



Quest Diagnostics Health Trends™ Report 2007:
“An Analysis of Chronic Kidney Disease (CKD) in the U.S.”

- Data Highlights and Methodology -

Inadequate Monitoring of Kidney Disease

- **60%** of patients with diabetes and kidney disease did not receive a standard urine test (microalbumin) between November 2005 and October 2006.
- **90%** of patients with high blood pressure (hypertension) and kidney disease who do not have diabetes did not have the test during the previous 12-month period.
- **52%** of patients with diabetes, hypertension and kidney disease did not have the test during the previous 12 months.

Poor Disease Management

- **27%** of patients with diabetes and early-stage kidney disease had hemoglobin A1c (HbA1c) levels $\geq 9\%$, compared to just **9%** of those with diabetes and advanced kidney disease.
- **66%** of patients with diabetes and early-stage kidney disease had HbA1c levels $\geq 7\%$. In contrast, **43%** of those with diabetes and advanced kidney disease had HbA1c levels $\geq 7\%$.
- Patients with cardiovascular disease (CVD) and early-stage kidney disease had higher average LDL-cholesterol levels than those with more advanced kidney disease (**101 mg/dL vs. 97 mg/dL**).
- Only **53%** of patients with CVD and early-stage kidney disease had LDL-cholesterol levels less than 100 mg/dL – the target level according to the National Heart, Lung, and Blood Institute’s ATP-III cholesterol guidelines.

Study Methodology

The Quest Diagnostics Health Trends™ Report, “An Analysis of Chronic Kidney Disease in the U.S.,” is based on an initial review of test results from November 2005 to December 2006, for patients ages 18 and older. Patient matching software was used to assign a “patient matching” identification number, so that a de-identified data set of individual patient results, matched over time, could be created. The de-identified data was then aggregated for analysis. The result was a data set that allowed the company to analyze data

on the level of the individual patient, while assuring that patients could not be identified by name, address, physician name, or similar features.

The first analysis was based on 3.4 million estimated Glomerular Filtration Rate (eGFR) results in October 2006, and 2.8 million microalbumin tests between November 2005 and October 2006. The analysis determined the percentage of patients with eGFR <60 who had a microalbumin test performed during the previous 12 months, grouped by diagnosis.

The number of patients in each group and the percentages having a microalbumin test in the year prior are detailed below.

eGFR Value	ICD-9 Codes	Number of unique patients who had eGFR in Oct. 2006	Number of unique patients who had at least 1 eGFR<60 in Oct. 2006 and ≥1 microalbumin (MA) in prior 12 months	% who had ≥1 MA test	% not having MA test
eGFR<60	Diabetes Mellitus	113,203	45,268	40.0	60.0
eGFR<60	High Blood Pressure	94,041	9,497	10.1	89.9
eGFR<60	Diabetes Mellitus + High Blood Pressure	21,207	10,116	47.7	52.3

The second analysis is based on approximately 13 million test results for diabetes (HbA1c), low-density lipoprotein cholesterol (LDL) and kidney disease (eGFR and microalbumin) performed in 2006, on 7.9 million unique patients. Of these test results, 500,000 met all the criteria for inclusion in the final analysis. Stage of CKD was based on patients having, on at least two occasions 90 days or more apart, an eGFR result of <60 mL/min/1.73 m² or a microalbumin result >30. For patients with multiple eGFR results during a single time period, the average of the two lowest eGFR scores was used to define stage of CKD.

In both studies described above, the presence of CVD (including a subset of patients with hypertension) and diabetes were identified by specified ICD-9 diagnostic codes, which are used by the diagnostics industry to categorize diseases.