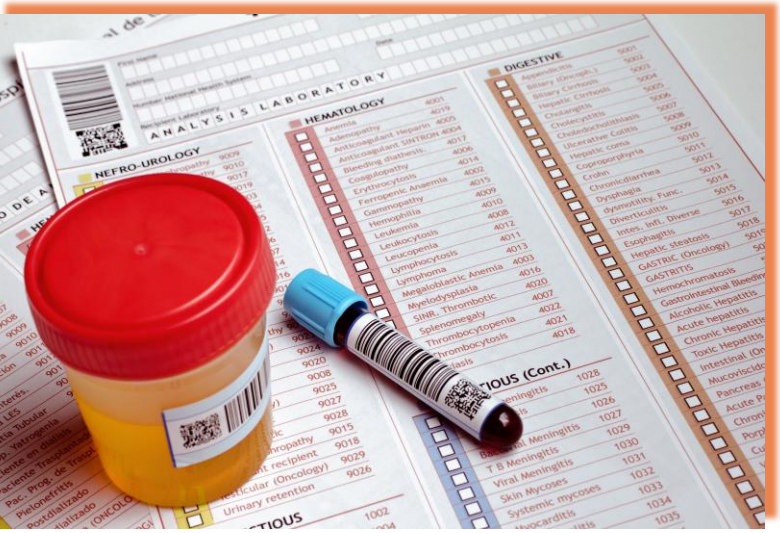

A Vision for Laboratory Testing for Chronic Kidney Disease in Michigan

White Paper | March 2026

Executive Summary

Laboratories play a vital role in providing consistent test methodologies and results reports. With approximately 70% of healthcare decisions based on laboratory tests, test standardization is critically important to maintaining appropriate quality of care.[1]

The purpose of this white paper is to describe laboratory-related barriers to CKD testing and identify opportunities to improve early detection and management of CKD in the state of Michigan. This white paper was developed by the National Kidney Foundation of Michigan (NKFM) in collaboration with the Michigan Department of Health and Human Services (MDHHS) Diabetes and Kidney Unit, Joint Venture Hospital Laboratories (JVHL), and Blue Cross Blue Shield of Michigan.

Following are recommended actions Michigan laboratories should take to facilitate testing for CKD:

- Use consistent nomenclature for urine albumin-creatinine ratio (uACR), moving away from "microalbumin" terminology. Following are CPT codes with appropriate descriptions: 82043 - Urine albumin, quantitative and 82570 - Urine Creatinine. When ordered together, employ "urine albumin-creatinine ratio (uACR)".
- Ensure that both CPT codes 82043 (urine albumin) and 82570 (urine creatinine) are included and correctly mapped together on the same date of service to accurately identify a valid uACR test.
- To ensure equity and appropriate quality of care, implement the 2021 CKD-EPI eGFR creatinine equation for calculating estimated glomerular filtration rate (eGFR) with CPT 82565 and LOINC code 98979-8.
- Report quantitative laboratory results for eGFR and uACR rather than threshold-based results (e.g. eGFR > 60 mL/min/1.73m^2).
- Train laboratory personnel to
    - Build uACR in their systems as an orderable test and report uACR results as milligrams per gram (mg/g)
    - Report quantitative uACR and eGFR results
    - Consider adding the "Kidney Profile" in their systems with appropriate panel listings and CPT codes for both components – the eGFR and uACR.
- Educate ordering providers regarding lab ordering protocols/processes.
- Ensure both laboratory staff and providers are acquainted with current guidelines related to eGFR and uACR testing for CKD (See Appendix 1).

Background

CKD: Common, Serious, and Costly

Chronic kidney disease (CKD) impacts roughly 14% of the adult population in the United States, which equates to over 35 million people.[2]

In Michigan, CKD affects more than 1 million adults — approximately one in every seven residents. From 2019 to 2023, the state's CKD prevalence increased from 3.4% to 4.2%, based on self-reported data from the BRFSS survey. Disparities persist among demographic groups: Black adults in Michigan are affected at a higher rate (5.7%) than White adults (4.2%), and women have a higher prevalence than men (4.9% vs. 3.9%).[3]

Patients with advanced CKD commonly experience both physical and psychological symptoms, including pain, fatigue, pruritus, sleep disturbances, nausea, and depression. These symptoms frequently occur concurrently and contribute to poor quality of life. Despite their prevalence, many remain underrecognized and inadequately treated in routine CKD care. Improved symptom assessment and management strategies are essential to addressing this gap and enhancing patient-centered outcomes in advanced CKD.[4]

