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End-stage renal disease epidemic in diabetics: is there light at the end of the tunnel?

Cécile Couchoud1 and Emmanuel Villar2,3

Correspondence and offprint requests to: Cécile Couchoud; E-mail: cecile.couchoud@biomedecine.fr

The world is facing an epidemic of diabetes, especially type 2 diabetes, which appears likely to endure for decades to come. Worldwide prevalence of diabetes was estimated at 2.8% in 2000. Between 2000 and 2030, the number of adults with diabetes is expected to increase by 50–70% in developing countries and by 20% in developed countries [1, 2]. In 2030, the prevalence of diabetes is projected to be 4.4% of the world population. The most important change in this prevalence appears to be an increase in the proportion of patients older than 65 years.

This change is related to the aging of the population, especially in developed countries [1, 2], and to the burden of obesity [3] that affects the prevalence of type 2 diabetes so strongly. Unfortunately, similar trends are also observed in
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renal disease must be interpreted with caution [16, 17]. Renal replacement therapy registries do not provide estimates of these groups of patients.

The differences in patient characteristics by type of diabetes and relative changes in the incidence and prevalence of diabetes in the general population and in the incidence of ESRD associated with diabetes are not likely to vary consistently between type 1 and type 2 diabetic patients over time. It is, therefore, important that epidemiology studies in ESRD populations include consideration of diabetes both as a cause of renal disease and as an associated condition or co-morbidity and that type 1 and type 2 diabetic patients be distinguished, in view of their different aetiology, management options and prognosis [23].

In comparing temporal trends, it is interesting to stratify the number of new patients with respect to demographic variation in the general population on the one hand and differences in exposure to risk factors on the other. For example, in France, between 2007 and 2011, the number of incident patients with diabetes type 2 increased by 20.9% compared with 6.7% in non-diabetic patients. Figure 1 shows the different components of the difference. In diabetic type 2 patients, an increase of 3.3% can be attributed to the aging of the general population, 2.2% to the increase in the population size and 15.4% to residual effects related to the disease. In non-diabetic patients, an increase of 3.1% can be attributed to the aging of the general population, 2.0% to the increased

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population size and only 1.6% to the residual disease-related effect. This difference in the residual effect confirms the persistent impact of diabetes on ESRD incidence.

In conclusion, the reassuring results reported by Comas et al. must now be confirmed in other European populations. Epidemiologic studies are needed to improve our understanding of the decrease in ESRD in the diabetic population. After the decrease of cardiovascular mortality in patients with diabetes and ESRD is confirmed, correlation studies would be useful to evaluate the diffusion of preventive treatments such as renin–angiotensin system inhibitors.

CONFLICT OF INTEREST STATEMENT
None declared.


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FIGURE 1: Change in the number of treated ESRD patients, since 2007, in 18 French regions that contributed to the REIN registry over 2007–2011 (method from Bashir and Esteve [24]).

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Detection and progression of chronic kidney disease: does the rear-view mirror help?

Lawrence P. McMahon

Correspondence and offprint requests to: Lawrence P. McMahon; E-mail: lawrence.mcmahon@monash.edu

Fuelled by the pandemic of obesity and Type 2 diabetes mellitus, the prevalence of chronic kidney disease (CKD) is a major global health burden. Its prevalence in many continents already affects over 10% of the adult population. Between Europe and the United States, approximately 1 million patients currently require renal replacement therapy (RRT), including dialysis and transplantation. By 2030, it is estimated this figure will exceed 2 million [1–3]. These figures are disconcerting: the cost of managing end-stage renal disease (ESRD) and its attendant co-morbidities even today engulfs a disproportionate percentage of the health dollar and, if the above estimates are even partly correct, it is a cost which will soar in forthcoming years. However, the cost of renal disease does not commence simply when the patient reaches end-stage. With the number of pre-end-stage CKD patients estimated at >30-fold those requiring RRT, the overall drain on economic and health resources is exceptionally high, even—perhaps particularly—for those who do not eventually reach ESRD [4].

Both the numbers and costs highlight a pressing need to successfully screen and identify patients with CKD, and to define those most at risk of progression. The first, to interpret national and global health patterns as they evolve; and the second, to effect a delay in functional renal deterioration. The overwhelming challenge even for developed societies is that the numbers defy traditional attempts at targeted appraisal and intervention. However, the task is not hopeless. Several recent studies suggest that if CKD can be identified, it might be possible to slow or even prevent a fall in renal function, at least for a limited time in targeted populations exposed to intense, often novel, models of care [5–7].

Effective screening ideally requires simple, precise and affordable markers. Those that currently define CKD are the estimated glomerular filtration rate (eGFR), based on the serum creatinine and, in the initial stages, urinary protein. It is likely that future prevalence studies will incorporate proteinuria more widely as it is a strong and independent predictor of progressive functional decline [8, 9]. Nevertheless, neither its definition nor its method of detection is free from controversy. The commonly-used reagent strip or ‘dipstick’ analysis is subject to the substantial error: the reagent pads are variably sensitive (according to the manufacturer) and individual