

Renal Disease in Type 2 Diabetes in Europe

What is diabetic kidney disease (DKD)?

The normal healthy kidney cleans the blood by filtering waste products and excess fluids, eventually producing urine into the bladder for excretion. Kidneys are also important in other ways, such as acting to help regulate blood pressure, stimulate red blood cell production and produce Vitamin D for healthy bones.

In a diseased kidney, it cannot effectively filter the blood leading to a build-up of toxic substances, raised blood pressure, anaemia and bone disorders. As kidney disease progresses, symptoms develop that may include fluid retention, tiredness, bone pain, itching and malaise, resulting in a poor quality of life. Blood proteins, such as albumin, are normally too large to be filtered by the kidney into the urine, and one marker of kidney damage is the detection of albumin in the urine. Ultimately, kidney disease can lead to end-stage renal disease (ESRD) which requires either dialysis or a kidney transplant to survive.¹ Diabetic kidney disease (DKD) can lead to an increase in incidences of premature death.^{1,5}

DKD, called diabetic nephropathy, is a chronic complication of diabetes due to damage to the small blood vessels within the filtration unit of the kidney. The kidney filter is damaged and the current mainstay of treatment has been to reduce high blood pressure in order to protect the kidneys from deterioration into ESRD.² The risk of ESRD is increased 12-fold in patients with diabetes.³

DKD is the leading cause of ESRD and accounts for approximately 50% of cases in the developed world.⁴ The physical, emotional, and financial burden of the disease increases exponentially as DKD progresses to ESRD.

Prevalence of DKD in Europe

Of the 60 million people living with diabetes in Europe, around 40% will develop DKD.⁵

As the prevalence of diabetes continues to grow, consequentially, so does DKD.⁴ The prevalence of ESRD is projected to increase approximately 3% per year from 2012 until 2025 based on the rise of obesity and type 2 diabetes.⁶

Symptoms of DKD

DKD often doesn't cause any symptoms until the disease has progressed and may not be noticed until around stage four (severely reduced kidney function) of the disease. Symptoms include:⁷

- Water retention causing swelling of the ankles, feet, lower legs or hands
- Shortness of breath, e.g. when climbing the stairs
- Tiredness due to a lack of oxygen in the blood
- Nausea or vomiting

Diagnosing DKD

To diagnose or assess the stage of DKD in patients with diabetes, doctors will check the level of a protein called albumin in the urine (albuminuria), the amount of creatinine (a muscle waste product from normal bodily wear and tear) in the blood, and the estimated Glomerular Filtration Rate – a measure of kidney function. People with diabetes should be screened for kidney complications at least to help identify DKD before it progresses to the more advanced stages.⁷

Prevention and treatment

Both glycaemic control and blood pressure control are associated with a reduction in risk of DKD.

SGLT2 inhibitors lower blood sugar levels, and independently reduce blood pressure within the kidney filtering units, suggesting their potential for use in reducing the risk of DKD among other complications.

Burden of DKD

DKD has a major impact on patients' physical, emotional, and financial wellbeing.

DKD is associated with a high risk of cardiovascular disease (heart attack, heart failure and stroke).^{1,8} DKD and high blood pressure (hypertension) together are the most common causes of ESRD, which is associated with premature cardiovascular death.⁹

DKD also amplifies the risk of other diabetes complications, including:^{1,5}

- A reduced quality of life
- Infections
- Fatigue
- Depression
- Adverse drug reactions
- Premature death

The economic burden of DKD – which is extremely high – significantly increases as kidney function declines.⁴ High costs are mainly due in part to the strong relationship of DKD with cardiovascular disease and the development of ESRD.⁴

Unfortunately, advances in the treatment of DKD have stalled. The lack of innovation in treatment for the last 15 years has resulted in a large unmet need among health care providers, payers, and patients. While screening and diagnosis guidelines are in place, the current standards of care do not substantially slow or stop the progression of disease to reduce the need for transplantation or dialysis, or prevent premature death.

References

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