Management of type 1 diabetes

LANCET

The WHO should save lives not money

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

1 This review examines the increasing incidence of diabetes in sub-Saharan Africa and discusses what can be done to address the problem.

2 The authors propose an 11 point action plan to deal with this problem.

3 The life expectancy of a child whose diabetes is newly diagnosed can be as little as one year.

4 There have been several programmes implemented by the IDF and WHO to address the rising burden of diabetes across the globe.

5 The 11 key points identified are: Organisation of the health system; Prevention; Data collection; Diagnostic tools and infrastructure; Drug procurement and supply; Accessibility and affordability of medicines and care; Training of health-care workers; Adherence issues; Patient education and empowerment; Community involvement with diabetes associations; and Positive policy environment.

6 There is a large strain on health-care resources in sub-Saharan Africa in terms of communicable diseases along with the additional complications of chronic conditions.

7 Type 1 diabetes in Africa is nearly always fatal, but is uncommon, whereas type 2 is rising at an alarming rate.

8 The World Health Organisation needs to modify its strategies over both non-communicable diseases and access to medicines that are required by few, but are essential to these few.

Bevan D, Yudkin J (2006) Diabetes care in sub-Saharan Africa. *Lancet* **368**:1689–95

Insulin does save lives… unless you live in sub-Saharan Africa

Daniel Flanagan, Consultant Physician, Derriford Hospital, Plymouth

'In Africa diabetes is very uncommon but very fatal.' A missionary doctor apparently wrote the above quote in the early part of the last century. In many African countries the numbers of people needing insulin are small but for those individuals the need is absolute.

Anyone who has spent any significant amount of time looking after people with diabetes will have heard stories about the very early days of insulin. They will have heard of the hopelessness of the diagnosis of type 1 diabetes and the gradual wasting away to death. This was dramatically reversed by the introduction of insulin. People were suddenly given new life and new hope. The stories are refreshing and uplifting and remind us of the huge advance that insulin therapy was at that time. In our current practice in this country we long for a problem that has such an easy solution – you are going to die but if I prescribe this simple injection you will not.

This paper by Beran and Yudkin (summarised on left) is carefully considered and could almost be said to be dispassionate, as one would expect from a review in the *Lancet*. It does however contain an account of the current situation in a number of sub-saharan countries. In balanced tones it describes a truly shocking situation. For some countries there may simply be no insulin available. We are back in the days before the introduction of insulin.

There are many other major health problems, principally infectious diseases, killing many more people in sub-Saharan Africa but diabetes is a problem that we know how to fix if the infrastructure is in place. The paper quotes a life expectancy of those with type 1 diabetes in rural Mozambique of seven months. In our own health system more and more complex treatments are used for less and less gain. Surely we should be responsible for ensuring our neighbours have this very basic resource.

ANNALS OF INTERNAL MEDICINE

Inhaled insulin for those opposed to injections

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

1 This meta-analysis was carried out to examine the safety, efficacy and patient acceptance of inhaled insulin therapy.

2 The authors conducted a search of databases for randomised controlled trials of inhaled insulin on non-pregnant adults with type 1 diabetes.

3 The trials selected for the study had to be of at least twelve weeks duration and had to report HbA_{1c} levels in patients undergoing inhaled insulin therapy compared with another active therapy, such as an oral agent.

4 In the 16 trials that met the inclusion criteria there were 4023 people, with an age range of 18 to 80 years old. From these trials it was noted that subcutaneous insulin produced a greater reduction in HbA_{1c} than inhaled insulin, which produced more of a reduction than oral glucose therapies.

5 It was observed that there were more incidences of severe hypoglycaemia in those with inhaled or subcutaneous insulin than oral glucose.

6 All of the trials selected were open-label, therefore possibly biased and could not look at long-term effects.

7 Until long-term data are available, inhaled insulin should be reserved for those opposed to injections.

Ceglia L, Lau J, Pittas AG (2006) Meta-analysis: efficacy and safety of inhaled insulin therapy in adults with diabetes mellitus. *Annals of Internal Medicine* **145**:665–75

'The presence of insulin resistance in type 1 diabetes is key in determining daily insulin'

JOURNAL OF DIABETES COMPLICATIONS

Resistance is key for daily insulin dose

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

1 The authors of this article examined the factors that determine insulin use in those with type 1 diabetes.

2 This was a cross-sectional study performed on 416 patients from two outpatient clinics in the Netherlands, all with type 1 diabetes.

