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**Improve the
patient experience
for women over a lifetime**

**Kidneys and
Women's Health**



What Is Kidney Disease?

Kidney disease is a general term for damage that impacts the ability of the kidneys to clear waste and excess fluid from the body. Renal disease can include acute kidney injury (AKI), in which there is a sudden, temporary, and sometimes fatal loss of kidney function, and chronic kidney disease (CKD), a progressive form of the disease that causes reduced kidney function over a period of time.

Microalbuminuria is a primary complication of CKD associated with diabetes in which the small blood vessels in the kidneys that are responsible for filtering wastes are damaged, causing protein to leak into the urine. CKD can lead to end-stage renal disease (ESRD), which, if left untreated, results in total and permanent kidney failure. Hypertension is the second-leading cause of ESRD and has been established as both a cause and consequence of CKD.²

Early identification and treatment of chronic kidney disease can help slow its progression and prevent renal failure, reducing the consequences of dialysis and renal replacement therapy.³

Chronic kidney disease affects approximately 195 million women worldwide and is the 8th leading cause of death in women, with close to 600,000 deaths each year.¹



The Global Burden of Renal Disease in Women

- Chronic kidney disease (CKD) affects 10–16% of the general adult population in Asia, Europe, Australia, and the United States.⁴
- CKD is estimated to be more common in women than in men (16% vs 13%).^{5*}
- The risk relationship of reduced estimated glomerular filtration rate and a higher albuminuria with mortality were steeper in women as compared to men.⁶

Risk Factors⁶

Kidney disease is a complex problem. Chronic kidney disease is usually caused by another medical condition. Primary risk factors include diabetes and hypertension, cardiovascular disease, a family history of kidney disease, age greater than 60 years, and ethnicity.

Secondary risk factors include unhealthy diet, obesity, autoimmune diseases, urinary-tract infections, systemic infections, and kidney loss, damage, injury, or infection.

There are several unique women's healthcare issues resulting from kidney disease affecting menstruation, conception, pregnancy, and menopause.⁷

*Prevalence (percentage) of CKD stages 1–5 among US adults aged 18 years or older using data from the 2011–2014 National Health and Nutrition Examination Survey and the CKD Epidemiology Collaboration (CKD-EPI) equation. These estimates are subject to variability and do not account for persistence of albuminuria or creatinine as indicated by the Kidney Disease Improving Global Outcomes recommendations. Estimates by sex, race, or ethnicity were age-adjusted using the 2000 U.S. standard population.



Symptoms⁷

Most people with CKD have no symptoms, because the body can tolerate a significant reduction in kidney function. CKD may remain unrecognized until the disease is advanced. The only way to detect CKD is by using a blood test to estimate glomerular kidney function and a urine albumin test to assess kidney damage. Some symptoms may include:

- Increased tiredness
- Lack of concentration
- Poor appetite
- Insomnia
- Nocturnal muscle cramping
- Swollen feet and ankles
- Puffiness around the eyes
- Dry, itchy skin
- Frequent nocturnal urination

When acute injury occurs, the kidneys are unable to function, upsetting the body's chemical balance and resulting in dizziness and little or no urine output. In most cases, people who develop AKI are already in the hospital.

Related Diseases and Conditions

Chronic kidney disease has a complicated interrelationship with other disease states, including:

- Diabetes
- Hypertension
- Cardiovascular disease
- Pregnancy complications
- Anemia
- Osteoporosis
- Vitamin D deficiency
- Gammopathies with free light chain involvement

