

Put feet first  
**prevent**  
amputations

# DIABETES AND FOOT CARE

## Time to Act

A joint publication of the  
International Diabetes Federation  
and the International Working  
Group on the Diabetic Foot.



International Diabetes Federation



INTERNATIONAL WORKING GROUP  
ON THE DIABETIC FOOT





# Acknowledgements



The International Diabetes Federation (IDF) and the International Working Group on the Diabetic Foot (IWGDF) would like to thank Novo Nordisk and LifeScan for their generous contribution towards the publication of Diabetes and Foot Care: Time to Act.



INTERNATIONAL WORKING GROUP  
ON THE DIABETIC FOOT



International Diabetes Federation

The International Diabetes Federation (IDF) and the International Working Group on the Diabetic Foot (IWGDF) would also like to thank ConvaTec, and Xilas medical inc. for their support of the publication of this book.

The IDF and the IWGDF gratefully acknowledge the contribution of the editorial committee, editorial board and contributing authors.

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Printing



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## Introduction

The time to act is now!  
Put feet first: prevent amputations  
How to use this publication  
Call to action for people with diabetes  
Call to action for healthcare professionals  
Call to action for healthcare decision-makers



# Time to Act

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## **The time to act is now!**

Diabetes is a serious chronic disease. All types of diabetes are potentially life-threatening and can reduce quality of life. In 2003, the global prevalence of diabetes was estimated at 194 million. It is now thought to be in excess of 200 million. This figure is predicted to reach 333 million by 2025 as a consequence of longer life-expectancy, sedentary lifestyle and changing dietary patterns. Diabetes is the global epidemic of the 21st Century and is now the fourth leading cause of death in most developed countries. At present there is no cure. This global epidemic will affect everyone, everywhere.

Healthcare financers and decision-makers will need to allocate sufficient resources effectively and will need to choose carefully how to reallocate resources efficiently in order to maximize the quality of care for their populations. This will involve investing in programmes that prevent diabetes and that facilitate the prevention of diabetes complications.

Diabetes representative organizations and others advocating for change in diabetes care will need to provide arguments to ensure that healthcare decisions are well informed and best serve the growing numbers of people with diabetes. They will need to fight hard to make sure that awareness of diabetes is prioritized and that preventing diabetes has a prominent place on the healthcare agenda.

Industry partners play an important role, not only in terms of the valuable contribution they make towards improving therapeutic care, but also in facilitating research, education and diabetes awareness programmes.

In the face of the epidemic, healthcare professionals will need to find new ways of organizing care delivery in order to absorb the fast-increasing workload. They will have to find new ways of working together to ensure that the burden of responsibility is shared across healthcare teams and that the people with diabetes in their care are welcomed and engaged as part of the team.

People with diabetes have a responsibility to themselves. They must play an active role in their own care and learn as much as they can about their condition in order to seek, recognize and act upon good advice. Many complications of diabetes can lead to death or severe disability. All of them have the potential to reduce the quality of life for people with diabetes and their families. However, with good diabetes management, the pursuit of a healthy lifestyle, and access to good healthcare, the complications of diabetes can be prevented or delayed.

# Time to Act

The International Diabetes Federation brings together all members of the global diabetes community to work towards increasing access to and improving the quality of diabetes care, as well as raising awareness of diabetes and its complications. Our mission is to promote diabetes care, prevention and a cure worldwide. World Diabetes Day provides an excellent example of how different diabetes stakeholders can come together to promote diabetes awareness.

While the day itself is celebrated on November 14, 2005 marks the shift to year-long campaigning to highlight the need for urgent action to bring about improvements in diabetes care: 2005 is the 'year of the foot'. The theme for World Diabetes Day is Diabetes and Foot Care.

The increasing global incidence of diabetes brings a corresponding increase in diabetes complications. Those affecting the foot are among the most serious and feared. Not only is the impact of amputation devastating on people's lives, it is also one of the most costly diabetes complications.

This publication is the fourth in IDF's Time to Act series. It is produced by the IDF Consultative Section and International Working Group on the Diabetic Foot (IWGDF). The aim of the publication is to inform people of the extent of diabetic foot problems worldwide, persuade them that action is both possible and affordable, and to warn them of the consequences of not taking action. It has been written by international experts in diabetic foot care to draw attention to the unacceptable number of lower-limb amputations that happen as a consequence of diabetes (up to 85% of the one million amputations per year are preventable). The publication offers solutions to those working to bring about improvements in diabetes care.

It is time for the global diabetes community to engage in a concerted effort to increase awareness among carers at all levels of healthcare services worldwide. It is time to reduce the unnecessary suffering that foot complications can bring. With relatively low investment, it is possible to advance education and prevention that will result in lower rates of amputation. The time to act is now!

