Management and prevention of type 2 diabetes

Contraindications to the use of metformin

Roger Gadsby, GP and Senior Lecturer, Centre for Primary Healthcare Studies, Warwick University

Metformin is the only oral hypoglycaemic agent proved to reduce cardiovascular risk and is therefore the monotherapy of choice in overweight people with type 2 diabetes, according to the NICE guidelines on control of blood glucose (NICE, 2002).

The potentially very serious complication of lactic acidosis associated with metformin therapy is of great concern. If the British National Formulary (BNF, 2002) guidelines for the use of metformin were strictly interpreted, it would be rarely be used in diabetes! For example, the guidelines use the term renal or hepatic impairment, which is vague and unhelpful

The *British Medical Journal* editorial (2003) points out that lactic acidosis is extremely rare with an estimated prevalance of 1–5 per 100 000 patients treated. Accumulation of metformin alone is rarely reported as a trigger for lactic acidosis – tissue hypoxia in addition is found in most instances.

The editorial reviews the risks and suggests that revised guidelines for metformin should be issued to state:

1) Metformin should be stopped if creatinine levels rise above 150 μmol/l.
2) Metformin should be withdrawn during periods of tissue hypoxia, e.g. at time of myocardial infarct.
3) Metformin should be withdrawn for 3 days after iodine contrast medium is given, and it should be restarted after checking renal function.
4) Metformin should be withdrawn 2 days before a general anaesthetic, and reinstated when renal function is stable.

This editorial brings very helpful clarity to the risk of lactic acidosis with metformin therapy and its suggestions will hopefully be widely adopted.

National Institute of Clinical Excellence (2002) Management of type 2 diabetes – management of blood pressure and blood lipids (Guideline H). NICE, London

British National Formulary (2002). BNF, London

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Counselling via e-mail increases weight loss

Readability	✓ ✓ ✓ ✓ ✓
Applicability to practice	✓ ✓ ✓ ✓ ✓
WOW! factor	✓ ✓ ✓ ✓ ✓

1 Short-term weight loss as a result of internet-based weight loss programmes has been shown, but the effects of e-mail counselling have not been assessed in a population at risk of diabetes.

2 A total of 92 participants at risk of developing type 2 diabetes were randomised to basic internet or to an internet plus behavioural e-mail counselling programme for 1 year.

3 Participants in the e-mail counselling group submitted calorie and exercise information, and received weekly e-mail behavioural counsellling and feedback from a counsellor.

4 The internet weight-loss programme resulted in an average weight loss of 4.4kg after 1 year in adults at risk of type 2 diabetes.

5 The addition of e-mail counselling doubled the percentage of initial body weight lost compared with an internet intervention without individualised therapist guidance.

6 Internet interventions involving weekly behavioural e-mail counselling have the potential for producing behavioural changes and weight loss which may help reduce the risk for type 2 diabetes.

Tate DF, Jackvony EH & Wing RR (2003) Effects of internet behavioral counseling on weight loss in adults at risk for type 2 diabetes. *Journal of the American Medical Association* **106**: 1097–103

BRITISH MEDICAL JOURNAL

Time to amend metformin contraindications

Readability	✓ ✓ ✓ ✓
Applicability to practice	✓ ✓ ✓ ✓
WOW! factor	✓ ✓ ✓

1 According to the United Kingdom Prospective Diabetes Study, metformin is the only oral hypoglycaemic agent proved to reduce cardiovascular risk. It is now recognised as the treatment of choice in overweight patients with type 2 diabetes.

2 This editorial presents evidence to suggest that it is time to amend the contraindications for metformin.

3 The published contraindications for metformin all relate to fear of lactic acidosis. However, lactic acidosis associated with metformin is a rare condition. If the present contraindications were adhered to strictly, metformin would rarely be prescribed.

4 Current published guidelines vary and may limit use of metformin, leading to confusion among doctors.

5 The benefits of treatment with metformin should be made available to as wide a group of appropriate patients as possible, without laying prescribers open to criticism or litigation in the event of concomitant lactic acidosis.

6 A simplified and pragmatic set of guidelines should be adopted, which stress the importance of renal clearance of metformin and withdrawal of metformin in patients with tissue hypoxia.

7 As metformin is the only oral hypoglycaemic agent proved to reduce cardiovascular mortality, its use should be as widespread as possible in type 2 diabetes.

Editorial (2003) Contraindications to the use of metformin. Evidence suggests that it is time to amend the list. *British Medical Journal* **326**: 4–5

DIABETES CARE

Moderate alcohol intake may reduce risk of diabetes

Readability	✓ ✓ ✓ ✓
Applicability to practice	✓ ✓ ✓ ✓ ✓
WOW! factor	✓ ✓ ✓ ✓

1 Alcohol consumption is a potentially modifiable risk factor for type 2 diabetes, but results of previous studies into its significance in diabetes have been inconclusive.