CKD is a progressive condition with serious health consequences, including markedly increased risks of cardiovascular disease (CVD), all-cause mortality, and progression to kidney failure. As kidney function declines—reflected by a lower estimated glomerular filtration rate (eGFR)—the risk of cardiovascular events and premature death rises significantly, even before the onset of end-stage kidney disease (ESKD). Cardiovascular complications are the leading cause of death among individuals with CKD and can occur in early stages.[4] Without timely identification and management, many individuals—particularly those with diabetes or uncontrolled hypertension—progress to ESKD, at which point dialysis or kidney transplantation becomes necessary for survival.[5]

CKD disproportionately impacts healthcare expenditures. According to the United States Renal Data System (2024), 15.4% of the approximately 23.2 million Medicare Fee-For-Service beneficiaries aged 66 and older were diagnosed with CKD. Although they represent a minority of beneficiaries, they accounted for over one-quarter (26.7%) of total Medicare FFS spending, totaling $86.4 billion in 2022 data.[2] In 2022, annual per-person costs for Medicare fee-for-services (FFS) beneficiaries aged 66 and older with CKD -

excluding those with ESKD—were more than twice as high as for those without CKD. Medicare spending for individuals with non-dialysis CKD averaged approximately $20,432 per person, compared to about $10,000–$11,000 for beneficiaries without CKD. This underscores the substantial cost burden of CKD, even before progression to ESKD. Additionally, Medicare-related spending for those with ESKD reached $52.3 billion in the same year.[2]

In 2022, estimated annual costs for Michigan Medicaid beneficiaries with laboratory evidence of CKD or ESKD were $22,860 versus $3,511 for beneficiaries without CKD or ESKD; this equates to approximately $3.9 billion for beneficiaries with CKD or ESKD.[6]

Given the substantial burden and cost of CKD, there is an urgent need for strategies that promote early detection and access to appropriate care in communities most at risk. Despite this need, there is a widespread gap in awareness surrounding testing and its primary risk factors—such as hypertension, diabetes, and family history—among both patients and healthcare providers.

Most people with CKD are unaware they have it, which is why testing for individuals at risk is critical to detect CKD and begin treatment early.[7]

Testing for Chronic Kidney Disease

CKD diagnosis requires two tests: estimated glomerular filtration rate (eGFR) to assess kidney function, and urine albumin -creatinine ratio (uACR) to detect kidney damage. (The ordering of both eGFR and uACR will be referred to as dual testing in this White Paper.) Recommendations related to eGFR and uACR testing for CKD are in current guidelines developed by Kidney Disease Improving Global Outcomes (KDIGO), NKF Kidney Disease Outcomes Quality Initiative (KDOQI), American Diabetes Association and the College of American Pathology. It is important that laboratory staff and providers are acquainted with these guidelines which appear in Appendix 1.

Estimated Glomerular Filtration Rate (eGFR)

The estimated glomerular filtration rate, derived from serum creatinine levels in conjunction with age and sex, provides an estimate of the kidneys' ability to filter waste products from the bloodstream.[8] Prior to 2021, widely used equations for estimating kidney function—such as the Modification of Diet in Renal Disease (MDRD) Study equation and the 2009 Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) creatinine equation—included a race-based coefficient that adjusted results for Black individuals. However, because race is a social construct rather than a biological determinant, its use does not accurately reflect individual genetic ancestry or variation in physiology. Importantly, continued use of race in clinical algorithms has been shown to perpetuate disparities in care. As a result, the use of race in estimating GFR is no longer considered appropriate. To promote equity and consistency in diagnosing CKD, the National Kidney Foundation (NKF) and the American Society of Nephrology (ASN) recommend nationwide adoption of the 2021 CKD-EPI creatinine equation, which estimates kidney function without including a race variable.[9]

Urine Albumin-to-Creatinine Ratio (uACR)

uACR testing is a critical but underutilized component of kidney disease evaluation. Albuminuria as measured by uACR is one of the earliest and most sensitive markers of kidney damage, often preceding declines in eGFR. In addition, uACR values > 30 mg/g are strongly associated with cardiovascular disease.[7] Despite its importance, uACR testing is frequently overlooked in clinical practice, especially among patients with diabetes or hypertension who are at elevated risk for CKD. The absence of uACR results significantly hampers accurate CKD staging using the KDIGO heat map classification, which integrates both eGFR and albuminuria to stratify risk and guide clinical

decision-making. Without uACR data, clinicians may underestimate disease severity, miss opportunities to intervene, and delay necessary changes in therapy. Routine use of uACR testing enables better monitoring of disease progression, facilitates timely initiation of protective treatments (e.g., ACE inhibitors, ARBs, or SGLT2 inhibitors), and reduces the risk of complications such as cardiovascular disease and kidney failure.[10]

The eGFR and uACR tests are complementary and, when used together, provide a reliable strategy for the early detection of CKD in at-risk individuals.

