

Transcript of Dr C Gotham's talk on diabetes on 27th October 2015

I sit on the PPG myself and there was discussion about having a talk such as this and I was asked what sort of subject matter I would like to talk about, it's a pretty big brief medicine and we are involved in it in one way or another from the moment we come into this world till the moment we leave it and all the moments in between. So somewhere or other medicine is a pretty big subject and the largest we are ever going to deal with and this is from a person who works in it. The reason I chose diabetes is I know you are aware of it but it is a massive massive issue, I have been brought up with it in all my training but over the last ten or fifteen years it has become enormous and that is now and it is going to get bigger. And the issue is that it will affect all our lives one way or the other and the things I am going to talk about will make that clear. I am going to have a little bit of patient participation but I teach medical students, I used to say to them anything you say, because I am going to ask for responses, anything you say will be treated fairly and nobody is wrong, whatever they say. Give me a throw back : "What is diabetes" (Reply from audience) "Sugar intolerance" Something to do with sugar. Any other offers? (Audience responses : "Insulin regulation" Yes, something to do with insulin. So, what is diabetes, we have said sugar problems. Audience responses : "Insulin resistance" Are you medical based? Yes, I would ask you about Insulin resistance. I am going to talk about insulin resistance. If somebody says diabetes to you is your immediate thought is : is it something to do with sugar? Is that fair? (AR : Yes) And you think of it as a disease to do with sugar control. Yes. And you wouldn't be wrong but actually in terms of what diabetes is, if I give you an example, what is the issue to do with sugar, how much impact that has on me and the patients, that is how much has to do with sugar (illustrates : small amount) and that it everything else (illustrates : large amount) so diabetes, I was brought up this way when I started, is a disease to do with sugar control, but that is the least of our problems. It is all the other things that go with it. Now I will explain that. So diabetes, is a problem I was brought up with where people were brought in fairly frequently with coma and diabetic ketoacidosis, various things like that. We hardly see that now, it's not a problem. When I am treating somebody with diabetes, the issue of sugar control, one way or another a doctor can treat that, and sort that out as long as the patients are compliant and happy to take the medication that is up to them if they do. But the biggest problem is everything else and I will explain that. People, even those with diabetes, often don't understand until they start getting those other issues, which is the biggest problem we have. Then the picture becomes more complicated. So the, thank you for participating, most people think diabetes is sugar, that is the least problem I have with most of the diabetics I deal with, the least problem. The figures : 10 years ago the figures for people with diabetes in this country were about 2 million. In ten years to now we were about 3.3 million, it has gone up about 60% in 10 years. Diabetes has been around a long time. I have got one diabetic patient who has been on insulin for 60 years but in the last 10 years it has gone up almost 60%. At this moment it is estimated, it has to be an estimate, but it has to be about half a million who are diabetic and don't know it. So if they actually have to have their sugar tested they would have diabetic levels. But they are not symptomatic, so they are not aware of it, so something has to bring them in or something has to happen for us to find out that that is the case. It is felt that at the moment, and again it is estimated, that it is approaching about one in three adults, so if you look at the audience tonight and I am not going to ask you to put your hands up that you may be diabetic or not, but one in three adults have, there are arguments about whether we should use this data it's not easy to understand, but there are one in three adults who have pre diabetes so one in three of the audience tonight, whether they know it or not, have this condition, unless something changes to alter that, have a very high likelihood of progressing into a diabetic state. That is a lot of people. And giving you the

cost of this, never mind going on to the issues - the cost to the state. Sadly I don't always reflect on this, because I just have to use them, I just looked up the cost of two of the more recent drugs, one an insulin based drug, one a tablet, one a day but the cost of that one tablet a day is £1.50. And it is very similar to the insulin one, in fact two tablets, another one I do use is £1.50. So that is just tablet based so if those 3 million people are taking 2 standard tablets every day you can see what the cost is, and this is every day. The actual cost to the state. And this is at the same time that the government wants us to save 20 billion from the NHS and that is a saving, not the cost of the NHS. But one of the big worries is that we have got a condition which is eminently preventable for a large size of the population of people with diabetes but sadly we are looking, you can see the explosion of figures we are talking about. One