Glycemic Index

An excellent overview from the Mayo Clinic:
https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/glycemic-index-diet/art-20048478

The University of Sydney website. They maintain a repository of glycemic index data.
http://www.glycemicindex.com/about.php

A more recent study looking at variation within an individual in the measure of glycemic index:
http://ajcn.nutrition.org/content/104/4/1004

From Dynamed Plus:

Cochrane review

- **low glycemic index diet reduces HbA1c (level 3 [lacking direct] evidence) and may reduce episodes of hypoglycemia (level 2 [mid-level] evidence)**
  - based on Cochrane review of trials with unclear allocation concealment
  - systematic review of 11 randomized trials evaluating low glycemic diet for ≥ 4 weeks in 402 patients with type 1 or type 2 diabetes not optimally controlled
  - all trials had unclear allocation concealment, only 1 trial had reported method of randomization
  - low glycemic diet associated with decreased HbA1c in analysis of 6 trials with 247 patients (weighted mean difference -0.5%, 95% CI -0.9 to -0.1%, p = 0.0013)
  - episodes of hypoglycemia significantly fewer with low glycemic index diet compared to control diet (1 trial) and compared to measured carbohydrate exchange diet (1 trial)
  - no trials reported on mortality, morbidity, or costs
  - Reference - Cochrane Database Syst Rev 2009 Jan 21;(1):CD006296

Randomized trials

- **low glycemic index diet associated with modest improvement in glycemic control and HDL cholesterol compared to high-cereal fiber diet (level 3 [lacking direct] evidence)**
  - based on randomized trial without clinical outcomes
  - 210 persons with diabetes type 2 treated with antihyperglycemic medication randomized to low glycemic index vs. high cereal fiber diet
  - dietary instruction given at baseline, then patients presented food diaries at week 2, week 4 and then monthly for 6 months
  - 74% completed trial
  - comparing low glycemic index vs. high cereal fiber
    - mean decrease in HbA1c 0.5% vs. 0.18% ($p < 0.001$)
    - mean change in HDL cholesterol +1.7 vs. -0.2 mg/dL ($p = 0.005$)

    - Reference - JAMA 2008 Dec 17;300(23):2742, commentary can be found in JAMA 2009 Apr 15;301(15):1538, Evid Based Med 2009 Jun;14(3):72
- **low glycemic index legume diet associated with slight improvement in glycemic control compared with high insoluble fiber diet (level 3 [lacking direct] evidence)**
    - based on randomized trial without clinical outcomes
    - 121 patients with type 2 diabetes randomized to low glycemic index legume diet (increase in legume intake by ≥ 1 cup per day) vs. high insoluble fiber diet (increase in consumption of whole wheat products) for 3 months
    - reduction in HbA1c by 0.5% for low glycemic index legume diet vs. 0.3% for high insoluble fiber diet ($p < 0.05$)
    - Reference - Arch Intern Med 2012 Nov 26;172(21):1653, editorial can be found in Arch Intern Med 2012 Nov 26;172(21):1660
- **low glycemic index dietary carbohydrate not associated with change in glycemic control (level 3 [lacking direct] evidence)**
    - based on randomized trial without clinical outcomes
    - 162 patients with diabetes type 2 managed by diet alone randomized to high-carbohydrate, high-glycemic index (high-GI) vs. high-carbohydrate, low-GI vs. low-carbohydrate, high-monounsaturated-fat diets for 1 year
    - no significant difference in HbA1c levels between diets
    - mean C-reactive protein and 2-hour postload glucose levels lower with low-GI diet
    - Reference - Am J Clin Nutr 2008 Jan;87(1):114, editorial can be found in Am J Clin Nutr 2008 Jan;87(1):1, commentary can be found in Evid Based Med 2008 Aug;13(4):107
- **meals with low glycemic index may reduce average daily glucose and/or hyperinsulinism (level 3 [lacking direct] evidence)**
    - based on small studies without clinical outcomes
    - low-biologically-available-glucose diet (high-protein/low-carbohydrate) for 5 weeks reduced average daily glucose (198 vs. 126 mg/dL [11-7 mmol/L]) and HbA1c (9.8% vs. 7.6%) in randomized crossover trial of 8 men with type 2 diabetes (Diabetes 2004 Sep;53(9):2375)
    - consumption of meals with low glycemic index (rate of carbohydrate absorption after a meal) may reduce hyperinsulinism, but evidence limited to small studies with methodologic problems (JAMA 2002 May 8;287(18):2414), commentary can be found in JAMA 2002 Aug 14;288(6):695, editorial discussion can be found in JAMA 2009 Dec 9;302(22):2477
- **glycemic index-based nutritional education associated with modest improvement in glycemic control compared to conventional nutrition education (level 3 [lacking direct] evidence)**
    - based on randomized trial without clinical outcomes
    - 40 patients with fasting plasma glucose 110-160 mg/dL (6.11-8.88 mmol/L) or HbA1c 5.8%-8% were randomized to glycemic index-based nutritional education vs. conventional nutrition education
    - mean reduction in HbA1c 0.46% in glycemic index education group vs. 0.21% in control group ($p < 0.001$)
    - Reference - Diabetes Care 2007 Jul;30(7):1874