Managing type 1 diabetes

How QS can help

What is type 1 diabetes?

- My immune system is killing off the insulin producing cells in my pancreas.
- I need to inject insulin to allow my body to absorb sugar from my blood. Insulin dose depends on amount of carbohydrate I eat.
- Because I inject, I have a risk of experiencing “hypos” - low blood sugar.
- I now have to do the job of my own pancreas.

Exercising with type 1 is risky

- Sensitivity to insulin increases when people exercise.
- Higher risk of hypos. In extreme cases can lead to loss of consciousness, seizure or death.
- The doctor told me exercise would be “more complicated”.

My passions - my motivations to manage type 1

QS is a powerful tool. My aims

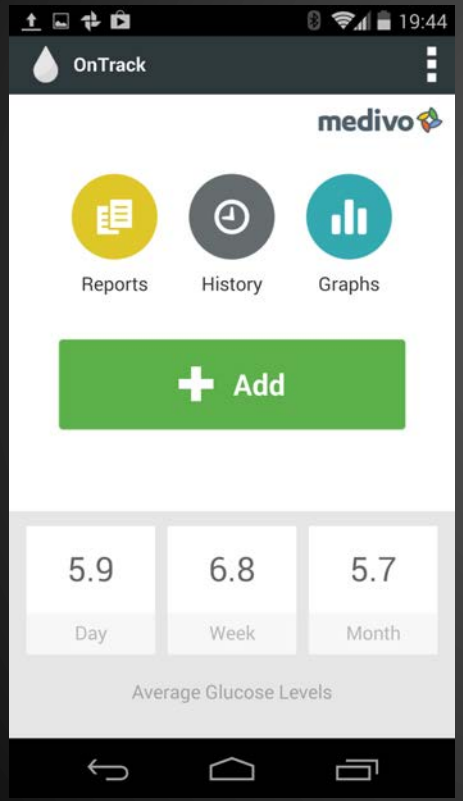
- Learn how my blood sugar changes whilst I exercise. Do all the activities I could before, safely.
- Learn how my blood sugar is affected by food, exercise and medication choices I make on a daily basis. Minimise the risk of long term complications.

Tools - a mobile app

What do I record?

- Grams of carbohydrate eaten. Meal descriptions can be free text.
- Insulin doses.
- Exercise - type, duration, free text.
- Blood sugar readings.

