

GFR estimation in diabetes

Agoons DD, Balti EV, Kaze FF et al. Performance of three glomerular filtration rate estimation equations in a population of sub-Saharan Africans with Type 2 diabetes. *Diabetic Medicine* 2016; 33: 1291–1298.

Estimated glomerular filtration rate (eGFR) is an increasingly used tool in modern diabetes care. It is used to measure the decline in renal function in those with advanced nephropathy, and also is the main guide to oral agent use or dosage (notably metformin). Current eGFR equations have been validated only in white populations, and there are concerns that ethnicity may affect the validity of some models. Researchers from Cameroon, South Africa and Australia have now trialled three equations, and compared them with creatinine clearance (CrCl) measured with 24-hour urine collections (as the 'gold standard'). The equations tested were the Cockcroft-Gault (CG), the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI), and the Modification of Diet in Renal Disease (MDRD). All had relatively weak correlations with CrCl, with *r* values of 0.58 (MDRD), 0.55 (CKD-EPI), and 0.61 (CG). There was no statistically significant difference between the three correlations. The authors felt that the MDRD had slight advantages over the other two equations in African type 2 diabetic patients, but also concluded that better equations are needed.

Beyond the body mass index

Tanamas SK, Lean MEJ, Combet E et al. Changing guards: time to move beyond body mass index for population monitoring of excess adiposity. *Quart J Med* 2016; 109: 443–446.

Obesity and overweight are recognised as significant risk factors for cardiovascular disease and type 2 diabetes. The traditional index of adiposity is the body mass index (BMI), but this does not give information on body composition or fat distribution. Researchers from Australia and the UK have recently reviewed this problem. They point out that BMI has only a 50% sensitivity in predicting excess body fat. Also, athletes may have a raised BMI but low total body fat. Finally, for the same BMI, white Caucasians have less body fat than Asians, but more than Africans. An alternative to BMI is waist circumference (WC) or waist:hip ratio (WHR). WC is the simplest measure but is still prone to observer error, though it does reflect central obesity and is at least as good as BMI in predicting adverse health outcomes. If 'high risk' BMI is defined as $>30.0 \text{ Kg/m}^2$, and WC as $>102 \text{ cm}$ for men and >88 for women; interesting patterns emerge. BMI and WC will agree in 57%, BMI alone will predict risk in 5%, and WC alone in 38%. Though BMI remains a useful demographic tool, the authors of this paper argue that other measures such as WC should be included in individual and population risk assessment.

Global diabetes prevalence

NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4.4 million participants. *Lancet* 2016; 387: 1513–1530.

The respected international group, the NCD Risk Factor Collaboration, has published a major pooled-data analysis of worldwide trends in diabetes prevalence. Data was taken from 751 studies including 4 372 000 adults from 146 countries. Overall prevalence globally rose from 4.3% in 1980 to 9.0% in 2014 in males, and 5.0% to 7.9% in women over the same period. The total numbers in the world with diabetes was 108 million in 1980, rising to 422 million in 2014. An interesting breakdown of these figures was that 29% of the rise was due to a true increase in prevalence, 40% was to population aging, and 31% was an interaction between these two effects. Polynesia and Micronesia had the highest diabetes prevalence (about 25%), and north-west Europe the lowest. The Middle East and north Africa had relatively high rates. These figures suggest that the current diabetes 'epidemic' is not being contained, with a near-quadrupling of the numbers with diabetes in the world since 1980. Urgent action is needed to promote weight control and exercise. This needs to be at all levels – from individuals and families, to national governments and global health organisations.

High strength insulins

Dashora U, Castro E. Insulin U100, 200, 300 or 500? *Brit J Diabetes* 2016; 16: 10–15.

Type 2 diabetes is a disease marked by insulin resistance. When insulin is used to treat the disease, not surprisingly, large doses may be needed. Large doses mean larger volumes, and as well as being uncomfortable, insulin absorption from high volume injections can be erratic. Also, a number of currently used injection pens have relatively low limits to the maximum number of units that can be injected at one time. Because of these problems, a number of high strength insulins have been recently introduced, with more to be released in the near future. The short-acting analogue insulin Lispro is now available in a U200 formulation (200 units per ml). Glargine is a long-acting analogue insulin and a U300 preparation is on release. It is cost-effective and there is some evidence that it is associated with less weight gain and hypoglycaemia risk than the U100 preparation of the same insulin. The ultra-long acting insulin Degludec now has a U200 strength and appears to have a lower risk of nocturnal hypoglycaemia than the U100 strength. Thus, reduction of injection volume can have potential advantages in terms of hypoglycaemia risk.