Calculation of Hazard Ratios and Incidence Rate Ratios [posted as supplied by author]

Where the hazard ratio (HR) and a confidence interval were reported the standard error (SE) of the Log(HR) was obtained using [1]

$$\text{SE}[\text{Log}(\text{HR})] \approx \frac{\left[\text{UppCI}_i - \text{LowCI}_i\right]}{2\,\Phi^{-1}\left(1 - \frac{\alpha_i}{2}\right)} \qquad [1]$$

Where UppCI_i and LowCI_i are the value for the upper and lower ends of the confidence interval for $\log(\text{HR}_i)$, Φ^{-1} is the inverse cumulative normal distribution function and α_i is the significance level or p-value (so 5% in [1]). For studies that reported a HR along with a p-value from the log-rank test, but no confidence interval, the SE of the Log(HR) was calculated using the formula given in [2]

$$\text{SE}[\text{Log}(\text{HR})] = \frac{\left[\text{Log}(\text{HR})_i\right]}{\Phi^{-1}\left(1 - \frac{\alpha_i}{2}\right)} \qquad [2]$$

For studies that did not report results in the form of HRs, but instead reported the percent that developed type 2 diabetes mellitus, incidence rate ratios (IRRs) were estimated using information on person years of follow-up. Where person years of follow-up was not reported it was estimated by assuming drop-outs, deaths and development of type 2 diabetes mellitus had occurred on average half-way through the trial and therefore these individuals added half the trial length to the total person years of follow-up. Those who continued to the end of the trial attributed the full trial length to the total**.** The incidence rates could therefore be estimated for each intervention arm (number of diabetics divided by total person years of follow-up) and the IRRs calculated**.**

References to identified studies [posted as supplied by author]

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The IRRs were transformed to the log scale for the meta-analyses, and the standard error of the estimated Log(IRR)s was calculated using [3]**,** where d_t and d_c were the numbers who developed type 2 diabetes mellitus in the treatment and control arms respectively.

$$\text{SE[Log(IRR)]} \approx \sqrt{\frac{1}{d_t} + \frac{1}{d_c}} \qquad [3]$$

The Da Qing trial assessed three different lifestyle interventions which resulted in multiple use of the same control group in a single meta-analysis. To adjust for this the number of diabetics and estimated person years for the control group was divided by the number of interventions from the trial**,** and the IRRs then calculated, effectively using a proportion of the control group. Furthermore, as the Da Qing study was randomised at the clinic level, the consequential clustering effect was adjusted for by reanalysing the reported data by fitting a Poison regression model, with clinic included as a random effect.

Pharmacological and lifestyle interventions to prevent or delay type 2 diabetes mellitus in individuals with impaired glucose tolerance: A Systematic Review and Meta-analysis

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Search strategy

Both Medline (1966 to July, week 3, 2006) and Embase (1980 to week 29, 2006) databases were searched using the following search terms.

RCT filter

1. randomized controlled trial.pt.
2. controlled clinical trial.pt.
3. Randomized Controlled Trials/
4. random allocation/
5. double blind method/
6. single-Blind Method/
7. clinical trial.pt.
8. clinical trials/
9. clinical trial.tw.
10. ((singl$ or doubl$ or trebl$ or tripl$) and (mask$ or blind$)).tw.
11. PLACEBOS/
12. placebo$.tw.
13. random$.tw.
14. (clin$ adj5 trial$).ti,ab.
15. or/1-14
16. (animals not human).sh.
17. 15 not 16

Type II diabetes

18. diabetes-mellitus,-non-insulin-dependent/
19. insulin-resistance/
20. obesity-in-diabetes.mp. or Obesity in Diabetes/
21. (MODY or DM2 or NIDDM or IIDM).ti,ab.
22. (non insulin$ depend$ or noninsulin$ depend$).ti,ab.
23. (("typ$ 2" or typ$ II) adj10 (diabet$ or DM)).ti,ab.
24. (insulin$ defic$ adj5 relativ$).ti,ab.
25. (adult$ onset or matur$ onset or late$ onset).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
26. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25

Prevention combined with type II diabetes (using and)

27. "PREVENTIVE MEDICINE"/
28. "PREVENTIVE-HEALTH-SERVICES"/
29. (PREVENT$ or PROPHYLA$ or AVOID$ or DELAY$).ti,ab.
30. 26 and (27 or 28 or 29)

Exclusions

31. "dermatomyositis".mp. or DERMATOMYOSITIS/
32. "myotonic-dystrophy"/
33. exp Diabetes Insipidus/
34. mellitus.ti,ab.
35. 33 not (18 or 34)
36. (diabet$ adj5 (insipidus not mellitus)).ti,ab.
37. ((keto$ resist$ or nonketo$ or non keto$ or slow onset or stabl$) adj5 (diabet$ or

DM or DM2)).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
38. (fragil$ X or X linked).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
39. (plurimetabolic$ syndrom$ or pluri metabolic$ syndrom$).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
40. "PREGNANCY-IN-DIABETES".ti,ab.
41. (pregnan$ adj5 diabet$).ti,ab.
42. 31 or 32 or 35 or 36 or 37 or 38 or 39 or 40 or 41
43. 30 not 42

IGT and similar conditions

44. "prediabetic-state"/
45. ((prediabet$ or pre diabet$) adj5 state).ti,ab.
46. "glucose-intolerance"/
47. (impaired glucose tolerance or glucose intoleran$ or insulin$ resist$).ti,ab.
48. impaired fasting glucose.ti,ab.
49. (IGT or IFG).tw.
50. (metabolic syndrome or syndrome x).mp. [mp=title, original title, abstract, name of substance, mesh subject heading]
51. "hyperinsulinemia"/
52. (hyperinsulin$ or hyper insulin$).ti,ab.
53. glucose tolerance test.tw.
54. impaired fasting blood glucose.tw.
55. (impaired fasting glycaemia or impaired fasting glycemia).tw.
56. (impaired glucose stat$ or impaired glucose respons$ or impaired glucose control$).tw.
57. (impaired glucose regul$ or impaired glucose metab$).tw.
58. (impaired glucose homeost$ or reduced glucose metab$).tw.
59. (reduced glucose toleran$ or glucose intolerant$).tw.
60. (prediabet$ or praediabet$).tw.
61. (borderline diabet$ or mild diabet$).tw.
62. (impaired insulin secret$ or reduced insulin secret$).tw.
63. 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62

IGT + ((diabetes and prevention)-exclusions)

64. 63 or 43

Above combined with RCT (using and)

65. 64 and 17