in 3 adults are potentially on the pathway to becoming a diabetic. And amongst that, we are looking every day at the drugs they are taking, for arguments sake, £3 - 5 a day and then you can mushroom that and this is the big worry the government have because it is eminently for the majority a preventable condition. Breaking it down, type one is where, unfortunately, you tend to develop acutely, where people require insulin and will require insulin for the rest of their lives, there is not an issue there that that is preventable. It can be that it is inherited, there are other various reasons people can have operations on their pancreas glands for a tumour or something like that and become immediately an insulin dependent diabetic. That group is not really what I want to talk about tonight because (.....) that group are going to happen, come what may. They are a fairly standard group, there isn't a massive increase in the problem we are seeing. And then the other type, this is called Type 2. Type 2 diabetes is where the person still has some insulin production but for various reasons it's not sufficient and as time goes by, unless they change something, the situation gets worse and the sugar control gets worse. That is type 2 and that is what I'm really talking about tonight. Of the people who are type 2, 9% come in a certain bracket, probably less than that, probably about 5% where it is nothing to do with lifestyle or anything like that. It is either inherited, they were always going to have Type 2 they couldn't have avoided it. The majority that we are talking about - about 80% - are completely avoidable with type 2. And what we should be doing is preventing it from happening. It is possible but then it brings in all sorts of things and we'll talk around that as we go on. But this is just to highlight the sort of figure we're talking about and it's enormous and it is growing. What are the risk factors? A very big one is all to do with calories, one form or another we are taking in more than we need. The ones are favoured at the moment by the chef person, what is his name Jamie Oliver.....is the sugar one, which is absolutely correct. We can't get away from sugar. We can't do without it. If we cut out sugar from our dietone way or another we need it, we need it, it's an absolute essential for life. It is just we are taking in far too much of it and in absolutely enormous volumes in some cases. The other one is fat. We have had that for a while. Remember 15 years ago, where lots of products in the supermarkets had 0.5% fat or 0% fat yoghurts and of course the population in the room today are just the sort of people who look for that sort of thing, they are picked up from various avenues including doctors, the issue of fats are bad for you and you went zooming in and looked for the lowest fat, which you correctly should do. But the problem is frequently for a lot of those products, what happens they may reduce the fat content but the carbohydrate content went up. When you look back at a lot of processed products that manufacturers were making at that time and the one thing with sugar, and I won't go into the history of sugar, is that most of us actually really like it, it hits the right area, yes some people like bitter when they go for a pint in the pub but actually sugar is the things that hits the positive thing and it comes everywhere so the manufacturers are commercial enterprises, they are not bad people but they know that bread with a little bit of sugar in, you will actually sell more of it, it will be more tasty. And so on. Sugar is certainly one of the biggies. It is still not fully understood what goes on but human

beings are eminently vulnerable and when we like something we might have some more and then we might have some more and what is wrong with that? It is a grey day outside and that is our habit with all sorts of things and we all say we should have things in moderation but we are all human as well and we are vulnerable to temptation. Everybody in this room will know they are vulnerable to some temptation and I won't ask you to hold your hands up to whatever temptation it is that you have but it is human nature and we have to work around it. We cannot have a perfect individual, diet or otherwise and the one that a lot of you will have heard from me is there is no normal in life. Everybody in this room is not normal. There isn't a normal any more. We are all abnormal or various versions of it. There is not a normal, whether it is the Queen, respect to her, we are all abnormal in one way or another and we have to get through life with those abnormalities. In our diet, we don't have a perfect diet, what we must try and do perhaps, which is what we don't do so much these days, is not say what we actually need, it's actually what we enjoy and the issue of need and enjoy can be quite a long way apart. I will move on to some other things. The risks : one, overweight. We are all genetically different and certainly in the room tonight I am slim, my mother and her family were more weighty, my father was slim. I tend to eat a lot but I don't put weight on terribly easily. I do exercise but there will be other people who exercise and carry more weight and it is unfair. So genetically we are slightly different. This isn't an issue that we put the blame on everybody who carries more weight, it's completely unavoidable but sadly the fact is if we get into