App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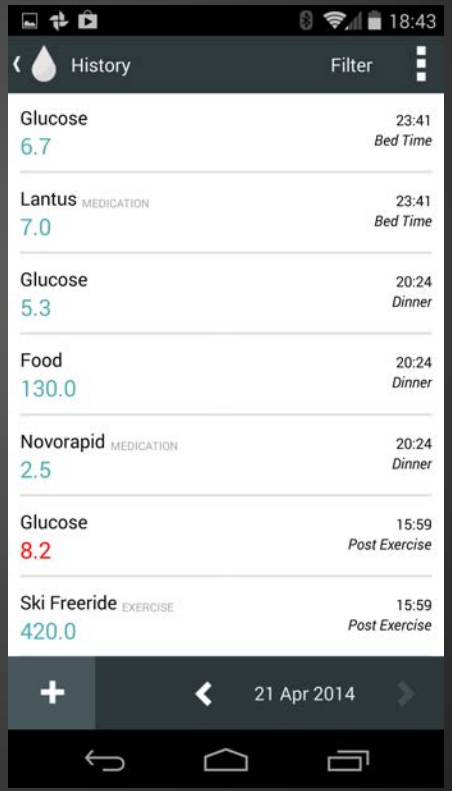
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Bed Time
Lantus MEDICATION
7.0
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Bed Time
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Dinner
Food
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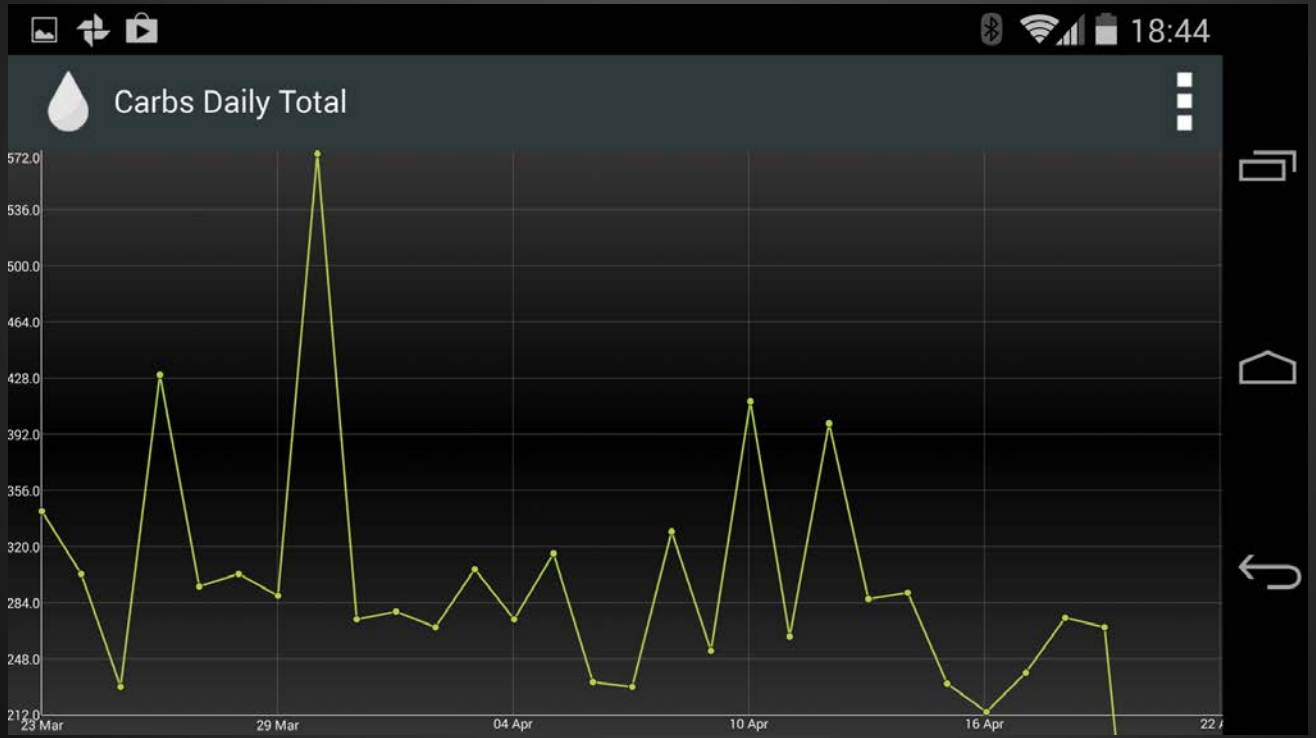
Novorapid MEDICATION
2.5
20:24
Dinner
Glucose
8.2
15:59
Post Exercise
Ski Freeride EXERCISE
420.0
15:59
Post Exercise
21 Apr 2014

I use app for very simple analysis

What was my insulin sensitivity today?



