

## Final Report

### Background

Chronic kidney disease (CKD) affects 1 in 9 adults in the US. It is often under-diagnosed and under-treated resulting in lost opportunities to detect CKD early and prevent or slow progression to chronic kidney failure. Over 25 organizations have come together to form a coalition to improve care given to patients with chronic kidney disease in the states of Michigan, Minnesota, North and South Dakota, and Wisconsin. To assist in this goal, the Early Referral Workgroup of the coalition sought to identify labs that were automatically reporting eGFR (estimated glomerular filtration rate) when a serum creatinine was ordered by the ordering physician as a practical way to detect, evaluate and manage people with CKD. A program was developed to collect information from laboratories that would provide knowledge on opportunities to develop education for primary care providers and others to identify practice changes to reduce chronic kidney disease.

### Method

Laboratory demographic information for CLIA (Clinical Laboratory Improvement Amendments) was collected from each of the state CLIA programs. A questionnaire was developed that asked labs about their practices of eGFR calculation. The State of Wisconsin was chosen as the pilot state to complete the questionnaire. The pilot questionnaire was sent to labs that were either certified or registered as a CLIA laboratory in the State of Wisconsin from the State offices. Questionnaires were returned to the Renal Network 11 office. The remaining four states subsequently completed the questionnaire. The questionnaires were both mailed and received by the Renal Network 11 office. For both groups, results were received via facsimile and mail for four weeks after distribution.

### Results

- Participation. A total of 1150 laboratories received the invitation to complete the questionnaire. Nearly two-thirds of labs completed and returned the questionnaire. Figure 1 shows a breakdown of questionnaires that were received. A small number of laboratories became ineligible to participate due to creatinine testing not being a part of their scope of testing. Laboratory eligibility was only determined for those labs that actually completed the questionnaire.

Figure 1						
State	Michigan	Minnesota	North Dakota	South Dakota	Wisconsin	Total Number of Labs
Returned Questionnaire	19	52	29	30	95	225 (57.3%)
<b>Total Number of Labs</b>	<b>392</b>	<b>299</b>	<b>132</b>	<b>179</b>	<b>148</b>	<b>1150</b>

- Lab Characteristics. Laboratories that participated in the project were asked if the location of their lab was hospital-based, clinic-based, independent, or other. The location of labs varied by state, but over half (58%) of labs were part of a hospital-based system. See Figure 2. The size of the labs participating were smaller than expected, with 84% of labs having fewer than 500 patient encounters per day, as shown in Figure 3.

