



Low rates of automatic reporting of estimated glomerular filtration rate in Southern Brazilian laboratories

Ariana Aguiar Soares^a, Amanda Veiga Cheuiche^a, Alexandre Sauer da Silva^a, Maria Júlia Almeida Rostirolla^a, Larissa Petermann Jung^a, Bernardo Lessa Horta^b, Joíza Lins Camargo^c, Sandra Pinho Silveiro^{a,d,*}

^a Postgraduate Program in Medical Sciences: Endocrinology, Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil

^b Epidemiology Graduate Program, Universidade Federal de Pelotas (UFPEL), Pelotas, RS, Brazil

^c Clinical Pathology Department, Hospital de Clínicas de Porto Alegre (HCPA), Porto Alegre, RS, Brazil

^d Endocrinology Unit, HCPA, Porto Alegre, RS, Brazil

ARTICLE INFO

Article history:

Received 9 July 2013

Received in revised form 8 August 2013

Accepted 30 August 2013

Available online 9 September 2013

Keywords:

Automatic report

CKD-EPI equation

Creatinine

Estimated glomerular filtration rate

MDRD equation

Renal function

ABSTRACT

Objectives: The aim of this study was to evaluate the rate of eGFR reporting in Southern Brazilian laboratories.

Design and methods: The eGFR automatic reporting, as assessed by Modification of Diet in Renal Disease (MDRD) and/or Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) creatinine-based equations, was evaluated in a representative cross-sectional sample. A standardized questionnaire to obtain this information was given out by mail or email.

Results: Five-hundred fifty laboratories, evenly distributed in the different state regions, completed the questionnaire. The eGFR was automatically reported by 54 (9.8%) laboratories, and the MDRD was the most commonly used equation (94.5%). The Jaffe methods were the most employed technique (94%) to measure serum creatinine.

Conclusion: The automatic eGFR reporting rate was unacceptably low, emphasizing the crucial role of educating medical teams and laboratories on the importance of having these tools available to optimize detection of renal disease and proper treatment.

© 2013 The Canadian Society of Clinical Chemists. Published by Elsevier Inc. All rights reserved.

Introduction

Chronic kidney disease (CKD) is defined as a glomerular filtration rate (GFR) <60 mL/min/1.73 m² and/or presence of kidney damage – such as increased urinary albumin excretion (UAE) – for 3 months or more [1]. CKD is an overwhelming public health problem. A recent international systematic review reported a rate of up to 14% of impaired kidney function worldwide [2].

In clinical practice, CKD can be easily identified by simple and readily available laboratory tests, such as creatinine-based estimated GFR (eGFR) and UAE measured in a spot urine sample. International guidelines recommend the automatic reporting of eGFR whenever serum creatinine is measured, using the Modification of Diet in Renal Disease (MDRD) or Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equations [1,3]. Although the performance of these equations is not optimal, it is well established that they can predict renal and cardiovascular outcomes [4].

Recent studies have demonstrated that automatically reporting eGFR enables earlier referral to the nephrologist and delays progression to advanced renal failure and dialysis [5,6]. It has been estimated that from 70 to 90% of the laboratories in Australia, North America, and Canada report eGFR [7–9], but European studies have described lower figures in Italy and Spain [10,11].

This study aimed at assessing the proportion of laboratories that routinely report eGFR in Southern Brazil.

Methods

Subjects and methods

A cross-sectional survey was conducted from July 2010 to July 2012 and investigated clinical laboratories located in the state of Rio Grande do Sul (RS), in the southern region of Brazil. The country is divided into five regions, and our region (encompassing 3 states: Paraná, Santa Catarina and Rio Grande do Sul) contributes to 16.5% of the Brazilian Gross Domestic Product (GDP). According to the National Institute of Geography and Statistic (Instituto Brasileiro de Geografia e Estatística – IBGE) last census, carried out in 2010, the population of the state is 10,693,929 inhabitants [12]. The state area is divided socially and geographically in north and south regions [12,13]. The study was

Abbreviations: eGFR, estimated glomerular filtration rate; CKD-EPI, Chronic Kidney Disease Epidemiology Collaboration; MDRD, Modification of Diet in Renal Disease.

* Corresponding author at: Serviço de Endocrinologia, HCPA, Rua Ramiro Barcelos, 2350, Prédio 12, 4º andar, Porto Alegre, RS, Brazil. Fax: +55 51 33599255.

E-mail address: silveirosandra@gmail.com (S.P. Silveiro).

approved by the Research Ethics Committee of the institution (protocol no. 10-0129), and each laboratory agreed to participate in the survey.

An invitation letter was sent to all 880 clinical pathology laboratories duly registered in the Regional Pharmacy Council. Technical specification survey included the following questions: 1) What method was used to measure serum creatinine (manufacturer's name), 2) Is this method IDMS-traceable? (This information is in the specifications of the kit), and 3) Does your laboratory report estimate equation based glomerular filtration rate (MDRD, CKD-EPI, or Cockcroft & Gault) whenever serum creatinine is requested? Half of the responding laboratories were randomly selected to answer about the number of daily serum creatinine measurements, and about the creatinine method employed.

Contact to obtain data was made by mail, e-mail, telephone, or interview.

Statistical analysis

The estimated sample size was 384 laboratories, based on a fixed proportion of 0.5 (50%), with an absolute precision of 5% and a confidence level of 95% [14]. Statistical analyses were performed in the Predictive Analytics Software (PASW) version 20.0 (Statistical Package for Social Sciences-Professional Statistics™, Chicago, IL, USA).

