



## The GI Foundation and the GI Symbol Program

IPA Congress  
November 2013

**CONFIDENTIAL**

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## Glycemic Index Foundation

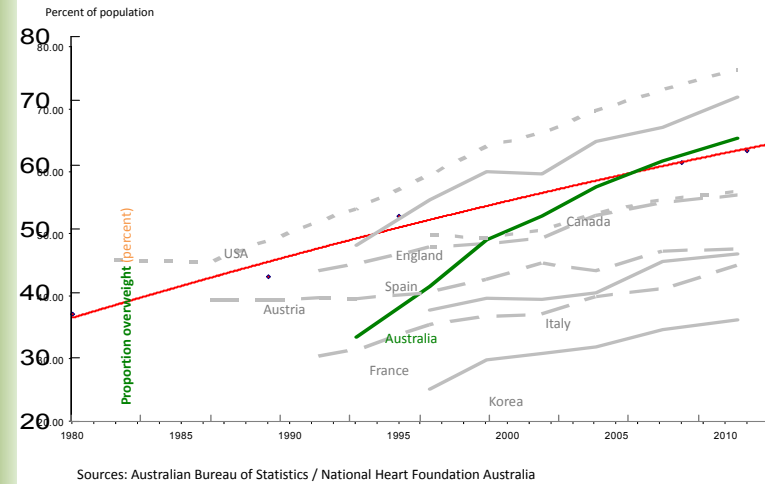


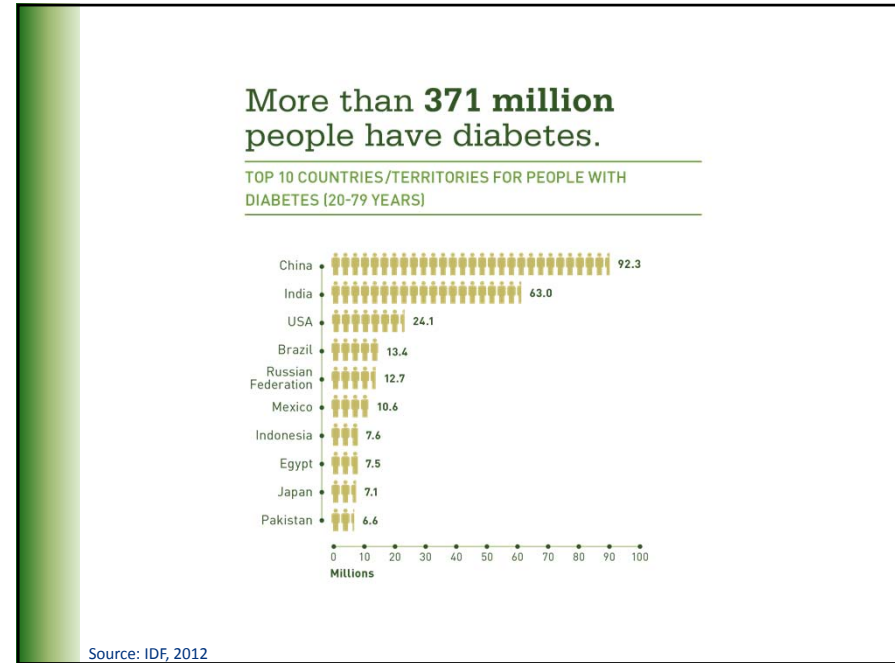
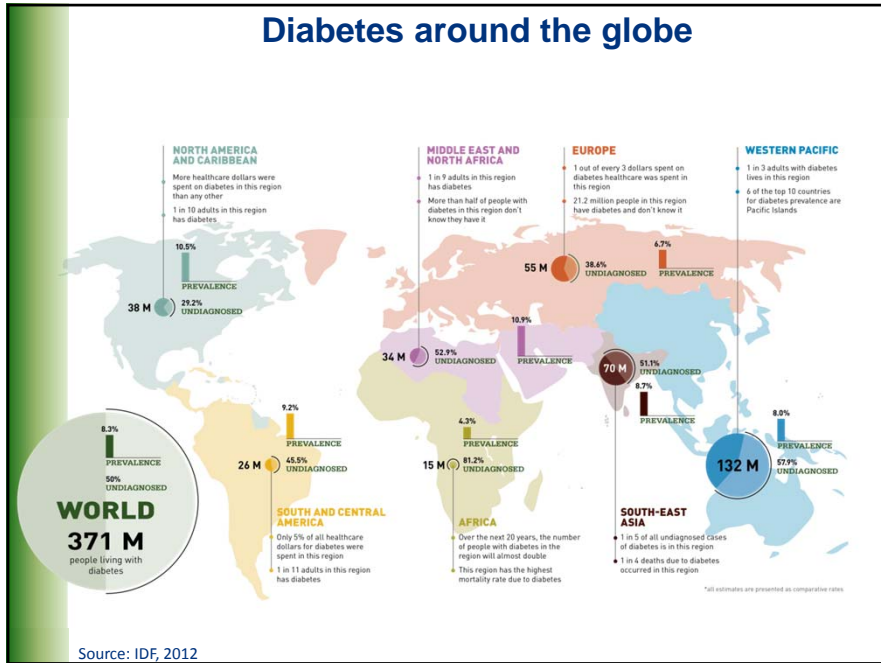
- **World leader** in putting GI research into practice
- A **not-for-profit** partnership between the University of Sydney and Juvenile Diabetes Research Foundation
- **Mission** to assist food suppliers in providing, and consumers in selecting, nutritionally healthy foods using the Glycemic Index
- **Committed** to an improvement in public health by raising the **awareness** and **understanding** of the health benefits of low GI diets – from a holistic and chronic disease perspective
- All funds raised **invested** in community awareness and new research