Figure 2. Location of Labs, 2007

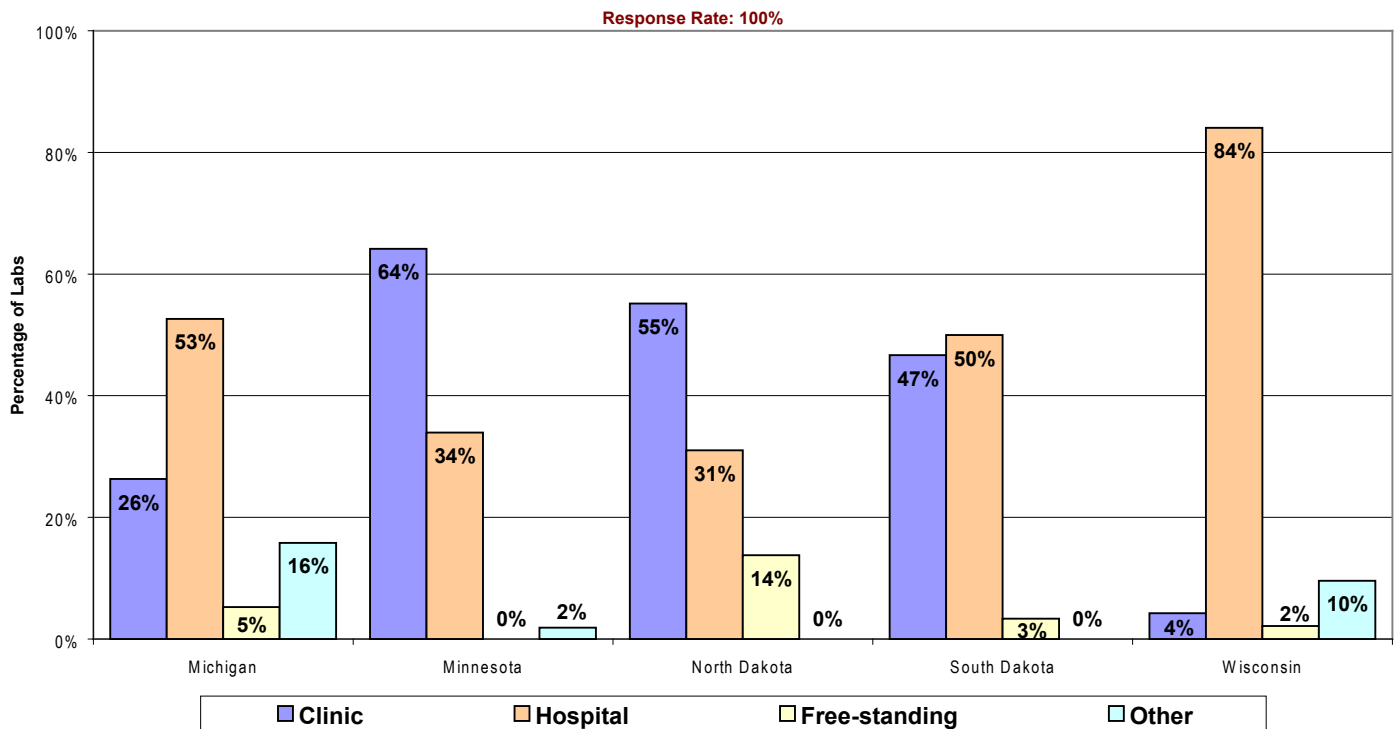
