

Incidence of chronic kidney disease in a population referred to a central laboratory for blood analysis

Authors: Sadollah Abedini¹, Morten Rønning¹, Helle Borgstrøm Hauger², Anders Hartmann³ and Halvard Holdaas³

¹Medical department, renal section, ²Central Laboratory, Vestfold Hospital Trust, Tønsberg, Norway and ³Medical department, renal section, Oslo University Hospital, Rikshospitalet, Oslo, Norway.

INTRODUCTION AND AIMS

Estimated glomerular filtration rate (eGFR) based on the MDRD formula has replaced serum creatinine for assessment of chronic kidney disease (CKD) (1). Studies estimating the overall incidence of CKD are mainly derived from population-based health surveys (2). We investigated the incidence of CKD based on eGFR in a population of patients referred from general practitioners for measurement of serum creatinine at a County Hospital in Norway.

METHODS

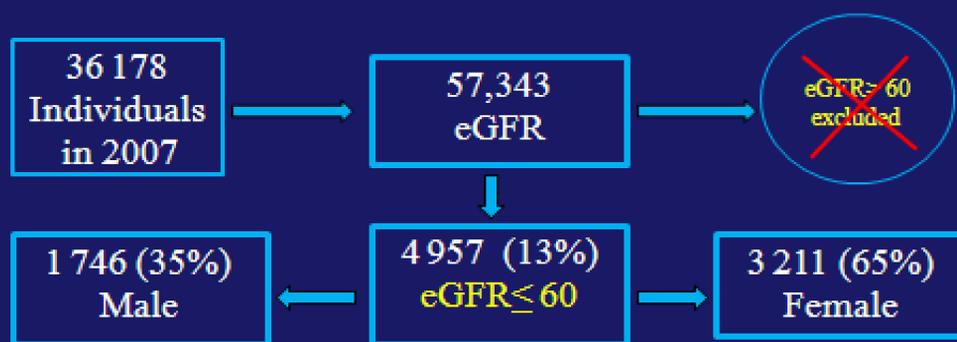
The central laboratory has routinely reported eGFR from January 2007 based on the MDRD formula. Serum creatinine was measured by an enzymatic method, using dry reagent slide technology on the Vitros 950 Analyzer (Ortho-Clinical Diagnostics, New York, USA).

Following MDRD formula is used to estimate GFR .

$$\text{eGFR} = 30849 * \text{serum creatinine}^{-1.154} * \text{age}^{-0.203} * 0.742 \text{ (if female)}$$

SPSS version 15 was used for the statistical analysis.

RESULTS



There were 57 343 eGFR measurements performed in 36 178 individuals during 2007.

In people with multiple eGFR measurements the average of the first and last eGFR was used. Individuals with eGFR > 60 ml/min per 1.73 were excluded.

In all, 4957 (13%) (3211 women and 1746 men) had eGFR <60 ml/min per 1.73 m².

Median age for women was 79.0 years (SD 12.1) and for men 77.0 years (SD 11.6). Aged ranged from 18 to 100 years.

Thirty-seven (0.1%) had eGFR <15 ml/min per 1.73, (stage 5). Two hundred and eighty-seven (0.8%) had eGFR 15-29 ml/min per 1.73, (stage 4) and 4447 (12.3%) had eGFR 30-59 ml/min per 1.73, (stage 3).

GRAPHS & TABLES

Gender	eGFR stage	Incidence	%
Female	<15	20	0,60
	15 - 29	151	4,70
	30 - 44	681	21,20
	45-60	2359	73,50
Male	<15	17	1,0
	15 - 29	136	7,80
	30 - 44	386	22,10
	45-60	1207	69,10

CKD stage	eGFR ml/min	Hunt II (2)	Vestfold Norway
3	30-59	4.2%	12%
4	15-29	0.2%	0.8%
5	<15	<0.1%	0.1%

CONCLUSIONS

The incidence of CKD stage 3 and 4 in a patient population referred to a central laboratory for blood analysis is 3 to 4 times higher than reported from a Norwegian population-based health survey . Number of patients with CKD is substantially higher than patients registered with the diagnosis of CKD at the hospital registry. Our findings suggest that there is a need for guidelines for referral and follow-up of individuals with severe, but not recognized CKD.

REFERENCES

- 1) Levey AS et al. "A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. Modification of Diet in Renal Disease Study Group" . *Ann. Intern. Med.* **130** (6): 461–70.
- 2) Hallan et al. "International Comparison of the Relationship of Chronic Kidney Disease Prevalence and ESRD Risk" *J Am Soc Nephrol* 17: 2275-2284, 2006 .