Kidney Disease Improving Global Outcomes guidelines for CKD recommend the combined use of eGFR and albuminuria to evaluate disease severity and guide clinical decision-making. This integrated approach is embodied in the KDIGO heat map (risk stratification matrix), which classifies CKD severity based on the intersection of eGFR and albuminuria categories as well as the cause (see figure 1).[7]

Stratifying CKD using the KDIGO Heat Map (see figure 1) provides critical insight into the urgency and intensity of care needed. Using both measures enables clinicians to obtain a more precise understanding of the patient's condition; evaluate the risk of CKD progression, cardiovascular complications, and mortality; and guide decisions regarding appropriate testing, monitoring intervals, and treatment strategies.[7]
The American Heart Association (AHA)/American College of Cardiology (ACC) 2025 guidelines for the prevention, detection, evaluation and management of high blood pressure recommend uACR testing for individuals with hypertension at initial diagnosis and least annually. In addition to being a biomarker for CKD, albuminuria is a strong predictor of cardiovascular risk and events although not widely recognized.[11] The American Heart Association (AHA) released the *Cardiovascular-Kidney-Metabolic (CKM) Health Presidential Advisory* in 2023 which outlined the interplay between CKD, cardiovascular disease and metabolic risk factors. The advisory provides a staging construct and CKM screening recommendations which include uACR to determine CKD and CVD risk.[12]

The KDIGO Heat Map (figure 1) is a color-coded, evidence-based tool used to stage, risk-stratify, and monitor chronic kidney disease (CKD). It plots estimated glomerular filtration rate (eGFR) against urine albumin-to-creatinine ratio (uACR) to categorize patients by risk of CKD progression and mortality: green (low risk), yellow (moderate risk), orange (high risk), and red (highest risk). The numbers 1, 2, 3, and 4+ within each color cell indicate the recommended number of times per year to monitor eGFR and uACR. Referral to nephrology is recommended for patients with higher-risk CKD or evidence of progression, particularly when the Heat Map indicates referral (e.g., orange or red risk categories).

CKD is classified based on: **• Cause (C)** **• GFR (G)** **• Albuminuria (A)**				**Albuminuria categories** Description and range		
				A1	**A2**	**A3**
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–299 mg/g 3–29 mg/mmol	≥300 mg/g ≥30 mg/mmol
GFR categories (ml/min/1.73 m²) Description and range	**G1**	Normal or high	≥90	Screen 1	Treat 1	Treat 3
	G2	Mildly decreased	60–89	Screen 1	Treat 1	Treat 3
	G3a	Mildly to moderately decreased	45–59	Treat 1	Treat 2	Treat 3
	G3b	Moderately to severely decreased	30–44	Treat 2	Treat 3	Treat 3
	G4	Severely decreased	15–29	Treat* 3	Treat* 3	Treat 4+
	G5	Kidney failure	<15	Treat 4+	Treat 4+	Treat 4+

Low risk (if no other markers of kidney disease, no CKD)
Moderately increased risk
High risk
Very high risk

Figure 1

Despite clear guideline recommendations, implementation of these diagnostic practices remains inconsistent—particularly among individuals with diabetes and hypertension – those at highest risk for CKD. A 2022 analysis of Medicaid claims of adult beneficiaries in Michigan showed that around a quarter (24.8%) of beneficiaries with diabetes received dual testing.[13] An analysis of 2021 Medicare FFS beneficiaries in Michigan (5% sample) showed about half (49.8%) of people with diabetes received dual testing, compared to only 24.2% of people with hypertension.[14] A large national laboratory study in 2021 found that dual testing occurred in 28.7% of patients with diabetes, 10.5% of patients with hypertension, and 41.4% of patients with both conditions. This diagnostic gap results in delayed identification of CKD and missed opportunities for early intervention that could slow or prevent disease progression.[15]

Improving CKD care requires early detection, symptom management, lifestyle changes, psychosocial support, and coordinated efforts from all sectors of the health care system.

The Laboratory's Role in CKD

Laboratories are valuable partners in these efforts and can play a key role in closing gaps in care and improving early detection of CKD. In 2018, the NKF launched what is now called the Laboratory Engagement Initiative (LEI), the NKF's national initiative to improve CKD testing, recognition, and management in primary care. LEI members include large national laboratories, hospital health systems, teaching institutions, laboratory accreditation organizations and professional pathology and laboratory leadership organizations. The LEI continues to advance standardized nomenclature for uACR testing and use of the Kidney Profile as a single, orderable unit for eGFR and uACR. In 2021 LEI members published a blueprint for implementation of the 2021 CKD-EPI race-free eGFR in laboratories.[16]

The Project Santa Fe Foundation Clinical Lab 2.0, which was established in 2016, to illuminate and support clinical laboratories in healthcare's transition from volume-based to value-based care. The state of kidney disease care in the U.S. served as an ideal platform to demonstrate the leadership role of the clinical laboratory in improving healthcare quality. The NKF / Project Santa Fe collaboration advanced analyses of longitudinal laboratory results and metadata from three integrated health systems that identified significant clinical care gaps in CKD and associated financial exposure.[17] Findings were published in *BMC Nephrology* in December 2024 solidly demonstrating the leadership role of the clinical laboratory in CKD care quality improvements.[18]

Identified Barriers to Guideline-Concordant Testing

Discussions with healthcare providers, clinics, health systems, and health plans and literature review illuminated the following barriers to dual testing which laboratories can help address:

Inconsistent naming conventions for albumin testing:

Some laboratories continue to employ the test name "microalbumin". Additionally, test names for the same CPT codes vary across laboratory locations.

