

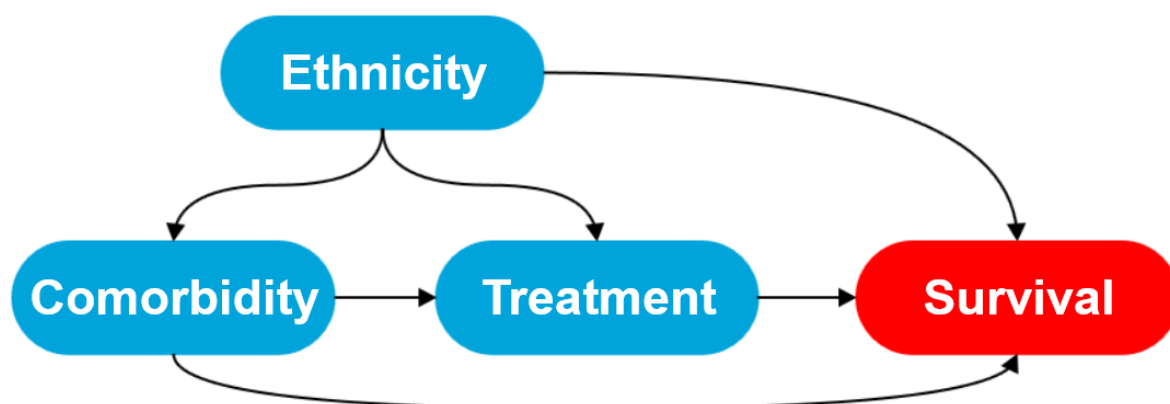
Cancer, Comorbidity and Care:

Key findings from the C3 (Quantitative) Study

As people age, their chances of being diagnosed with a serious chronic illness such as heart disease or diabetes increase – so does the probability that they will be diagnosed with cancer.

Because of this, people diagnosed with cancer may also be living with one or more other chronic conditions, or **comorbidities**. Comorbidity may interfere with the usual care a cancer patient might expect to receive, and may also reduce their chance of surviving their cancer.

Research in New Zealand has shown that Māori patients with cancer have poorer cancer survival than non-Māori patients **even if the extent of the disease is about the same**.¹ Māori suffer higher rates of many cancer types, and are also known to have higher rates of many chronic diseases including heart, respiratory and kidney diseases, and diabetes.



The Effect of Comorbidity on Care and Cancer Survival Inequalities Study – known as the **C3 (Quantitative) study** – is one of two **Cancer, Care and Comorbidity (C3) studies**. This study aimed to investigate the impact of comorbidity and ethnicity on cancer care and outcomes in New Zealand. To do this, we identified a sample of 14,096 patients who had been diagnosed with one of nine cancers (**bladder, breast, colon, kidney, liver, ovarian, rectal, stomach or uterine**).

We used information from 1) the New Zealand Cancer Registry, 2) the administrative hospital discharge database (NMDS), 3) databases held by the main cancer treatment centres in New Zealand, and 4) the mortality database. For a **subset** of patients with rectal, stomach and liver cancers we also carried out a manual hospital notes review. From these sources, we collected information about **the cancer** (such as its extent at diagnosis), **the patient** (such as their age, sex, ethnicity and whether or not they had comorbidities), **their cancer treatment** (including surgical, chemotherapy and radiotherapy) and **their outcomes**.

Footnote 1: Hill S, Sarfati D, Robson B, Blakely T. Indigenous inequalities in cancer – what role for health care? *Australian and NZ Journal of Surgery* 2013; 83: 36-41

Key findings:

- Māori patients tended to be **younger** than non-Māori patients; they were also considerably more likely to live in **more deprived areas and outside main urban areas** than non-Māori for most cancers.
- Extent of disease (or stage) at diagnosis differed significantly between Māori and non-Māori patients for **breast and colon cancers**, with Māori patients tending to have more advanced disease at diagnosis. For the other cancers, there were **no significant differences** between Māori and non-Māori patients in terms of extent of disease at diagnosis.
- **Comorbidity is common among cancer patients**, with prevalence varying between cancer sites. By far the most common condition identified was hypertension, with 8-21% of patients being recorded as having this condition across cancer sites. Cardiac conditions were also common (cardiac arrhythmias 4-14%; congestive heart failure 2-8%; angina 2-6%; and other cardiac conditions 2-10%); as was diabetes with (2-14%) and without (3-11%) complications.
- Māori patients tended to have **higher levels of comorbidity** than non-Māori patients.
- Māori patients had **poorer cancer survival** for breast, colon, kidney and ovarian cancers compared with non-Māori patients even after adjusting for differences in age and sex. Differences in stage at diagnosis accounted for most of the survival difference for breast and colon cancers.
- Māori kidney cancer patients were **52% more likely to die** of their cancer (HR: 1.52, 95% CI 1.01-2.29), and Māori ovarian cancer patients were **twice as likely to die** of their cancer (HR:2.08, 95% CI 1.38-3.14) than non-Māori patients – even after adjusting for age, sex and stage.
- The differences in survival for bladder or uterine cancers between Māori and non-Māori patients were small and not statistically significant.
- For the three notes review cancers, **cancer survival tended to be poorer** among Māori than non-Māori liver and stomach cancer patients after adjusting for age, sex and stage, but differences were of marginal statistical significance (liver: HR 1.36; 95% CI 0.96-1.92; stomach: HR 1.27, 95% CI 0.97-1.66). There was little difference in cancer specific survival between Māori and non-Māori patients with rectal cancer.
- **Those with comorbidity tended to have poorer cancer survival** than those without, regardless of cancer site.
- The **extent to which comorbidity explained differences in survival** between Māori and non-Māori patients varied across cancer sites. Comorbidity tended to explain more of the all-cause survival disparity than the cancer-specific disparity.
- Despite considerable efforts to augment routinely collected treatment data, the **quality of these data remained poor**. Because of this, results relating to treatment using the routine data were unreliable. The NZ Health Sector needs to improve the quality of routinely collected treatment data.
- Treatment data for notes review cancers were more robust. For these cancers, **those with comorbidity tended to be less likely to receive treatment** for their cancer than those without comorbidity.
- There was no consistent relationship between receipt of treatment and ethnicity.

For further information and documentation, please see our website (<http://www.otago.ac.nz/wellington/research/cancercontrol/>), or contact diana.sarfati@otago.ac.nz / jason.gurney@otago.ac.nz.