# The global diabetes epidemic



# Rates of overweight and obesity in adults: 1980-2012

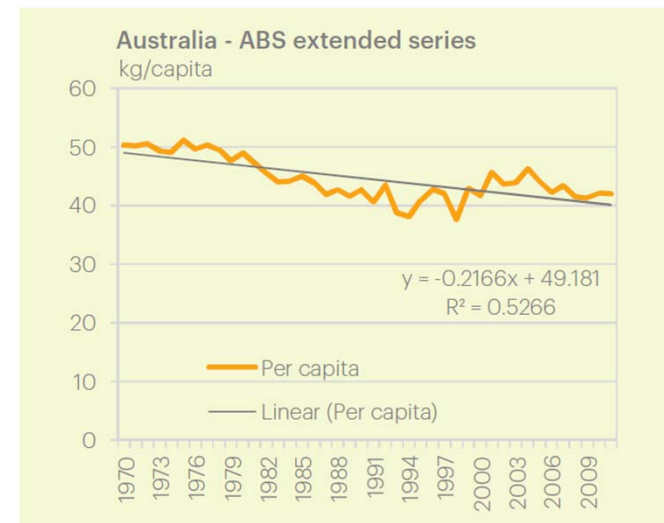




**Increased sugars consumption is not a plausible cause of diabetes in Australia**



**Apparent consumption of sugar (kg/person/yr) in Australia: 1970 - 2011<sup>1</sup>**



Source: Green Pool, 2012

## The GI, or Glycemic Index

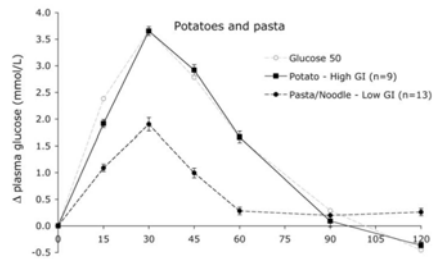
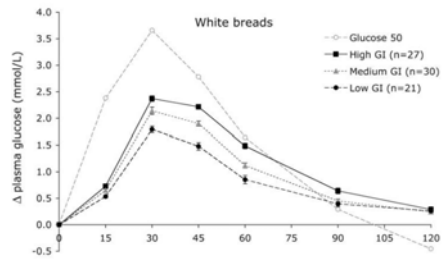


## The Glycemic Index

The **glycemic index** or GI:

- compares equal quantities of available carbohydrate in foods
- is a measure of their effect on blood glucose levels in healthy people over a 2 hr period
- provides a measure of carbohydrate quality.
- is a percentage:

### Glycemic Index



### Glycemic Index (GI): Ranking

Individual food portion<sup>1</sup>:

Low	55 or less
Moderate	56 - 69
High	70+

Whole day<sup>2</sup>:

Low	45 or less
Moderate	46-59
High	60+

1. Australian Standard. Glycemic Index of Foods AS4694-2007. Standards Australia. 2007.  
 2. Atkinson et al. Diabetes Care. 2008; 31(12):2281-3.

