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Cancer Control Research: Trends, Inequalities and Interventions

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Today's Research: Tomorrow's Health

Tony is an epidemiologist and public health medicine specialist at the University of Otago, Wellington. He has received numerous Health Research Council of New Zealand grants, including two programme grants. His research has pioneered the linkage of national censuses with mortality and cancer data, in collaboration with the Ministry of Health and Statistics New Zealand.

Tony's research interests include inequalities in health and mortality, tobacco smoking, healthy eating, and public health and cancer control interventions. Cutting across all his research is a strong focus on epidemiological and quantitative research methodologies. Tony has published over 150 peer reviewed journal articles, including with international collaborators from Harvard, the World Health Organization, and the International Epidemiology Association.

Since 2010, Tony directs the HRC-funded Burden of Disease Epidemiology, Equity and Cost Effectiveness Programme. This ambitious programme aims to build infrastructure and capacity to rapidly assess the health impact and cost effectiveness of a range of preventative and cancer control interventions - and examine their equity impacts.

For more information go to:

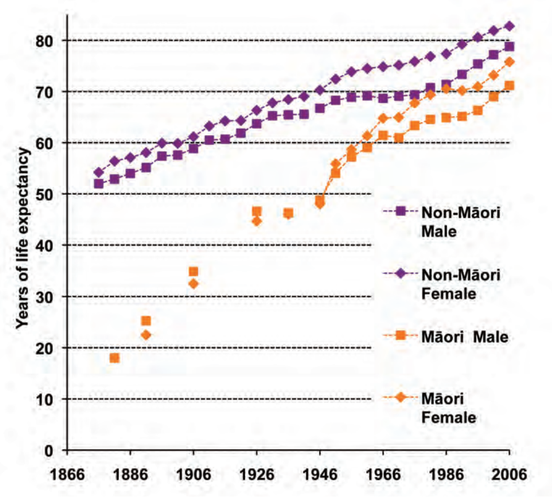
www.uow.otago.ac.nz/BODE3-info.html

Much of my research works through three sets of questions.

Step 1: What are the trends in mortality, cancer and inequalities?

There have been fantastic improvements in life expectancy in the last century (Figure 1), but there are also marked inequalities with Māori having lower life expectancy. Much of this improvement has been due to 80% reductions in premature cardiovascular disease death rates since the 1970s. This means that cancer is now a more common cause of premature death. Moreover, as our knowledge of what causes cancer (e.g. smoking) and what cures cancer (e.g. improved surgery) has improved over time, inequalities in death rates from cancer have opened up (Figure 2).

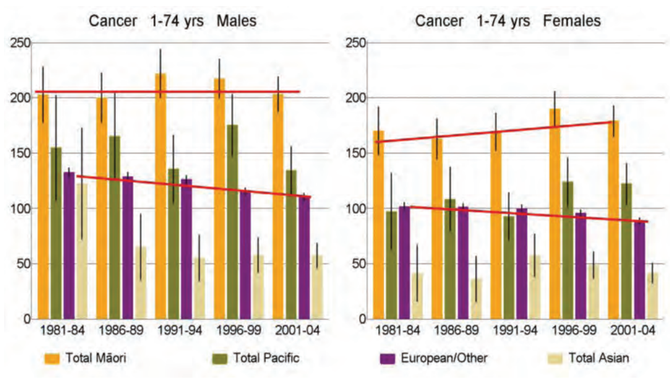
Figure 1: Trends in life expectancy



Step 2: What are the causes of these trends and inequalities?

One of our research projects has been a close examination of why Māori have 33% higher death rates from colon cancer once diagnosed. Three overall conclusions are possible. First, comorbidities (e.g. if you also have heart disease and diabetes) that are more likely among Māori contribute, and so does access to and through treatment services. Second, within the cancer treatment pathway small differences between Māori and non-Māori at lots of points cumulate to be a big difference (Figure 3). And third, these types of processes are common across different cancers and amenable to intervention.

