more diabetics were involved with prevention activities and behavior, amputations and overall hospitalizations due to complications would be downsized significantly.
The United States is officially experiencing an obesity epidemic which tracks and causes diabetes. The appeal of a sedentary lifestyle along with unhealthy foods has trapped many and thus, led to an alarming rise of diabetes diagnoses. Moreover, many diabetic patients are reluctant to take part in self-prevention methods since they would have to pay for it themselves, while expenses for treatment are covered through insurance. This is where educating the masses functions as an inexpensive tactic to truly exemplify how this lack of urgency can lead to life changing circumstances. Ironically, daily self-examination of the foot is the best prevention method for complications and it only costs the individual a few minutes of their day.

Lower extremity complications associated with diabetes mellitus hold great impact on individual and group demeanor and emotion, nationwide health status, and healthcare costs. Type 2 diabetes mellitus is a chronic condition that currently affects 23.6 million people, nearly 8% of the American population. In 2002, it was estimated by the Amputee Coalition of America that the total annual cost of diabetes was near $132 billion, about “one out of every ten healthcare dollars spent in the United States”. Diabetic amputations contributed a staggering three billion of these dollars, with every amputation procedure costing approximately $38,077 (“American diabetes association,” 2007). Around 60% to 70% of diabetics suffer from neuropathy and around 600,000 diabetics develop foot ulcers every year (“Fact Sheet,” 2008). Lower extremity treatment that does not require amputation, like the debridement of ulcers, ranges from $8,000 to $20,000 per procedure. Inpatient and outpatient costs surfacing after this simple tissue removal range from $4,000 to $7,000 (Holzer et al., 1998). Those that allow their ulcers to worsen run the risk of infection, and once infection sets in, amputation is next in line.

When comparing the costs for treating amputations to the costs of treating an ulcer, the numbers are considerably higher. “According to the Journal of the American Podiatric Medical Association, a foot or lower leg amputation costs between $30,000 and $60,000 in initial hospital costs, plus between $43,000 and $60,000 in costs for follow-up care over the next three years” (Phillips, 2009). Follow-up care is composed of but not limited to the inpatient hospital stay, the
outpatient recovery process, the pharmaceutical treatment process, and the physical wound treatment process. Long after the surgery, patients as well as tax-paying citizens will feel the effects from orthotic appliances, prosthesis, home care, social services, and any time taken off of work for disability purposes. These sorts of wide-spanning and ongoing costs cannot and will not ever be able to be distinguished.

Public insurance companies and the American healthcare system alike are feeling the burden of excessive diabetic amputations. The U.S. Department of Health and Human Services states that health care costs are three times higher for diabetes patients with multiple hospitalizations as compared to diabetes patients with a single stay in a given year. It is no surprise that the multiple hospitalization patients are those requiring amputation treatment. Patients with Medicare account for a majority of these costs as they are 48% more likely to have multiple hospital stays compared to those with private insurance. HCUP Highlight Issue 1 is data collected by the U.S.D. of Health and Human Services and it alleges that, “With appropriate primary care for diabetes complications, nearly $2.5 billion in hospital costs might have been averted, with significant potential savings obtained in Medicare ($1.3 billion of total costs) and Medicaid ($386 million of total costs)” (“Economic,” 2005) Stopping the complications before a snowball effect happens will undoubtedly halt further unnecessary healthcare deficits.