### Common low GI foods<sup>2</sup>

- Barley 33
- Legumes/beans 30's
- Pastas 40's
- "Specialty" breads 40's
- Muesli 50's
- Fruits (except melons) 40's
- Milk 30's
- Yoghurt 30's

2. Atkinson et al. Diabetes Care. 2008; 31(12):2281-3

### Common high GI foods<sup>2</sup>

- Potatoes 77
- Cornflakes 77
- Rice bubbles 85
- Wholemeal and white bread 75
- Crisp breads 81
- Rice (most types) 83

2. Atkinson et al. Diabetes Care. 2008; 31(12):2281-3

### GI of plum products<sup>2</sup>

- Prune juice 43
- Plum 39
- Prunes, pitted 29



2. Atkinson et al. Diabetes Care. 2008; 31(12):2281-3

### Definitions

#### Glycemic load (GL)

- a function of a food's glycemic index and its total available carbohydrate content and defined as:

$$\text{Glycemic Load} = \text{GI} (\%) \times \text{Carbohydrate} (\text{g})$$

- Using a serve of prunes (4 prunes) as an example:

GI value = 29%; Carbohydrate per serve = 14 g

$$\text{GL} = 0.29 \times 14 = 4$$

The GL of a serve of prunes is 4



## Glycemic Load (GL): Ranking

Individual food portion<sup>3</sup>:

Low	0-10
Moderate	11-19
High	20+

Whole day<sup>4</sup>:

Low	< 95 g 8,400 kJ/d diet
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3. Brand-Miller JC, Holt SHA, and Petocz P. Glycemic load values:2002. Am J Clin Nutr. 2003; 77 (1): 993-5.

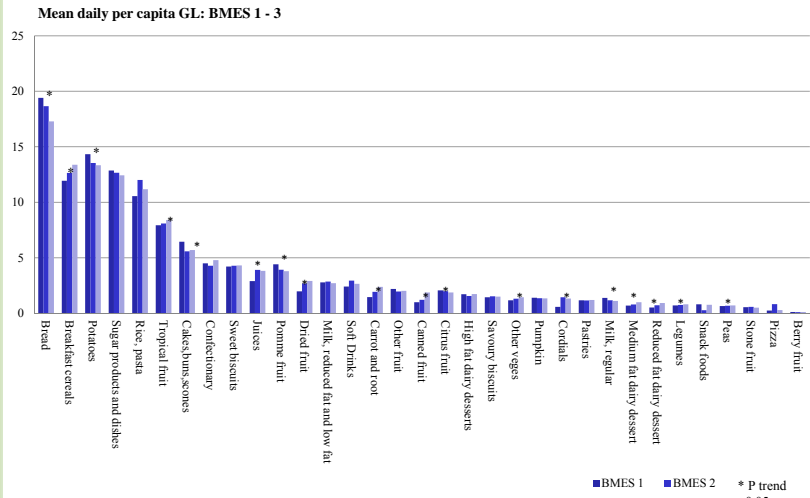
4. Livesey et al, AJCN. 2013.

## Glycemic Load

- 1 unit of GL ~ 1 g of glucose
- The higher the GL, the greater the elevation in blood glucose and insulin levels<sup>5</sup>.

