

Elective Report

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1. How does the prevalence of major endocrine diseases differ between New Zealand and the UK?

One of the most common endocrine diseases, and one I was interested in comparing, is diabetes. A paper in the New Zealand Medical Journal estimates the prevalence of diabetes in New Zealand in 2008/9 as being 7%, with a prevalence of 25% for prediabetes. Prevalence was found to be higher in men, and those who were obese, with rates increasing with age. Undiagnosed diabetes was found to be highest in the Pacific population. The authors predicted that the rates of diabetes would continue to rise due to the high levels of prediabetes detected. This has considerable implications for the morbidity and mortality of the New Zealand population, with diabetes-related complications being the sixth most common cause of death in all New Zealanders in 2009, and the fourth most common in the Maori population. In 2012, there were 225,731 people in New Zealand with diabetes in total.

In the UK in 2011, 2.9 million people had diabetes. The average prevalence of diabetes in the UK is 4.45%, which is either diagnosed or undiagnosed disease. This is estimated to rise to 5 million people by 2025. This is divided into 90% having type 2 diabetes and 10% with type 1. The effects of diabetes are widespread in the UK, for example, it is the leading cause of blindness in the working population in the UK, with 4,200 who are blind because of diabetes, and this increases each year. It appears that diabetes is increasing in both nations. Currently, rates are not too dissimilar, meaning that the complications of diabetes will become an increasing problem for both countries.

Thyroid disease is another common endocrine problem; thyroid disorders affect 5% of women in New Zealand and 1% of men, with incidence increasing with age. One study found a prevalence of 3.1% for thyroid dysfunction in New Zealand, with 2.5% being overtly hypothyroid, and 0.2% being overtly hyperthyroid. Other conditions such as goitres, nodules, and thyroiditis accounted for the rest.

In the UK, the prevalence for hyperthyroidism and hypothyroidism is thought to be 1 - 2% each, with 0.8 per 1000 women and less than 0.1 per 1000 men being affected each year by hyperthyroidism. Generally speaking, thyroid disease is more common in women in both nations, but this fact is well known. It is hard to find figures that are directly comparable for the two nations, but similar figures have surfaced during my research. I think the prevalence of these conditions are similar between the countries. From this very preliminary search, it appears that the prevalence of endocrine disease may not be very different between the countries.

2. Compare and contrast healthcare provision in New Zealand and the UK.

The National Health System (NHS), developed in 1948, provides the majority of healthcare provision in England. It provides free care at the point of use for all permanent UK residents, which is paid for through general taxation. The private sector also provides healthcare, but only 8% use these services.

Care can be divided into primary care and secondary care. Primary care refers to the care given by the healthcare provider, which is the initial consultation and point of contact for patients, and also includes coordinating other services that the patient might need. This is typically done by the general practitioner, but there are lots of other professionals involved including nurse practitioners and healthcare assistants. Secondary care refers to the care given by medical specialists, and they

are generally not the first point of contact for patients. This is generally considered the care given in hospitals, although some secondary care providers work in other institutions, such as psychiatrists and physiotherapists.

Trusts are the bodies charged with providing the healthcare. Commissioning trusts examine the needs of the local population and negotiate with providers to give the appropriate care to that population. These providers may be NHS bodies, or they may be private entities. These trusts are involved in decisions of what the capital is spent on in their region. Provider trusts are the NHS bodies providing the healthcare services, for example hospital and ambulance services.

The public healthcare system in New Zealand is not completely free like it is in the UK, but it is designed to be as affordable and low cost as possible with government subsidies. It is also divided into primary and secondary care. Patients have to pay a fee to access primary care, but secondary care is free and specialist care is subsidised by the government. Ambulances are free in some areas and part charged other places. This applies for New Zealand residents and citizens.

Most of the everyday business of the New Zealand health system is carried out by the District Health Boards (DHBs). They also control the majority of the funding. These districts plan, manage and provide the purchased services for their district to ensure that services are efficient and effective. The structure of New Zealand health provision is shown in figure 1.

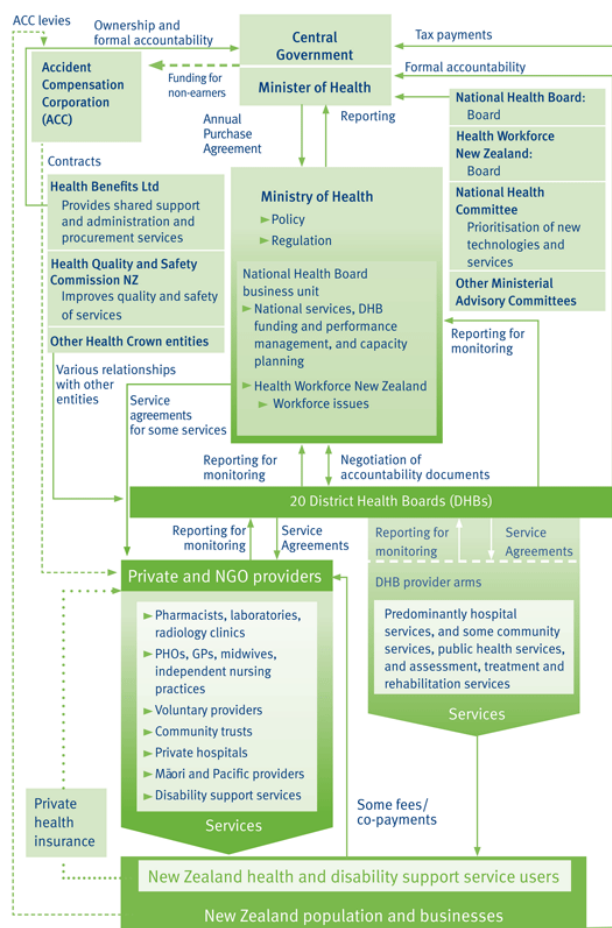


Figure 1: Healthcare provision in New Zealand (Ministry of Health, 'Overview of the Health System').