Impact: This can result in providers ordering the incorrect urine test because confusion often arises from similar-sounding or incomplete test names.

Incorrect or incomplete test performed:

In some cases, providers correctly order a uACR, but only the urine albumin is measured because the laboratory does not offer or automatically pair it with urine creatinine.

Impact: This omission can hinder the accurate assessment of kidney damage, contribute to missed or delayed diagnoses, and result in noncompliance with national quality standards. The Healthcare Effectiveness Data and Information Set (HEDIS) and the Merit-based Incentive Payment System (MIPS) "Kidney Health Evaluation" measures require both eGFR and uACR testing for proper evaluation of CKD in those with a diagnosis of diabetes. When uACR is not correctly reported, the quality measure is not met, which can negatively affect provider performance metrics and reimbursement.[19] The test may require repetition, resulting in unnecessary inconvenience for patients and contributing to increased healthcare expenditures and system inefficiencies. Moreover, incomplete testing hinders the ability to effectively monitor disease progression, thereby necessitating additional repeat testing.

Incorrect or lack of mapping between electronic health records (EHR) and laboratory information system (LIS):

This issue was raised in several discussions with health systems and health plans. Overcoming this barrier requires examination of the EHR and LIS systems to ensure correct and updated documentation and mapping of orders along with CPT and LOINC codes are employed.

Impact: This can result in providers ordering the correct tests that cannot be run or counted towards the HEDIS or MIPS measures.

Specific test results are not reported for eGFR or uACR value; and they are expressed as over/under certain thresholds:

This precludes accurate classification of CKD and uACR. Some health plans are utilizing in-home urine test kits that rely on threshold-based measurements; however, this approach may be less clinically informative and of limited utility in monitoring and managing disease progression. In addition, this approach is often considered semi-qualitative and quantitative testing is required.

Impact: Unable to stage patient using heatmap; unable to monitor trends over time and adjust care/medications appropriately. If quantitative testing is required, additional expense and patient inconvenience is incurred.

Outdated eGFR equation used:

Some laboratories have not yet adopted the recommended 2021 CKD-EPI equation to determine eGFR and are using outdated eGFR equations that include a race component. As of March 2023, according to a survey by the College of American Pathologists, approximately 66% of clinical laboratories had adopted the CKD-EPI 2021 equation for estimating glomerular filtration rate.[16]

Impact: Use of outdated eGFR equations, such as the 2009 MDRD, 2009 CKD-EPI, and 2012 CKD-EPI, undermines the ability for clinicians to appropriately identify, diagnose, treat, refer and manage kidney disease and transplantation services/options. It further exacerbates the inequalities in access to CKD identification and treatment.

The NKF LEI members constructed and widely distribute as needed the sample IT ticket (see Appendix 2) to facilitate implementation of the 2021 CKD-EPI race-free eGFR equation. The resource is available here: Sample IT ticket to facilitate implementation of the 2021 CKD-EPI race-free eGFR equation.

The Laboratory Environment in Michigan

Laboratory testing is conducted across a wide array of facilities, including hospital-based and independent laboratories as well as large national laboratories, which contributes to significant variability in how kidney disease is assessed and how quickly new guidelines are adopted. This inconsistency poses a risk to the accuracy and reliability of test results, potentially undermining early detection efforts and impacts clinical care including medication management and transplant. Unlike the large national laboratories, many Michigan hospital laboratories have not implemented the 2021 CKD-EPI eGFR, consistent naming conventions for uACR, or use of the Kidney Profile.

Survey of Laboratory Practices

Driven by feedback from health care providers, health plans, and provider organizations, the NKFM partnered with the Michigan Department of Health and Human Services (MDHHS) Diabetes & Kidney division, Joint Venture Hospital Laboratories (JVHL), and Blue Cross Blue Shield of Michigan (BCBSM) to develop a survey of Michigan-based laboratories. An electronic survey was distributed through JVHL beginning in January 2025. The survey consisted of 11 questions aimed at understanding laboratory practices related to kidney disease testing. Respondents were asked to provide the name and type of their laboratory or institution (e.g., hospital-based, academic, or commercial). The survey inquired about the nomenclature used for the urine albumin-to-creatinine ratio (uACR) and the frequency with which it is ordered. Additional questions addressed which estimated glomerular filtration rate (eGFR) equation is used, whether eGFR is automatically reported with serum creatinine results, and whether the laboratory has combined eGFR and uACR into a single orderable unit or panel. Follow up discussions were held with laboratory staff who indicated willingness to meet. 42 of 103 hospitals responded.