5. Foster-Powell K, et al. Am J Clin Nutr. 2003; 76 (1): 5-56.

### Common sources of carbohydrate: 1993-2003<sup>6</sup>

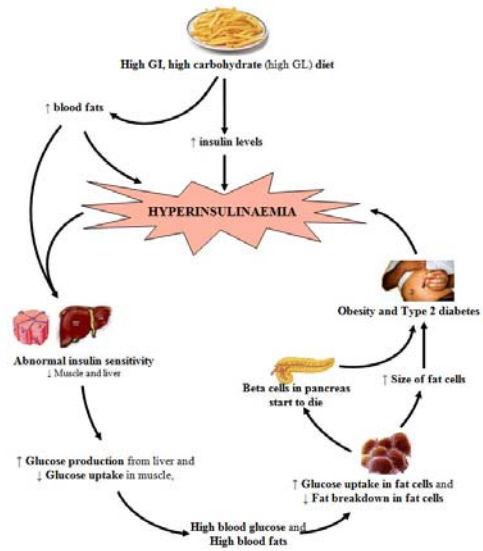


6. Barclay, A. PhD thesis. December, 2007.

### The Glycemic Index and health



## High GI/GL diets and human physiology<sup>6</sup>



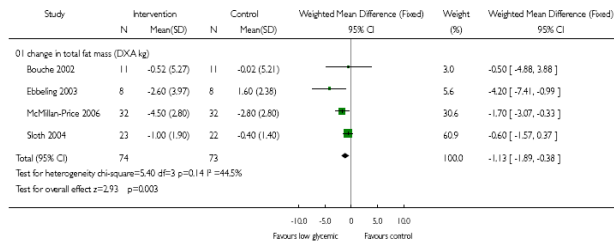
6. Barclay, A. PhD thesis. December, 2007.

## GI and overweight and obesity



## Cochrane review and meta-analysis of low GI diets in overweight/obesity<sup>7</sup>

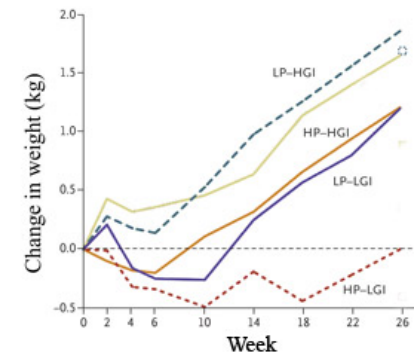
- decreases in body mass of 1.1 kg
- total fat mass of 1.1 kg,
- body mass index of 1.3 kg/m<sup>2</sup>
- significantly greater in participants receiving low GI compared to standard low fat diets



7. Thomas et al. The Cochrane Library 2007, Issue 3.

## Comparison of 5 weight maintenance diets<sup>8</sup> Body weight changes over 26 wks in adults (n = 773) after 11 kg wt loss

HP (21.7% of kJs), LGI (56.5)(total carbs = 44% of kJs; total kJs = 7,400 kJ) diet lost 0.38 kg, all others gained weight

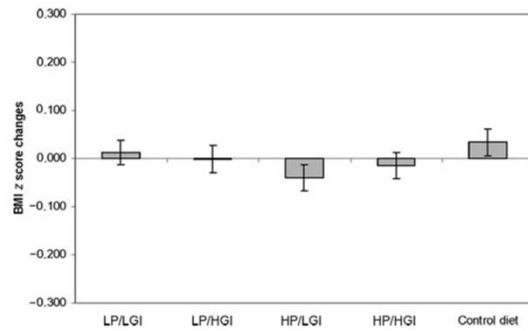


8. Larsen et al. N Engl J Med 2010;363:2102-13.

## Low GI diets and weight loss in children Comparison of 5 weight maintenance diets<sup>9</sup>

Body weight changes over 26 wks in children (n = 465)

HP (21.4% of kJs), LGI (56.9)(total carbs = 50.6% of kJs; total kJs = 6,253 kJ) BMI<sub>z</sub> score by 0.045 kg/m<sup>2</sup>, all others gained weight



Mean changes in BMI z scores over the 6-month dietary intervention. Bars indicate SE. Levels of significance were assessed by using analysis of covariance (age, gender, family structure, and country as covariates).