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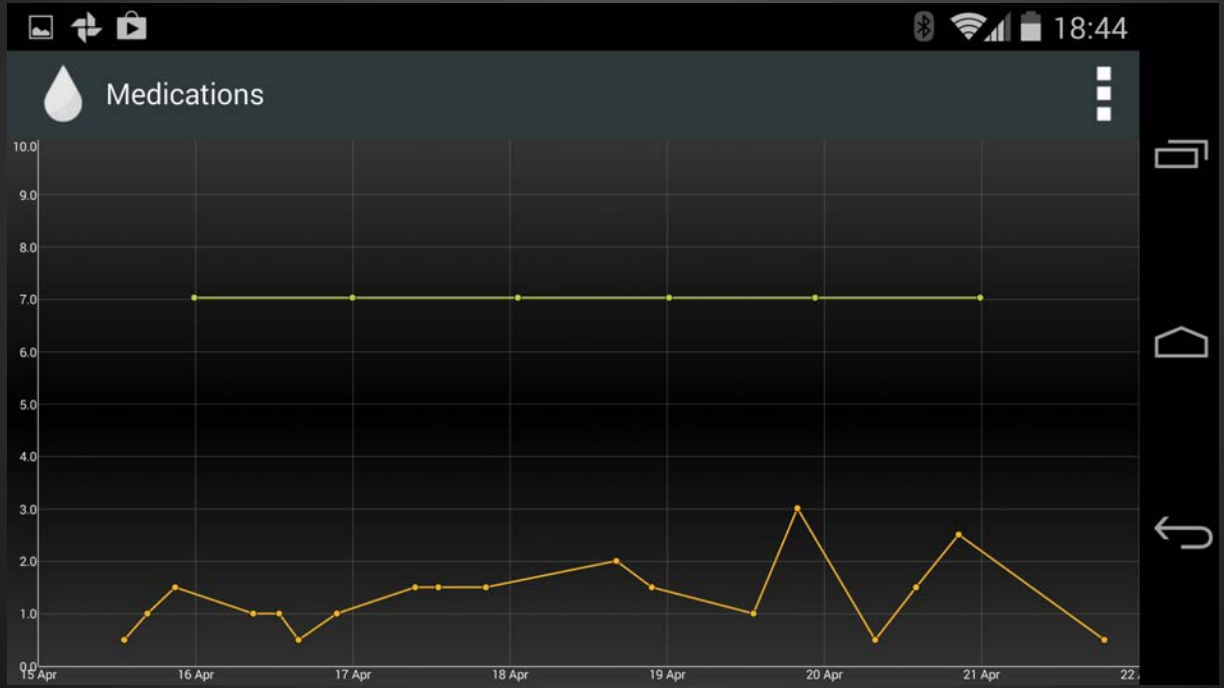
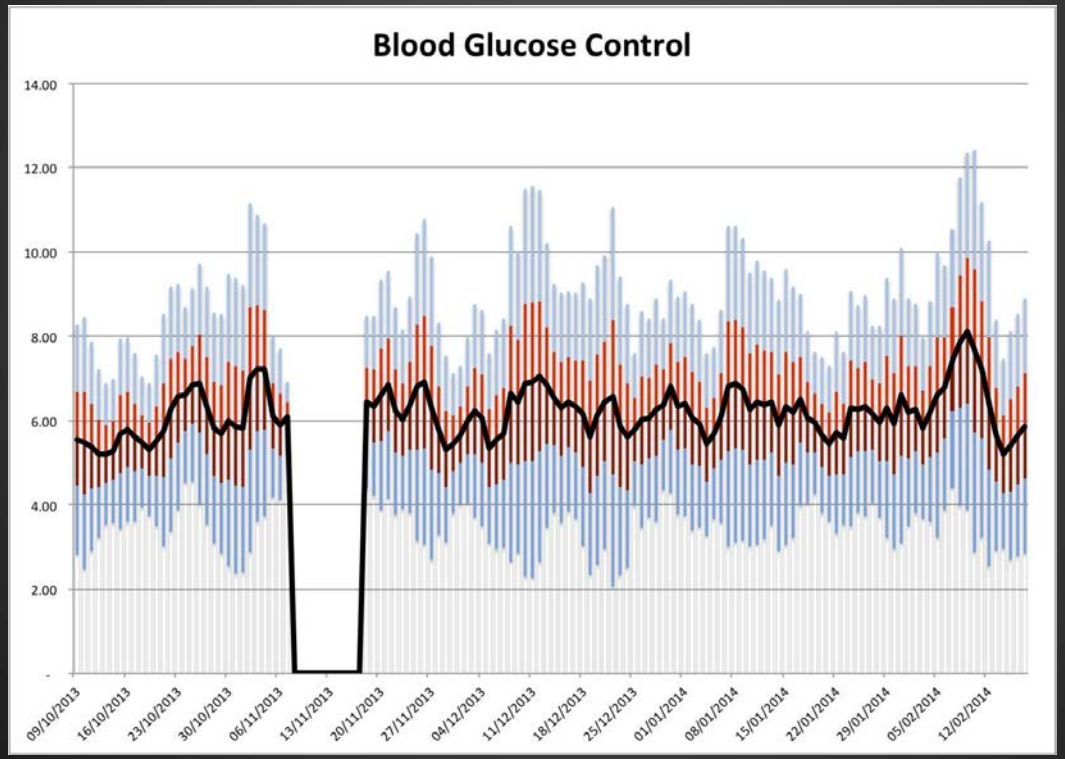


