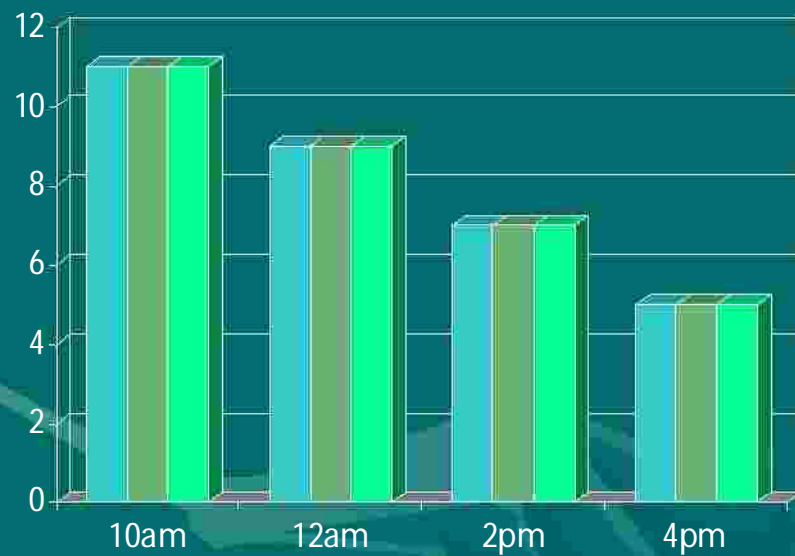


Carbohydrate Counting

David Richardson

25th February 2010

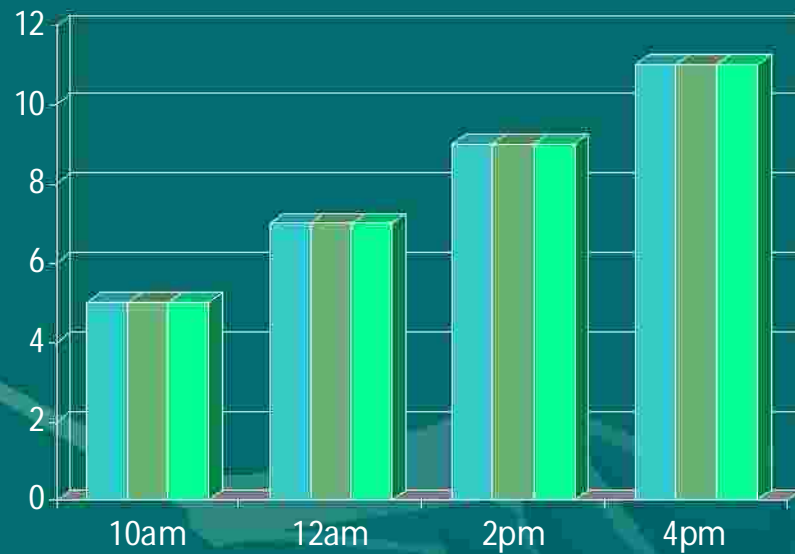
Diabetes - abc



Causes of Blood Sugar falls (hypo):

1. Too much insulin
2. Exercise

Diabetes - abc



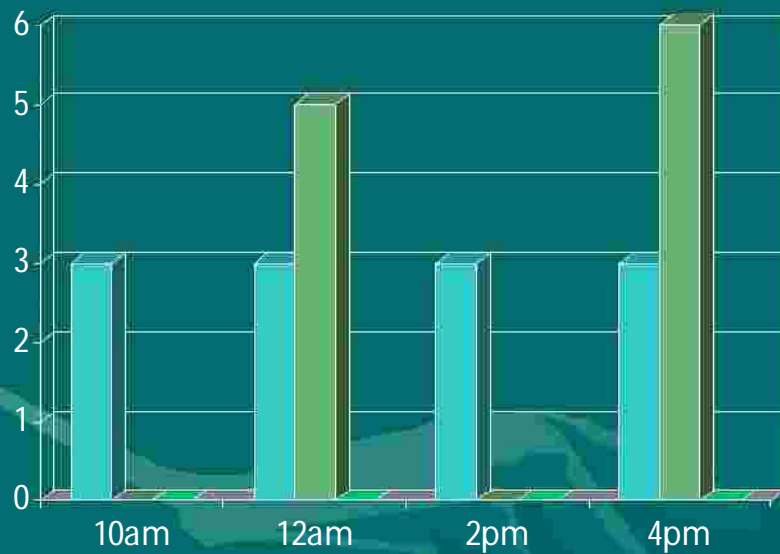
Causes of Blood Sugar rises (hyper):