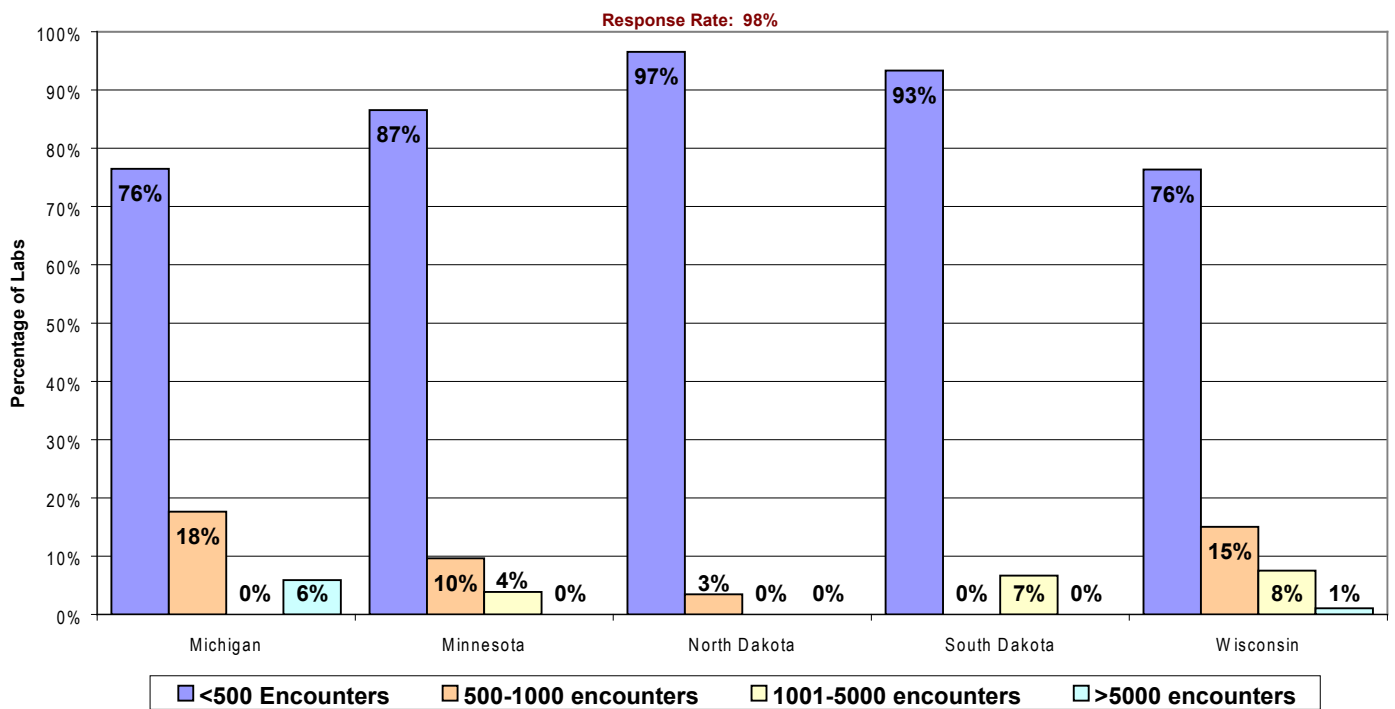
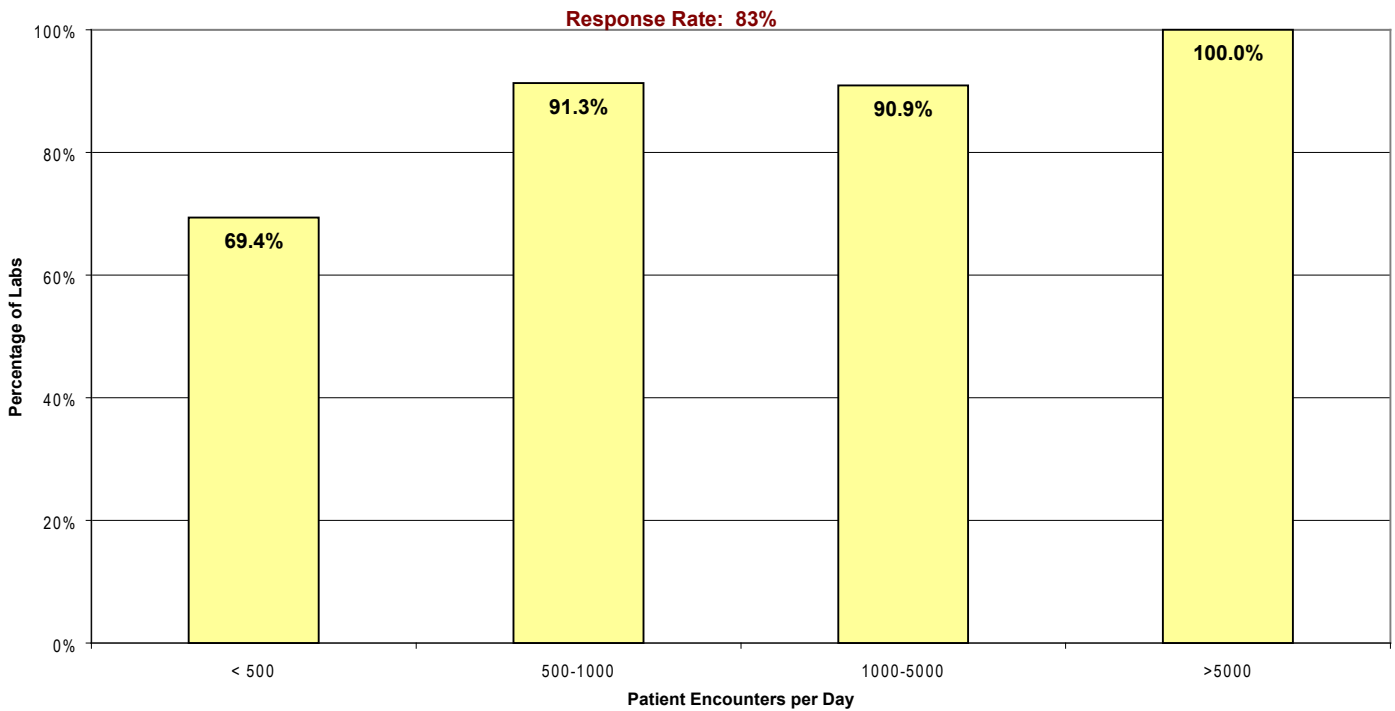