the weight zone that is more harmful for those people that put more weight on, we still have to say the same things to them. We do appreciate that we are all different and it is harder for some people than for others. Similarly for girls versus boys - we have something called testosterone, various levels of it, and we have till we are relatively mature in life. For girls they have a small amount and it is far easier for girls to put weight on than for boys. Testosterone keeps our weight down. Guys who put weight on - they have been working at it for quite a long time. With being overweight, it is a particular type of overweight. It is the waist overweight. We all carry some fat, we must carry some fat. The girls and guys who are beanpoles, that is not healthy either. So it is not an issue of everybody must be a beanpole. We are all in our various levels of abnormality, we don't want to be very overweight and we don't want to be very thin. Very thin - I won't go into that tonight - carries health risks, various types. Girls who go to the gym every day and are exercising all the time have awful problems but they don't realise it. The issue is we need to be something in the middle. But waist size.....I won't ask what your waist sizes are, but we should be, we now know : looking for guys 36" and below. And the waist size, if you every measure it, but when individuals measure this sort of area (gestures below navel) and lift up something that is above it, it should be about midway. I have a 36" trouser, but if you go midway it is about 42". It should be around your tummy button. If your tummy button is at the end of a particularly well endowed abdomen, it could be well down here (gesturing downwards). But it should be midway between your ribs and your pelvis, that's where your waist is. For girls it should be around the order of 31" , above that we are running into problems and for guys about 36 – 36.5", above that we are running into problems. The issue of weight, some of you might have been watching the rugby or gave up after a while, for obvious reasons. Those guys, some of them are carrying 17 stone or whatever and technically their bmi, (the rower Steve Redgrave who is insulin diabetic, would typically consume 12,000 calories a day, having to control that with insulin is really difficult. His wife is a doctor so that is useful. The issue is that he was technically well overweight, his bmi was over 30, but it is all muscle bound. He was very weighty for his height so the bmi didn't work. But his waist measurement was within that acceptable level. So it is same with the rugby players now, not the Bill Beaumonts for those who might remember Bill Beaumont but the modern day rugby players their packs were pretty sizable but their waists are pretty trim. And so it is waist area

that is the problem area of carrying weight. Broad shoulders, big muscles, and so there are some guys with a slightly sizable tummy but in fact they are more muscle bound they probably don't come into this bracket.

So it is where waist sizeso we can almost give up weighing ourselves, we should measure our waist. We are all different sizes, in the same way I said we are none of us normal, but it is measuring our waist size, give up weighing ourselves the waist size is the principle thing. So the association of waist with cardio vascular disease, massive evidence to show that, the same with type two diabetes. The lack of activity. So we know there is an association of that, irrespective of what our diet is, if we are not active, that affects us. I won't go into the patho physiology of this because it's there, but lack of physical activity does have a bearing. Family history : there is no doubt that genetically some people with diabetes there is a higher incidence in family groups. So that one we can't get away from. But potentially, it is avoidable still, if knowing there is maybe a family history you aspire to a correct waist size and keep active and all sort of things then you can avoid having it. Crudely if you imagine with diabetes, diabetes is : there is a gland here which is producing insulin called the pancreas something called the islets of Langerhans which are certain cell groups in the pancreas. And they have got certain life a bit like certain other glands in the body and very crudely if you imagine we all did live to a 100 and we know with the generations that are coming through increasingly if you think about this diabetic problem they are suggesting 30% of youngsters being born today are going to live to 100, so if you imagine they are carrying medical problems and we should aspire to having diabetics having longevity like everyone else.....like with any condition, that is a lot longer for us to try and manage that medically as well. But the longer we live the more likely we are to get diabetes, so if we all live to 100 we are more likely to get whatever we have done in life. But what happens is people who adopt a certain lifestyle and have certain risk factors , you are more likely to bring the chances of that diabetes nearer to you and so at the age you are going to get it you are bringing it nearer to you and at the moment, those groups of people, we call them pre-diabetes, I mentioned it earlier, they are about 1 in 3 of us adults are in this bracket . Without knowing it they, one in three of us here, we are looking at diabetes coming towards us as we mature. And there are no