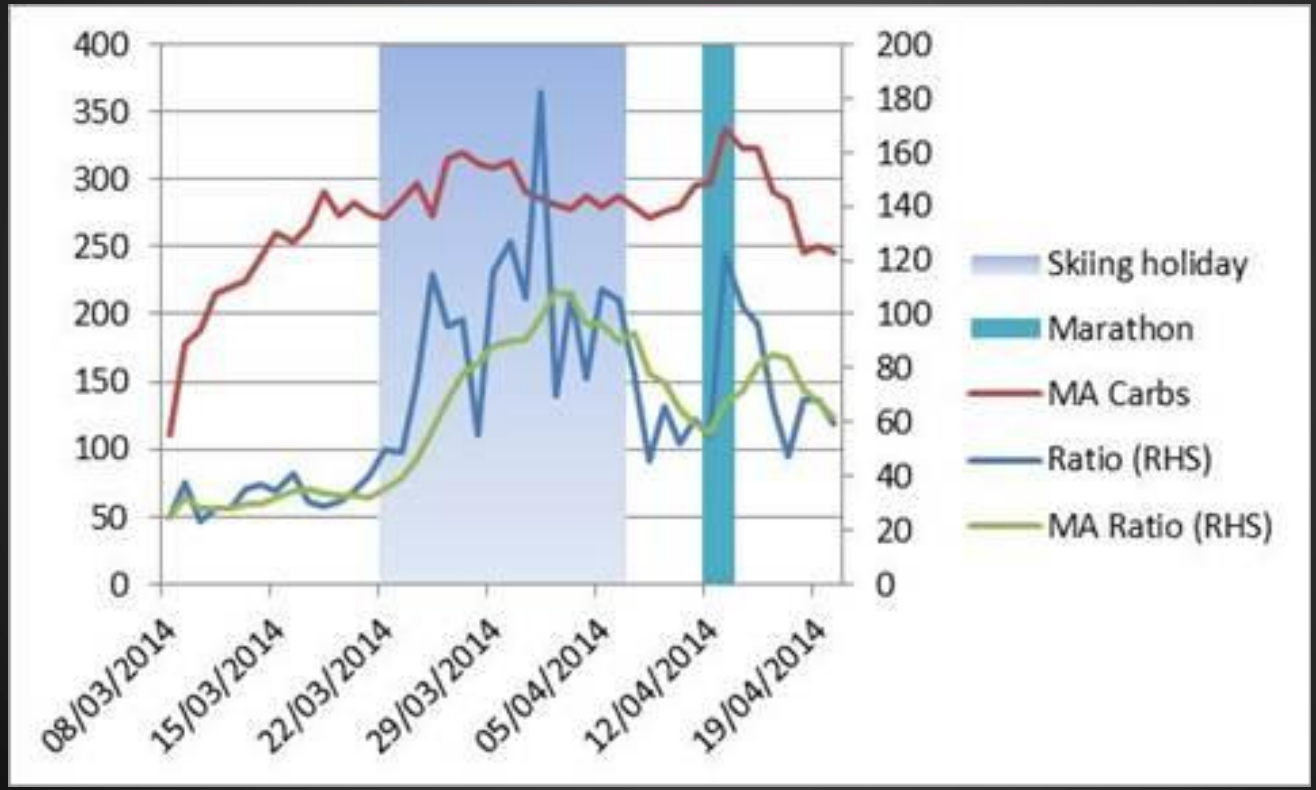
More powerful tools - I use excel

- Blood sugar levels are influenced by many factors - carbs consumed, type of carb, fat consumed with carbs, exercise, heat, stress etc etc.
- I need something more powerful than apps available in the app store!
- I export data in CSV files to excel to do bespoke analysis.

