

Complement-mediated kidney diseases and their impact

The kidneys play a vital role in keeping us healthy, and it is often only when something goes wrong that we realize just how important they are. Unfortunately, as many as 1 in 10 people are affected by chronic kidney disease (CKD) worldwide, which occurs when the kidneys have been damaged over time and can no longer function the way they should. 2

There are many different causes of CKD.² In some rare kidney diseases, called complement-mediated kidney diseases, damage to the kidneys is caused when a part of the immune system becomes overly active.³⁻⁵ This generates an inflammatory response that leads to kidney damage, resulting in protein in the urine (proteinuria) and lower kidney function.^{3,5}

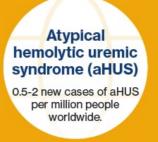


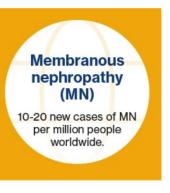
Types of complement-mediated kidney diseases

Complement-mediated kidney diseases are chronic, rare, complex and progressive and occur when the immune system becomes overly active.³⁻⁹ They include diseases such as C3 glomerulopathy (C3G), IgA nephropathy (IgAN), atypical hemolytic uremic syndrome (aHUS) and membranous nephropathy (MN).⁷⁻¹⁰



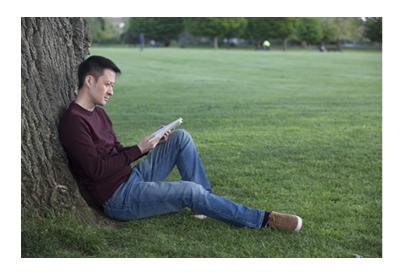
Immunoglobulin A nephropathy (IgAN) 21-40 new cases of IgAN per million people worldwide.





These rare kidney diseases, with the exception of MN, can start early in life, mainly affecting teens and young adults, though symptoms may not be noticed until later in life. 11-14 Unfortunately, some patients will progress to kidney failure within only 10 years of being diagnosed. 7,15-21

Living with complement-mediated kidney diseases



People living with complement-mediated kidney diseases can experience a variety of symptoms, including debilitating fatigue, that have a significant impact on their quality of life. 22-25 This can limit physical activities and abilities to socialize, resulting in severe psychosocial consequences, including reduced motivation, depression and anxiety. 23-25

Unfortunately, there are limited treatment options specifically approved for these rare kidney diseases. ^{7,10,15,25-27} Oral corticosteroids and immunosuppressants can be used in patients at high risk of disease progression, but these often come with significant side effects, including hypertension, diabetes, obesity and a heightened risk of infections. ²⁵⁻²⁸

Progression of these diseases to kidney failure can also mean that people require dialysis for life or may need a kidney transplant, which contributes to an impaired quality of life and an increased risk of premature death.²⁹⁻³⁰

The symptoms associated with complement-mediated kidney diseases, along with the challenges of therapy and time-consuming dialysis, can lead to impaired quality of life and feelings of social isolation and increasingly poor health.²²⁻²⁵

The human and societal impact of complement-mediated kidney diseases

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In addition to the personal impact of complement-mediated kidney diseases, many people can experience unemployment and productivity loss, given the high prevalence of these diseases among working-aged adults.³¹⁻³³ In the U.S., only 11-31% of people who were previously employed retained their job a year after starting on dialysis, compared with 30% in Europe, and 55% in Japan.³⁴

There is also a significant impact on healthcare systems, with high-income countries typically spending more than 2-3% of their annual healthcare budget on the treatment of kidney failure. ^{35,37} In the U.S., for example, the treatment of chronic kidney disease cost more than \$87.2 billion in 2019. ³⁶

Without new treatment options, there will continue to be a significant economic burden on healthcare systems across the globe, driven by dialysis and kidney transplantation costs. 36-38

Our commitment to complement-mediated kidney diseases



At Novartis, we are committed to developing treatments for people living with complement-mediated kidney diseases through continued investment in research and development, and targeted acquisitions.

There is a need for well-tolerated therapies that target key drivers of disease progression in complement-mediated kidney diseases to help delay kidney failure, and in doing so, extend dialysis-free life.³⁹

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