symptoms in pre diabetes, none at all. The issue of thirst, we know about with diabetes, that is when you have got acute diabetes and you don't get symptoms for the group we're dealing with. Most of the people I see, very rarely – any here? Less than 5 people I see in a year that actually approach with diabetes because of the symptoms of thirst and passing more urine. It's very uncommon. We find out by chance and for completely different reasons. And there's another group called the metabolic syndrome which is not diabetics. This is : metabolic syndrome/pre-diabetes there is a big overlap. They tend to carry more weight, they tend to have higher blood pressure, tend to have certain type of cholesterol/lipid mixes, tend to have a big waist, in the overweight bit, it is endomorphic large waist-type weight. And that group are the ones that as soon as somebody walks through the door I know without checking their blood pressure, that that is what I am looking at. And these are the sort of people we need to work with. The other thing is youngsters and the youngsters in your families. I have never previously seen before the last five years or so children who are having type 2 diabetes. Type 1 diabetes, for sure, affects children. Type 2 for children? This is purely because of weight. When I was taking my sons to a swimming pool in Southampton and it was gob smacking to see the young children with obviously demonstration of obesity. I have never seen so many and that is something we never ever saw but type 2 diabetes in children, purely because of diet and and being overweight. And those people are going to go through life, and just think about the cost involved. The issue with sugar control isn't merely the problem, you do get people with acute ketoacidosis going into hospital and put onto drips - it does happen. Relatively it is not that common now. You

do get people with hypos, who are already diabetic so there are issues with sugar control which do mean people have to go into hospital or need more care from us. And other things with diabetes, you are more prone to infections, osteoporosis, that go along with it. But usually issues to do with sugar like infections - they are more common in diabetics but most of the time those things related to the sugar themselves or completely indirectly as an acute problem is not that often. The problem area and the one that will give long term problems are the complications and there is a massive list. So if we start from the top to the bottom because it is a big list. The strokes. Lots of reasons why we get strokes. Diabetes dementia. One form of dementia is the effect of furring up of the arteries. I'm going into the area which is the important area and which takes up all of our time now and which is going to take up more and more of our time is not to do with the acute sugar control, that is easy. It is actually to do with the complications of having diabetes and that is the problem. So really diabetes and the problems with sugar is a misnomer. It is a vascular disease. It is a blood vessel disease and everything to do with the big heavy cost area is to do with the blood vessels in turn getting furred up. Those people, maybe some people here, maybe you have high blood pressure. Why do we treat high blood pressure? Because high blood pressure is associated with the furring up of arteries. With smoking, those people who smoke, the big positive news with smoking. Why do we bother with smoking? Certainly the issues with lung cancer and things like that. The big area is furring up of arteries. Why are we bothered about big intakes of alcohol? Furring up of arteries. Diabetes? Furring up of arteries. The reason I am going top to bottom is to explain that. So, dementia. Alzheimers is the most common one but the issue of furred up arteries - atherosclerotic it's called - is very common as well and often the two go together. Alzheimers isn't on its own. Number two is strokes, various types, mini strokes and so on, far higher than diabetes, all to do with furred up arteries. Eyes : cataracts are more common with diabetes, the vessels in the back of the eyes, the retina, diabetic retinopathy, after macular degeneration, which is a life thing, basically you can't do much about, basically one of the most common causes of blindness that we have to face in life. Further down. Teeth, you know about all the problems we can have with that. The heart. Heart disease, we have certainly done well with things like smoking, with respect to that but with diabetes there is a higher incidence of heart disease. The muscles in the heart. There is something called cardiomyopathy, where the muscle actually degenerates as a result of various things. Diabetes is one of the things that causes degeneration that can lead to heart failure. So heart failure and heart disease is the commonest condition. It is in the heart conditions which can cause death, not meaning to be negative, but the top four are heart, lung, cancer and stroke are all, certainly, except the lung one, the heart and the stroke are very much for those people who have diabetes. The abdomen. Never have seen this before, it has all come in the last ten years. The liver function test, we know some of you may have had a liver function test, the instance of liver function abnormalities now there has been a massive increase. And every diabetic I see has got this problem. And even patients I see coming in with