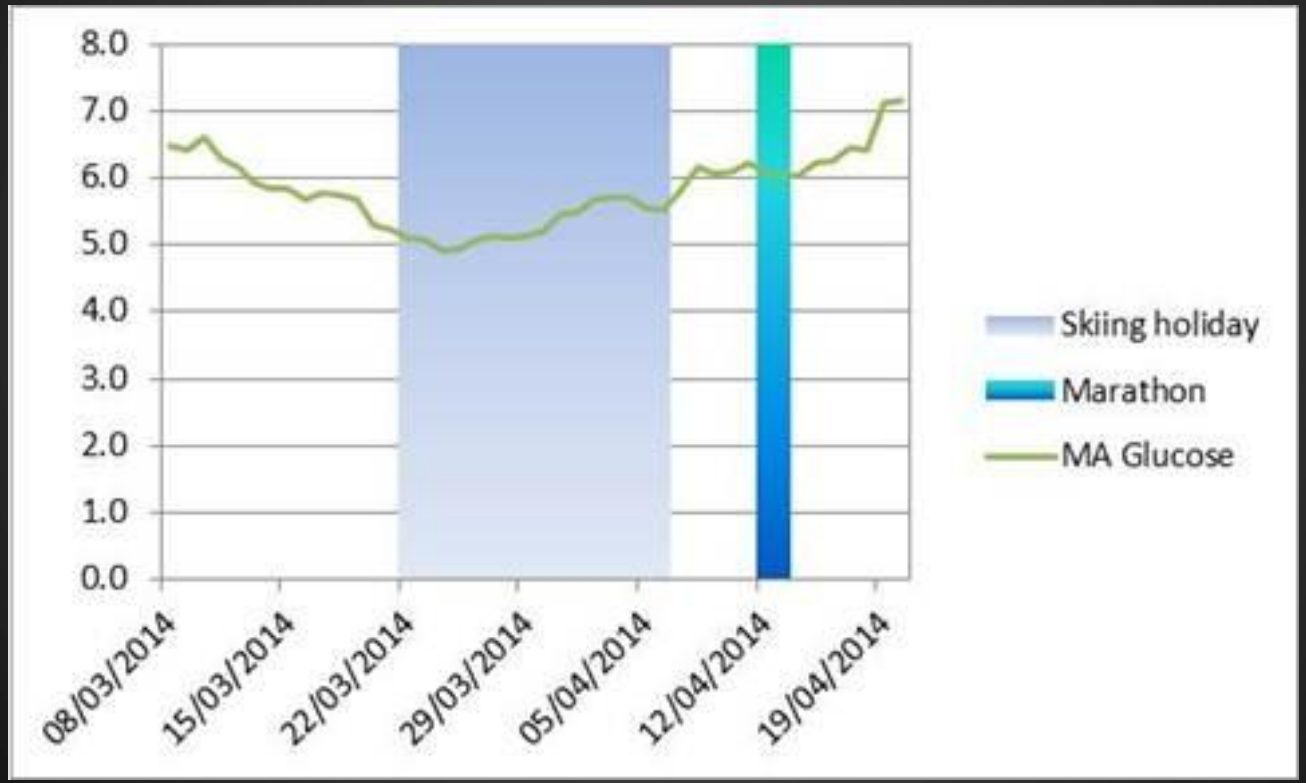
How successful is my blood sugar control? Fan chart.