9. Papadaki et al. *Pediatrics* 2010;126(5):e1-e10.

## GI and diabetes prevention

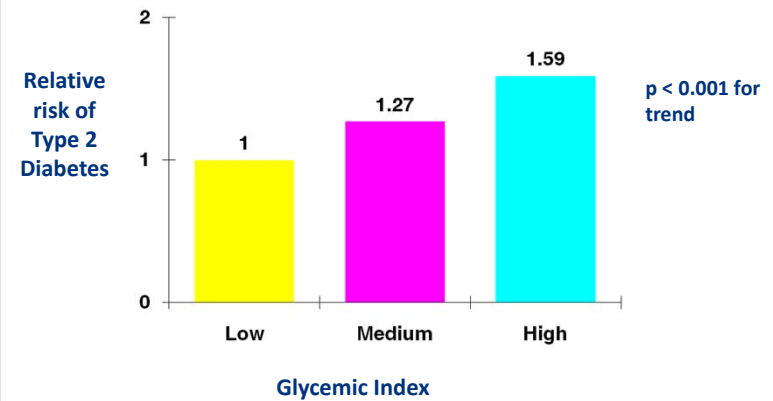


## Low GI diets and Type 2 diabetes

Glycemic Index, glycemic load, and dietary fibre intake and incidence of type 2 diabetes in younger and middle-aged women<sup>10</sup>

Design	Cohort study
Participants	91,249 US Women, aged 24-44
Results	High GI diet increase risk by 59%
Diet	<b>Carb intake 224 g/day (50% E)</b> Fibre intake 18.5 g/day
Median GI	49

10. Schulze et al Am J Clin Nutr, 2004; 80:348-356



10. Schulze et al Am J Clin Nutr, 2004; 80:348-356

### Systematic review and meta-analysis of low GL diets and type 2 diabetes<sup>13</sup>

- All evidence available from prospective cohort studies
- People consuming a low GL diet (<95g/8,400kJ/day)
- Decrease risk of developing type 2 diabetes by 45%
- This can be achieved by either:  
consuming 200 g carbohydrates (~40% kJs) a day with a GI of 50, or  
250 g carbohydrates (~50% kJs) a day with a GI of 40

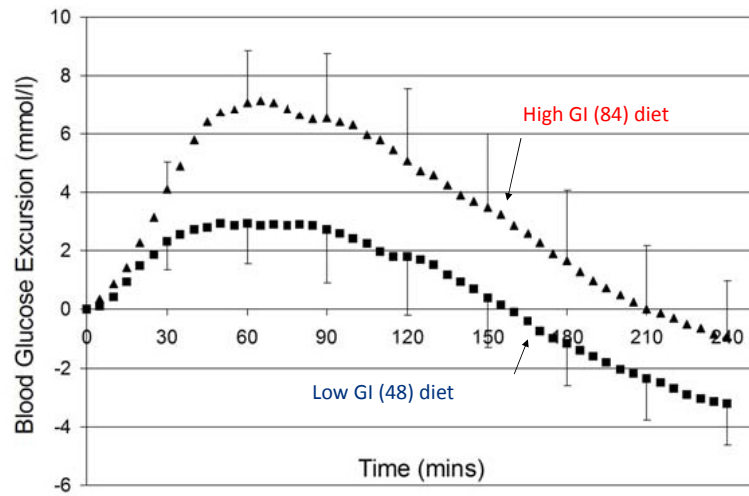
13. Livesey, et al. AJCN 2013.

### GI and diabetes management



### GI and daily BGLs in PWD<sup>14</sup>

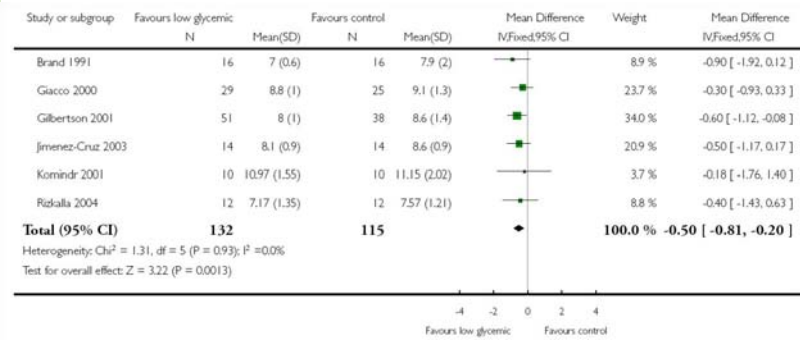
RCT, 20 Australian children aged 7-17 yrs.