Figure 3. Patient Encounters among Labs, 2007



4. **eGFR Reporting.** The questionnaire also asked labs about their eGFR reporting practices when a physician orders a serum creatinine. More than 80% of labs reported that either they or their reference laboratory currently automatically calculate and report eGFR on the patient lab report when a serum creatinine is ordered by the physician. The majority of labs with 500 patient encounters or greater include the eGFR calculation on the patient report. However, this percentage is greatly reduced for labs with fewer than 500 patient encounters, of which only two-thirds include calculation and reporting of eGFR. See Figure 4. Several labs that have not incorporated automatic calculation and reporting of eGFR for all patients cited special circumstances in which eGFR is reported. As shown in Figure 5, these special circumstances include reporting for

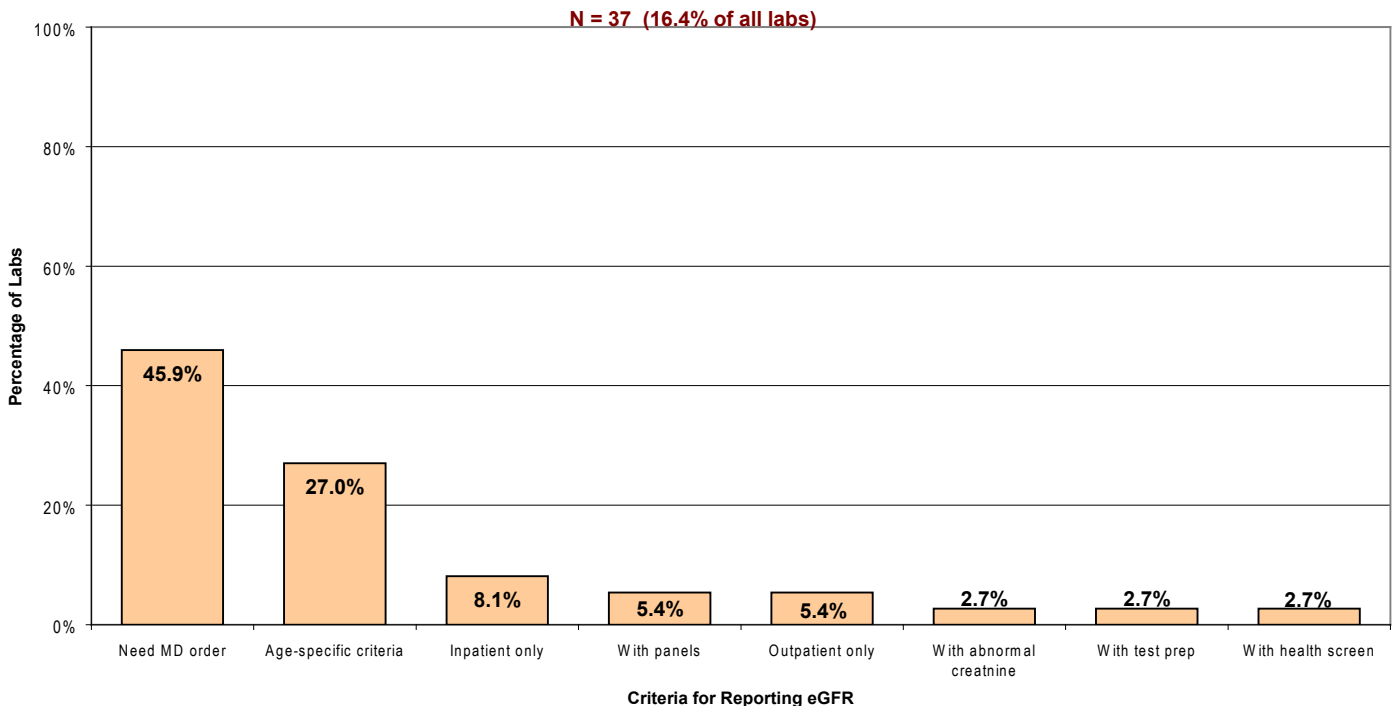
**Figure 4. eGFR Automatic Calculation/Reporting by Patient**