**Pierre Lefèbvre**



President  
International Diabetes Federation

**Martin Silink**



President-Elect  
International Diabetes Federation





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“Tell me and I will forget.  
Show me and I may remember.  
Involve me and I will understand.”

*Confucius*



## Put feet first: prevent amputations

Of the many serious complications that can affect individuals with diabetes, it is the complications of the foot that take the greatest toll. People with diabetes are 25 times more likely to lose a leg than people without the condition. Throughout the world, up to 70% of all leg amputations happen to people with diabetes. The economic and psychological impact of limb loss is immense. In many cases, people can no longer provide for themselves or their families, they become dependent on the care and support of others and often cannot maintain the same level of social contact.

More than one million people with diabetes lose a leg every year as a consequence of their condition. This means that every thirty seconds a lower limb is lost to diabetes somewhere in the world. The majority of these amputations are preceded by a foot ulcer. The most important factors related to the development of these ulcers are peripheral neuropathy, foot deformities, minor foot trauma, infection and peripheral vascular disease.

The spectrum of foot lesions varies in different regions of the world due to differences in socio-economic conditions, standards of foot care and quality of footwear. In developed countries, one in every six people with diabetes will have an ulcer during their lifetime. In developing countries, foot problems related to diabetes are thought to be even more common.

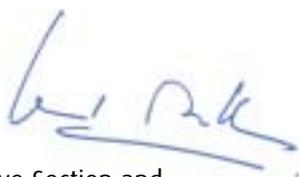
### **This situation can be changed.**

It is possible to reduce amputation rates by between 49% and 85% through a care strategy that combines: prevention; the multi-disciplinary treatment of foot ulcers; appropriate organization; close monitoring, and the education of people with diabetes and healthcare professionals. Healthcare decision-makers have a key role to play in removing the barriers to implementation that still exist in many countries.

The management of the diabetic foot according to present guidelines, as set out in this publication, would result in improved survival rates and a reduced number of diabetic foot complications. In addition, implementation would be cost-effective or even cost-saving compared to standard care and would do much to reduce needless suffering.

It is the ultimate goal of reduced amputation rates and improved quality of life that should motivate the advocacy work of those fighting to make a difference for those living with diabetes around the world. It is hoped that this book will provide useful and persuasive arguments that will help achieve this goal.

Karel Bakker



Chair  
IDF Consultative Section and  
International Working Group on the Diabetic Foot



# How to use this publication

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## The aim of this book is

- to increase awareness of diabetic foot problems
- to illustrate that prevention is the first step towards solving diabetic foot problems
- to show that prevention and reduction of amputations can be achieved by identifying the high-risk foot and educating people with diabetes as well as healthcare professionals
- to state that standardized foot strategies aimed at preventing the occurrence of foot ulcers and amputations are highly cost-effective and even cost-saving
- to demonstrate that regional and national foot programmes have already been highly successful and provide models for improvements elsewhere
- to inspire key diabetes stakeholders to engage in the implementation of diabetic foot care services
- to give support to communities and individuals who want to improve foot care for people with diabetes
- to convince people with diabetes, healthcare professionals and decision-makers all over the world that the time has come to act

**Put feet first  
prevent  
amputations**

# How to use this publication

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## Access the information you need

This book has been written to inform people with diabetes, healthcare professionals and healthcare decision-makers all over the world how to prevent and how best to care for diabetes-related foot problems.

While most chapters include some information that is important to all readers, some chapters are more directed towards one audience rather than written specifically for all three.

In order to facilitate the extraction of information, a colour code has been used. Almost every chapter begins with key messages for people with diabetes, healthcare professionals and healthcare decision-makers respectively.

Each group has its own colour code:

The colour code for people with diabetes

The colour code for healthcare professionals

The colour code for healthcare decision-makers

The chapters that are directed more towards one group have been colour-coded for that group.

The important sections in each chapter are also indicated with the colour corresponding to the audience for which it is thought to be most useful.

The editors hope that this will help readers to access easily the information they require.

**A flap at the back of the book provides a detailed guide for readers.**

# Call to action

## Call to action: people with diabetes

### At risk of foot ulceration

If you have diabetes, you are at risk of foot ulceration. This is particularly the case when diabetes has resulted in a loss of sensation in the feet. This often happens when someone has lived with diabetes for some time. As a consequence, it is possible to injure the foot, causing an ulcer without realising it. Foot ulcers can lead to amputation. Unfortunately, the chances of amputation are far higher for a person with diabetes than a person without the condition.