14. Ryan et al. Diabetes Care. 2008 ;31(8): 1485-90

### GI and glycated hemoglobin<sup>15</sup>

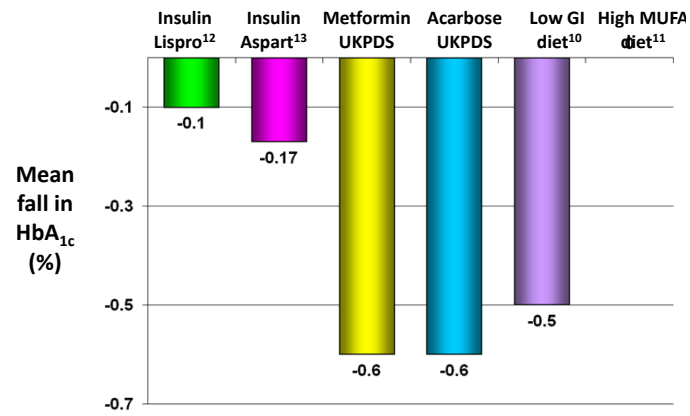
11 RCT's. 402 participants



15. Thomas and Elliot. The Cochrane Collaboration, 2009.



### Low GI diets compared to medication/insulin



10.Thomas and Elliot. The Cochrane Collaboration, 2009.

11.Garg Am J Clin Nutr 1998; 67:577S

12.Heller et al 1999 Diabetes Care 1999; 22:1607 & others

13.Lindholm et al 1999 Diabetes Care 1999; 22:801 & others

### GI and cardiovascular disease

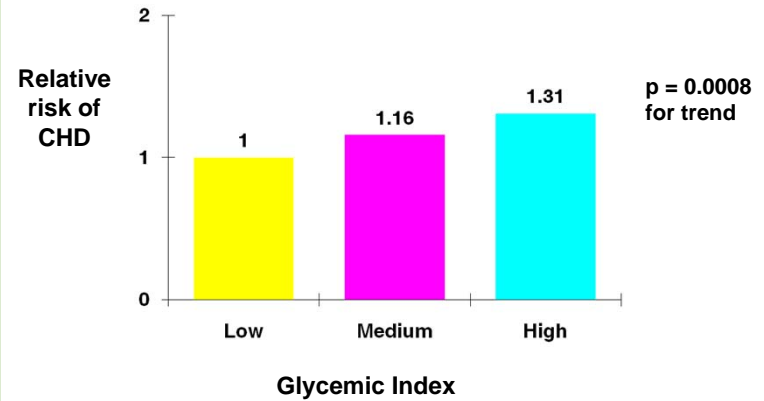


## Low GI diets and heart disease

A prospective study of dietary glycemic load, carbohydrate intake, and risk of coronary heart disease in US women<sup>16</sup>

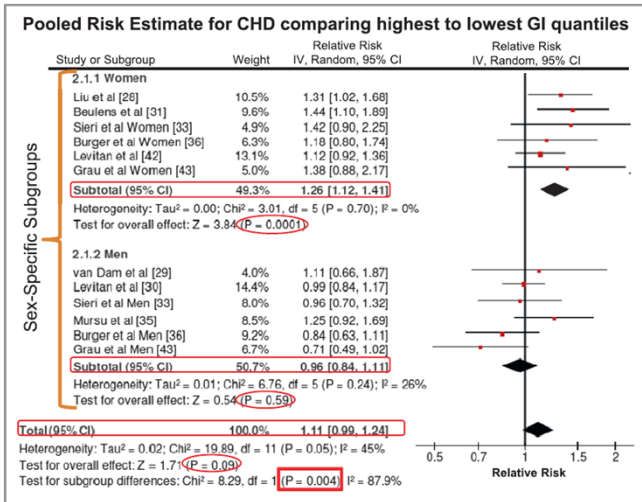
Design	Cohort study
Participants	75,521 US Women, aged 38-63
Results	High GI diet increase risk by 31%
Diet	Carb intake 186 g/day (40% E) Fibre intake 17 g/day
Median GI	51