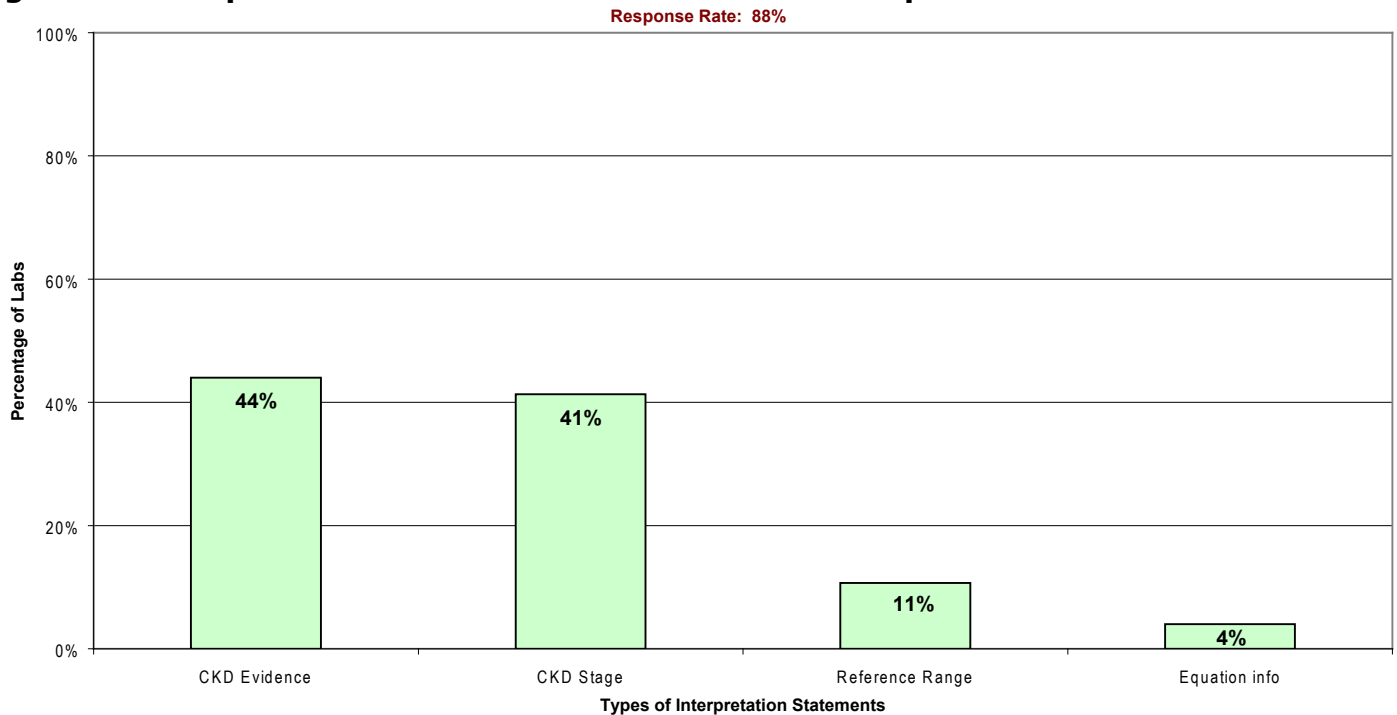
non-pediatric patients, only if inpatient, only if outpatient, only with panels, only when abnormal creatinine results are reported, and others. Additional labs also stated that eGFR is only calculated and reported when the ordering physician requests the calculation.

- eGFR Calculation and Interpretation.** Nearly all labs who report eGFR (86%) use the MDRD (Modification of Diet in Renal Disease) formula to calculate eGFR (response rate of 91.6%). Labs not using the MDRD formula relayed that they were unsure of the formula used in their laboratory to calculate eGFR. Labs who did currently calculate and report eGFR were asked if they included any additional information on the patient report that provided guidance to the physician. 58% of labs include a statement to assist the physician with