Another aspect of New Zealand healthcare is the government agency Pharmac, which works on behalf of DHBs to decide which medicines and related products will be subsidised by the government. Pharmac was originally created in 1993 in order to get the best health outcomes for the money that the government spends, and in the years 2000-2013, Pharmac saved \$5 billion. The combined pharmaceutical budget is set by the minister of health, the DHBs hold the funding,

and Pharmac helps to manage these resources, primarily deciding which medications to fund, negotiating price, setting subsidy levels and conditions, as well as ensuring that spending stays within the budget. This system helps make medications available, and ensure they are used appropriately, making the most of the money given for this purpose.

I don't think there is a particular UK equivalent to Pharmac; the UK Medicines Information service is an NHS pharmacy based service which uses evidence based information to advise on the safe, efficient, and effective use of medications. The main functions are to manage medicines within NHS organisations and to support the pharmaceutical care of individual patients, so has the same main aims as Pharmac, although does not appear to be involved in any funding decisions.

3. What is the prevalence of obesity and smoking in New Zealand and compare to the UK? Are these risk factors for Type 2 diabetes as important in New Zealand?

The reason that I included this objective is because New Zealand has the perception of being a 'healthy' and 'fit' nation, so I contemplated whether the effect of obesity would be less, more or the same as the UK. What I did not initially account for was the indigenous Maori population; obesity is seen a lot more in this population anecdotally, hence obesity in New Zealand seems to be a tale of two halves.

A study by the University of Auckland and the Ministry of Health showed that 3,200 deaths in New Zealand can be attributed to obesity, and most of these from type 2 diabetes, ischaemic heart disease and stroke, with the prevalence of obesity in New Zealand doubling over the past 25 years. From the document, 'Tracking the Obesity Epidemic', in 1977 the prevalence of obesity was 9% in men and 11% in women; this increased to 20% in men and 22% in women in 2003. This change is more marked in the middle aged. It appears that over the years, there has been little change in the prevalence of those who are overweight (42% of men and 26% of women), with most of the changes being in the higher end of the BMI spectrum in those who are obese, which is thought to be as a result of the 'obesogenic' environment. This data also shows that men are more likely to be overweight, whereas women are more likely to be obese. Over the same time period, these changes are also reflected in the Maori population. It has been suggested that more recently the rate of increase in obesity is slowing, indicating that there may be promise for reducing levels of obesity and halting the epidemic.

Although there were smaller numbers of Maori included in the previous mentioned document, it shows that the 'obesity epidemic' was more advanced in this population compared to the total population. 31% of men and 29% of women were overweight with 19% of men and 20% of women being obese. The rates of obesity in Maori men and women both increased to 27% in this time period. The rates of those who are overweight also increased to 37% in men and 31% in women. A substantial slowing of increase has occurred in the Maori population of late.

Looking more recently, the New Zealand Health Survey from 2012/2013 suggests that there has been an increase in adult obesity. 31% of adults are obese (increased from 29% last year). This means that 1.5 million New Zealanders are currently obese, out of a total population of 4.4 million. The report also suggests that obesity is more prevalent in socioeconomically deprived areas. The Maori population have demonstrated higher rates of obesity at 68%.

The Health and Social Care Information centre in the UK have shown an increase in obesity rates in the UK over the past 8 years, with rates in 2011 showing that 24% of men and 26% of women are obese (increased from 13% and 16% respectively in 1993).

Comparing the UK to New Zealand, both nations appear to have had an increase in obesity over the years, with the New Zealand figures being marginally higher. This suggests that obesity may actually be more of a problem there than in the UK, although increasing rates are worrying wherever they occur.

With regards to smoking, New Zealand have showed a decline in daily smoking rates, decreasing from 18.3% in 2006/7, to 16.4% 2011/12, to 15.5% in 2012/13. However, smoking rates have still remained high in the Maori population, with 36% of Maori adults smoking daily. Deprived areas also show higher smoking rates (28%) compared to less deprived areas (9%).

Figures from 2014 in the UK show that approximately a sixth of the population smoke; 22% of men and 19% of women. In 1974, half the population smoked. Smoking in men is highest in the 25-34 age bracket, whereas in women it is the 20-24 age group. Rates are also higher in poorer people of the population.

Both nations have shown a decrease in smoking rates when compared to the past; rates are now similar between them, however the increased number of Maori smoking may complicate disease risks or prevalence in the total population.

I believe that obesity and smoking are just as important in New Zealand as they are in the UK; obesity is increasing in both countries, and although smoking is decreasing in both countries, rates are comparable. The Maori population may complicate the total New Zealand population figures, as obesity is suggested to be higher, and they continue to exhibit high smoking rates.

4. Reflect on the possibility of a career in endocrinology.

Thinking about my time with the Endocrinology department, it has definitely made me think about investigating this further as a career. I had enjoyed my placement in endocrinology in my third year of university, so it was certainly an area I wanted to experience again to learn more about. Joining the team at Christchurch Hospital has been a fantastic opportunity to find out more.

I really enjoyed learning more about this topic and felt like I got an insight into the broad range of topics that would be included in a job in endocrinology; common problems such as diabetes and thyroid, but also other problems such as the large number of pituitary diseases, transgender patients and antenatal care. One of the things I like about the subject is the logical nature of the feedback loops and working out where the problem is, although this is sometimes more difficult than it appears!

This is still an option for my career and I will endeavour to get more experience in the subject. I have a foundation post in diabetes and endocrinology so hopefully this will aid my decision and further my learning.

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