16. Liu et al Am J Clin Nutr, 2000; 71:1455-61



16. Liu et al Am J Clin Nutr, 2000; 71:1455-61

## Systematic review and meta-analysis GI and risk of heart disease<sup>17</sup> 10 studies, 230,000 participants



17. Mirrahimi et al. JAHA, 2012.

## International Carbohydrate Consortium: Consensus statement



### Key members

- David J.A. Jenkins, MD, PhD, DSc
- Thomas M.S. Wolever MD, PhD
- Walter C. Willett, MD, DrPH
- Jennie C. Brand-Miller, PhD
- Geoffrey Livesey, PhD
- Simin Liu, MD, ScD
- John L. Sievenpiper, MD, PhD

### Key statements

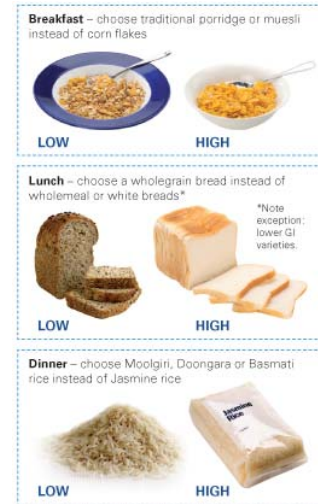
- 7. There is convincing evidence from meta-analyses of controlled dietary trials that diets low in GI improve glycemic control in people with type 2 diabetes.
- 8. There is convincing evidence from meta-analyses of prospective cohort studies that low GI/GL diets reduce the risk of type 2 diabetes.
- 9. There is convincing evidence from a large body of prospective cohort studies that low GI/GL diets reduce the risk of coronary heart disease.
- 14. Probable evidence exists for low GI/GL diets in body weight management.

## Putting the GI into practice



## Educating people about choosing the right type and amount of carbohydrate

- Simply swap low GI carbs for high GI carbs within each food group or category
- This principle will lower the dietary GL



## Healthy eating for weight/diabetes management and prevention: Sample meal plan for adult woman

### Breakfast

45g Muesli  
1/2 cup milk (↓ fat)  
1 x toast  
+ Canola margarine

### Lunch

2 x toast  
+ Canola marg  
210 g NAS Baked  
Beans

### Dinner

1 <sup>1</sup>/<sub>3</sub> Cup Spaghetti  
Bolognaise Sauce  
+ 2 cups salad  
+ vinaigrette

### Morning Tea

Fruit Biscuits  
eg 2 Full O Fruit's

### Afternoon Tea

200 mL Fruit yoghurt  
(Diet)

### Supper

Fruit (eg, 1 sml Apple)

## Nutrient analysis of sample meal plan

Meal	Nrg (kJ)	Pro (g)	Fat (g)	SaFa (g)	CHO (g)	Fibre (g)	GI	Na (mg)
B'fast	1,350	11	7	1	51	7	49	310
MT	372	1	1	0.5	17	1	48	30
Lunch	1,500	14	6	1	58	13	47	368
AT	420	10	0.5	0.2	12	0	14	115
Dinner	1,830	28	12	3.6	49	7	46	250
Supper	240	0.3	0.1	0	13	2.2	38	64
<b>Total</b>	<b>5,712</b>	<b>64</b>	<b>27</b>	<b>6</b>	<b>200</b>	<b>30</b>	<b>45</b>	<b>1,137</b>

• Comparison to key recommended intakes:

Protein	=	64 g (0.76g/kg or 19% of energy)
Total Fat	=	27 g (18 % of energy)
Saturated Fat	=	6 g (4% of energy)
Carbohydrate	=	200 g (56% of energy)
Fibre	=	30 g (5g/1000kJ)
GI	=	45
Na	=	1,137 mg (920 – 2300)

## The GI Symbol Program: Making healthy choices easy choices



## GI Symbol Program requirements



- Products must be tested by approved laboratory using the Australian Standard procedure.
- Products must contain  $\geq 10\text{g}$  of Carbohydrate, or  $\geq 80\%$  carbohydrate AND be traditionally served in multiple units of small serve sizes
- Products must meet strict nutrition criteria:
  - Energy
  - Total Fat & Sat Fat
  - Sodium
  - Dietary Fibre &
  - Calcium

