

# Diabetes

## 4 key messages for today

*We estimate the number of diabetics in the world to be approximately 400 million<sup>1</sup>. Many of them have diabetes without knowing it, which is to say that a medical diagnosis has never been made. In the next 25 years, the number of diabetics will continue to increase to over 600 million persons<sup>1</sup>. This increase will be primarily due to the aging of the population globally and the increase of the main environmental risk factors for diabetes: an unbalanced diet, obesity and a sedentary lifestyle.*

*Diabetes affects men and women alike, and does not respect geographic frontiers, ethnic or economic factors. The countries with the greatest numbers of diabetics are China (~110 million), followed by India (~69 million) and the United States of America (~29 million) but all countries are affected by this "epidemic"<sup>1</sup>.*

### Author

Dominique Lannes, Medical Officer  
Underwriting and Claims R&D Centre

## Type 1 and 2 diabetes

### Different pathological mechanisms, one common factor: high serum glucose levels

#### Type 1 diabetes

This form represents approximately 10% of all cases of diabetes. It can occur at any age but usually begins in childhood (75% of diagnoses) and always requires treatment by insulin injection. It results from the destruction of the pancreatic beta cells that secrete the vital insulin hormone. Insulin allows the body's cells to use sugar to make energy. We do not yet fully understand how the cellular destruction occurs.

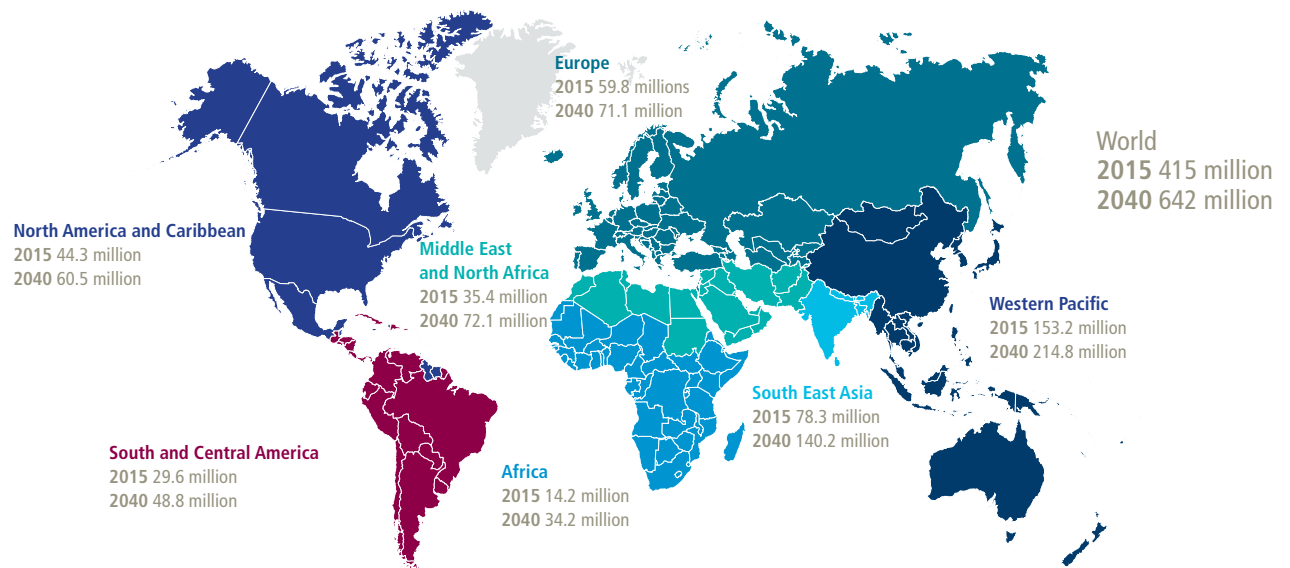
One thing however is certain: it is a multifactorial disease in which a genetic predisposition and environmental factors (eg viral infection, autoimmune mechanism) interact collectively to destroy the pancreatic beta cells.

#### Type 2 diabetes

This form accounts for nearly 90% of all diabetes, usually begins in adulthood and requires treatment with oral medication. The incidence of this form of diabetes increases with age. In type 2 diabetes, the secretion of insulin by the pancreas is usually adequate but the body cells cannot use it properly. The reason for this non-utilization or insulin resistance is not fully understood. It is thought to be a multifactorial condition for which a genetic predisposition interacts with environmental factors such as obesity, sedentary lifestyle and a high caloric diet. During this phase of the disease, the pancreas tries to compensate by producing more and more insulin (hyperinsulinism).

