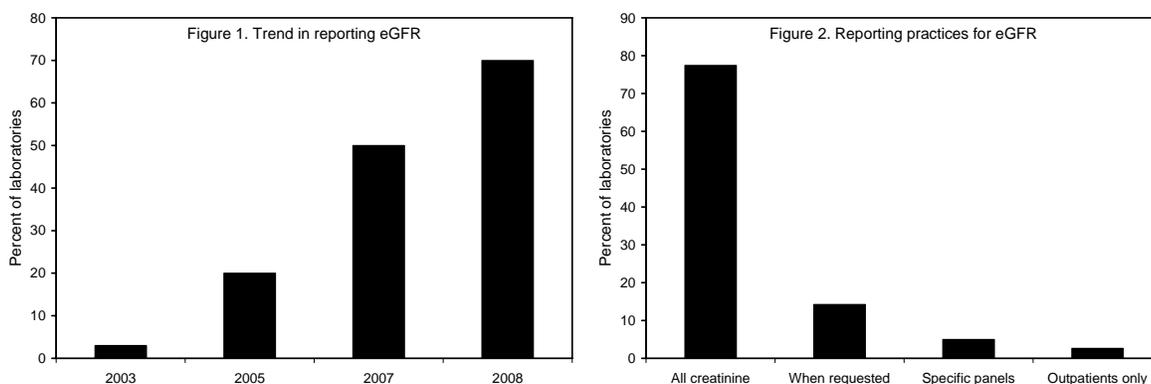


## Current status of reporting eGFR

The general chemistry C-B Survey, June 2008, included questions regarding practices for reporting estimated glomerular filtration rate (eGFR) from serum creatinine results. Responses were received from 4325 participants (76%). Nearly all laboratories (80%) used the National Kidney Disease Education Program (NKDEP) recommended 4-parameter MDRD equation; with the 6-parameter MDRD and Cockcroft-Gault equations used by 2% and 4%, respectively; the others were not sure what equation was used. Nearly all calculations (96%) were performed by a LIS system.

Estimated GFR was reported by 70% of respondents. The number of laboratories in the C Survey reporting eGFR has increased markedly since 2003 when the NKDEP program was launched (Figure 1). Of the respondents, 77% reported eGFR with all creatinine results, 14% only when requested, 5% only with specific test panels, and 2.6% only for outpatients (Figure 2).



The NKDEP web site (<http://nkdep.nih.gov>) recommends to report estimated glomerular filtration rate (eGFR) with all serum/plasma creatinine results when it is appropriate and feasible to do so. The public health goal of the NKDEP is to identify patients with stage 3 chronic kidney disease (GFR 30-59 mL/min/1.73m<sup>2</sup>) so they can be put on effective treatment to slow progression of the disease. Because serum creatinine is not well correlated with kidney damage in the early stages of the disease, an eGFR value is more easily related to a patient's kidney disease condition.

The NKDEP web site cautions that there are clinical conditions when an eGFR is not appropriate. The MDRD Study equation should only be used in individuals age 18 and older, has not been validated for use with the elderly (over 70 years of age), pregnant women, patients with serious comorbid conditions, or persons with extremes of body size, muscle mass, or nutritional status. GFR estimating equations have poorer agreement with measured GFR for ill hospitalized patients and for people with near normal kidney function. However, if a computer reporting system cannot identify patients for whom reporting eGFR is most appropriate, laboratories should report eGFR for all patients and allow the clinician to determine the suitability of a result for a patient's condition.

The NKDEP recommends not to report a numeric value for eGFR > 60 mL/min/1.73m<sup>2</sup> because several factors combine to make the values less reliable. Among those reporting eGFR, 71% adhered to the NKDEP guidelines and reported > 60 mL/min/1.73m<sup>2</sup>. However, significant numbers of laboratories were reporting higher numeric values. The main contributors to a less reliable eGFR over 60 mL/min/1.73m<sup>2</sup> are:

increased imprecision of lab results for creatinine at the lower creatinine values consistent with higher (more normal) GFR values, results from the MDRD equation itself have more uncertainty and a negative bias vs. measured GFR as GFR gets more normal, and calibration biases among different creatinine methods have more influence at lower creatinine values consistent with higher GFR values.

The NKDEP creatinine standardization program is underway. The goal of this program is for IVD manufacturers to change the calibration of creatinine methods to be traceable to an isotope dilution mass spectrometry (IDMS) reference measurement procedure. Forty-three percent (43%) of participants in this Survey reported using creatinine methods that had calibration traceable to IDMS. It is very important that a laboratory use the correct version of the MDRD 4-variable equation when using a creatinine method that has its calibration traceable to IDMS. IDMS traceable methods will have lower values for creatinine and the IDMS traceable version of the MDRD 4-variable equation must be used. See the NKDEP web site for more information on the MDRD equation. Note that the MDRD 6-variable, the Cockcroft-Gault and other estimating equations do not have versions suitable for use with a creatinine method that has its calibration traceable to IDMS and will produce erroneously high estimates of GFR or creatinine clearance with such methods.

It is important to inform the pharmacy and persons who prescribe drugs when introducing a creatinine method that has calibration traceable to IDMS. Drug dose adjustments are made based on kidney function that is usually evaluated based on the serum creatinine. Because methods with calibration traceable to IDMS will have lower creatinine values, a drug prescriber may get an incorrect assessment of kidney function. Pharmaceutical manufacturers have used the Cockcroft-Gault equation to estimate kidney function, but there is no version of this equation available for use with an IDMS-traceable creatinine value. Consequently, a drug prescriber needs to be informed that the creatinine values will be lower, and the magnitude of the change in values compared to a previous method. Please see the NKDEP web site for more detailed information and a downloadable sheet that can be given to the pharmacy and to prescribers of drugs.

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