Results

Five-hundred fifty (63% response rate) laboratories completed the questionnaire, as follows: 402 out of 648 (62%) laboratories located in the northern region, and 148 out of 232 (64%) in the southern region of the state (Fig. 1), ensuring geographic representativeness of the data collected.

Of the 550 responding laboratories, 54 (9.8%) routinely reported eGFR when serum creatinine measurement was requested; of these, 44 (11%) were located in the northern region and 10 (7%), in the southern region ($P = 0.139$), ensuring a balanced representation of the state. Table 1 shows the number of eGFR reports according to each equation. MDRD was the most commonly used equation. No laboratory employed the “6 variable” MDRD equation, which requires the measurement of serum albumin and blood urea nitrogen.

In a random subgroup analysis, 243 laboratories also answered about the number of serum creatinine measurements performed daily, ranging from 1 to 860 per day (median of 15/day). The Jaffe methods

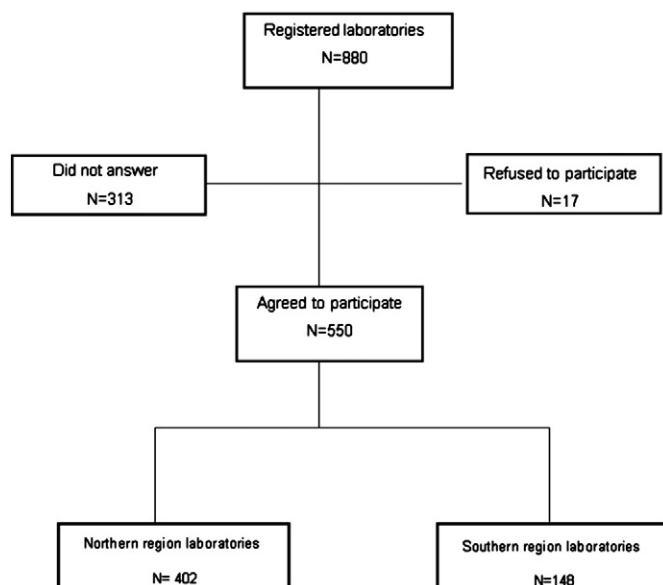


Fig. 1. Flowchart of the regional laboratory survey.

Table 1

Equations used by 54 laboratories that automatically reported estimated glomerular filtration rate (eGFR), out of 550 responding laboratories.

eGFR reporting equation	Number of laboratories
MDRD	51 (94.5%)
CG	2 (3.7%)
CKD-EPI	1 (1.8%)
Total reports	54 (100%)

CG = Cockcroft–Gault; CKD-EPI = Chronic Kidney Disease Epidemiology Collaboration; MDRD = Modification of Diet in Renal Disease.

were used by 229 (94%) laboratories, followed by enzymatic measurement in 9 (4%), and dry chemistry in 5 (2%). This subgroup also informed about the traceability of creatinine assay, and 101 (42%) laboratories were using traceable methods.

Discussion

The rate of automatic eGFR reporting when serum creatinine measurement is requested was about 10%. This figure is much lower than the reported rates of 70–90% in Australia, the United States, and Canada [7–9]. In Europe, a regional Italian survey described a 35% rate of automatic reporting [10], and a Spanish study reported a proportion of 42.5% [11]. These numbers reflect the results of task forces that started in these countries years ago [7,15].

The implementation of routine eGFR reporting was initiated in 2002 in the United States [15] and in 2004 in Australia [7], with the assistance of the Kidney Disease Outcomes Quality Initiative (K/DOQI) guidelines. It was recommended that all clinical laboratories should report eGFR whenever serum creatinine measurement was requested. Simultaneously, the introduction of IDMS-aligned assays was encouraged, improving the performance of eGFR equations [16].

Therefore, areas with higher uptake rates have been the product of collaboration between laboratory organizations and nephrology organizations, formal position statements and active campaigns to promote laboratory uptake and facilitate correct interpretation.

Our low rates of eGFR reporting clearly indicate a need to develop education programs to allow large-scale implementation of this recommendation in our country. In line with this, the government in India is taking steps to improve standardization of creatinine laboratory testing and implement eGFR reporting [17].

A recent systematic review evaluated high-quality studies and described a noteworthy prevalence rate of impaired kidney function of about 8%, similar to that of diabetes mellitus, indicating a substantial worldwide health care challenge [2]. The ultimate goal of guidelines is to promote optimal use of laboratory results, allowing earlier CKD detection and timely management. Implementation of automated eGFR reporting side-by-side with serum creatinine values at clinical laboratories will certainly improve CKD recognition. A recent North American study demonstrated that differences in coding of CKD by age and gender were reduced after the introduction of automated eGFR reporting [18]. Previous studies conducted in the United States [19], the United Kingdom [20], Australia [7], and Canada [6,21,22] have shown that automated eGFR reporting increased nephrology referral rates, leading to more timely expertise care. Indeed, a recent literature review showed that nephrology referrals increased between 13 and 270% after the institution of automated eGFR reporting [23]. Similarly, in a cohort of pre-dialysis patients, co-management of CKD by primary care providers and nephrologists resulted in significantly better care [24]. Moreover, eGFR reporting was associated with an increase in guideline-based care of older patients with CKD [25], and with a decline in otherwise inappropriate creatinine clearance tests performed [26].

In this study, statewide sampling representativeness was ensured on a geographical basis by including a proportional number of laboratories from each region (north vs. south). Since the northern region encompasses about 75% of the entire state population, with a GDP of about

Download English Version:

<https://daneshyari.com/en/article/8317638>

Download Persian Version:

<https://daneshyari.com/article/8317638>

[Daneshyari.com](https://daneshyari.com)