Findings from the Laboratory Testing for Kidney Disease survey conducted in Michigan indicate that 48% of laboratories in Michigan do not utilize the recommended nomenclature “Albumin-Creatinine Ratio, urine” (see figure 2). Specifically, several laboratories fail to include both required CPT codes—**82043** (urine albumin) and **82570** (urine creatinine)—which are essential to calculate and report a complete uACR result.

Does your laboratory use the nomenclature "albumin-Creatinine Ratio (uACR) to order this test (using CPT codes 82043 (Albumin, Random, Urine) and 82570 (Creatinine, Random, Urine))?

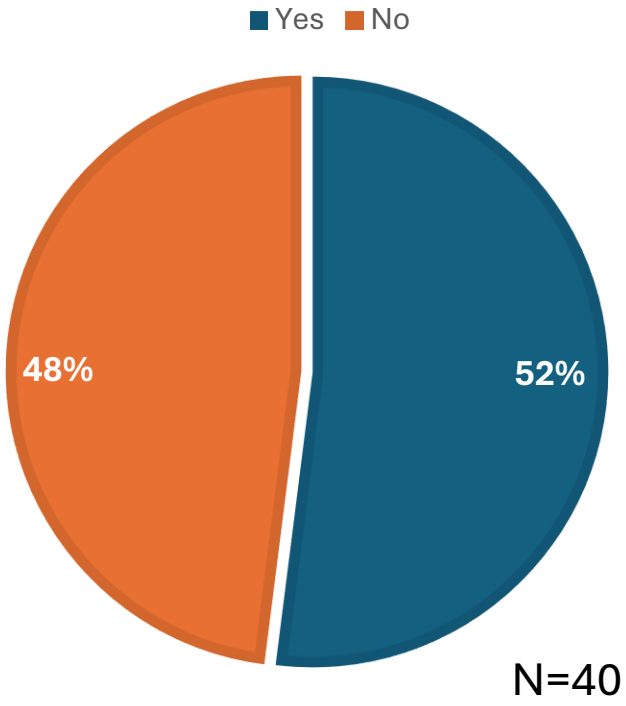

Figure 2

Additionally, 4.7% (2 out of 42) of labs reported offering only the Protein to creatinine ratio (PCR) test but no uACR. While the PCR test is clinically useful for diagnosis of certain types of kidney disease, the uACR is the standard test for screening as it is more sensitive in detecting early kidney damage.[7]

The NKF Laboratory Engagement Initiative recommends standardized nomenclature for ordering the uACR test to reduce ambiguity in electronic health records (EHRs) and laboratory systems. To accommodate character limitations in various interfaces while preserving clinical clarity, four naming variations are suggested:

- "**Albumin-creatinine ratio, urine**" (29 characters)
- "**Albumin/creatinine ratio urine**" (28 characters)
- "**Albumin/creat, ratio urine**" (25 characters)
- "**Album/creat ratio, urine**" (22 characters)

Of the 42 labs in Michigan that responded to the survey, examples of the different naming conventions used by laboratories include:

- Albumin, Micro
- MALB/CREAT RATIO
- Microalbumin urine
- Urine Albumin Creatinine Ratio
- Albumin/Creatinine, Random Urine

The laboratory survey conducted indicates that 13.1% (5 of 38 respondents) of laboratories have yet to implement the CKD-EPI 2021 equation, despite its recommendation by national guidelines discussed above. (See Appendix 3 for details on the Laboratory Survey Methods and Appendix 4 for the survey questions).

Recommendations

1. Use Consistent Naming Conventions

Use consistent nomenclature for urine albumin-creatinine ratio (uACR), moving away from "microalbumin" terminology.

CPT codes with appropriate descriptions:

82043 - Urine albumin, quantitative

82570 - Urine Creatinine

When ordered together, employ **"urine albumin-creatinine ratio (uACR)"**

2. Ensure Proper CPT Code Pairing for uACR Testing

Ensure that **both CPT codes 82043 (urine albumin) and 82570 (urine creatinine)** are included and correctly mapped together on the same date of service to accurately identify a valid uACR test.

3.

Implement Updated CKD-EPI 2021 eGFR Calculation

To ensure equity and appropriate quality of care, implement the 2021 CKD-EPI eGFR creatinine equation for calculating estimated glomerular filtration rate (eGFR) with **CPT 82565 and LOINC code 98979-8.**

4.

Report Quantitative eGFR and uACR Results

Report quantitative laboratory results for eGFR and uACR rather than threshold-based results (e.g. eGFR > 60 mL/min/1.73m^2)

5.