3 The results of the study found that both BMI and waist circumference were related positively to daily insulin use.

4 The study also found that a 14% decrease in insulin need occurred if using an insulin pump.

5 The findings of this study would suggest that the presence of insulin resistance in type 1 diabetes is key in determining daily insulin requirement.

Muis MJ, Bots ML, Bilo HJ et al (2006) Determinants of daily insulin use in Type 1 diabetes. *Journal of Diabetes Complications* **20**:356–60

DIABETES CARE

Pramlintide elevation reduces weight and postprandial glucose

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

1 This study was designed to assess the safety, efficacy and tolerability of pramlintide dose escalation.

2 The study lasted for 29 weeks and was a randomised, double-blind, placebo controlled trial. It involved 296 participants who were randomised to receive either pramlintide or placebo alongside insulin. Pramlintide dose was increased from 15 μg to 60 μg and insulin was decreased during initiation.

3 There were several end points selected for the study including change in HbA_{1c}, postprandial glucose, weight, insulin dose and tolerability.

4 A baseline HbA_{1c} value of 8.1% was recorded for both groups and had decreased at 29 weeks by 0.5%, however pramlintide appeared to reduce both postprandial glucose and weight.

5 In both groups there were low rates of hypoglycaemia, however the rates increased with those participants kept on 30 μg pramlintide.

6 The authors conclude that dose elevation, alongside mealtime insulin reduction, had a positive effect on weight and postprandial glucose levels.

Edelman S, Zhang B, Garg S et al (2006) A double-blind, placebo-controlled trial assessing Pramlintide treatment in the setting of intensive insulin therapy in type 1 diabetes. *Diabetes Care* **29**: 2189–95

DIABETOLOGIA

High incidence of type 1 diabetes in remote areas

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

1 In this paper the authors investigate the association of type 1 diabetes with 'remoteness'.

2 New incidences of diabetes in children (0-14 years old) in Northern Ireland were registered between 1989 and 2003.

3 Analysis was carried out on remoteness, child population density and deprivation.

4 There were 1433 new cases of type 1 diabetes identified in this study.

5 The authors found that there was a higher incidence of type 1 diabetes in more remote areas of Northern Ireland, possibly reflecting a reduced exposure to infections early in life.

Cardwell CR, Carson DJ, Patterson CC (2006) Higher incidence of childhood-onset type 1 diabetes mellitus in remote areas: a UK regional small-area analysis. *Diabetologia* **49**:2074–77

NEJM

Islet transplantation can restore glycaemic stability

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

1 This study was conducted to investigate the feasibility of islet transplantation using the Edmonton protocol.

2 This was an international, multicentre trial across 9 centres; 3 in Europe and 6 in the United States.

3 Thirty-six patients with type 1 diabetes who underwent islet transplantation were enrolled in the study.

4 These patients all had to be between 18 and 65 years of age, have had type 1 diabetes for at least 5 years with recurrent neuroglycopaenia as assessed by a diabetologist.

5 The primary end point of complete insulin independence and reasonable glycaemic control was achieved by 44% of the study group (16 people). Ten people had partial islet function and ten had complete graft loss after 1 year. Twenty-one subjects attained insulin independence throughout the trial.

6 Three quarters of those who achieved insulin independence required insulin again at the end of 2 years, however, 5 of those who reached the primary end point were still insulin independent after 2 years.

7 The results of this multicentre study on the Edmonton protocol support those trials done at single centres and demonstrate the benefit of islet transplantation.

8 Islet transplantation with the Edmonton protocol can restore glycaemic stability, but may not be sustainable.

Shapiro JAM, Ricordi C, Hering BJ et al (2006) International trial of the Edmonton Protocol for islet transplantation. *New England Journal of Medicine* **355**: 1318–30

'...there was a higher incidence of type 1 diabetes in more remote areas of Northern Ireland, possibly reflecting a reduced exposure to infections early in life.'