**Figure 5. Criteria for Labs Reporting eGFR (excluding labs reporting for all patients)**



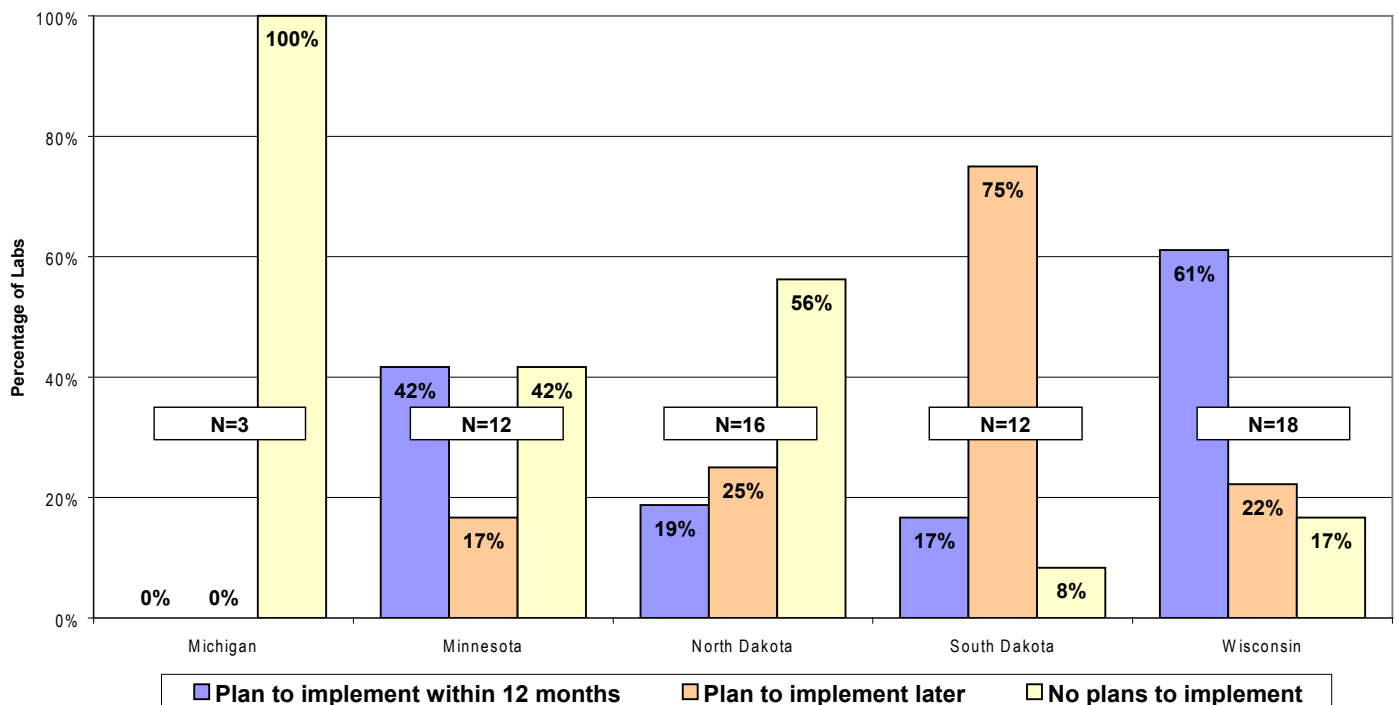
**Figure 6. Interpretation Statements Included on Lab Report**



eGFR interpretation. The interpretation statements used included staging of chronic kidney disease, evidence of CKD, and listing the reference range, as shown in Figure 6. In addition, 73% of labs also include written instructions for interpreting the eGFR value for African-American and non-African-American patients. Nearly all labs (96%) reported these statements directly on the patient reports, with two labs providing an electronic link to the interpretive statements and one lab sending report directly to physician.

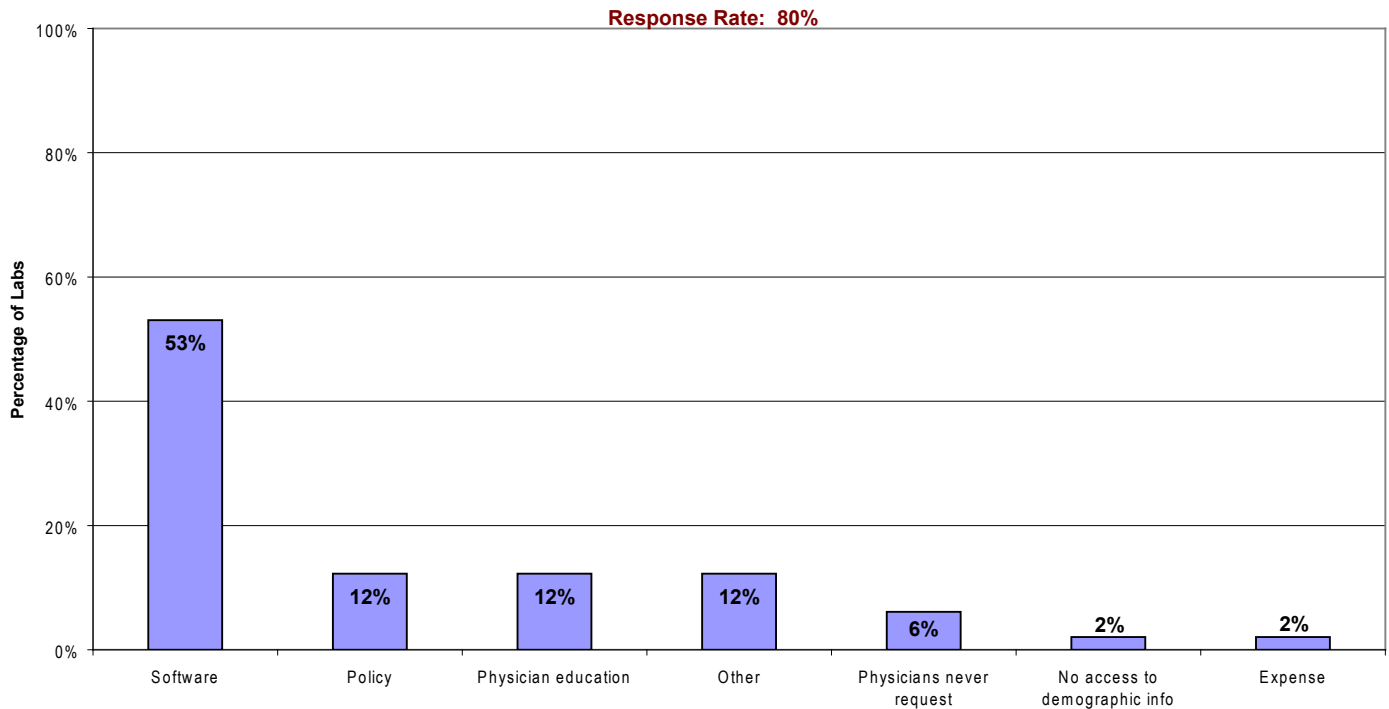
- Plans for eGFR Reporting.** About one-fifth (19.7%) of labs stated that no automatic calculation of eGFR was being conducted. Overall, one-third of labs plan to implement eGFR report within the next 12 months (34.3%), 31.2% plan to implement sometime in the future, and the remaining one-third do not plan to implement. Figure 7 shows the breakdown of these plans by state.

