Glycemic Index, Glycemic Load, Carbohydrates, and Type 2 Diabetes
Systematic review and dose-response meta-analysis of prospective studies

OBJECTIVE
Diets with high glycemic index (GI), with high glycemic load (GL), or high in all carbohydrates may predispose to higher blood glucose and insulin concentrations, glucose intolerance, and risk of type 2 diabetes. We aimed to conduct a systematic literature review and dose-response meta-analysis of evidence from prospective cohorts.

RESEARCH DESIGN AND METHODS
We searched the Cochrane Library, MEDLINE, MEDLINE in-process, Embase, CAB Abstracts, ISI Web of Science, and BIOSIS for prospective studies of GI, GL, and total carbohydrates in relation to risk of type 2 diabetes up to 17 July 2012. Data were extracted from 24 publications on 21 cohort studies. Studies using different exposure categories were combined on the same scale using linear and nonlinear dose-response trends. Summary relative risks (RRs) were estimated using random-effects meta-analysis.

RESULTS
The summary RR was 1.08 per 5 GI units (95% CI 1.02–1.15; P = 0.01), 1.03 per 20 GL units (95% CI 1.00–1.05; P = 0.02), and 0.97 per 50 g/day of carbohydrate (95% CI 0.90–1.06; P = 0.5). Dose-response trends were linear for GI and GL but more complex for total carbohydrate intake. Heterogeneity was high.