Train Laboratory Personnel to:

- Build uACR in their systems as an orderable test and report uACR results as milligrams per gram (mg/g)
- Report quantitative uACR and eGFR results
- Consider adding the "Kidney Profile" in their systems with appropriate panel listings and CPT codes for both components – the eGFR and uACR.

6.

Education

Educate ordering providers regarding lab ordering protocols/processes.

7.

Stay Up-to-Date on Guidelines

Ensure both laboratory staff and providers are acquainted with current guidelines related to eGFR and uACR testing for CKD (See Appendix 1).

Next Steps to Implement Recommendations

1. Communicate Laboratory Engagement initiative's recommendations regarding CKD lab tests to Michigan laboratories, health systems, and health plans.

2. Seek recommendations from the laboratory professionals on how to communicate to the laboratory professional network.

3. Conduct targeted education of laboratory professionals.

4. Develop and share mapping instructions for health systems and laboratories to ensure accurate ordering and reporting back results.

5. Conduct laboratory survey again to ascertain progress.

Acknowledgements

For more than 70 years, the National Kidney Foundation of Michigan has led efforts to prevent kidney disease and improve lives through evidence-based programs, data-driven strategies, and statewide partnerships. **Our mission is to prevent kidney disease and improve the quality of life for those living with it.**

For more information, please visit NKFM's Healthcare Professionals webpage (URL: nkfm.org/healthcare-professionals).

This white paper was developed in collaboration with our valued partners:

This white paper has been endorsed by:

A Special Thanks To

We also extend our gratitude to the Michigan Health & Hospital Association (MHA) for their assistance in obtaining survey responses.

Contributions

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Appendix 1

Current Guidelines related to eGFR and uACR Testing for CKD

- Kidney Disease Improving Global Outcomes:
  Kidney Disease: Improving Global Outcomes (KDIGO), 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease.

- Kidney Disease Quality Outcomes Initiative:
  Kidney Disease Quality Outcomes Initiative (KDOQI), US Commentary on the KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of CKD

- American Diabetes Association:
  American Diabetes Association, (ADA) 11. Chronic Kidney Disease and Risk Management: Standards of Care in Diabetes—2025

- College of American Pathologists:
  College of American Pathologists. CAP recommendations to aid in adoption of new eGFR equation. Accessed November 7, 2025.

- Kidney Disease Improving Global Outcomes published by Annals of Internal Medicine:
  Ann Intern Med, 2023, Diabetes Management in Chronic Kidney Disease: Synopsis of the KDIGO 2022 Clinical Practice Guideline Update

- Diabetes, Cardiorenal and/or Metabolic Diseases:
  Metabolism, 2024, DCRM 2.0: Multispecialty practice recommendations for the management of diabetes, cardiorenal, and metabolic diseases

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Appendix 2

Example request or ticket to the information technology (IT) team to implement the CKD-EPI 2021 equation to calculate eGFR from creatinine.

Additional implementation information is available in the report: National Kidney Foundation Laboratory Engagement Working Group Recommendations for Implementing the CKD-EPI 2021 Race-Free Equations for Estimated Glomerular Filtration Rate: Practical Guidance for Clinical Laboratories. *Clin Chem* 2022;68:511-20.

Result name: eGFRcr

Result type: calculation applied to all serum, plasma or whole blood creatinine results

Calculation equation variables: creatinine in mg/dL, age, sex

Calculation equation:

Programming logic for "IF" statements to select the correct equation for each set of parameters			
Age (years)	**Sex**	**S_{cr} (mg/dL)[a]**	**eGFRcr equation**
>=18	Female	<=0.70 (or <0.71)	$= 142 \times (S_{cr}/0.7)^{-0.241} \times 0.9938^{Age} \times 1.012$
		>0.70	$= 142 \times (S_{cr}/0.7)^{-1.200} \times 0.9938^{Age} \times 1.012$
	Male	<=0.90 (or <0.91)	$= 142 \times (S_{cr}/0.9)^{-0.302} \times 0.9938^{Age}$
		>0.90	$= 142 \times (S_{cr}/0.9)^{-1.200} \times 0.9938^{Age}$

[a] S_{cr} may be a creatinine value measured in serum, plasma or whole blood specimens.

eGFRcr attribute:	How reported:
Result Units	mL/min/1.73m^2
Result comment applied to all results	eGFR was calculated using the 2021 CKD-EPI race-free equation.
Number of decimal places	zero, report in whole numbers
Reference or interpretative range	>60 mL/min/1.73m^2
Reportable range	5-150 mL/min/1.73m^2 (note this reporting interval should be approved by the laboratory director; values <5 are reported as <5 and values >150 are reported as >150)
Position in flow sheet view of laboratory results	immediately follow the (serum) creatinine result
LOINC code for eGFRcr using 2021 CKD-EPI equation	98979-8

Implementation notes:

1. Discontinue existing calculated results for eGFR (if African American) and for eGFR (if not African American).
2. Do not chart results for the new eGFRcr in the same row in flow sheet view as the former results for eGFR (if African American) or for eGFR (if not African American). Results for the new eGFRcr should not be graphed continuously with results from older equations.

