



Too Deadly for Diabetes

My name is Ray Kelly. I am a Kamilaroi man with 32 years' experience in the health industry. I have a degree in Human Movement, a Master of Teaching (PDHPE), and a Bachelor of Research (Type 2 Diabetes in Aboriginal Communities). I am currently completing a PhD at the University of Melbourne School of Medicine on the topic "Analysis of the factors contributing to successful reversal of T2DM through lifestyle change by Indigenous people in Australia".

It was in 2006 that I came across the work of Prof. Kerin O'Dea(1) and this changed the direction of my work. In this study she was able to show that Aboriginal people could reverse the process of type 2 diabetes within 7 weeks, by reverting to a more traditional lifestyle. As an Aboriginal man with a strong family history of type 2 diabetes and heart disease, this really made an impact.

I would learn that type 2 diabetes was not always an issue for Indigenous Australians, with the first national report on Aboriginal health in 1979 noting that diabetes was virtually non-existent for Indigenous people who still lived traditionally.(2) This supported a study from 1970 that reported that type 2 diabetes was considered rare among Indigenous Australians that were yet to move to an urban environment.(3)

I spent the next couple of years researching the topic of weight loss, remission of type 2 diabetes, and how it might work within our current health system. In 2010 I worked up the courage to set up a clinic, where patients with a chronic disease could be referred by their General Practitioner (GP). We employed dietitians and exercise physiologists and worked in closely with the local GPs. Over time we devised a system that would assist patients in improving health outcomes for type 2 diabetes and heart disease and worked within the structure of our current health system. Each year, our patients achieved a total weight loss of over 5,000kg, with many reducing or eliminating the need for medication for type 2 diabetes and hypertension.



It was during this time that I also began to travel to international scientific conferences to learn more about remission of type 2 diabetes. I would discuss my issues with leading researchers from around the world and come back and adjust my own program, with a strong focus on patient safety.

In 2017 I decided to focus on regional and remote Aboriginal communities. Since then, I have partnered with 16 Indigenous communities across NSW to provide my 'Too Deadly for Diabetes' program. This has seen patients lose a total weight loss of over 5,800kg, at an average weight loss of 7% of their starting weight. The average reduction in HbA1c has been 1.6%. Many participants also reduce or eliminate medications for type 2 diabetes and hypertension. These results are impressive when compared to the whole Australian population, however it must be stated that these communities have many challenges and would be considered some of the most difficult locations in NSW to provide a lifestyle program. In addition, the program is provided within the primary care setting by nurses and Aboriginal Health Workers/Practitioners. We have been able to show that even in the most challenging environments, Aboriginal people will achieve great health outcomes if provided with the right information and support.

The following video shows some of the patients and health professionals that have been involved in the program: https://youtu.be/PPph65G_waA

We also recently partnered with Sunrise Health to provide a program in Jilkminggan, a small remote community 1.5 hours from Katherine (Northern Territory). We had 18 women sign up immediately and it took just 3 weeks to have our first patient taken off insulin, and 5 weeks to have 2 other ladies taken off all medications for type 2 diabetes.

Here, Aboriginal Health Practitioner Antonella speaks about the program after the first few weeks: <https://youtu.be/ZIC8YfmaWt4>



Overview of Program Design

The Too Deadly for Diabetes program is effective because it is designed with the success of Aboriginal people in mind. We undergo a co-design process that allows us to learn from the local community and then assist in the structure of the program. The program is provided by staff from the Aboriginal health service, which assists in supporting participants and helping them as they require a reduction in medications. Information is provided to the participants via the smartphone app and/or through printed material.

The exercise program is based around the participants current level of health, with many people starting by walking for 20-30 minutes per day. Alternative physical activity options are provided through the smartphone app.

