

## Editorial

### Counting on better health?

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Summer 1981 - first year medicine, QUB. Professor Ian Roddie was due to give a physiology lecture on "Diet and Exercise". The Prof was obviously important - his name was on the front of our physiology text-book (along with Professor William Wallace), so there was quite a sense of anticipation in the room. Without a word, the Prof walked up to the blackboard, wrote "Eat less" at the top of the board then "Exercise more" at the bottom and joined the two together with curved arrows. He turned to look at the class for a few seconds, then walked off in silence. Total duration of lecture - 45 seconds.

The point was powerfully made but converting ideas to action is much more difficult. In our professional roles, we all advise smoking cessation, more exercise and eating less along with alcohol and salt moderation but it seems as though we are losing the battle. According to 2014 figures, 60% of adults in Northern Ireland are overweight or obese and 28% of adults take less than 30 minutes of exercise per week<sup>1</sup>. A 2012 study suggested that the annual cost of obesity to the Northern Ireland economy was £370 million<sup>2</sup>.

Can technology help? The Internet has become an all-pervasive force in modern life and has gone through a number of iterations. The latest is "the Internet of me" - collecting data about all aspects of oneself. One manifestation of this is the "selfie" photograph, but the tools and gadgets exist for the individual to collect extensive physiological data such as heart rate, steps taken, distance travelled on GPS, weight and percentage body fat along with calories consumed and burnt.

The term "Quantified Self" was coined by Kevin Kelly and Gary Wolf, editors of technology magazine *Wired* in 2007 to describe this trend, alternate terms are "life-logging" or "body-hacking"<sup>3</sup>.

The trend hit the mainstream in 2014 with the marketing of "wearables" - sensor devices that usually interact with a smartphone to display data which is stored on remote servers. According to the *Wall Street Journal*, many millions of dollars of venture capital has been invested in tracker firms making devices such as Fitbit<sup>4</sup> and sports clothing manufacturer Under Armour recently purchased a market leading smartphone app that records dietary calories and nutrients, MyFitnessPal, for \$475 million<sup>5</sup>. The richest technology company on the planet, Apple, has joined in with the Watch.

The Quantified Self has also extended into the realm of genetics. Not so long ago, gene testing was astronomically expensive. The budget for the Human Genome Project, a

complete mapping of human DNA was \$2.7 billion back in 2003<sup>6</sup>. American company, 23 and Me, now offers this service in the UK for £125 based on the collection of a little saliva.

Results are divided into:

Genetic risk factors including alpha-1-anti-trypsin deficiency, APO-E variants for Alzheimer's disease and BRCA-1 and BRCA-2 variations for breast and ovarian cancer.

Inherited conditions including cystic fibrosis, beta-thalassaemia and G6PD deficiency.

Traits including carrier for red hair, lactose intolerance and tendency to male pattern baldness.

Drug responses including clopidogrel efficacy and risk of simvastatin-induced myopathy.

Broad brushstroke ancestry data are included along with an indication of percentage Neanderthal ancestry.

Over and above the headline results, your complete genome is listed and can be browsed for specific variations or downloaded and stored in the family data archive!

There are of course, many ethical and data security issues to consider. Should you disclose any significant results to a life insurance company? Should you tell your family about findings that may affect their future health? How will your GP respond if you want to take a positive result further?

The question also arises about who has access to the data. It is interesting to note that Google, well known for data harvesting, has invested heavily into 23 and Me. It has been said that if something you use on the Internet is free then you are paying with your data and privacy - perhaps the same is true of our physiological and genetic data.

Some commentators in the UK have expressed a hope that a nation of self-motivated, life-logging individuals could impact on the huge financial burden of treating obesity, poor diet and sedentary behaviour. Set against this, I have seen asymptomatic individuals at clinic worried about a high resting heart rate or an excessive heart rate during exercise measured by their trackers. Interestingly, these particular individuals weren't taking very much exercise - somehow the expectation was that the tracker itself would improve things.

Diet and exercise in 2015? Eat less. Exercise more. Collect data.

John Purvis Hon. Editor (2.8% Neanderthal).

#### REFERENCES

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