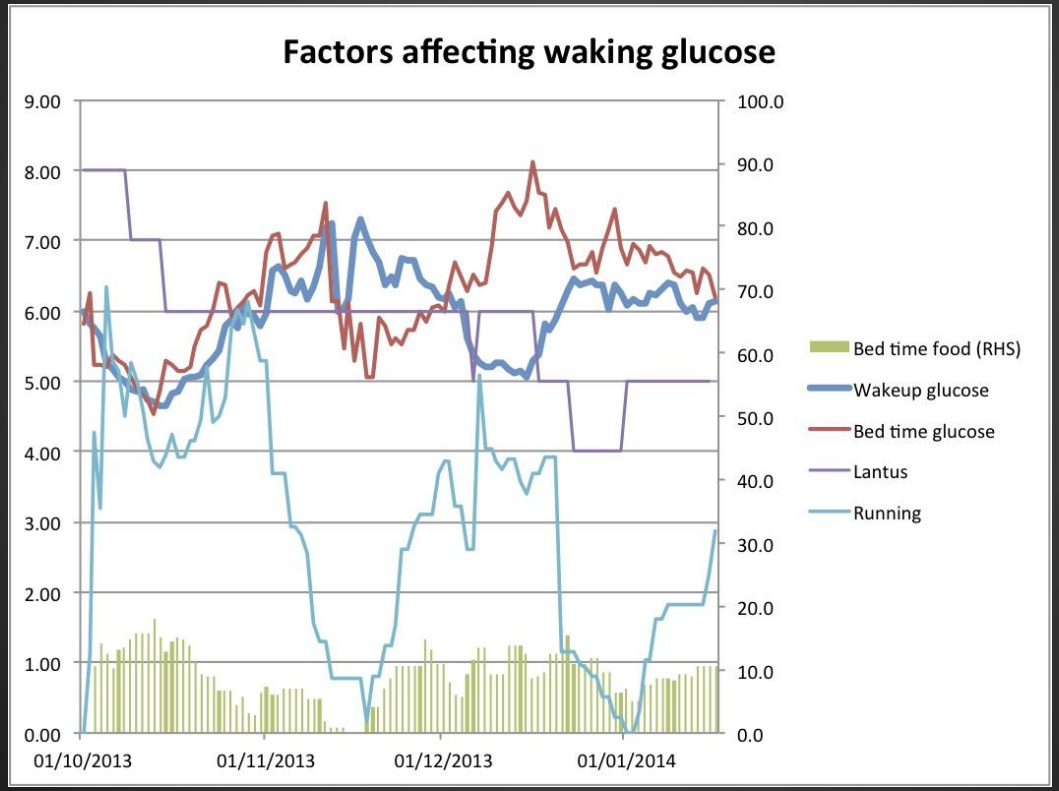
Analysis - exercise and BG control



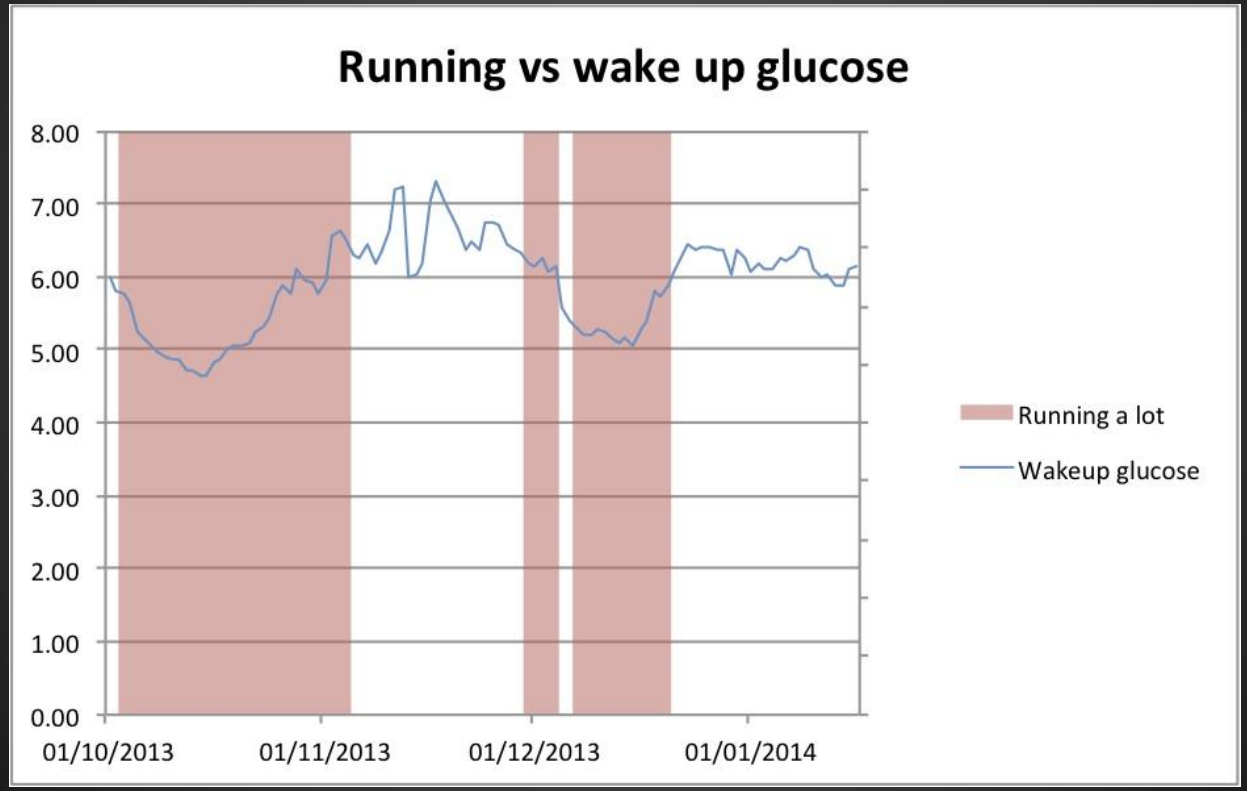
Analysis - exercise and BG control



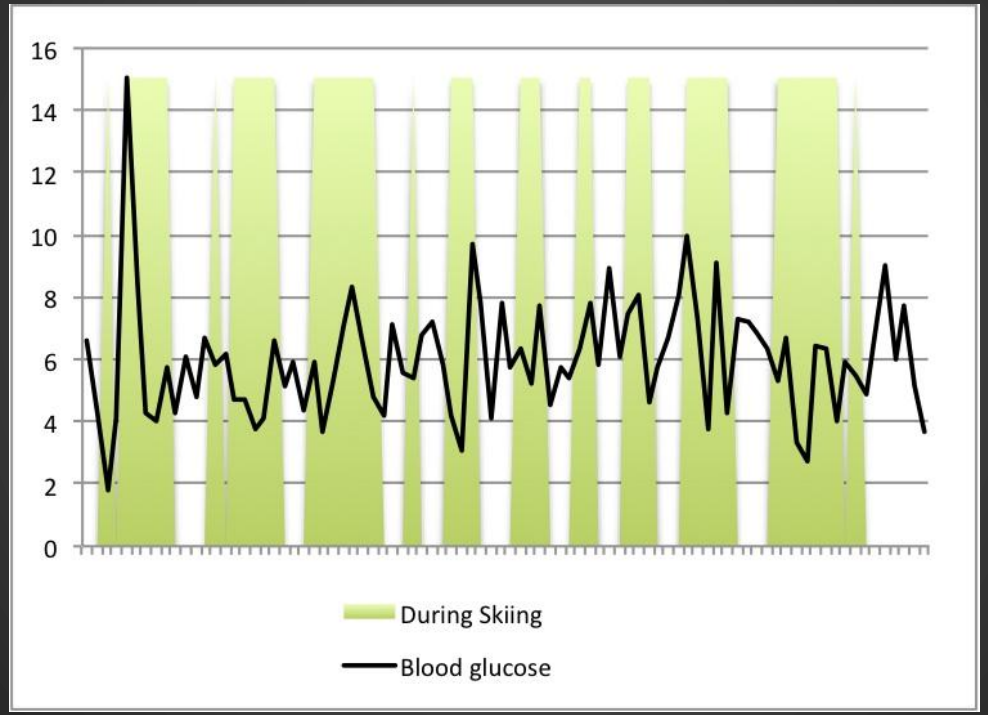
Analysis - wake up glucose



Running a lot helps glucose control



Blood glucose control whilst skiing



Limitations

- Time
- Need for simplicity.
- I wrote “complex” VBA programme to analyse data but now just use basic excel.
- Complex data analysis is hard.

Exercise

- I need to eat carbs (e.g. jelly babies) whilst exercising to prevent hypos.
- Over the first hour of exercise blood sugar varies differently.
- I test blood before, after and during exercise.

Carbohydrate needs whilst exercising

- Running. 40g per hour. First 40 minutes depend on speed or type of training.
- Climbing. Not much.
- Ski touring - walking up hill. Same as running.
- Skiing - off-piste. 20g per hour.
- Standing in very cold places. Approx 20g extra per hour.

Disadvantages with my method

- Data recording done on phone.
- Especially before bed.
- Reliant on technology working.
- My laptop is grinding to a halt.

Has QS had a positive impact?

- Hospital blood tests give a measure of average blood sugar over the past three months - called HbA1c.
- My HbA1c has been in a “healthy” range since October. My risk of suffering from diabetes-related complications is low.

Has QS had a positive impact?

- I do all the physical activity I did pre-diagnosis.
- I understand pretty well how my blood sugar responds to different factors.
- I did my first ultra marathon in December, and...

… I got the Guinness World Record for fastest marathon run in an animal costume!

For more information and more data analysis, see www.masteringdiabetes.wordpress.com