The meal plan is based around fresh, unprocessed food with a focus on reducing carbohydrates. The extent of this reduction is determined by the participant, but most would be including more carbohydrates than what would be found in the Keto or Paleo eating formats. The amount of carbohydrates included in a meal plan can be a topic of hot discussion with many people still advised by health professionals to follow the Australian Dietary Guidelines, even though it is noted that they were not designed for those with complex health care needs and have had little consideration for Aboriginal and Torres Strait Islander peoples. The last update to the dietary guidelines occurred in 2013, and were primarily based on systematic reviews completed up to that date (4). However, the first systematic review of peer reviewed research completed on nutrition interventions for Aboriginal and Torres Strait Islander people was only published in 2019 (5). To compensate for this, the authors for the dietary guidelines completed a broad search on diet or nutrition related outcomes for Indigenous Australians and noted “there were no reviews on dietary patterns amongst Indigenous Australians” (4). However, they did find 14 studies that provided at least some details on health related outcomes.(4) On searching the studies provided, few were related to obesity or chronic disease with only one mentioning diabetes, which reported an increase in HbA1c (6).



Interestingly, Kerin O’Dea’s groundbreaking research that showed great reductions in fasting blood sugars utilised a meal plan that had 50% to 80% of the participants daily dietary consumption coming from protein.(1) This was based around the more traditional macro-nutrient content for many Aboriginal and Torres Strait Islander nations.(7)

Research

The Too Deadly for Diabetes program has been provided in Mount Druitt (Western Sydney) since 2019, with participants losing a total weight loss of over 1,200kg. An independent mixed methods study was completed by a team of researchers from the University of Technology Sydney (UTS).(8) The authors reported an average weight loss of 7.46kg, a reduction in HbA1c of 1.68%, a reduction in systolic blood pressure of 8.88 mmHg, and a reduction in diastolic blood pressure of 4.69 mmHg.

Long Term Sustainability

Some health professionals feel that these outcomes are unsustainable over the long-term and will use the recent 5 year follow up data from the DiRECT Trial that reports 23% of patients were able to sustain remission from the 2 year follow up, to the 5 year follow up.(9) However, in Australia we would love to have a 23% success rate at 5 years, given few GPs could currently provide details of a patient who has achieved this. Whilst some participants from the DiRECT Trial did not sustain remission, there would be many who would have reduced medications and improved their HbA1c over the long term. This makes a massive impact on their progression toward other health conditions and their quality of life, as well as the burden on the health system. We have no published data on long term outcomes for those who have completed the Too Deadly for Diabetes program, however we do have plenty of anecdotal evidence. A report was completed for the Coonamble Aboriginal Health Service after 15 months of the program being provided by their staff. It reported a total weight loss of 1,597kg, from 186 participants. This was an average weight loss of 8.6kg (8.4% of starting weight), and an average reduction in HbA1c of 1.5%. We also have



individual stories of long-term success such as Mary, who was on insulin for type 2 diabetes for 15 years and taken off insulin in just 7 days on the program. She has sustained this success for just over 5 years. This is Mary after completing the program: <https://youtu.be/aHZ1YjQOh9s>

Programs with Non-Indigenous Participants

Over the past 15 years we have provided many programs that included non-Indigenous participants. Two of our most successful and unique programs were with the Arnott's biscuit company and the GWS Giants AFL Club.

Arnott's Biscuit Factory

Over 10 weeks we provided a weekly 15-minute consultation for 53 employees. In that time, they lost a total of 643kg, at an average of 12% weight loss. These participants were from a wide range of cultures and had to overcome a range of obstacles including having English as a second language, completing shift work, and of course having biscuits available everywhere. We returned 6 months later to measure the participants ability to maintain the loss and the average loss was still within 600 grams of their end of program weight. Many saw a reduction in medications and of the 37 who had high blood pressure during initial screening, only 5 still had high blood pressure by the completion of week 10. These results were presented at the International Congress on Obesity in Gothenburg, Sweden, and the European Congress on Obesity in Vancouver, Canada.

GWS Giants

Over a 12-month period, we provided a program for the AFL club, the GWS Giants. One hundred (100) of their fans followed the program for 12 weeks and lost a total of 1,612kg, at an average of 16.1kg each (14.2% of their starting body weight). All of these participants had at least 1 chronic disease, but most had several. The program was provided over the internet with no face-to-face contact, and weekly consults were provided over the phone. Almost all participants saw normalisation of



their fasting blood sugars and blood pressure and many saw a reduction, or total elimination of medications.

