

The choice is yours

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What the doctors say (and is unhelpful)

Every day people go to their doctor to receive the results of their routine blood test and are told they have diabetes - it is for life - not reversible and will get progressively worse - but we have pills which can manage your blood sugar, so as it gets worse we can give you stronger and stronger pills but eventually you will need insulin injections and you are likely to die young probably from a heart attack.

You are warned that if they do not take the pills you are likely to go blind and have a limb amputated.

Most people on hearing that news will not be that happy but will decide to keep on with the pills and have a good time - eating and drinking what they like - while they are alive.

But while there is some truth in what the doctor has said it is only part of the truth as there are options - for the vast majority of people diabetes can be reversed or even cured but not by a simple pill. People need to know the facts and make their choice.

The almost unbelievable story

We know that we are experiencing an explosion in diabetes - the disease is not new and there are cases going back to ancient times but it only affected a very few people who were highly sensitive - less than 1% of the population.

But diabetes is just one of a whole class of chronic (non-communicable) diseases. Premature death from heart attacks was the first to receive significant scientific study starting in the 1950's after the war.

Unfortunately heart attacks are a 'zero - one' situation which are not amenable to experimentation so science had to rely on correlation analysis of populations. Ancel Keyes observed that people who died prematurely from heart attacks had a lot of fat in their bodies and concluded - and widely promoted - that fat was the cause of heart attacks.

Low fat v low carb

This started the craze for low fat foods which the food industry loved because they could use low cost carbohydrates and sugar which became one of the major causes of the diabetes epidemic.

The 'fat is bad' became a universally accepted paradigm until challenged by Nina Teicholz in her book the 'The Big Fat Surprise' and Gary Taubes in his many books including 'Why we get fat'.

This initiated the popularity of Keto low carb diets which led to the great 'low fat v low carb' war which still rages today.

<https://www.youtube.com/watch?v=da1vwigy5tQ&t=58s>
<https://www.youtube.com/watch?v=9MTDatDO5O4>
<https://www.youtube.com/watch?v=5KWAqKR9JBE&t=54s>

But this battle has become a little dated as science began to appreciate the complexity of the human body and how it processes foods. Both sides make a major mistake - just because we eat fat does not mean that the fat goes into our blood stream also our bodies readily convert carbs into sugar and then sugar into fats - the dangers of oversimplification.

Professor Roy Taylor of Newcastle University UK

Professor Roy Taylor is recognised as moving our understanding of how diabetes works one step further down the road. This led to the important conclusion that diabetes was not a 'forever' disease but could be reversed - in fact relatively easily.

It is rare in life that there is a true paradigm shift but this is one case - in truth many medical practioners have still to appreciate the importance of Roy's findings and are still telling their patients that diabetes is not reversible - this can only be described as a social tragedy with people thinking they are doomed to a life of diabetes when there is a good chance they can be cured.

<https://www.youtube.com/watch?v=F3r5ykZ9hLY>
<https://www.youtube.com/watch?v=i0ZazsBeV9w>
https://www.youtube.com/watch?v=6vsrB_dIUzI

What he said is quite simple. We eat food, which either contains fat or the body converts into fat. This is first stored in the liver - that's one of its jobs to act like a fuel tank storing energy when it is available - and releasing it when it is needed - it happens all the time - no problems.

Problems start when the fuel tank gets to overflow. At first some of this excess fat gets into the muscles which blocks sugar entering the muscles. (I use sugar in lay language - there are lots of different sugars but this is a chatty document).

This is the first stage of diabetes - there is still plenty of insulin but it does not work - nasty - but not the end of the world and readily reversible.

But then comes stage 2 when the pancreas stops making insulin. In much of the literature this was described as the Beta cells (which make the insulin) 'burning out'. This surprised me as using muscles does not usually make them burn out - it tends to make them stronger.

Roy and his team showed - using sophisticated MRI techniques - that this is not what happens. Fat overflows from the liver into the pancreas - flooding it with fat - which stops the Beta cells working - so no insulin.

But his breakthrough was showing that just going on a restricted diet (in his tests highly restricted) was sufficient to clean the pancreas of all the excess fat and it would start working properly again producing insulin. Bye bye diabetes.

Michael Mosely the well know medical presenter (and a doctor who suffered from diabetes) has said that it may not be necessary to restrict diet to the extent in Roy's experiments and that a light Mediterranean diet may be adequate.

Proving that diabetes is reversible and describing the basic mechanism is a major development but as in many scientific discoveries it opens up more questions - specifically why do some people suffer from diabetes and others seem immune and more intriguing why has diabetes increase exponentially in such a short period of time?

For that we have to look to another of my heroes or heroines Giulia Enders.

Giulia Enders - writer extraordinaire

The obvious answer to why some people get diabetes and others don't is simply genes. But obvious answers are often incorrect and certainly genes would not answer the second part of the question - what has changed? It takes generations to change genes so we can rule that out.