1. Food
2. Insufficient Insulin
3. Inactivity

Diabetes - abc

Insulin Doses

1. Basal - background
2. Bolus – food/corrections



Diabetes - abc

Two parameters needed to determine Insulin Doses:

1. Insulin Sensitivity – how much insulin needed to bring high blood sugars down (into range)
 2. Carbohydrate Ratio – how much insulin needed to balance food intake and keep blood sugars stable
- These parameters vary between different people
 - These parameters can also vary for the same person at different times of the day

Diabetes - abc

Insulin Bolus using Carb Counting:

- Determine Amount of Carbs in food (generally in 'g' – grammes)
- Get carbohydrate ratio (for present time)
- Divide carbohydrate amount by ratio to get insulin dose.
- That's it!

Diabetes - abc

Determine Amount of Carbs:

- Determine quantity of food:
 - Weigh food (eg potatoes, pasta etc)
 - Count items (eg biscuits, crackers etc)
- Find food label.
- Divide quantity of food by portion size on food label and then multiply by 'Total Carbohydrate' amount on food label.
- That's it!

Diabetes - abc

A Healthy Habit: Read Food Labels

Scan the Nutrition Facts panel on packages to evaluate what's inside and compare the nutrient value of foods.

Start Here
Serving size is the amount of food the nutrition information is based on. Calories is the amount of "energy" in the serving. Adjust the amount of calories and nutrients if your serving size is different.

Both all types of fat, especially saturated and trans fat, which are listed in both positions.

Most of the fat you eat should be unsaturated.

In general, the greater the difference between total carbohydrates and sugars, the more carbohydrates are available.

Most people should get 48-64 grams of protein daily.

Percent Daily Values are based on a diet of other people's secrets.

Adults need most of their energy from carbohydrates, so most adults need less.

2,000 calories diet for most adults (men and women).

Nutrition Facts

Serving Size: 6 crackers (28g)
Servings Per Container: About 13

Amount Per Serving

Calories 120 **Calories from Fat 40**

% Daily Value*

Total Fat 4.5g	7%									
Saturated Fat 0.5g	4%									
Trans Fat 0g										
Polyunsaturated Fat 2.5g										
Monounsaturated Fat 1.5g										
Cholesterol 0mg	0%									
Sodium 180mg	7%									
Total Carbohydrate 19g	6%									
Dietary Fiber 3g	13%									
Sugars 0g										
Protein 3g										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Vitamin A</td> <td style="width: 30%; text-align: right;">0%</td> <td style="width: 30%;">Vitamin C</td> <td style="width: 10%; text-align: right;">0%</td> </tr> <tr> <td>Calcium</td> <td style="text-align: right;">0%</td> <td>Iron</td> <td style="text-align: right;">8%</td> </tr> </table>			Vitamin A	0%	Vitamin C	0%	Calcium	0%	Iron	8%
Vitamin A	0%	Vitamin C	0%							
Calcium	0%	Iron	8%							

* Percent Daily Values are based on a diet of other people's secrets.

		Calories: 2,000	2,500
Total Fat	Less than 65g	65g	80g
Sat Fat	Less than 20g	20g	25g
Cholesterol	Less than 300mg	300mg	300mg
Sodium	Less than 2,400mg	2,400mg	2,400mg
Total Carbohydrate	300g	300g	375g
Dietary Fiber	45g	45g	30g

Calories per gram:
Fat 9 Carbohydrate 4 Protein 4

Limit These
Pay extra for cholesterol and sodium reductions to health products (look for "low cholesterol" recommendations in brackets).

Get More of These
Carbohydrates should be 45-65% of total daily calories. Get potassium from added sugars (check ingredients). Get enough vitamins: essential for good health, such as vitamins A and C, calcium, iron, and zinc, and fiber.