Considerations for designating sex to use in the equations:

Some LIS and EHR computer systems include data elements for sex at birth, legal sex, preferred sex, or other options. When only one sex designation exists, it is used. If the sex at birth and the legal sex are the same, either sex is used.

When the sex at birth does not match the legal sex or other sex designation, the laboratory director needs to collaborate with physician care providers and the IT team to define an acceptable option for reporting eGFRcr. Reporting options may include:

1. Do not report a value for the eGFRcr result and add a comment such as: "Because the sex at birth does not match other sex fields, an eGFRcr value is not calculated. Providers should use a calculator at the National Kidney Foundation (NKF) web site https://www.kidney.org/professionals/kdoqi/gfr_calculator to determine eGFRcr based on the clinically appropriate sex of the patient."
2. Do not report a value for the eGFRcr result. Create additional result names such as eGFRcr(male) and eGFRcr(female) that are only resulted and reported when used. Use both male and female equations to calculate the respective values and add a comment to each such as: "Because the sex at birth does not match other sex fields, both male and female eGFRcr values are provided."
3. Do not report a value for the eGFRcr result and add a comment that includes the values for a male and for a female. A comment could be: "Because sex at birth does not match other sex fields, a value for eGFRcr is not reported. For information, the eGFRcr value for a male is [add calculated value], and for a female is [add calculated value]."

Considerations regarding reporting eGFRcr when sex is ambiguous are reviewed in the AACC/NKF Guidance Document on Improving Equity in Chronic Kidney Disease Care. *J Appl Lab Med*, 2023;8:789-816.

Age, sex and creatinine combinations to use for testing.

The following table provides combinations of values that will test that the correct equation was used in all possible scenarios. These values can be used to test the build before it is put into use.

Age (years)	**Sex**	**Creatinine** mg/dL	**$eGFR_{cr}$ (CKD-EPI 2021)** mL/min/1.73m^2
<18	Male		do not calculate
<18	Female		do not calculate
18	Male	0.90	127
18	Male	0.91	125
18	Female	0.70	128
18	Female	0.71	126
90	Male	0.50	97
90	Male	1.50	44
90	Female	0.50	89
90	Female	1.50	33
not available			do not calculate
	not available		do not calculate
Creatinine below or above the measuring interval (analytical measurement range)			do not calculate

Appendix 3
National Kidney Foundation of Michigan Chronic Kidney Disease Testing
Laboratory Survey Method

Purpose of the Assessment

The overarching objective of this survey is to identify laboratory-related gaps, inconsistencies, and barriers that contribute to underutilization of urine albumin–creatinine ratio (uACR) and estimated glomerular filtration rate (eGFR) testing in Michigan. Findings will be used to inform statewide strategies to standardize kidney health testing, improve early detection of chronic kidney disease (CKD), advance health equity, and support alignment with national recommendations from the National Kidney Foundation (NKF), American Society of Nephrology (ASN), Kidney Disease Improving Global Outcomes (KDIGO), and College of American Pathologists (CAP).

Methods

To understand laboratory-related barriers to (CKD testing in Michigan, the National Kidney Foundation of Michigan (NKFM) partnered with the Michigan Department of Health and Human Services (MDHHS) Diabetes & Kidney Division, Joint Venture Hospital Laboratories (JVHL), and Blue Cross Blue Shield of Michigan (BCBSM) to conduct a statewide assessment of clinical laboratory practices. This effort was informed by feedback from health care providers, health plans, and provider organizations who identified laboratory variation, inconsistent test nomenclature, and unclear ordering pathways as major contributors to gaps in CKD detection and management.

Survey Development

NKFM and its partners collaboratively designed a structured electronic survey intended to capture key laboratory practices relevant to CKD testing. The survey consisted of 11 questions covering laboratory characteristics, test ordering workflows, and specific approaches to reporting kidney health markers. Respondents were asked to identify the name and type of their laboratory or institution (e.g., hospital-based, independent, commercial, or academic) to contextualize differences in practice settings.

Survey content focused on several domains:

- *uACR nomenclature and ordering practices:* terminology used (e.g., “microalbumin” vs. “urine albumin–creatinine ratio”), frequency of ordering, and clarity of available orderable tests.
- *CPT code pairing and mapping:* whether laboratories correctly pair CPT codes 82043 (urine albumin) and 82570 (urine creatinine) on the same date of service to constitute a complete uACR test.
- *eGFR calculation and reporting practices:* which estimated glomerular filtration rate (eGFR) equation is used; whether the 2021 CKD-EPI race-free creatinine equation has been adopted; and whether eGFR is automatically reported when serum creatinine is ordered.
- *Integration of kidney testing:* whether laboratories have implemented a combined or streamlined orderable panel that includes both eGFR and uACR.