Siemens Healthineers Solutions for Renal Disease Testing

	ADVIA Centaur® Systems	ADVIA® Chemistry Systems	Dimension® EXL™ Systems	Dimension Vista® Systems	IMMULITE® Systems	Atellica® NEPH 630 System† and BN™ Systems	DCA Vantage® Analyzer	CLINITEK® Urine Analyzers	Atellica® CH 930 Analyzer	Atellica® IM Analyzers
Risk Assessment										
Albumin		•	•	•		•	•	•	•	
Albumin: Creatinine Ratio							•	•		
Creatinine		•	•	•			•	•	•	
Cystatin C		•		•		•			•†	
Beta Trace Protein†						•				
Free Light Chains Kappa ⁸⁻¹⁰						•			•†	
Free Light Chains Lambda ⁸⁻¹⁰						•			•†	
Ig Light Chains, Type Kappa				•		•				
Ig Light Chains, Type Lambda				•		•				
IgG (urine)				•		•			•	
Microalbumin		•	•	•	•	•	•	•	•	
NGAL						•				
Protein								•		
Protein: Creatinine Ratio								•		
Urea nitrogen		•	•	•					•	
α-1 Microglobulin				•		•				
α-2 Macroglobulin				•		•				
β-2 Microglobulin		•		•	•	•			•	
Comorbidities										
Hemoglobin A1c		•	•	•			•		•	
Intact PTH	•				•					•
Lipid panel		•	•	•						
Vitamin D Total	•		•							•

*Alliance application

† Under development. Not commercially available. Future availability cannot be guaranteed.

‡ Not available for sale in the U.S.

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References:

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- Davita Health website: <http://www.davita.com/kidney-disease/causes/assessing-your-risk/women's-health-risks-and-chronic-kidney-disease/e/5012>
- Serum FLC aid in the diagnosis of myeloma in patients with severe renal failure: <http://www.biomedcentral.com/1471-2369/9/11>
- Quantitative assessment of serum and urinary polyclonal FLC in patients with Chronic Kidney Disease: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2572283/>
- Association between Free Light Chain Levels and Disease Progression and Mortality in Chronic Kidney Disease: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847714/pdf/toxins-05-02058.pdf>

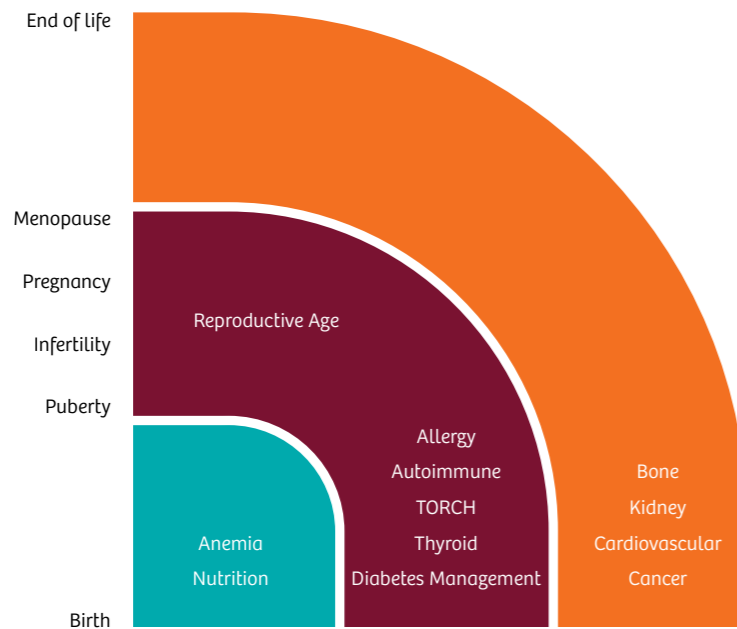
Caring for Women with Renal Disease

While requirements and guidelines for diagnosis, monitoring, and treatment vary by type of kidney condition, imaging, laboratory diagnostics, and point-of-care testing are integral in screening, diagnosing and/or monitoring most kidney conditions.

As an integrated healthcare company, Siemens Healthineers offers comprehensive solutions that follow the complete continuum of renal care, including risk assessment and early prevention, diagnosis, therapy, and aftercare. In addition, our solutions in healthcare IT support the exchange of data for making informed decisions.

Whether as a patient or when caring for a loved one, being informed about kidney disease is a powerful way to improve the patient experience. It can provide comfort and enable confidence to make more-informed care decisions.

Women's Lifetime Health Continuum



**Her results.
Her lifetime.**

**Tests to advance her health
and vitality and improve her
patient experience
for a lifetime.**