Footnotes
*Rounded to the nearest 5% and not required on label.
The amount of each nutrient recommended daily.
The amount of calories in fat, carbohydrates and protein (fat has more than double).

Example Food Label

Diabetes - abc

Alternatively, use Dawn's palmtop 'Carb Counter'...

Windows Mobile Carb Counter

Runs on a Windows PDA type device like HP Compaq



1. The screen shots in the following slides are from a PC emulator running the application.
2. The Carb Counter Application was developed in March 2008 by David Richardson and subsequently refined through four versions since.
3. Carb Counter has been in use every day for every meal ever since then.
4. THERE ARE NO BUGS!
5. It's repaid the hours invested to develop it by reducing Dawn's HbA1C

Alternatively, runs on a Windows Mobile phone device like HTC Desire



Windows Mobile Carb Counter



1. Separate panels for each meal of the day and a snack panel.
2. Extensible Food Database that can be maintained at home, restaurants, school etc.
3. Archives each meal consumed each day to build up a sizeable searchable history.
4. Search panels to recall previous meals.
5. Flexible Reminders panel.
6. Insulin ratio screen that allows the Carb Counter to calculate the insulin amount required for each meal.

Windows Mobile Carb Counter

The screenshot shows a Windows Mobile application window titled "MealEatenForm". The interface includes a menu bar with "Breakfast" selected, a search field containing "Food? juice", and a list of food items: "Brown Warburtons Bread" and "Pressed Apple Juice". The "Pressed Apple Juice" item is selected, and its details are shown in a form below, including "Note", "Portion", "Vol (ml)", "Amts 80", "Carbs 42.8", "Tot Carbs", "Insulin 3.9", and "Adj? 11 g/Unit". At the bottom, there is a table with columns for "Food", "Amount", "Carbs", "Fat", and "Pr".

Food	Amount	Carbs	Fat	Pr
Cheerios Cereal	40	30.1	1.6	
Semi Skimmed Milk	80	3.4	1.3	
Pressed Apple Juice	80	9.3	0	

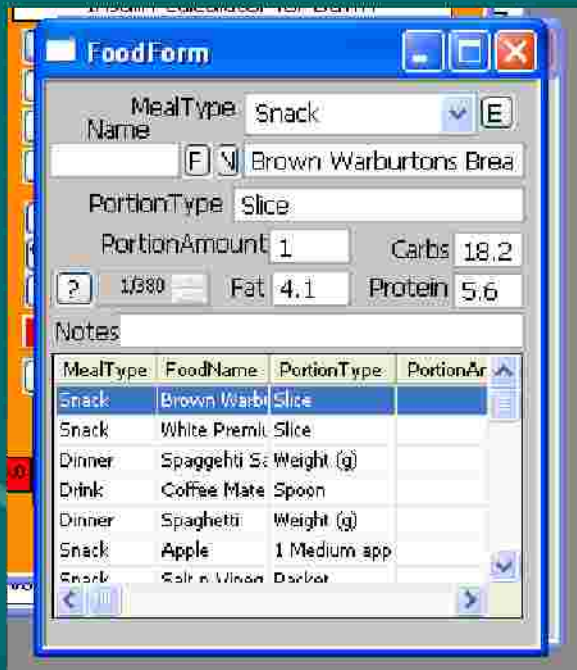
1. Search panel to look up foods
2. Spreadsheet type rows allow a meal to be built up
3. Food database retrieves carb, fat, protein amounts and adjusts based on quantity in current meal
4. Calculates total carbohydrate and also insulin amount

Windows Mobile Carb Counter



1. Meals automatically archived each day. 2 years of history in device we use every day.
2. History of meals can be searched by date & meal or by looking for a food, for example 'Bread'.
3. Meals retrieved can be copied back to the current meal and modified as necessary. Useful when having a similar meal that was eaten before.
4. It's also possible to copy forward from the current meal to override a previous archive.
5. Optimisation feature gives control of how many days back to search.