2 This study examined 2953 Japanese men aged 35–59 years who did not have type 2 diabetes, impaired fasting glucose (IFG), medication for hypertension or a history of cardiovascular disease.

3 Measurements of fasting plasma glucose concentrations revealed a U-shaped association between alcohol consumption and the incidence of IFG or type 2 diabetes over 7 years follow-up.

4 Moderate alcohol consumption among Japanese men would therefore appear to be associated with reduced risk of development of IFG or type 2 diabetes.

Nakanishi N, Suzuki K, Tatara K (2003) Alcohol consumption and risk for development of impaired fasting glucose or type 2 diabetes in middle-aged Japanese men. *Diabetes Care* 26: 48–54

AMERICAN JOURNAL OF MEDICAL QUALITY

Pharmacist-led programme reduced HbA_{1c}

Readability	✓ ✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓ ✓ ✓

1 People with diabetes do not always receive the recommended care for metabolic control.

2 This study describes the implementation of a pharmacist-led, primary care based diabetes management programme for patients with type 2 diabetes and poor glucose control.

3 A total of 159 patients were enrolled. Clinic-based pharmacists offered support to patients with diabetes through direct teaching about diabetes, frequent phone follow-up, and use of a database.

4 After an average of 6 months, there was a mean reduction in HbA_{1c} of 1.9 percentage points.

5 This study provides evidence to support a role for clinical pharmacists in patient care.

Rothman R, Malone R, Bryant B, Horlen C & Pignone M (2003) Pharmacist-led, primary care-based disease management improves hemoglobin A1c in high-risk patients with diabetes. *American Journal of Medical Quality* **18(2)**: 51–58

MAYO CLINICAL PROCEEDINGS

Rationale for the use of insulin

Readability	✓ ✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓ ✓ ✓

1 Diabetes is the leading cause of new cases of blindness, end-stage renal disease, and lower extremity amputation, and contributes substantially to cardiovascular death.

2 This is a review of the pharmacological management of type 2 diabetes and the rationale for the use of insulin.

3 Evidence from randomised controlled trials indicates that aggressive treatment directed at improving glycaemic control reduces the incidence of microvascular complications.

4 Despite the wide availability of more and more antidiabetic drugs, actual treatment outcomes remain suboptimal relative to established treatment goals, such as HbA_{1c} <7%.

5 Early detection and aggressive treatment are critical to slow the progression of diabetes because multiple defects (such as insulin resistance or lipotoxicity) and vascular complications may be present at the time of diagnosis.

6 Clinical trends are changing and moving towards earlier use of insulin combined with one or more oral agents.

7 Such strategies can address the multiple abnormalities present early in the disease course and may restore optimal control.

8 A new treatment paradigm for patients with type 2 diabetes to achieve and maintain near-normal glycaemic control is needed.

Chan JL & Abrahamson MJ (2003) Pharmacological management of type 2 diabetes mellitus: rationale for rational use of insulin. *Mayo Clinical Proceedings* **78**: 459–67

'People with diabetes do not always receive the recommended care for metabolic control'

DIABETES CARE

Hospitalisation for diabetes could be prevented

Readability	✓ ✓ ✓ ✓
Applicability to practice	✓ ✓ ✓ ✓ ✓
WOW! factor	✓ ✓ ✓

1 Information is lacking about the specific comorbidities that place individuals with type 2 diabetes at greatest risk of hospital admission. Some of these admissions might be preventable.

2 Preventable hospitalisation was assessed in 193 556 Medicare beneficiaries, aged ≥ 65 years, with type 2 diabetes by measurement of ambulatory care-sensitive conditions.

3 Cardiovascular related comorbidities were common and accounted for increased odds of preventable hospitalisation.

4 Non-cardiovascular related comorbidities associated with a greater likelihood of preventable hospitalisation included chronic obstructive pulmonary disease, asthma and lower respiratory disorders.

5 Improved outpatient care strategies could reduce the impact of comorbidity on unecessary hospitalisation in patients aged ≥ 65 years old with diabetes.

Niefeld MR, Braunstein JB, Wu AW, Saudek CD, Weller WE, Anderson GF (2003) Preventable hospitalisation among elderly medicare beneficiaries with type 2 diabetes. *Diabetes Care* **26**: 1344–49

'Improved outpatient care strategies could reduce the impact of comorbidity on unecessary hospitalisation in patients aged ≥ 65 years old with diabetes.'