### Adequate diabetic foot care

The risks of developing foot ulcers and therefore the possibility of amputation can be reduced if diabetic foot care is adequately managed, both by the person at risk and by those in a position to provide care. In terms of education and the consequent ability to take care of your feet, the message is simple: the more you learn about diabetes and your feet, the more likely you are to avoid foot problems in the future. However, your possibilities are greatly enhanced if the care, advice and support with which you are provided are adequate.

### Annual assessment of your feet

The provision of adequate foot care for people with diabetes requires sufficient funding and knowledge. As a minimum, you should have an annual assessment of your feet (more if your risk of foot complications is higher). This is an essential component of your diabetes management. If you already receive regular foot care, you are fortunate. As explained in this book, many people with diabetes do not have access to the quality of diabetes care they deserve. You have a responsibility to yourself and to other people with diabetes in the community to make sure that, given local circumstances, the provision of diabetic foot care is as good as it possibly can be. One way to work towards this goal is to add your voice to the many people around the world advocating improved care for people with diabetes. The best way to start is to join your local diabetes association and support the activities in which they are engaged. National and global advocacy for people with diabetes can bring about significant changes to how diabetic healthcare is structured, managed and financed.

### Reductions in amputations

Research into diabetic foot care has shown that reductions in amputations are possible. As the growing numbers of people living with diabetes increases pressure on limited healthcare resources, you will have to play an active role in your own healthcare. You need to know how to check and look after your feet on a daily basis. Ask the person or team who look after your diabetes to tell you whether you have or are at risk of foot problems. Ask them how best to prevent future problems. Be aware that if you have numb feet, you might not feel that there is a problem. This, however, does not mean that the problem is not serious.

### Ill-fitting shoes harm your feet

Ill-fitting shoes can harm your feet. Make sure where possible that you make informed choices of what footwear to use by seeking good advice. If your shoes have caused a foot problem, you should wear different shoes. Ask the person or people who look after your feet to help you to find a suitable alternative.

## Call to action

Because diabetes is a complicated condition that can affect many parts of the body, healthcare professionals from different disciplines are likely to be involved in your healthcare team. While it is often true that any foot care is better than none and that many people are fortunate to receive any kind of foot care, you should be aware that current research in diabetic foot care strongly suggests that your feet are best cared for when teams of healthcare professionals from different disciplines (the educator, the diabetes specialist and the podiatrist, to name but a few) share information and work with you to help you care for existing foot problems and prevent future ones. It should be your role to make sure that the foot care you and other people with diabetes receive is as good as it can possibly be, or, as is often the case, better than it is at present. Be aware and make others aware that foot ulcers and amputations can be prevented with good foot care.

Healthcare professionals from different disciplines



# Call to action

## Call to action: healthcare professionals

### Sharing responsibility

All healthcare professionals working in foot care share the responsibility for bringing about improvements in the delivery of foot care for people with diabetes and for reducing amputation rates.

In most countries, foot care is not yet at the level of funding, organization and professionalization

In some developed countries, the approach to foot care is exemplary and provides a model to inspire many working elsewhere. It has been shown that, through appropriate prevention and management of the diabetic foot, it is possible to achieve reductions in amputations and reduce the suffering of many people living with diabetes. However, in most countries, including developed countries, foot care is not yet at the level of funding, organization and professionalization that would facilitate the ready attainment of these objectives. Given, however, that the goals are both possible and affordable in many contexts, it is possible to learn from those foot-care settings where standards are being set.

Long-term cost of amputation is higher than primary healing

Long-term cost of amputation is higher than primary healing. The core components of a successful (as measured by improved outcomes) foot clinic are described briefly below.

### Screening

The identification of the foot at high risk of diabetes complications is key to preventing amputations. The screening of the diabetic foot does not have to be done by a doctor or a podiatrist; it can be performed by others so long as they have been carefully trained to assess the situation and react appropriately to the findings.

### Examination

It is the responsibility of every healthcare professional involved in the care of people with diabetes to ensure that the feet and footwear of those in their care are examined at least once per year. The examination should be more frequent for those at high risk of ulceration. The results of all examinations should be carefully recorded.

### Education

Sufficient and appropriate foot-care education must be provided in order to ensure that people with diabetes know how to take care of their feet. Education should be simple, relevant, consistent and repeated. Healthcare professionals should follow post-graduate training to improve their own understanding and enable foot-care practices to keep up with the latest developments.

### Organization

A multidisciplinary team approach to diabetic foot care has been shown to result in fewer amputations. Healthcare professionals involved in the care of people with diabetes should strive to create a professional environment where this approach can be implemented. Podiatrists are key members of the multidisciplinary diabetic foot team. Collaboration between clinics and the standardization of diabetic foot care terminology, management, and practices will facilitate research in the field and help improve care and bring about the reductions in amputations that are needed.