Windows Mobile Carb Counter



FoodForm

MealType: Snack

Name: Brown Warburtons Brea

PortionType: Slice

PortionAmount: 1 Carbs: 18.2

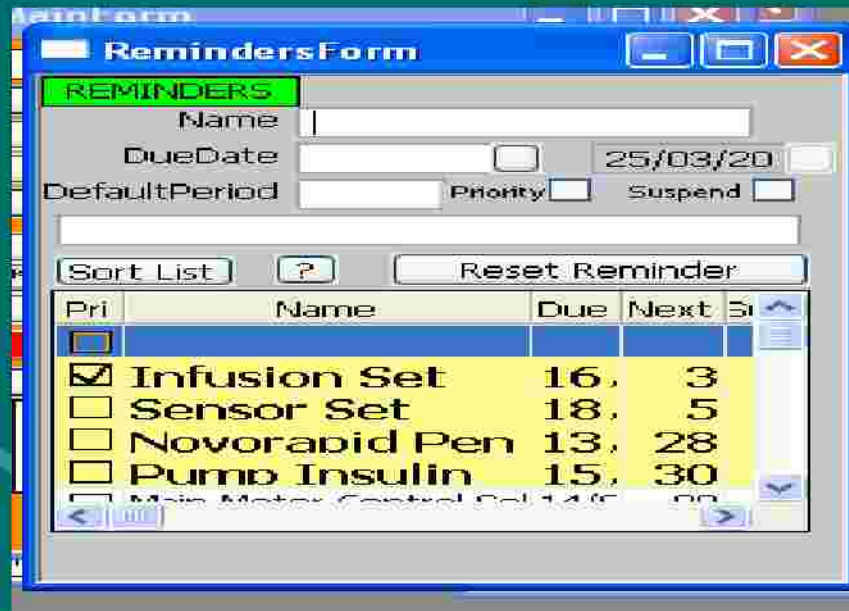
Fat: 4.1 Protein: 5.6

Notes

MealType	FoodName	PortionType	PortionAr
Snack	Brown Warb	Slice	
Snack	White Premil	Slice	
Dinner	Spaggetti S:	Weight (g)	
Drink	Coffee Mate	Spoon	
Dinner	Spaghetti	Weight (g)	
Snack	Apple	1 Medium app	
Snack	Salt n. Wine	Darbar	

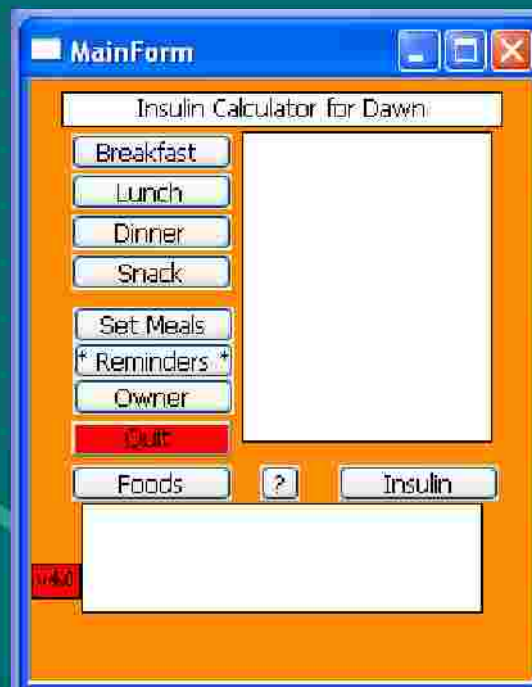
1. Extensible Food Database allows foods to be added at any time.
2. Food entries hold carbohydrate, fat, protein amounts per (for example) 100g food.
3. Foods can be held by other Portion Types too such as 'Slice', 'Pot', 'Biscuit' etc ... This allows complete flexibility in how to carbohydrate and not does not necessitate the use of scales to weigh food.
4. Carb counter meal panel will multiply quantity of food by these parameters to calculate how much carbohydrate, fat & protein is in the meal.

Windows Mobile Carb Counter



1. Reminder panel tracks things that need to happen every so many days.
2. Useful for Pump items like infusion sets, pump insulin. Also things like control solution etc.
3. Allows certain items to be marked as 'Priority'. They appear first in reminder panels.
4. As many or as few items can be set up for reminders.

Windows Mobile Carb Counter



For more details on the Carb Counter ...

Please contact [David Richardson](mailto:ms_davidr@hotmail.co.uk) (ms_davidr@hotmail.co.uk)