Cystatin C

*A small protein with a big effect on early detection of kidney disease*

One of the important parts of managing chronic kidney disease is its early identification and control. Early disease is asymptomatic, resulting in late detection. This in turn leads to irreversible damage and ultimate loss of kidney function, at which point the only treatment options (dialysis or kidney transplantation) affect individual quality of life and are inordinately expensive. For this reason, in the U.S., the annual cost of managing patients with chronic kidney disease amounts to 122 billion USD, 70 percent of which is accounted for by the treatment of comorbidities.1

Timely diagnosis and accurate monitoring of kidney function help avoid kidney damage but require a test capable of identifying subtle changes in kidney performance, especially when it begins to fail. Serum creatinine is currently the most commonly used screening test of kidney function in routine practice. But it is insufficiently sensitive, failing to detect early decline in a patient’s glomerular filtration rate (GFR): typically, serum creatinine levels only begin to rise once 50 percent of kidney function is lost and hence a blind area. It is estimated that half of all at-risk patients are failing to benefit from the appropriate treatment that follows accurate early diagnosis.2,3

![Fig. 1: Half of all at-risk patients are failing to benefit from the appropriate treatment because of the creatinine blind area](image)

Studies have shown that cystatin C is a more accurate predictor of early kidney damage risk, and that it is sensitive to even small variations in kidney function. Earlier diagnosis followed by earlier treatment could help to prevent or at least delay the onset of end-stage renal disease. In the U.S. early intervention has been shown to reduce treatment costs by as much as 70 percent.4
The new Tina-quant® Cystatin C Gen. 2 test from Roche completes our toolset for diagnosis and monitoring with dedicated markers for patients with kidney damage and those at risk. Healthcare professionals can use cystatin C to secure their patients the benefits of enhanced early detection before kidney failure and concomitants become apparent. The course of kidney disease and further complications can be managed by constant monitoring in extension with the Elecsys PTH (1-84) and the Elecsys Vitamin D tests.

### Table: Markers for Monitoring Kidney Disease

<table>
<thead>
<tr>
<th>Marker</th>
<th>What does it indicate?</th>
<th>Who might be affected</th>
<th>Test/Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin D</td>
<td>Low levels of vitamin D can be seen in kidney disease and occur in persons with early kidney failure.</td>
<td>In patients with kidney failure a lack of calcitriol production prevents calcium absorption.</td>
<td>Elecsys® Vitamin D3 (25-OH)</td>
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<td>PTH</td>
<td>To determine whether PTH levels are responding normally to changes in blood calcium levels and to confirm removal of the gland(s) causing the problem.</td>
<td>In patients with kidney disease and/or failure, phosphate may not be excreted efficiently, disrupting its balance with calcium.</td>
<td>Elecsys PTH</td>
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<tr>
<td>Cystatin C</td>
<td>Endogenous marker for monitoring kidney dysfunction, by calculating the glomerular filtration rate. Cystatin C is far less susceptible to non-renal variability than serum creatinine, and therefore provides more reliable information.</td>
<td>Patients with kidney dysfunction.</td>
<td>Cystatin C</td>
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</tbody>
</table>

**Fig. 2: Our tests for monitoring the course of chronic kidney disease**

**References:**


