Ethnic disparities in colon cancer survival in New Zealand

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- Cancer Society of New Zealand
Colorectal cancer mortality rates by ethnicity

Study Questions:

- Verify Māori / non-Māori survival disparity (for colon ca)
- What factors contribute to this survival disparity?
  - Tumour characteristics
  - Patient comorbidity
  - Health services
Retrospective cohort:
301 Māori, 328 non-Māori patients
diagnosed 1996-2003
Cancer-specific survival

![Graph showing cancer-specific survival over time with two lines representing Non-Maori and Maori groups, with a p-value of 0.026.](image)
Reasons for poorer survival in Māori?

- More aggressive / advanced tumours
- Greater comorbidity
- Poorer health care
  - Differences in treatment
  - Differences in markers of health care access / quality
Tumour characteristics: grade of tumour

![Graph showing percentage of cohort by tumour grade for Māori and non-Māori populations. The graph includes categories for well differentiated, moderately differentiated, and poorly differentiated tumours.]
Tumour characteristics: stage at diagnosis*

*Age- and sex-standardised prevalence
Reasons for poorer survival in Māori?

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- Greater comorbidity
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  - Differences in treatment
  - Differences in markers of health care access / quality
Patient comorbidity*

*Age- and sex-standardised prevalence
Effect of comorbidity on survival

Adjusted hazard ratios for cancer specific and all-cause survival among 589 colon cancer patients by specified comorbidity

Adjusted for age, sex, ethnicity, smoking, year of diagnosis, stage, grade, site of cancer
Effect on treatment choice

- Of 190 patients in our cohort with Stage III disease, 68% were offered chemotherapy.
- Older patients and those with higher comorbidity were considerably less likely to be offered chemotherapy.
  - 84% with Charlson comorbidity score=0 cf 19% with Charlson comorbidity score of 3+ were offered chemotherapy
  - 80% of 55-64 yr cf 37% of 75yr + were offered chemotherapy
- Among those with highest comorbidity there was around a 60% reduction in excess risk of death if offered chemotherapy.
Reasons for poorer survival in Māori?

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- Greater comorbidity
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  - Differences in treatment
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Treatment

Surgery*

*Age- and sex-standardised prevalence
Treatment: number of lymph nodes removed during surgery

Percentage of cohort

Number of lymph nodes

0-11 12-29 30+

Māori non-Māori
Post-operative mortality

Adjusted for patient and clinical factors:

All surgery:

RR = 3.17
(1.51-6.63)

Elective surgery:

RR = 5.15
(1.37-19.28)
Chemotherapy (stage III)*

- Referred to oncologist
- Reviewed by oncologist
- Offered adjuvant chemo
- Received adjuvant chemo
- Started within 8 weeks

*Age- and sex-standardised prevalence
Reasons for poorer survival in Māori?

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Māori/non-Māori hazard ratio (RR): step-wise adjustment for explanatory variables

<table>
<thead>
<tr>
<th>Adjusted for:</th>
<th>HR</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unadjusted</td>
<td>1.33</td>
<td>(1.03 - 1.71)</td>
</tr>
<tr>
<td>i) Demographics</td>
<td>1.30</td>
<td>(0.99 - 1.71)</td>
</tr>
<tr>
<td>ii) + Tumour characteristics</td>
<td>1.33</td>
<td>(0.99 - 1.79)</td>
</tr>
<tr>
<td>iii) + Patient comorbidity/smoking</td>
<td>1.20*</td>
<td>(0.89 - 1.63)</td>
</tr>
<tr>
<td>iv) + Treatment</td>
<td>1.17</td>
<td>(0.86 - 1.60)</td>
</tr>
<tr>
<td>v) + Health care access / quality</td>
<td>1.07*</td>
<td>(0.77 - 1.47)</td>
</tr>
</tbody>
</table>

*Significant change from previous HR (Hausman test)†

Conclusions

- Māori patients have significantly poorer survival from colon cancer compared with non-Māori patients (HR 1.33)
- Greater comorbidity levels and differences in health care access are both important mediators of worse survival in Māori (each accounts for ~1/3 of the total disparity)
What does this mean?

- Māori patients have poorer access to quality health care compared with non-Māori

↓

- Māori patients have lower cancer survival compared with non-Māori
Where to from here?

- **System factors**
  - Resourcing and location of cancer services
  - Focus of cancer services (structure, organisation delivery of services reflect Pakeha world view)
  - Composition of cancer service workforce

- **Regional factors**
  - Improve access to specialists in rural areas
  - Increase support for patients and whānau travelling to cancer services
  - Specialist support for local clinicians
  - Coordination of case management through cancer care pathway

- **Clinical factors**
  - Optimise treatment of those with comorbidity
  - Evaluation of patient management against clinical guidelines/ audit in peer review context
  - Training in ‘cultural safety’