

Update to eGFR Calculation

With the Epic wave 3 Go-Live on 4/2/2022, all of the clinical laboratories in the UVM Health Network (AHMC, CVMC, CVPH, ECH, PMC, and UVMC) will be changing the calculation of estimated glomerular filtration rate (eGFR) from creatinine to the new CKD-EPI 2021 creatinine equation that does not include a race coefficient. This will apply to all tests that report a creatinine measurement. The new equation is recommended by the National Kidney Foundation and the American Society of Nephrology’s Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease. The new eGFR equation has similar overall performance characteristics to the older equations and has been assessed to not have potential consequences that disproportionately affect any one group of individuals. For most patients, the eGFR result will be similar, however, for some, the values may differ by more than 10%, particularly at higher values of eGFR and for younger adult ages. See the table below for a comparison of eGFR calculated by the new equation to earlier equations.

Table 2. Difference in eGFR_{cr} using the CKD-EPI 2021 equation compared to earlier equations.

Age, years			20				50				80			
Creatinine, mg/dL			0.60	1.00	1.50	2.00	0.60	1.00	1.50	2.00	0.60	1.00	1.50	2.00
Race group	Sex	Equation	mL/min/1.73m ²											
Black (African American)	Male	2021 eGFR _{cr}	142	110	68	48	118	92	56	40	98	76	47	33
		2009 eGFR _{cr}	168	125	77	54	136	101	62	44	110	82	50	35
		Difference	-26 (-15%)	-15 (-12%)	-9 (-12%)	-6 (-11%)	-18 (-13%)	-9 (-9%)	-6 (-10%)	-4 (-9%)	-12 (-11%)	-6 (-7%)	-3 (-6%)	-2 (-6%)
	Female	2021 eGFR _{cr}	132	83	51	36	109	69	42	30	91	57	35	25
		2009 eGFR _{cr}	152	94	58	41	123	76	47	33	100	62	38	27
		Difference	-20 (-13%)	-11 (-12%)	-7 (-12%)	-5 (-12%)	-14 (-11%)	-7 (-9%)	-5 (-11%)	-3 (-9%)	-7 (-9%)	-5 (-8%)	-3 (-8%)	-2 (-7%)
2006 MDRD			>60	>60	>60	52	>60	>60	>60	43	>60	>60	55	39
Difference							-3 (-7%)				-8 (-15%)			
Non-Black (non-African American)	Male	2021 eGFR _{cr}	142	110	68	48	118	92	56	40	98	76	47	33
		2009 eGFR _{cr}	145	108	66	47	117	87	54	38	95	71	43	31
		Difference	-3 (-2%)	2 (2%)	2 (3%)	1 (2%)	1 (1%)	5 (6%)	2 (4%)	2 (5%)	3 (3%)	5 (7%)	4 (9%)	2 (6%)
	Female	2021 eGFR _{cr}	132	83	51	36	109	69	42	30	91	57	35	25
		2009 eGFR _{cr}	131	81	50	35	106	66	40	28	86	53	33	23
		Difference	1 (1%)	2 (2%)	1 (2%)	1 (3%)	3 (3%)	3 (5%)	2 (5%)	2 (7%)	5 (6%)	4 (8%)	2 (6%)	2 (9%)
2006 MDRD			>60	>60	44	32	>60	59	37	26	>60	53	33	24
Difference			7 (16%)				4 (13%)				4 (8%)			

*The MDRD Study equation is not intended for reporting numeric eGFR values of ≥ 60 mL/min/1.73m².

Source: Miller et al. 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, Clinical Chemistry, 2021; hvab278, <https://doi.org/10.1093/clinchem/hvab278>

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If you have any questions or concerns regarding this change, please reach out to the Medical Director of Clinical Chemistry at UVMHC (clayton.wilburn@uvmhealth.org).

References:

1. W Greg Miller, Harvey W Kaufman, Andrew S Levey, Joely A Straseski, Kelly W Wilhelms, Hoi-Ying (Elsie) Yu, J Stacey Klutts, Lee H Hilborne, Gary L Horowitz, John Lieske, Jennifer L Ennis, James L Bowling, Mary Jane Lewis, Elizabeth Montgomery, Joseph A Vassalotti, Lesley A Inker, 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, *Clinical Chemistry*, 2021;, hvab278, <https://doi.org/10.1093/clinchem/hvab278>
2. Delgado C, Baweja M, Crews DC, et al. A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease. *Am J Kidney Dis*. 2021 DOI: 10.1053/j.ajkd.2021.08.003
3. Inker LA, Eneanya ND, MCorsh J, et al. New Creatinine- and Cystatin C–Based Equations to Estimate GFR without Race. *New England J Med*. 2021: DOI: 10.1056/NEJMoa2102953

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