

**Submission to the Standing Committee on Health and Ageing
Inquiry into Obesity in Australia**

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Synopsis:

This submission considers the impact of obesity on the health of the nation, provides a summary of the current scientific understanding of the cause of obesity, considers prevention and evidence-based interventions. Models of care are discussed: bariatric services established in a teaching hospital and a multidisciplinary clinic associated the St Vincent's Hospital Campus.

The Problem of Obesity in Australia in 2008:

Obesity is the major cause of disease in Australia. It affects 50-60% of the adult population. It causes type 2 diabetes, which now affects 7% of the adult population with one in four adults over the age of 70 years affected. The most current prevalence data (AUSDIAB) show an even greater prevalence of impaired glucose tolerance and prediabetes; of concern AUSDIAB found that only half of people with diabetes have been identified as having the condition. The centrality of obesity in causing the majority of modern diabetes is discussed further in an Invited Editorial I wrote for Diabetes Care, the premier scientific journal for clinical research into diabetes and is attached as Appendix 1.

Obesity is now the major cause of cardiac disease in non-smokers. It impacts on every body system, causing obstructive sleep apnoea, fatty liver disease, gastro-oesophageal reflux, degenerative joint disease. Even in youth, it causes premature onset of these diseases. Type 2 diabetes caused by obesity is rapidly becoming the most common form of diabetes seen in children. Obesity is the commonest cause of infertility in Australia; evidence shows this is reversed by modest weight loss. Obesity is the main cause of endometrial (uterine) cancer, oesophageal cancer and contributes greatly to the risk of non-genetic breast cancer.

Obesity increases health risks in normal setting, such as pregnancy, where it increases risks of preeclampsia, gestational diabetes, obstructed labour, Caesarean section. Obese women have complicated deliveries and their newborn infants more frequently require neonatal intensive care.

Obesity impacts upon health costs and service delivery at every level, however these costs are hidden in other statistics, such as extended length of hospital stay, coronary angiography and stenting, knee replacement prostheses, drug therapies. The conditions most frequently associated with obesity are hyperlipidaemia, type 2 diabetes, hypertension, reflux. The drugs used to treat these conditions are the highest costing drugs provided to the Australian public under the Pharmaceutical Benefits Scheme. For example, each prescription of insulin used to treat a patient with type 2 diabetes costs about \$120. This may last anywhere from one month (annual patient cost \$1440) where insulin requirements are low; in morbidly obese patients this may last 3-5 days, with an annual cost of about \$12,000. Unfortunately these patients are common in specialised settings such as my own.

Obesity robs youth of their potential: studies have shown lower academic achievement and lower earnings despite qualifications for overweight and obese individuals. Obesity robs the Australian nation from optimising the productivity of its work force, through illness, lost potential and premature death.

As stated in my opening address, there is no time bomb, it has already exploded. Obesity has reached epidemic proportions.

The Causes of Obesity:

Numerous studies show that obesity is strongly inherited. Gene mutations are extremely rare causes of obesity. Obesity genes are genes that promote thrifty conservation of energy obtained through the food supply. These genes promote storage of energy in good times for use in the leaner times that have characterised human history. As such, they can be viewed as “survivor” genes and thus have evolutionary advantage. Only individuals with “survivor” or “conservation” genes have the potential to become overweight or obese. Understanding this scientific fact gives insights into why some individuals show great susceptibility to putting on large amounts of weight where others gain little living in similar circumstances.

The scientific data confirms strong gene-environment interactions, whereby specific environmental factors promote disproportionate weight gain in susceptible individuals. Specifically, low levels of physical activity appears to be strongest promoter of weight gain in the genetically susceptible. Scientific evidence is provided in the references (1-5).

Modern western societies promote sedentariness in every aspect of living: in work, at home and in leisure time. Children, like adults, have lost opportunities for physical activity through increased reliance on motorised transportation to school, loss of open space, fear (stranger danger), changes in housing (smaller or no backyards), increased hours of television viewing and computer games. Accompanied by the consumption of energy dense food, especially convenience foods, this imbalance between energy expenditure and energy consumption results in weight gain. In the genetically susceptible, this results in excessive weight gain and obesity.

