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Metabolic syndrome

Independently raises cardiovascular risk and should be picked up in primary care

Metabolic syndrome is characterised by hyperinsulinaemia, low glucose tolerance, dyslipidaemia, hypertension, and obesity. This cluster of factors has been recognised for many years, but the syndrome was not formally labelled until Reaven did so in 1988 and suggested that insulin resistance was its central characteristic.[1] Insulin resistance seems to be the main underlying factor leading to the increased risk of mortality from coronary heart disease among people with the syndrome.[2] Strategies to combat the forecast epidemic of type 2 diabetes and its vascular complications should focus on preventing and intervening early in metabolic syndrome.

Established macrovascular pathology is common when diabetes is diagnosed,[3] implying either delayed diagnosis or an atherogenic prediabetic state. The UK prospective diabetes study showed that, once diabetes is diagnosed glycaemia is only modestly related to cardiovascular disease.[4] Insulin resistance may be the common antecedent of metabolic syndrome, type 2 diabetes, and cardiovascular disease. Any strategy aimed at preventing the principal cause of death in type 2 diabetes should, therefore, encompass treatment of the metabolic syndrome.

The clinical identification of metabolic syndrome is based on measures of abdominal obesity, atherogenic dyslipidaemia, hypertension, and glucose intolerance. The World Health Organization's definition of metabolic syndrome requires evidence of insulin resistance and measurement of fasting insulin or its surrogates as essential criteria.[w1] However, the Adult Treatment Panel III of the US National Cholesterol Education Program (NCEP) proposed a simpler definition, developed for clinical use and not including any estimation of insulin resistance.[w2] People meeting three of the following criteria qualify as having the metabolic syndrome: raised blood pressure (> 130/85 mm Hg), a low serum concentration of HDL cholesterol (<1.04 mmol/l in men and <1.29 mmol/l in women), a high serum triglyceride concentration (>1.69 mmol/l), a high fasting plasma glucose concentration (> 6.1 mmol/l), and abdominal obesity (waist circumference >102 cm in men and >88 cm in women). A new definition, proposed recently by the International Diabetes Federation, has central obesity as an essential criterion, with a range of cut-offs for waist circumference for people from different ethnic groups.[5]

In a recent joint statement, the American Diabetes Association and European Association for the Study of Diabetes questioned the diagnosis of metabolic syndrome.[w3] The debate will, no doubt, continue. Yet the concept of metabolic syndrome provides a practical and useful way to identify patients with multiple factors that place them at high risk of developing diabetes and cardiovascular disease.[5]

The prevalence of metabolic syndrome in the adult population in developed countries is 22-39% and varies depending on the definition used and on ethnicity.[2 6 7] As defined by both WHO and NCEP metabolic syndrome is associated with future coronary heart disease events and type 2 diabetes.[w4] Both definitions also predict cardiovascular mortality,[w5] although only the NCEP definition has also been shown to predict all cause mortality.[w6] Metabolic syndrome seems to evolve gradually. Having even one or two features of the syndrome was associated in one study with increased risk of mortality from coronary heart disease and cardiovascular disease.[w7]

People with metabolic syndrome and a Framingham risk score greater than 20% have an increased risk of major coronary events over the next 10 years compared with people without metabolic syndrome and with the same risk score.[8] Furthermore, the Framingham risk score—based on age, serum concentrations of both LDL and HDL cholesterol, blood pressure, cigarette smoking, and diabetes mellitus—predicts full development only of cardiovascular disease whereas the presence of metabolic syndrome predicts both diabetes and cardiovascular disease.

What does the diagnosis of metabolic syndrome mean for screening for and preventing chronic disease, particularly in primary care? All components of the NCEP and the International Diabetes Federation criteria for metabolic syndrome—hypertension, dyslipidaemia, abdominal obesity, and fasting glucose concentration—can readily be measured in primary care. Unlike the WHO criteria, these criteria do not include a glucose tolerance test, which would increase workload in primary care. Patients and primary care teams should focus on preventing all components of metabolic syndrome, bearing in mind that the risk of developing the metabolic syndrome increases with weight gain[9] and insulin insensitivity is improved by weight loss,[10] and eating less saturated fat.[11] Earlier this month in its report *Preventing chronic diseases: a vital investment*, WHO published its latest projections on increased premature deaths from chronic diseases,

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including diabetes, and called for urgent action on modifiable risk factors such as unhealthy diets and physical inactivity.[w8]

It is becoming increasingly clear that a proinflammatory state is a common feature of the syndrome and of atheromatous disease. A recent randomised controlled trial showed that insulin resistance and measurements of C reactive protein were significantly lower at two year follow-up in patients with metabolic syndrome who had been allocated to a Mediterranean diet than in those who continued their normal diets.[12] Although large intervention studies have shown that intensive modification of lifestyle delays the onset of diabetes in patients with impaired glucose tolerance,[w9] no similar trials have aimed at reducing all the cardiovascular disease risk factors among people with metabolic syndrome.

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Extended prescribing by UK nurses and pharmacists

With more evidence and strict safeguards, it could benefit patients

Earlier this year the United Kingdom Department of Health consulted on options for extending prescribing by nurses and pharmacists.[1 2] Last week the department announced that nurse and pharmacist independent prescribers will be able to prescribe any licensed drug except controlled drugs—the most radical of the options considered.[3] This proposal heralds one of the most far reaching extensions of prescribing by nurses and pharmacists anywhere in the world.

The BMA has responded with dismay.[4] One of the association's concerns is that it is not safe to prescribe without training in diagnosis. We accept that this is true in most cases but note that training is becoming available for many nurses and pharmacists in the UK. As a result, both professions are able to diagnose and manage acute illnesses in primary care, and some are already prescribing independently, albeit from a limited formulary. In secondary care specialist nurses diagnose and manage in a wide range of clinical fields.

Nevertheless, the potential for nurses and pharmacists to prescribe independently from virtually the whole of the *British National Formulary*[5] is an important departure from current practice, and the wisdom of this policy deserves close scrutiny. Prescribing is one of the most powerful tools that health professionals can use in tackling disease, and yet it is also an important cause of patient harm.[6 7] To prescribe safely and effectively across all therapeutic groups requires high levels of knowledge and skill, and, even with many years of training, balancing benefits against risks can be a difficult challenge.

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A key question, however, for independent prescribing by nurses and pharmacists is that just because these professionals can prescribe any drug from the *British National Formulary*, does it follow that they will do so? Furthermore, is it likely that they will prescribe beyond their competencies?

Ideally, we would answer these questions with reference to the literature, but little high quality research has been done.[8 9] One recent study, which has considerably influenced the Department of Health's policy, has been reassuring: independent nurse prescribers tended to prescribe for relatively minor conditions, and medically trained assessors found that they generally prescribed appropriately.[10] Early data on prescribing by nurses and pharmacists in primary care suggest patterns in keeping with the skills of these professionals in treating minor illnesses and contributing to the management of patients with long term conditions (personal communication, Helen Kendall, Prescription Pricing Authority, 24 October 2005).

Nevertheless—given that evaluations of prescribing by nurses and pharmacists are not fully in the public domain, are mainly descriptive in nature, and have not all been subject to rigorous independent peer review—it is impossible to draw clear conclusions on the safety and appropriateness of extended prescribing. It is worrying that, before launching this new policy, the Department of Health has not waited for

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