**Figure 7. Laboratory Plan to Implement eGFR Reporting**



7. Barriers to eGFR Reporting. Of the 61 labs who did not currently report eGFR, several barriers to implementation were cited. Figure 8 summarizes these barriers, but the greatest barriers to implementation included software limitations and physician education. Of these labs, a significant number of labs that stated their eGFR goals focused on improvement of physicians ordering eGFR calculation, in lieu of automatic eGFR reporting by labs.
8. Technical Assistance Requests. Of the 61 labs who do not report eGFR, two-thirds of labs stated they would not be interested in receiving technical assistance to implement eGFR reporting.

**Figure 8. Barriers to Implement eGFR Reporting**



## Conclusions

This project was conducted within five states of the Upper Midwest region. The majority of labs are reporting eGFR when a serum creatinine is ordered by the physician. Practices among labs do show variation by state. The state of Michigan passed a resolution in 2006 requiring labs to report eGFR when a serum creatinine is ordered for all Medicaid patients. As a result of this, ancillary evidence shows that most labs are reporting eGFR for all patients. No other states in the Upper Midwest region have made this change. In addition, the location of labs varies greatly from state to state. Whereas Wisconsin has the majority of labs embedded in hospitals, Minnesota and the Dakotas have labs predominantly in clinics. The fact that all states report their laboratories as small in size also impacts their ability to perform automatic eGFR calculation and reporting, as shown in Figure 4. Beyond this, additional regional differences in medical practice exist between states, as each has developed its own set of criteria as to when and if eGFR should be automatically calculation and reported (Figure 5).

For labs automatically reporting eGFR, many are also providing interpretation statements, which includes information on either CKD evidence, CKD staging, reference range, or additional equation information. This addition allows for continued education and support to the provider that is caring for patients at risk of developing chronic kidney disease. The MDRD formula for eGFR is exclusively used for calculating values.

Of the labs who do not currently report eGFR, approximately two-thirds of them plan to implement automatic reporting in the future, but only one-third would be receptive to technical assistance with its implementation. Labs cited barriers to implementation with the highest barriers being software, physician education, and policy.

These conclusions have assisted the workgroup in identifying the next steps of this project. Initially the workgroup developed this project to assist labs in eGFR reporting implementation, with the hypothesis that most labs who had not yet implemented automatic reporting of eGFR. This project showed the workgroup that the majority of labs in the Upper Midwest region had already implemented, and only a few had not yet implemented. The number of labs who both has not yet implemented and has no plans to implement in the future is very small. Therefore, decisions for developing the project's next strategies has changed to include more comprehensive primary care physician education on interpreting eGFR values and identifying patients that should receive CKD screening. The workgroup will also work to develop laboratory best practices on automatic eGFR reporting implementation.

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