Our scientific understanding of obesity also shows us that once overweight or obese, an individuals metabolism will adapt to caloric restriction and increased physical activity to limit loss of fat stores. In the longer term, physiological adaptation results in regaining of weight. Understanding this brings insights into the lack of success of lifestyle interventions to produce long term (eg 5 year) maintenance of weight loss.

The Solutions to the Obesity Epidemic:

1) Prevention:

Prevention must be a primary goal, starting in childhood, but extending to adolescence, early adulthood when individuals establish their lifestyle patterns outside the parental home. It is imperative in the childbearing years when early feeding patterns are established in children. Prevention starts at home, within the family unit which sets the example for everyday lifestyle choices.

Preventive strategists would benefit by recalling the fundamental origins of public health in the early 19th Century. During a cholera epidemic in London in 1854, Dr. John Snow showed that a particular water pump (on Broad Street), was responsible for disseminating the disease. By his persuading the authorities to remove the pump handle, the epidemic was controlled. Educating the public that the pump was contaminated, applying warnings to the pump were not beneficial.

Similarly, we know that the epidemic of obesity is caused by sedentariness and consumption of excessively calorific foods. Enlightened (and perhaps brave) government will remove the (allegorical) pump handle by legislation which will extend into town planning, the food industry, advertising to children (See Appendix: WHO Report on Marketing Food to Children), the workplace and so on.

Prevention does not however help those afflicted by obesity. Prevention is a fundamental investment in the health and future productivity of the nation.

2) Treatment:

The vast body of scientific studies show modest weight reduction (eg 5 kg) improves type 2 diabetes, hyperlipidaemia, hypertension. Modest weight reduction also prevents type 2 diabetes in the susceptible. Modest weight loss improves survival of women with breast cancer. However, the majority of the evidence shows that longer term (in excess of 5 years), lifestyle interventions fail to produce sustained weight loss.

Bariatric surgery in the morbid obese (gastric banding, sleeve gastrectomy and Roux-en-Y gastric bypass) has been shown at 10 years to produce sustained weight loss. The health benefits of this translates to a 50% reduction in death, 40% reduction in new coronary disease and 60% reduction of new cancers (ref). It “cures” diabetes in 75-95% of people with type 2 diabetes (6-8). It is the only long term therapy proven to induce long term weight reduction with robust data supporting positive health outcomes.

Bariatric surgery is available only to those with access to health care through the private sector, with the exception of specific circumstances negotiated by doctors with their hospital administrations. Specific examples include the Bariatric Obesity Study at St Vincent’s Hospital Sydney (which I will discuss below). A further example is that at Royal Adelaide Hospital where 5 patients per year may receive a sleeve gastrectomy for severe obesity. This objective was obtained after significant negotiation where the case was argued that there are no restrictions placed on patients undergoing gastric surgery for reflux (which is most commonly caused by obesity), but that a similar operation could not be offered for treatment of the cause of the reflux.

The Bariatric Obesity Study at St Vincent’s Hospital Sydney: a model for bariatric services in a tertiary or quaternary referral hospital setting.

As an endocrinologist whose research interest is founded in the causes of diabetes and its prevention, it was clear that bariatric surgery produced superior outcomes to other treatments available for obesity and type 2 diabetes. To study the mechanisms as to how surgically-induced weightloss reverses diabetes, I established the Bariatric Obesity Study. Grant funding to run this study was obtained from the St Vincent’s Clinic Foundation in 2007 (\$100,000), which permitted employment of fractional staff. I myself oversee every aspect of this study and provide all the counselling and treatment, since this is integral to the

success of the surgery and funds were limited. Gastric banding has been performed through the St Vincent's Hospital, after (extremely limiting) criteria were set by our administration. The Bands were donated by one of the manufacturers. Thus far, 14 patients have been treated. We have achieved this without any additional cost to the hospital and have proof that we have not extended surgery waiting list time.

Our results are of major clinical and scientific importance. Almost all the subjects had type 2 diabetes at baseline; by 3 months post-surgery the majority have either normalisation of glucose metabolism or downgrading of the disorder to impaired glucose tolerance. Most patients have been able to stop most of their medications, which in some cases extended to 10 different drugs.