From a cultural standpoint, individual and family suffering is present in both physical and mental form. A patient that has experienced an amputation will no longer be a mobile as they once were causing them to depend on others for daily functioning. This puts economic strain on the family as various accommodations must be provided, while self-sustaining duties such as going to work will not be possible and amputees with jobs will come to realize that off from work will be unavoidable. Furthermore, the disconnection from being independent and self-sufficient can emotionally drain and distress an individual. To avoid negative consequences existing in many realms, the entire American market should be driven towards educating the diabetic population.
The Solution: Spreading Awareness

Advertising:

Advertising through various outlets is a cost efficient way to reach a large group of individuals. For example, prevention promotion can be communicated through billboards, magazine ads, newspaper ads, medical periodical ads, TV and radio commercials, and pamphlets located at diabetic populated settings. Pamphlets can be provided to patients at no cost and will contain information on identifying risks, easy-to-read steps on how to properly take care of their feet, and future consequences if prevention is not implemented. To be effective, these pamphlets will be dispersed at clinics, hospitals, nursing homes, and pharmacies to provide easy access for diabetic patients to view and take home. The cost of producing 10,000 pamphlets can reach up to $1000, but this cost is priceless compared to the widespread knowledge that would be spread and the positive prevention consequences that would follow. Currently, there is lack of advertisement for not only the availability but the importance of diabetic footwear as well. Creating strong ads that explain what can occur if improperly fitting shoes are worn will induce more diabetics to purchase a better fitting shoe and thus, save their foot from irreversible damage.

Diabetic shoes can be flaunted through all major forms of media but communicating the ad to the intended audience in the right locations is still important. Each of the previously mentioned forms of mass communication could also push to provide contact information for local podiatry clinics as well as podiatrists offering home-health care. A large scale approach to advertising will encourage diabetics to be proactive in the treatment of their disease and in due course reduce the number of lower extremity hospitalizations and the dreaded amputations.
A physical presence that an individual can see and hear is an exceptionally valuable teaching tool. A diabetic educational course conducted by a health expert will allow patients to grasp the severity of their disease. Publicly funded classes such as those of Alcoholics Anonymous will cover diabetic risks as well as preventive care patients can perform on their own. Instruction would likely take place during the evening to accommodate those with who have work or school during the day. A multidisciplinary approach that brings input from podiatrists, physicians, nutritionists, and fitness experts sets up a class to educate patients on a multitude of different levels. Using a diverse combination of teaching apparatuses such as lectures, videos, images, PowerPoint presentations, handouts, and group activities can grasp the attention of those who currently lack knowledge on foot complications. Specifically, instruction on what neuropathy is, what wounds and injuries to look for, how to properly wash and take care of their feet, and what kinds of shoes are best suitable for their condition, will be sufficient to help avoid any further downward progression. After completing of the course, the goal is to see diabetics that are now dedicated to handling diabetes with much more aggression. These publicly funded courses along with those conducted by the American Diabetes Association endorse mass knowledge for such a colossal group of uneducated individuals. Health and recovery centers across the country will provide information to diabetics on the times and locations of courses being held. Moreover, podiatrists, physicians, and any other discipline of diabetic treatment will be encouraged to verbally refer their patients to attend the classes. Advice in the form of human interaction will cause diabetics to feel a strong interest in preventing their condition from progressing negatively.
Home health podiatry care that is more readily available will increase awareness for diabetic foot complications. This solution will allow patients to obtain private care, treatment, and prevention knowledge in the comfort of their own home. Without a need for serious surgery procedure, foot inspections, cleaning, application of topical moisturizers, orthotics fitting, correct shoe fitting, and lessons on personal foot examination can all be conducted within the household at a price that is more affordable than a clinic or hospital setting.

Home health podiatry care is ideal for individuals who are physically incapable of making a visit to a licensed podiatry treatment center due to some form of immobility. This inability to visit a health center often causes the patient to delay examination or treatment until it is too late and amputation is inevitable. At this point, the patient has no choice but to go to the hospital, have an extended stay, and thus, accumulate high medical costs that would have been minimized if the problem was identified earlier. Many diabetics hold strong to the idea that examination is expensive and treatment is a cheaper option because the expenses are covered by insurance or by the government. Therefore, free or extremely cost efficient in home examination should be conducted at a podiatrist’s discretion to encourage diabetics to see a podiatrist. This podiatrist will then become in charge of treating the patient’s condition, which will save money and resources by targeting the issue at an earlier stage of progression. Through this process, the podiatrist is reimbursed for their treatment procedure as some form of medical assistance helps cover the cost for the patient. Overall, this plan lowers medical costs as the disorder is treated earlier.