It could be epigenetics - that magic system of turning genes on and off but that does seem unlikely to explain the short term changes. So we need to look for another explanation - so enter one of my heroines Giulia Enders.

If you are an expert in gut biology then you would have read her book 'Gut - the inside story of our body's most under-rated organ'. If not you should - it is quite an achievement to make a book about poop as exciting as a James Bond Thriller - but she has done just that and deserves a prize - in fact she has won many prizes for her writings.

I think of the gut in two stages.

First there is the mechanical aspect - what varieties are there and what do they do - science seems to be making rapid progress on this front with its DNA testing.

Second how do our guts think to take decisions? This is very different to knowing what they do. We know our guts can direct food for useful energy, to store it for a rainy day (and make us fat and give us diabetes in the meantime) or send it down the big brown ejection tube.

But how do our guts actually take this decision? We know it is like some mega computer but how does it work. Every morning I look at my Google alerts for the answer but it never comes.

But we do know some things about our gut biology which at least gets us on the road. We know that there are at least a thousand different species and if you include the subspecies over six thousand. And we all have very different gut biomes which could fit the pattern of human variability.

Also the little creatures breed very fast so they can evolve to new species very rapidly.

They also have a feature they call horizontal gene transfer which enables living microbes to exchange genes in real time.

Now that is incredible. Just think what this would be like if we humans had this capability. Two little kids go out to play together - now kids have no understanding of race so one could be a white kid and the other a black kid and they play happily together all morning free from the tensions of adult life.

But come dinner time they go home and the white kid is still white and the black kid is still black.

Now if we humans had horizontal gene transfer they could be happily exchanging genes while they play - they wouldn't care - but when they go home what would their mummy say when she finds that her precious kid has changed into a brown (or purple) kid. Now that would make a good plot for a TV drama.

Insulin, lectin and the high speed slide

Insulin is at the heart of diabetes so has received much study, we all know about insulin resistance even though we don't understand how it works in detail - just some fat blocking the entry of sugar into the muscles.

But insulin is also called the fat hormone as it makes us put on fat - and the fat makes us more insulin resistant - so if we are still in stage 1 diabetes the pancreas churns out more insulin to try and barge the sugar into our muscles - which makes us store yet more fat. It seems a slippery slope and once we are on it we just keep on sliding down at an increasing speed.

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<https://www.youtube.com/watch?v=gm-UcdE3nTQ&t=37s>
<https://www.youtube.com/watch?v=1a2Fsf8e4l&t=50s>
<https://www.youtube.com/watch?v=EnTI07kArNI>

Now that may sound terrible but the solution should be simple - eat less so there is no surplus food to make fat to store. Easy right?

Well not quite. It seems that we start on the road to diabetes because our guts are getting confused and sending out the wrong signals. Now leptin is a hormone that our guts churn out to tell us we are full and should stop eating. If you meet someone who just does not care what they eat but remain slim and healthy you can be sure that there leptin is working fine.

But just as our guts can get their decision making screwed up so we can become insulin resistant we can also become leptin resistant. Now this is a double whammy - we not only have insulin resistance making us store fat but we have leptin resistance telling us we are still hungry - so we go on eating even though technically we are full to bursting point - we just don't feel full.

Toxins and excesses

What we really need is another Roy Taylor to come along and explain how the decision making process in our guts works. But that is an incredibly complex problem and many people are going to die before that solution appears on my google alerts.

So what so we do in the mean time?

Well we only have to go back a few decades when it appeared our guts were working fine.

Since then we have excessive use of toxins on our food production - may be not toxins to us (although that is not sure) but certainly toxins to our guts. That is after all the purpose of those insecticides and herbicides to kill of the bugs so they kill of bugs in the fields as well in our tummies when we eat the crops.

We have also changed our diet dramatically. It is now virtually impossible to buy common foods which are not loaded with sugar, even foods like fruits and vegetables carry a double whammy - they are loaded with toxins and short of essential trace minerals.

People may have been deluded that they could wash these toxins off the surface but there is worse to come. They are now developing toxins that they incorporate into the seeds so the entire plant becomes loaded with toxins so there is no way of removing the toxins. It is difficult to see any bright side to this obsessive striving for profits but there is one. These toxins are the ones that kill of bees - how can this possibly be good? It gives the possibility that Governments will ban them.

The port in the storm

So where is the bright light in all this gloom? We can learn from Professor Roy and repeat his work on reversing diabetes by a restrictive diet. But instead of using liquid shakes for food we can feed people real food - largely but not exclusively plant food - that has been grown in biologically active soils which aims to restore the gut biology to a healthy natural state so we avoid insulin and leptin resistance.

In the short term we should also give up any ideas of finding a general solution to diabetes (which applies to everyone) but instead fit people with continuous blood sugar monitoring so we can see exactly what the effects are of eating certain types of food and develop a diet tailored to each person. For the time being we just have to accept that people - or at least their guts - are all different - so for now we need tailored solutions.

Hopefully members of the Gbiota club are up for a bit of citizen's research but the Yangtou village farm stay project offers the possibility of a more controlled project.