other conditions, frequently we are getting where there are abnormalities in the liver function and I check it out, I might do an ultra sound scan and so on it is not because of gall bladder, it is not because of a chronic liver disease which is inherently liver disease. What it is is what is called fatty liver. Fatty liver is a big growth area. Fatty liver is associated with diabetes. And if you are looking at number five in the death list and this country is not particularly good on that, it is of all the things that are getting worse, you don't think of it. But chronic liver disease leading to death is number five in the death list. Didn't use to be the case. People here may obviously have relatives who have liver disease, but liver disease itself is number 5 in the death list. And what we have got there is a growing problem because fatty liver disease can actually progress and become cirrhosis and yes people can have things like liver transplants and do but

unfortunately that is not the end point that we want to aspire to. But diabetes has an impact on the liver as well. Each year, it is another growing area all because of diabetes, are amputations. It has gone up. Five/six years ago 6,000 a year, now it is 7,000 a year. Amputations associated with diabetes. Neuropathy. That is where the nerves are damaged. It is a common accompaniment to diabetes. With some people it is sugar control not being good enough but we know it happens with other people. Neuropathy is where the nerves are not working properly. One area, that gentlemen may be and I do suggest this to gentlemen who may be in a pre diabetic state, I suggest what is termed erectile dysfunction, it is commonly associated with diabetes. And neuropathy is associated with that. Certainly erectile dysfunction is associated with diabetics because of furred up arteries. So actually now we know when men come in with erectile dysfunction we go looking for other problems. It is a signal for us to deal with the problem but look for something else. Neuropathy in the limbs. Again usually adjustment levels will help but sometimes people are left with numbness and pins and needles and pains in the legs all because of diabetes and we can't alter that. And some people because the sensation has gone in their feet, they start banging into things. If you haven't got any feeling they stop feeling when they hurt themselves. When we stub our toes we can feel it and we actually damage ourself. And they do it regularly. And there are conditions : Charcot's joint. It is a particular condition where people actually do damage their limbs because of their neuropathy and have to have operations. These are saving operations like when they have damaged their feet, almost like leprosy. It's not a common one but it is associated – it's those complication areas. The most common cause – you will have heard of this – of renal dialysis and the need for transplants in this country is diabetes. The cost of that? I won't keep going into cost, but it is enormous. The whole area of dialysis and having to go several times a week and certainly for transplants – you are talking about tens of thousands of pounds. The commonest cause of renal transplants/renal dialysis is diabetes. So we have the diabetic problem and a massive mushroom behind it, that is waiting to come where people are aware they are on that tightrope. And the problem is, when you haven't got a symptom, then it's easy to ignore – nothing hurts – why try and fix it? And what we want to do is fix it before they get to that stage, because once they are there they can't get back from it. And that is where it is affecting all our lifestyles over the next 10 – 15 years. I could be dealing with diabetes every day and all the complications that go with it as my main job and not do anything else. It would become like that for a GP. And the hospital can't afford to look after them. I went to a meeting recently where the hospital said we need to push more of what we are doing to you because we cannot cope. So we have got to cope with that. But the problem is – our bit is a bottomless pit – that's where they want to go. Our costs are less than the hospital. 55% of the NHS budget, which is enormous, goes on hospitals. For the GPs – we have 90 – 95% of the face to face consultations every day. But we get 8.5%. From the diabetic point of view it needs to be managed in general practice – not going into hospital. It shouldn't be. So it will become a bigger problem we will have to deal with. One of our arguments as GPs is we should be dealing with more of this sort of things earlier, but basically there is a day job as well. And although they might not like it – chasing after people more and encouraging them to adopt a change in lifestyle and so on and giving them reasons why. You can see the enormity of the problem we are dealing with. I will mention insulin resistance, as it was mentioned earlier. Have you heard of the term? It is not known for sure what causes it but what it basically means is people who have insulin resistance, and diabetics definitely have it, and those who are pre-diabetic have developed it. So it is one of the main problems we have to deal with and it is associated with obesity, waist size, incorrect fat intake, inappropriate sugar intake. And it is all types of sugar. People think fructose is OK because it comes from fruit. Fruit is good and has a lot of good things in it.