People should be able to seek help by calling a number, sending an email, or submitting their disorder on a website. From here, various podiatrists can pick and choose their cases, and a patient plan will be set up prior to treatment but after initial examination.
Suzanne’s Battle with Diabetes

Suzanne has been battling with diabetes for the last 10 years, prolonging her condition due to excessive weight and a lack of regular physical activity. In the last two years, she has become quite dormant after retiring from her career as a schoolteacher. She spends a majority of her time at home sitting on the couch or laying in bed. Suzanne wears shoes that do not adequately support the shape or arches of her foot. Moreover, her footwear breaks down her skin and inadequately protects her from high pressure and various forces. This factor along with the fact that she has lack of sensation in her feet from neuropathy puts her at risk of developing a foot ulcer.

One day, Suzanne discovers a large callus on the side of her foot that has created a bit of deformity. She panics and decides to call a podiatrist to set up an in-home evaluation. The podiatrist visits her the next day and begins with a determination of whether or not she has developed an ulcer.

Luckily for Suzanne, she is not at the ulcer stage yet and the doctor gives a detailed explanation on various preventive measures. This includes mild cleansing with soap and water, along with the use of topical moisturizers to ultimately promote moist and healthy skin.

The physician also inspects Suzanne’s shoes for improper fit and comes to the conclusion that she must make the switch to high quality athletic shoes or diabetic footwear. The podiatrist also informs Suzanne to avoid home remedies, hot soaks, heating pads, and harsh topical products.

In conclusion, the doctor leaves Suzanne with a list of preventive measures she should follow daily and they agree to have follow-up appointments every two weeks. “By reinforcing preventive advice and inspecting the patient's feet at routine follow-up visits, the physician can help the patient develop and maintain good foot-care habits” (Armstrong & Lavery, 1998). Over the next month, the callus and deformity on Suzanne’s foot slowly but surely disappears causing her feet to be in healthy state. Her new diabetic shoes will prevent the development of any sores or blisters that could potentially become ulcers. She is now extremely knowledgeable on how to avoid foot complications even though she has lost sensation from her shins down. Suzanne continues to examine her feet daily and uses appropriate moisturizing applications.
The solutions proposed will specifically target high medical costs as well as the unneeded progression of diabetic complications. Shorter hospitalization stays as well as cheaper treatment procedures will save billions in insurance costs every year. Furthermore, diabetic patients will prevent the development of ulcers, which will in turn put a stop to non-traumatic lower extremity amputations. Our solutions offer convenience as well as mass communication which helps to reach a large group of diabetics. This means our various solution proposals will be heard and explored all over the nation. Once foot examination and foot care is promoted on an across-the-board level, a trend will ensue, allowing more and more diabetics to become aware of possible complications before they arise. With this, diabetics may become more motivated to handle other aspects of their disease and reverse the effects of the American type 2 diabetes mellitus epidemic.

The next logical step is to fill our health and recovery centers with “foot care” pamphlets providing patients with daily routines they can begin immediately. Contacting billboard owners, TV stations, radio stations, magazines, periodicals, and newspapers to begin advertising sits next in line. Correlating which diabetic footwear companies are willing to have their products promoted is essential before an effective advertisement can be made. In the same realm, finding a pool of podiatrists that are willing to take part in home-health care should be done prior so that advertisements can be fashioned accordingly. For diabetic educational courses, podiatrists, nutritionists, and fitness experts will be brought together to plan and potentially teach. Teaming up with the American Diabetes Association to promote the availability of diabetic educational courses is the last step in our solution timeline.
References


Picture References

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Solutions:
(Advertising)
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