We have taken detailed scientific measures. Arterial stiffness (which predicts premature cardiac death) is reduced. Markers of inflammation reduce, including some novel pro-inflammatory markers expressed on circulating white cells which promote the first stages of atherosclerosis. Our results will be considered breakthroughs in understanding why reducing weight in obese individuals with diabetes can cure this condition and provide opportunities for future treatments. These data from the Bariatric Obesity Study have been accepted for presentation at the upcoming Endocrine Society (US) annual meeting, to be held in June and the European Association for the Study of Diabetes in September.

The model of care we have established at St Vincent's Hospital revolves around a multidisciplinary approach involving expert medical, surgical, nutritional, physical and psychological advice, tailor made to each individual patient. Each individual's needs are sufficiently different to warrant this approach. We are also in the unique position of close interdisciplinary ties to other units within the hospital, such as cardiology, gastroenterology, rehabilitation medicine, with strong networks with the general practitioners who provide primary care.

To effectively treat the morbidly obese and reduce their burden of disease, bariatric surgery must become available in the public hospital system. An expert multidisciplinary team experienced in the treatment of obesity is mandatory; proof of ability to perform research highly desirable, since any model must be validated for efficacy and cost-effectiveness.

Overseas model of success include the Karolinska Institute in Sweden, which has published the seminal studies evaluating bariatric surgery (6, 7).

The Australian Centre for Metabolic Health: an expert multidisciplinary clinic for treatment of obesity and metabolic diseases in a Medicare supported environment.

The Australian Centre for Metabolic Health was established in 2007 to respond to the specific needs of my patients. I run a private practice, in addition to my fractional senior staff specialist position in Endocrinology and research activities at the Garvan Institute of Medical Research. Like many private practices in endocrinology, one is overwhelmed by the number of diabetic patients, newly diagnosed, maintenance visits, in addition to deteriorations that require immediate attention. I actively promote weight reduction in all my diabetic patients, however visits every 3-6 months are generally insufficient to maintain lifestyle change momentum. For those patients who can afford bariatric surgery, their increased requirements for supervision could not be met within the constraints of my consulting time. Dietetic services at St Vincent's were unable to provide dietetic counselling for the obese due to limitations on staff.

To provide the services my patients required, I established the Australian Centre for Metabolic Health, with the mission of providing expert multidisciplinary assistance to the obese, especially those with comorbidities such as diabetes, heart disease, arthritis and so on. The Centre operated through my rooms, when I am in the Hospital or at the Garvan. It has a team of expert general practitioners who have been trained "up to speed" by myself, in addition to services in nutritional counselling, psychology and exercise prescription. Services are subsidised by Medicare Item Numbers, private insurance rebates, and where appropriate Medicare subsidisation of through Mental Health Care Plans which now permit access to psychology services to all Australians.

We have weekly case conferences where every case is discussed in detail and progress noted. These meetings are essential to developing expertise and sharing my experience and knowledge. I am currently planning a course to teach health professionals how to effectively treat obesity; as I wrote the Obesity Component in the Curriculum of Training in Endocrinology for the Royal Australasian College of Physicians whilst I was the Chair of the Specialist Advisory Committee in Endocrinology, I am aptly capable of extending this to training others.

The Centre must meet its financial costs, as it operates in the private sector and receives no subsidies. The Centre demonstrates that an expert multidisciplinary clinic founded in the highest principles of best practice operate within the private setting. The success of this model could easily be extended into a public hospital setting, with the proviso that the team were experts in the treatment of obesity and other metabolic diseases.

Specific Recommendation:

1. Establishment of expert multidisciplinary clinics offering the broad range of interventions to treat obesity, extending from lifestyle advice, supervised very low calorie diets and where appropriate, offering bariatric surgery. Care within these clinics must be coordinated by individuals with a proven track record in the treatment of obesity and opportunities must be made by these clinics to disseminate knowledge both to the local community and other health professionals.

It may be appropriate to have one such clinic in each larger Area Health Service, taking referrals from within area.

Summary:

Obesity is our modern day Armageddon. Its impact on the health and welfare of the nation is already being felt, and unless action is taken now, this impact will rapidly escalate in the next 10 years. Preventive strategies are critical, as is making available to those affected the most effective and proven interventions. In the case of morbid obesity, this intervention is bariatric surgery within the setting of an expert multidisciplinary centre.

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Appendices:

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