### A broad range of healthy low GI carbohydrates



### The GI Symbol Program: Awareness and understanding





## Awareness of GI in Australia is high

- 77% of Australians are aware of the Glycemic Index
  - ✓ 70% of those understand the GI is about blood sugars and energy
  - ✓ 69% likely to use the GI rating when choosing food
  
- Greatest awareness amongst:
  - ✓ Females (Over 80%)
  - ✓ 25-39 year age group, generally married with young children
  - ✓ 50+ age group

Nielsen & Co 2012: Random Sample of Main Grocery Buyers 18+ years; 1502 respondents (709 ♂; 793 ♀)

## GI is understood by consumers

Those aware of the glycemic index have a good understanding of its benefits

- ✓ Providing sustained energy
- ✓ Good for weight loss and management
- ✓ Good for children's health and wellbeing
- ✓ Useful for preventing heart disease
- ✓ Useful for exercise endurance

The benefits of GI are relevant to groups across the community and across life-stages

Source: Nielsen & Co. 2012

## Growing Awareness of the GI Symbol

- 37% of Australians are aware of the GI Symbol  
Introduced in 2009
- More than 80% of those aware believe the Symbol shows that the foods are:
  - ✓ Healthy, wholesome and a good choice
  - ✓ Scientifically tested
  - ✓ Provide sustained energy/glucose release



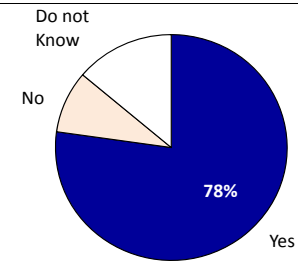
There is a big opportunity ...  
84% of those aware of GI are likely to use the GI Symbol when shopping – when the GI Symbol has been explained

Source: Nielsen & Co. 2012

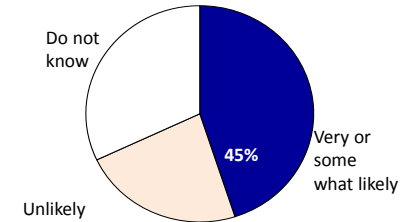
## The GI Symbol is a good shopping tool



Percentage of people who think the GI symbol is a useful shopping tool



Likelihood of switching to a brand that carries the GI symbol



- 9 out of 10 people with diabetes want GI information on pack
- The GI Symbol is by far the most popular existing front of pack labeling scheme for p/w diabetes

“The GI Symbol was identified as one of the most widely recognised food endorsement schemes”

Nick Stace, CEO Choice, 2010

Source: Nielsen & Co. 2012; Diabetes Australia 2009

## The GI Symbol program brings benefits beyond other endorsements

### Cutting edge science

We are at the fore-front of cutting edge science led by the most respect universities around the world: Sydney, Harvard, Toronto, UCLA and many others.  
Support for general-level health claims on GI Symbol products

### Benefits for everyone

Health benefits supported by 30 years high-level science  
Benefits across the community and life-stages  
Diabetes, Weight, Heart, Pregnancy, Children, Sport

### Product innovation

Our partners benefit from GIFs expertise and global network to:

- renovate existing products
- formulate new value-added products
- uncover new Low GI foods from global sources e.g. Carisma potato

## Summary

- There is a global chronic disease epidemic fuelled by obesity
- Healthy low GI diets assist with weight loss/management and help prevent diabetes and cardiovascular disease
- The GI Symbol Program makes identifying healthy low GI foods easy for consumers
- Core low GI foods are now available around the globe, and particularly in Australia
- Prunes are a great low GI food and eligible to be part of the GI Symbol Program

## Further information



**Alan Barclay**

02 9785 1037

0416 111 046

[alan.barclay@gisymbol.com](mailto:alan.barclay@gisymbol.com)

**Glycemic Index Foundation**

[www.gisymbol.com](http://www.gisymbol.com)

[www.glycemicindex.com](http://www.glycemicindex.com)

<http://ginews.blogspot.com>