

## Deconstructing diabetes – why one size does not fit all

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Professor David James, Head of the Diabetes and Obesity Program at Sydney's Garvan Institute of Medical Research, believes it's time to draw attention to the many things we don't yet know about the complex metabolic disease we call 'Type 2 diabetes', and to the oversimplifications that abound in discussion of future treatments.

In an essay published in *Diabetes Management Journal*, James describes the complexity behind diabetes, and urges a close look at our assumptions that define the 'culprits', or treatment targets.

The scenario seems simple and compelling. People living in industrialised countries live sedentary lives, while at the same time eating too much high-fat, high-sugar food. As a result, they become obese and develop 'insulin resistance', a reduced ability to use insulin for carbohydrate metabolism. The pancreas compensates by producing ever-increasing amounts of insulin, until it becomes exhausted and diabetes develops.

"When we look at the worldwide obesity epidemic, and the number of people developing diabetes, we tend to make sweeping generalisations, try to make one size fit all," said James.

"Not only does one size not fit all, but our approach might end up compromising, or even endangering, people's health."

"One obvious example is the notion that all obesity is bad. While in most cases it's true that obesity is very bad for health, there is a considerable sub-group of obese people – around 20% – who are metabolically healthy."

"A recent study showed that when you force these 'healthy obese' people to lose weight by putting them on calorie restricted diets, their metabolism gets worse. So arguably those people are living in an equilibrium that for them is perfectly fine."

"Then we have the French – they eat lots of fat in their diets, and their daily calorie intake is as high as any of us, and yet they remain thinner and succumb less to diabetes. Why is that? No-one knows."

“I’m not saying that too much nutrition is not a factor, when it’s clearly central. I am saying that it’s impossible to stop people from eating food.”

“If you can’t stop people eating food, you have to find a solution elsewhere. That’s when the open road turns into a myriad of back alleys and dead ends – or unanticipated traffic jams.”

“To give an example, one arm of diabetes research focuses on allowing the pancreas to keep producing ever-increasing amounts of insulin to compensate for ‘insulin resistance’, the diabetic’s reduced ability to use insulin effectively for glucose uptake.”

“The problem is that insulin has many functions in the body. Flooding the system may solve the problem of insulin resistance, but it exacerbates fat synthesis, so people would end up with hypertriglyceridemia, which causes severe cardiovascular problems.”

“We must remember that the body is a finely tuned mechanism, so tampering with parts of it before you can see the big picture could have many unpleasant and unforeseen effects.”

## **ABOUT GARVAN**

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent’s Hospital in Sydney, it is now one of Australia’s largest medical research institutions with over 500 scientists, students and support staff. Garvan’s main research programs are: Cancer, Diabetes & Obesity, Immunology and Inflammation and Neuroscience. Garvan’s mission is to make significant contributions to medical science that will change the directions of science and medicine and have major impacts on human health. The outcome of Garvan’s discoveries is the development of better methods of diagnosis, treatment, and ultimately, prevention of disease.

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