Figure 2: Trends in cancer mortality rates (per 100,000)



Sources: Blakely T, Tobias M, Atkinson J. Inequalities in mortality during and after restructuring of the New Zealand economy. BMJ 2008;336:371-75. Blakely T, Tobias M, Atkinson J, et al. Tracking Disparity. Wellington: Ministry of Health, 2007.

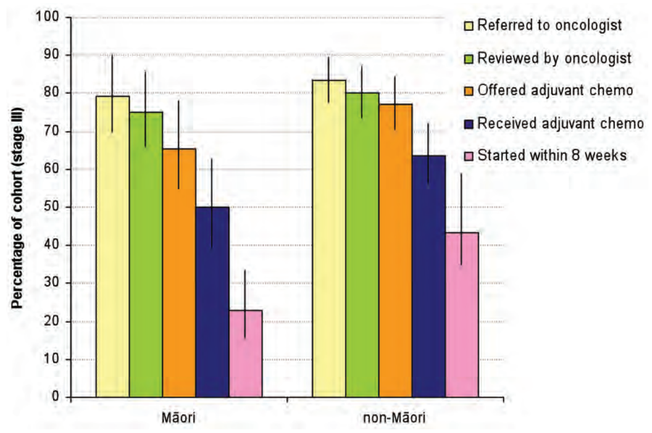
Step 3: What cost effective interventions should we put in place to improve cancer outcomes and reduce inequalities?

I am now leading a new HRC-funded research programme that models the costs and benefits of cancer control interventions. We are uniquely positioned in New Zealand to undertake this innovative research for many reasons, but perhaps most importantly our rich health datasets including the Cancer Registry, Mortality, Pharmaceutical and Lab, Hospitalisation, Outpatient and Census datasets – to name a few.

This programme builds on past research to allow us to model health impacts, and costs, by ethnic and socioeconomic group – not just the average citizen. Figure 4 shows how it all comes together, to calculate two outputs for any intervention: what the health gains will be; and how much it will cost (including 'knock on' costs in the health system). We then calculate the cost-effectiveness to provide information for policy makers on where to spend our tax-payers' dollars to get the biggest bang for our buck, *and* reductions in health inequalities.

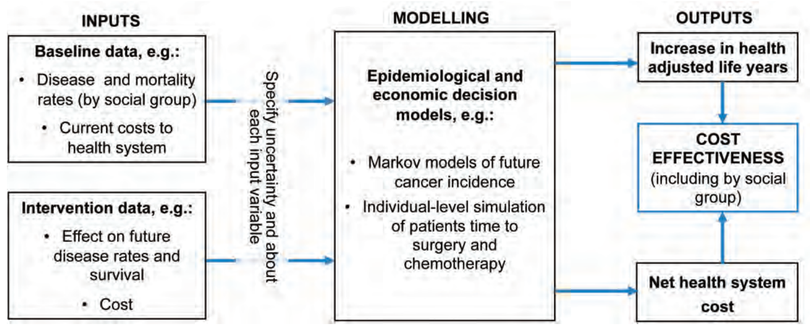
One intervention we are modelling is care coordinators (sometimes called 'patient navigators') for stage III colon cancer. This is important in light of the Government's just announced $33 million for cancer care coordination in the 2012 Budget; our research will help identify where it is best to allocate that resource.

Figure 3: Inequalities in colon cancer survival between Māori and non-Māori arise due to lots of small differences cumulating



Sources: Hill S, Sarfati D, Blakely T, et al. Ethnicity and management of colon cancer in New Zealand. *Cancer* 2010;116(13):3205-14. Hill S, Sarfati D, Blakely T, et al. Survival disparities in Indigenous and non-Indigenous New Zealanders with colon cancer. *J Epidemiol Comm Health* 2010;64(2):117-23.

Figure 4: Modelling what interventions are cost effective and pro-equity



Burden of Disease Epidemiology, Equity and Cost Effectiveness Programme (BODE3; 2010-15)

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