A systematic review of drug therapy to delay or prevent type 2 diabetes

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A systematic review, using Cochrane methodology, is regarded as 'gold standard' in evidence-based medicine. This paper fulfils this criterion. The authors of this study (Padwal et al, 2005; summarised on right) clearly state the search methodology, inclusion criteria and search terms used. They also made an a priori decision that quantitative meta-analysis of the data would not be possible due to substantial between-study differences in end point definitions, patient populations and interventions.

Of 5511 citations found in the initial search, 36 full-text articles were reviewed, of which ten met the inclusion criteria. An additional 15 articles were identified from searching manually and by reviewing the reference lists of all included studies.

The results show that in the largest studies, of 2.5 to 4 years' duration, metformin, acarbose, troglitazone, and orlistat have all been shown to lower the incidence of diabetes compared with placebo. However, follow-up rates varied from 43 % to 96 %. The authors state that current evidence for statins, fibrates, antihypertensive agents and oestrogen are inconclusive. In addition, the critical question of whether drugs are preventing or simply delaying the onset of diabetes, the authors feel, remains unresolved. They conclude that, currently, no single agent can be definitively recommended for diabetes prevention. They advise that future studies need to be designed with the lowering of the incidence of diabetes as the primary outcome and should be of sufficient duration to differentiate between genuine diabetes prevention as opposed to simply delaying or masking of the condition.

So there it is. Gold standard evidence says no drug can currently be recommended for diabetes prevention. I suggest that until the evidence base changes, drugs to prevent diabetes should only be given as part of a trial that fulfils the authors' quality standard.

BRITISH MEDICAL JOURNAL

British South Asians' perceptions toward OHAs

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

1 No previous studies have focused on the perceptions that people with diabetes from the Pakistani/Indian sub-continent have of their diabetes drugs. This article presents results of one such study in the UK (although the authors state the small numbers involved [n=32] as a limitation).

2 The authors conducted an observational cross-sectional study which included in-depth interviews in Punjabi or English.

3 The interviews were biased towards discovering perceptions against oral hypoglycaemic agents (OHAs).

4 The study participants mostly regarded their medications to be superior to those they may have been prescribed in Pakistan or India. They believe that the UK health service is able to provide a better level of service. But, also discovered at interviews was that the same people made deliberate efforts to reduce or stop their prescribed drug intake.

5 In conclusion, the authors say that, despite the study's limitations, healthcare professionals involved in the care of people with type 2 diabetes should consider cultural factors when educating individuals to manage their condition.

Lawton J, Ahmad N, Hallowell N et al (2005) Perceptions and experiences of taking oral hypoglycaemic agents among people of Pakistani and Indian origin: qualitative study. *British Medical Journal* **330**(7502): 1247–51

DIABETES CARE

Prevention of T2DM should be end point of drug trials

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

1 Pharmacological therapy to prevent type 2 diabetes may be a therapeutically important approach for those people in whom other interventions either have failed or are not feasible. This systematic review of MEDLINE, EMBASE and the Cochrane Controlled Trials Registry aimed to discover whether any drug trials had used the prevention of type 2 diabetes through pharmacological methods as their primary end point.

2 The search strategy included those trials which examined the effects of agents/drugs (such as oral hypoglycaemic agents [OHAs], antiobesity drugs, antihypertensives, statins, fibrates and oestrogen) on the incidence of type 2 diabetes.

3 Initial searches retrieved a total of 5511 citations, of which ten met all inclusion criteria. A further 15 citations were included after additional manual and reference list searches.

4 The only agents found to have been used in trials with lowering the incidence of type 2 diabetes as its end point were OHAs and orlistat.

5 The authors found that in the largest studies, of duration 2.5–4 years, metformin, troglitazone and acarbose were all found to decrease the incidence of diabetes, but the follow-up rates varied from 43–96 %.

6 In conclusion Padwal et al state that no single pharmacological intervention can be recommended for the prevention of type 2 diabetes.

Padwal R, Majumdar SR, Johnson J, Varney J, McAlister FA (2005) A systematic review of drug therapy to delay or prevent type 2 diabetes. *Diabetes Care* **28**(3): 736–44

DIABETES CARE

Insulin glargine reduces risk of severe hypoglycaemic episodes

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

1 A meta-analysis of controlled trials was carried out in order to assess the risk of hypoglycaemia for insulin glargine versus twice-daily intermediate-acting insulin in adults with type 2 diabetes.

2 Three of the four studies analysed were 24–28 weeks long; the fourth lasted 52 weeks, for which interim data from week 20 were used.

3 The HbA_{1c} values for participants in all four studies were similar between those treated with glargine and intermediate-acting insulin. However, the incidences of severe hypoglycaemia and severe nocturnal hypoglycaemia were significantly lower in the insulin glargine-treated groups by 46 % (P=0.0442) and 59 % (P=0.0231), respectively, across all studies. Therefore, the authors conclude that insulin glargine given once daily is a better intervention than other slower-acting analogues.

Rosenstock J, Dailey G, Massi-Benedetti M et al (2005) Reduced hypoglycemia risk with insulin glargine. *Diabetes Care* **28**(4): 950–5

DIABETES CARE

Intensive therapy needed to prevent deterioration of HbA_{1c} levels

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

1 The General Practice Research Database (GPRD) contains anonymous medical records of more than 3 million UK residents.

2 A total of 290 practices were used as a source for data on people with type 2 diabetes who were initially treated with metformin monotherapy for >90 days, and then had sulphonylurea added when glycaemic control appeared to deteriorate.

3 An average of 6 months after sulphonylurea initiation, HbA_{1c} began deteriorating again at a similar rate to that observed on metformin monotherapy, at which point glucose-lowering therapy intensified in most practices.

4 This retrospective analysis concludes that there is ample evidence to persuade primary carers to adopt aggressive treatment for people in whom metformin monotherapy and metformin/sulphonylurea therapy has failed in controlling blood glucose levels.

Cook MN, Girman CJ, Stein PP et al (2005) Glycemic control continues to deteriorate after sulfonylureas are added to metformin among patients with type 2 diabetes. *Diabetes Care* **28**(5): 995–1000

ANNALS OF INTERNAL MEDICINE

Lifestyle modification cheaper than metformin treatment

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

1 The Diabetes Prevention Program (DPP) has previously published data concluding that lifestyle intervention and metformin treatment is more costly than placebo.

2 This article uses outcome measures such as the incidence of type 2 diabetes and its related complications (e.g. microvascular, neuropathic and cardiovascular) as the primary end point for a study analysing the cost implications of lifestyle intervention versus metformin treatment for individuals with impaired glucose tolerance (IGT).

3 Lifestyle intervention and metformin treatment were estimated to delay the onset of type 2 diabetes by 11 and 3 years, respectively; also, the cost per quality-adjusted life-year (QALY) was approximately $1100 and $31 300, respectively, to the health service. To society, the approximate costs were $8800 for lifestyle and $29 900 for metformin interventions.

4 In conclusion, the DPP strongly advocates, primarily, the promotion of lifestyle intervention in peole with IGT who are at high risk of developing type 2 diabetes.

Herman WH, Hoerger TJ, Brandle M et al (2005) The cost-effectiveness of lifestyle modification or metformin in preventing type 2 diabetes in adults with impaired glucose tolerance. *Annals of Internal Medicine* **142**(5): 323–32