

Screening out diabetes

The ADF cannot be complacent as obesity and type 2 diabetes becomes increasingly common among Australians

THE REVIEW ARTICLE by Obaid and Turtle in this issue of *ADF Health* (see page 29) highlights the rapidly increasing prevalence of type 2 diabetes in Australia,¹ which has doubled over the past 2 decades to involve 7% of the adult population. Much of the disease burden of diabetes is hidden, as only half of those affected are aware of it. In addition, for every person with known diabetes there are four more with glucose intolerance (prediabetes) associated with metabolic syndrome and a markedly increased risk of developing diabetes and vascular disease.

The ageing of our population will lead to “epidemics” not only of diabetes, but also of other chronic disorders associated with age, such as osteoporosis, osteoarthritis, cancer, dementia and others. The diabetes and prediabetes threats are particularly worrying, as they are developing in increasingly younger individuals, presumably due to the increasing adiposity² and inactivity in the young. The AusDiab study³ reports that 0.3% of Australians aged 25–34 have diabetes, increasing to 2.4% from 35–44 years and 6.6% from 45–54 years. The corresponding data for prediabetes are 5.4%, 11.7% and 17.2%, respectively. The AusDiab study did not include 20–24 year-olds, but regression of the data line suggests that the incidence of prediabetes in this group might be 3%.

Significant implications exist for the Australian Defence Force in regard to recruitment, retention, operational readiness and health costs. It is inevitable that the health of the ADF population will generally reflect that of the Australian population, but the prevalence of diabetes is likely to be somewhat lower because of weight and fitness standards at entry and because of the Annual Health Assessment preventive health program. A study in the US⁴ found that rates of diabetes at a US Army medical clinic were a tenth of those that would be expected based on the US Third National Health and Nutrition Examination Survey (NHANES III)⁵ data, but another US study found that the incidence was not reduced in the military.⁶

In the ADF, urine is tested for glucose at entry and at periodic examinations, but only pilots routinely have fasting blood glucose measurements. All other ADF personnel undergo periodic medical examinations where specific testing is driven by clinical indications. Fasting glucose measurement is recommended for personnel with risk factors such as age over 40, body mass index over 30 kg/m², family history of diabetes, or a history of gestational diabetes or giving birth to an infant

weighing over 4 kg.⁷ Risk factors that should be added to this list are waist–hip ratio ≥ 0.85 for women or ≥ 1.00 for men,⁸ hypertension and Pacific Islander, Aboriginal and Torres Strait Islander, Chinese or Indian ethnicity.¹ The ADF is currently reviewing policy and procedures regarding health promotion, the frequency and content of periodic medical examinations and their use as part of preparing personnel for deployment.

The use of targeted “case identification”, rather than “screening”, of all ADF members is a cost-effective way of identifying some of those with abnormalities of glucose tolerance, but unfortunately will not identify all. There must be a significant number of personnel with undiagnosed diabetes and prediabetes. These members will have a substantially increased risk of developing macrovascular and microvascular disease that may not be recognised until well advanced.

It is a requirement that all ADF personnel, including non-combatants, are fit for operational deployment to the equivalent of a “bare base” with limited medical and evacuation capacity, unusual/long hours, extreme physical exertion and stress, and poor sanitation. Furthermore, in the event of actual armed conflict or other emergency, it is possible that no medical or evacuation capacity will exist for prolonged periods. While individuals with mild diabetes controlled with diet and exercise are likely to function reasonably well under these circumstances (and may actually benefit from them), those dependent on oral hypoglycaemic agents or insulin will have an unacceptable risk of acute metabolic disturbance (eg, hypoglycaemia, hyperglycaemia, acidosis) and are not suitable for deployment. Furthermore, in this situation, personnel with known and unknown diabetes will be at increased risk of other acute medical problems, such as myocardial ischaemia and infection, leading to loss of operational effectiveness.

Most individuals with diabetes function well in civilian life and it is equitable and cost-effective to provide the medical, allied-health, social and pharmaceutical resources to support them in maintaining this function. However, in a relatively small defence force such as the ADF, where all members must be deployable, it is questionable military policy to apply “cost-effective” civilian public health policy. A case exists to minimise impact on operational effectiveness by identifying all personnel with abnormalities of glucose tolerance. The only way to do this would be to apply universal fasting glucose screening (or preferably oral glucose tolerance testing) at

enlistment and at periodic medicals. Those with any abnormality of glucose tolerance should not be enlisted. Serving members should be given the opportunity (and resources such as dietitians, exercise trainers, psychologists) to reduce weight and increase metabolic fitness, which can result in normalisation of glucose tolerance. Those who remain glucose intolerant should probably be discharged unless a command decision is made to retain them because their expertise or experience is essential.

The type 2 diabetes “epidemic in the making” is largely preventable by reversing trends to obesity and physical inactivity. While this seems an impossible task in the general population, it should be achievable in the ADF because of the regimented nature of the military. The health promotion programs already in place in the ADF need to be intensified, along with detailed monitoring of the prevalence of diabetes and prediabetes and the effectiveness of prevention programs.

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