Potatoes don't have so much, especially if you boil them, they have no vitamin C left in them. But in real terms, all sugars are the same, whatever their name, if you are having too much of it, you are going to invite a problem and the same with the fats. Insulin resistance is, if I have a diabetic or a pre diabetic in front of me and in both our arms there is a vein? And someone is taking specimens and checking the insulins at exactly the same time as we eat our meal. At the start of the meal both will – this is a pre-diabetic not a diabetic because they are making insulin at that point, we are eating the same meal, we have finished the meal – have exactly the same levels at that point. Then over the next hour or 2 what happens is the sugar goes into our blood stream having absorbed it from our bowel and it is placed in different parts of the body to get the sugar level down to what is an appropriate level again and puts it in the correct storage places which tend to be skeletal muscle, liver, are the two main areas and it gets levelled down that way. And you have heard of glycogen which is the storage compound in our muscle and our liver, our liver is a big one for that, which is the long term storage bit and gets the sugar down. What happens to the pre-diabetic is that, as my level is coming down and my insulin levels, because it responds immediately to that, the sugar level comes down because it has put it away in the nice places, my insulin comes down, back to normal. Pre diabetic over here, he feels exactly the same, he has had exactly the same meal. But his insulin level is up and his sugar level is still up. Basically he has to produce even more insulin and what is happening is the insulin he is producing is not doing the job, there is a resistance to it doing the job at the cellular level. And it is not getting the sugar inside the liver or the skeletal muscle, it is being ineffective at the cellular level. So that person has to produce even more insulin to do the same job. Whereas my level has gone down straight away. Crudely, that person is wearing their gland out, which only has a certain life. So as I said, if we lived to 100, our gland would wear out. And most of the time with 90 year olds, their diabetes is there, you don't have to do anything about it, it is just slowly wearing out. But basically the pre-diabetic doesn't know he or she is wearing their gland out. Diabetes is coming towards you, you can do something about it. There was a chap, who had a lot of money, who was a patient of mine. I was putting him on drug no 12 for his diabetes, hypertension, cholesterol, his diabetic drugs, he was a type 2, overweight round the stomach. I said I think we have to bring in another drug here, unfortunately. He said I'm not having that. What can I do, tell me what I have got to do. I said I don't think you're going to do it because we have talked about this for a long time, I thought he wouldn't do it. Basically he employed a personal trainer, he employed a personal dietician, he employed a cook to cook his meals and literally over the next 6 – 9 months I was pulling off the drugs as he was doing this and he was diabetic. He remained, one way of testing is a type of fasting sugar you have to have two values above a certain level – diabetic. There is another thing called HBA1C which you may have heard of, those people who are diabetic will have heard of. And that is a very helpful tool which tells us roughly where the sugar level has been over the last three months. There are a couple of test like that and if they are above a certain level they are diabetic. Basically all those levels became non diabetic. He was still diabetic, he was just having a honeymoon period because over time, even if his weight remained the same, his gland would wear out, it would be less than 100. But it's saving him – it reduced his load of drugs by 75%. I hoped he stayed there, the problem is a lot of people don't. But it is possible to improve things. What we would like to do with all pre-diabetics, if they know about it, the metabolic syndromes, is for them to do the same thing so they avoid getting into that from the outset. But it is very difficult to encourage someone, they just have to take it from what you are saying, a printout or whatever. They feel fine, they have no pain, they are enjoying their life, their wine or whatever it is, to get some people to change is a major difficulty. My worry is it is going to be a big cost to the nation, it already is, but it is going to be an enormous cost over the next 10 or 20 years. It's going to affect a lot of people as we are potentially looking

to 1 in 3 of the adult population having diabetes. But it is also affecting children. And it is all to do with education and sadly when we ask why are people eating so much? There is an element of people getting hooked on sugar, like an addiction to it. And it is not just the taste, it's like needing something in your hand, like we used to talk about cigarette smoking, trying to stop that. And certainly there is some evidence talking about insulin resistance that it alters the diet we have on the cellular level which affects insulin resistance. So there are reasons that perhaps the type of food we are having – they have started talking about it, I'm not totally in agreement with it, a tax on sugar. But we have to start looking at our diet, we weren't meant to drink a litre and a half of fizzy pop. The commercial psychologists, in shops, tell you where things should be, with different colours, there is a big science in that. And we have to do something with that too. But people don't like interference.