The club filmed a video of our first program that shows a participant's journey:

<https://www.facebook.com/watch/?v=1657513064271201>

Australia's Health Revolution

In 2021, I co-hosted a 3-part series alongside Dr Michael Mosley titled 'Australia's Health Revolution'. In this we presented the research around remission of type 2 diabetes and coached 8 Australians as they attempted to improve their HbA1c through changes to their food intake and physical activity. The outcomes reflected those reported previously in my Too Deadly for Diabetes program. Across the 8 weeks, some participants came off all medication for type 2 diabetes, whilst others reported a major reduction in dose, with one male no longer requiring insulin after just 7 days. The program averaged 500,000 viewers each episode and generated a great deal of discussion across the country.

It is still available to view on SBS on Demand: <https://www.sbs.com.au/ondemand/tv-series/australias-health-revolution-with-dr-michael-mosley>

Conclusion

No matter whether health professionals and researchers feel these outcomes are good or not, it shows that we can achieve better health outcomes for people with type 2 diabetes and this should be the main take away from this work. We should take confidence that substantially better health outcomes can be achieved in the short term, and work on how we can better support this over the long term.

Prevention is important, but better management of those that have progressed with the disease can be vastly improved. This will substantially reduce the number of people progressing on to comorbidities such as heart, kidney, and eye disease, saving the government a lot of money, and providing a better quality of life for those with type 2 diabetes. More importantly, we will have our loved ones around for longer with a greater ability to participate within our family and community.



References

1. O'Dea K. Marked improvement in carbohydrate and lipid metabolism in diabetic Australian Aborigines after temporary reversion to traditional lifestyle. *Diabetes*. 1984;33(6):596-603.
2. Parliament of Australia. House of Representatives Committees Inquiry into Aboriginal Health. https://www.aph.gov.au/parliamentary_business/committees/house_of_representatives_committee_s?url=reports/1979/1979_pp60report.htm1979.
3. P H Wise FME, D W Thomas, R B Elliot, L Hatcher, R Craig. Hyperglycaemia in the urbanized Aboriginal. The Davenport survey. *MED J AUST*. 1970;2.
4. National Health and Medical Research Council. A review of the evidence to address targeted questions to inform the revision of the Australian Dietary Guideline https://www.eatforhealth.gov.au/sites/default/files/files/the_guidelines/n55d_dietary_guidelines_evidence_report.pdf2011 [Available from: https://www.eatforhealth.gov.au/sites/default/files/files/the_guidelines/n55d_dietary_guidelines_evidence_report.pdf].
5. Gwynn J, Sim K, Searle T, Senior A, Lee A, Brimblecombe J. Effect of nutrition interventions on diet-related and health outcomes of Aboriginal and Torres Strait Islander Australians: a systematic review. *BMJ Open*. 2019;9(4):e025291.
6. Chan LCK, Ware R, Kesting J, Marczak M, Good D, Shaw JTE. Short term efficacy of a lifestyle intervention programme on cardiovascular health outcome in overweight Indigenous Australians with and without type 2 diabetes mellitus : the healthy lifestyle programme (HELP). *Diabetes Research and Clinical Practice*. 2007;75(1):65-71.
7. O'Dea K. Traditional diet and food preferences of Australian Aboriginal hunter-gatherers. *Philosophical Transactions of the Royal Society of London Series B: Biological Sciences*. 1991;334(1270):233-41.
8. Power T, East L, Gao Y, Usher K, Jackson D. A mixed-methods evaluation of an urban Aboriginal diabetes lifestyle program. *Aust N Z J Public Health*. 2021;45(2):143-9.
9. UK D. Weight loss can put type 2 diabetes into remission for at least 5 years, direct study reveals 2023 [Available from: https://www.diabetes.org.uk/about_us/news/weight-loss-can-put-type-2-diabetes-remission-least-five-years-reveal-latest-findings].