Appendix 3
National Kidney Foundation of Michigan Chronic Kidney Disease Testing
Laboratory Survey Method

Survey Distribution

JVHL distributed the electronic survey to laboratories across Michigan beginning in January 2025. Surveys were sent to 103 hospital-based laboratories within the JVHL network. A total of **42 laboratories responded**, resulting in a 41% response rate.

To broaden representation and include laboratories not affiliated with the JVHL network, NKFM and its partners conducted additional outreach through the Michigan Health & Hospital Association (MHA). This expanded engagement strategy was intended to capture testing practices across a wider range of hospital systems, independent laboratories, and community-based facilities, ensuring that findings reflect statewide laboratory workflows and variations.

Follow-Up Engagement

Laboratory staff who indicated willingness to engage further were contacted for follow-up conversations. These discussions allowed NKFM and partners to clarify responses, validate reported practices, and gain deeper insight into laboratory workflows, technical limitations, and administrative barriers affecting CKD testing.

These qualitative discussions are being used to contextualize survey findings and refine recommendations for laboratory standardization and statewide implementation.

Appendix 4

National Kidney Foundation of Michigan Chronic Kidney Disease Testing Laboratory Survey

The National Kidney Foundation of Michigan (NKFM) is interested in working to increase early detection and management of chronic kidney disease. Laboratory testing is a key aspect of this work. In an effort to understand the current state of laboratory practices regarding CKD testing, we are requesting laboratories complete this short survey. Your response will help us understand the: · nomenclature used by laboratories for "Albumin- Creatinine Ratio, urine" (uACR) · equation used for calculation of estimated Glomerular Filtration Rate (eGFR) · implementation of a single ordering set containing eGFR & uACR (i.e., Kidney Profile).

The information you provide will be useful in communicating with health systems and medical providers as we encourage early detection of chronic kidney disease throughout the state. Kindly respond by April 30, 2025.

1. What is the name of your laboratory or institution?

2. Is your laboratory . . . Hospital or part of a hospital system, Independent Medical Laboratory, Independent clinical reference, National laboratory such as LabCorp or Quest.

YOUR LABORATORY & URINE ALBUMIN-CREATININE RATIO (uACR)

3. Does your laboratory use the nomenclature "Albumin-Creatinine Ratio, urine" (uACR) to order this test [using CPT codes 82043 (Albumin, Random, Urine), and 82570 (Creatinine, Random, Urine)]?

- Yes
- No

4. What nomenclature(s) does your lab use?

- Nomenclature:
- Procedure Code(s):

5. How often is this test ordered?

- Often
- Rarely
- Never

YOUR LABORATORY & eGFR EQUATIONS

6. What equation does your lab use to calculate the eGFR?

- 2021 CKD-EPI creatinine equation without race co-efficient
- 2009 CKD-EPI creatinine equation without race co-efficient
- 2009 CKD-EPI Equation with two values based on race
- MDRD Study equation Cockcroft-Gault equation

7. Does your laboratory report eGFR with serum creatinine automatically?

- Yes, report GFR numerical value
- Yes, report whether GFR is greater or less than 60 but no numerical value
- No

Appendix 4

National Kidney Foundation of Michigan Chronic Kidney Disease Testing Laboratory Survey

8. Has your laboratory combined serum creatinine eGFR and the uACR into a single orderable unit (also known as the Kidney Profile) as recommended by the National Kidney Foundation Laboratory Engagement Plan?

- No
- Yes, and we call it the "Kidney Profile"
- Yes, but we call it _____(indicate below)
- Indicate name of orderable unit

9. Has your lab implemented a single orderable unit, such as the Kidney Profile?

- Yes
- No

10. When did you implement a single orderable unit? (such as the Kidney Profile)

11. How often is this profile ordered?

- Often
- Rarely
- Never

To understand and address factors causing low and incomplete testing for kidney disease, the National Kidney Foundation convened the Laboratory Engagement Initiative (LEI) - a unique, multidisciplinary team of professionals from leading laboratories, hospital health systems and professional laboratory societies. The LEI conducted a thorough, end-to-end review of the challenges that impede complete testing and thus early recognition of CKD (chronic kidney disease) in the primary care setting. The group released a set of recommendations which can be found here: Laboratory Engagement Initiative (LEI) | National Kidney Foundation https://www.kidney.org/content/laboratory-engagement-initiative-lei

12. The National Kidney Foundation invites you to meet with us via Zoom to discuss in more detail and dive deeper into the above questions. Please fill in your name, title, and contact information below to agree. Someone on our team will reach out to you for a date and time that works for you.

- Name
- Title
- Email
- Address
- Phone Number

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