

Establishment of eGFR Reference Ranges in Geriatric Population Using the Modification of Diet in Renal Disease Study Equation

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Context: Glomerular filtration rate (GFR) is an important tool in the management of patients who need clinical assessment of kidney function. The National Kidney Disease Education Program encourages laboratories to automatically report eGFR when serum creatinine is reported, and eGFR is based on the Modification of Diet in Renal Disease Study equation, which has been shown to be reliable in estimating GFR from serum creatinine when the patient's age, sex, and race are also known.

Design: We analyzed eGFR data collected from 63 500 samples of patients tested in our laboratory; the Roche/Hitachi Modular P was used to measure serum creatinine (modified Jaffe). Patient data were separated into 6 age groups: younger than 50, 51 to 65, 66 to 75, 76 to 85, 86 to 99, and older than 100 years. In addition, each group was separated based on sex. The prevalence of eGFR of less than 60 or less than 90 mL/min/1.73 m² in each group was calculated. Reference intervals were calculated using nonparametric analysis.

Results: The mean value of eGFR decreased with age in both sexes. The percentage of patients with eGFR values less than 60 and less than 90 mL/min/1.73 m² increased with age for both males and females. Reference ranges for both sexes ranged from 16 to 229 mL/min/1.73 m² in the younger than 50 years old group to 13 to 77 mL/min/1.73 m² in the older than 100 years old group (Table).

Conclusions: Kidney dysfunction based on eGFR is more common in elderly people and increases with age. More than 20% of the population older than 90 years will reach critical value of eGFR, requiring extensive treatment from nephrologists.

The Prevalence of eGFR		
Age, y	Prevalence, %	
	Male	Female
<30 mL/min/1.73 m²		
<50	6.4	11.5
51–60	8.0	12.5
61–70	12.3	18.8
71–80	12.7	18.8
81–90	15.6	20.1
91–99	18.6	22.6
100–110	15.5	29.2
<60 mL/min/1.73 m²		
<50	24.4	48.6
51–60	35.3	49.9
61–70	49.9	60.8
71–80	62.6	71.7
81–90	70.0	82.7
91–99	76.2	87.4
100–110	75.7	90.9