However, after a period of several years, the pancreas can no longer counterbalance and is unable to secrete enough insulin. The diabetes then becomes "insulin requiring" and treatment with oral antidiabetic agents has to be combined with insulin.

Estimated number of people with diabetes worldwide and per region in 2015 and 2040 (20-79 years)<sup>2</sup>



### 1 GLOBAL PREVALENCE OF TYPE 1 DIABETES IS INCREASING SLOWLY BUT SURELY AT A RATE OF 3% PER YEAR

This progression is also observed in other autoimmune diseases such as rheumatoid arthritis and multiple sclerosis.

### 2 GLOBAL PREVALENCE OF TYPE 2 DIABETES IS NOW INCREASING AT A RATE OF 1% PER YEAR IN ADOLESCENTS AND YOUNG ADULT POPULATIONS

We have for a long time attributed type 2 diabetes to adults, but in the last 20 years the incidence of this type of diabetes in children and adolescents has been increasing worldwide. Children belonging to certain ethnic groups are known to be more susceptible: African, Pacific Asians and South Asians. Again, sedentary lifestyle, high calorie diets and certain genetic predispositions explain this increase in younger persons.

### 3 AFTER AGE 60, THE APPEARANCE OF TYPE 2 DIABETES DOESN'T SIGNIFICANTLY AFFECT MORTALITY COMPARED TO THE GENERAL POPULATION OF THE SAME AGE

After age 60 in fact, cancer, cardiovascular diseases unrelated to diabetes and other chronic disease become more common causes of death. This increase in other causes of death dilutes the effect of type 2 diabetes in terms of all-cause mortality. In the Swedish study looking at mortality and type 2 diabetes<sup>3</sup>, the total mortality of the 44 664 person type 2 diabetic population (aged 75 years and older) was only 1.1 times that of the general population, showing that the increase is only slight.

### 4 INSULIN IS USED AT AN EARLIER STAGE OF THE DISEASE IN TYPE 2 DIABETES

Let's look at the Swedish approach to see the current state of this issue. Sweden is a small paradise for diabetes experts because the country has set up registers that include the entire population with type 1 and type 2 diabetes. In a recent study looking at the excess mortality for persons with diabetes<sup>3</sup>, what do we observe?

At the time of publication, there were 33 915 type 1 diabetics in Sweden<sup>4</sup>, all treated with insulin. There were 435 369 type 2 diabetics, of whom 86 223 received insulin with or without oral antidiabetic drugs.

Therefore, there were twice the number of type 2 diabetics on insulin than the total number of type 1 diabetics. In other words, in Sweden, a patient on insulin is actually more likely to be a type 2 diabetic.

You will find in the references these 2 articles from Sweden which discuss the main risk factors found for increased mortality in diabetics.

**SCOR's clients can draw on the expertise and experience of SCOR's medical experts, dedicated research centres and SOLEM to provide them more information.**

## REFERENCES

1. International Diabetes Federation. IDF Diabetes Atlas, 7th edn. Brussels, Belgium.
2. International Diabetes Federation, 2015. <http://www.diabetesatlas.org> (map)
3. Tancredi M, Rosengren A, Svensson AM, Kosiborod M, Pivodic A, Gudbjörnsdóttir S, et al. Excess mortality among persons with type 2 diabetes. *N Engl J Med.* 2015;373:1720–32
4. Lind M, Svensson AM, Kosiborod M, Gudbjörnsdóttir S, Pivodic A, Wedel H, et al. Glycemic control and excess mortality in type 1 diabetes. *N Engl J Med.* 2014;371:1972–82

## WHAT ARE THE IMPLICATIONS FOR LIFE INSURANCE?

The global increase in the prevalence of diabetes is mainly confined to type 2 diabetes, but the prevalence of type 1 diabetes is also rising.

Insulin treatment is no longer the distinguishing characteristic for differentiating between type 1 and type 2 diabetes. Although the causes of the two forms of diabetes are different, their consequences are the same: chronic hyperglycaemia. This begs the question: Can the risk assessment of type 1 and type 2 diabetics can be combined under a single entity?

In any case, it is necessary to monitor the developments in the field of diabetology. New tools for monitoring patients by connected devices and the artificial pancreas are just two factors that will change the lives of both patients and insurers!

**The key parameters for assessing mortality risk in diabetics are: poor glycaemic control with increased glycated Hb, duration of disease, kidney problems and cardiovascular complications. These risk factors are taken into consideration in the SOLEM Underwriting Manual.**

Paolo De Martin  
Editor

SCOR  
5, avenue Kleber  
75795 Paris Cedex 16  
France

[www.scor.com](http://www.scor.com)