# Call to action

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It is important that healthcare professionals support and stimulate research into diabetic foot care. Data collection and study will help decision makers to allocate resources efficiently and will lead to improved outcomes for people with diabetic foot problems.

## Research

Guidelines provide an essential tool to help implement good diabetes care for all people with the condition. Guideline recommendations define standards of care and use evidence-based interventions to achieve these standards. They should be used to steer healthcare professionals, people with diabetes, policy-makers and administrators towards optimal care. The diabetes care offered will differ within countries and across national borders and therefore some components of diabetic foot care will need to be tailored to suit local circumstances. The goal posts, however, should not be moved.

## Guidelines



# Call to action

## Call to action: healthcare decision-makers

### A serious, chronic disease

Diabetes is a serious, chronic disease caused by both genetic and environmental factors. Increasing age, obesity, sedentary lifestyles and changing dietary patterns are leading to year-on-year increases in the global incidence of diabetes. In 2003, the global prevalence of diabetes was estimated at 194 million. It is now thought to be in excess of 200 million. This figure is predicted to reach 333 million by 2025. At present there is no cure. All people with diabetes deserve access to the best possible care, medication and diabetes supplies that available resources will allow.

### Serious and costly complications

Many serious and costly complications affect individuals with diabetes. These include heart disease, kidney failure, blindness and complications of the foot. Foot problems are common, life-threatening and place an enormous financial burden on the healthcare sector, people with diabetes and their families, and society as a whole. Every year, more than one million people undergo lower-limb amputation as a consequence of diabetes. This presents a significant economic problem, particularly if amputation results in prolonged hospitalization, rehabilitation and an increased need for home care and social services. In developed countries, the long-term (3 years) costs associated with an initial amputation are estimated to be as high as approximately US\$64,000. This estimate excludes the indirect costs as a consequence of loss of productivity, any costs incurred by the person with diabetes and any family member who provides care, and includes no calculation of the loss of quality of life.

The reduction of these costs and improvements in the quality of life of people with diabetes will require effective care and education to improve health outcomes. Investing in diabetic foot-care and prevention programmes can be one of the most cost-effective forms of healthcare expenditure, provided the programme is goal-focused and properly implemented.

### A multidisciplinary team approach

There are many different causes of diabetic foot problems. Ideally, healthcare professionals from different specialities should be involved in the provision of care. The past 15 years have seen a growing evidence base that strongly indicates that foot care for people with diabetes is optimal when sufficient financial and human resources are employed to create diabetic foot care services that involve healthcare professionals from different disciplines. The multidisciplinary team approach to diabetic foot care has been shown to bring about a 49%-85% reduction in amputation rates. This underlines the need to provide funding and support to create new clinics along the lines described in this publication.

### The provision of podiatric services

Of the healthcare professionals involved in the multidisciplinary diabetic foot care team, the podiatrist plays a pivotal role. In many countries, there is an urgent need for podiatry training programmes to be established. Podiatrists should be state-registered and regulated by government.

# Call to action

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People with diabetes should not be put at increased risk by unregulated, unqualified and poorly equipped practitioners.

People with diabetes and their representative organizations should be encouraged to help establish realistic treatment goals that recognize success in terms of metabolic control, delayed onset or prevention of complications, and sustained or improved quality of life. This involves collaborative educational initiatives to ensure that informed self-care actions are taken and appropriate lifestyle choices made.

Good equipment must be provided to diagnose foot problems in people with diabetes before the problems get worse and become more costly to treat. Well-designed promotional and educational materials should be available in sufficient quantities. As most ulcers are caused by poor footwear, adequate shoes should be provided for people with diabetes.

Wherever possible, research should be supported to collect data on diabetic foot disease and lower-extremity amputations. Using research findings to inform diabetic foot care will ensure that diabetic foot-care and prevention programmes are focussed effectively. Local and regional variations in complications of the foot, as well as varying incidence across population sub-groups suggest opportunities for targeted intervention. Identifying people with diabetes at risk of developing foot ulcers and taking the appropriate preventative measures would be cost-effective or even cost-saving. Investing resources in both would reduce total costs to society and improve quality of life.

Every 30 seconds a lower limb is lost to diabetes somewhere in the world. This need not be the case. Studies have proven that amputation rates can be reduced by more than 49% if appropriate strategies are implemented and adequate resources allocated.

The involvement of people with diabetes and diabetes representative organizations

The provision of materials and equipment

The need for research

Every 30 seconds a lower limb is lost to diabetes

