Cancer Screening among Indigenous peoples

Prof Diana Sarfati
Session outline

- How can cancer screening make inequities worse?
  - Prof Diana Sarfati
- A framework for considering health equity for Māori in cancer screening
  - Dr Melissa McLeod
- Improving bowel cancer screening for Indigenous Australians.
  - Prof Gail Garvey
- Challenges and solutions for cervical screening in Samoa
  - Dr Malama Tafuna’i
Indigenous peoples

• more than 370 million indigenous people in 70 countries worldwide.
• These are hugely diverse populations
• Indigenous peoples are the first peoples of a country or region with distinct traditions, and social, cultural, economic and/or political characteristics.
• In many countries, Indigenous peoples face disadvantage and have worse health than non-Indigenous people
How can screening affect inequities?

- Choice of priorities
- Measuring inequity and impact on access
- Model of delivery (e.g. location of services, nature of health promotion material, type of test)
  - Impacts on unequal participation
- Access to and through diagnosis and treatment services
How can screening affect inequities?

• Choice of priorities
  • Measuring inequity and impact on access
  • Model of delivery (e.g. location of services, nature of health promotion material, type of test)
    – Impacts on unequal participation
  • Access to and through diagnosis and treatment services
Which screening programmes would you implement first?

Cancer mortality by site (male) per 100,000 age standardised

Prostate
Stomach
Lung
Colorectal
How can screening affect inequities?

- Choice of priorities
- Measuring inequity and impact on access
- Model of delivery (e.g. location of services, nature of health promotion material, type of test)
  - Impacts on unequal participation
- Access to and through diagnosis and treatment services
Cancer incidence rates of American Indians before and after linkage (1988-93, per 100,000)

Cancer incidence rates of American Indians before and after linkage (1988-93, per 100,000)

Parkin et al Am J Public Health, 1999
How can screening affect inequities?

- Choice of priorities
- Measuring inequity and impact on access

- Model of delivery (e.g. location of services, nature of health promotion material, type of test)
  - Impacts on unequal participation

- Access to and through diagnosis and treatment services
Cervical screening coverage (%) by ethnicity, women aged 25-64 yrs (screened in last 3 years)
How can screening affect inequities?

- Choice of priorities
- Measuring inequity and impact on access
- Model of delivery (e.g. location of services, nature of health promotion material, type of test)
  - Impacts on unequal participation
- Access to and through diagnosis and treatment services
Percentage difference in cancer mortality between Māori and non-Māori, 1991-2004

POOLED ESTIMATE

Non-Māori have poorer survival

-40% -30% -20% -10% 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

General principles

• Programmes should be designed with reducing or eliminating inequity as a principle goal

• All components of the screening pathway should be considered regarding implications for equity
  – from governance down to operational aspects
  – Including monitoring
Cancer Care at a Crossroads Conference

31 January - 1 February 2019
Te Papa, Wellington, New Zealand

Bringing together the brightest minds and most influential personalities from across the cancer control continuum to address New Zealand's cancer care challenges

Read more about the outstanding line-up of international and national speakers at: otago.ac.nz/cancer-care
Session outline

• How can screening make inequities worse?
  – Prof Diana Sarfati
• A framework for considering health equity for Māori in cancer screening
  – Dr Melissa McLeod
• Improving bowel cancer screening for Indigenous Australians.
  – Prof Gail Garvey
• Challenges and solutions for cervical screening in Samoa
  – Dr Malama Tafuna’i
CRC screening: will it be equitable for Māori?

Dr Melissa McLeod (MBChB, MPH, NZCPHM)
Senior Research Fellow
University of Otago, Wellington NZ
Overview

PhD on modelling equity


BODE$^3$ programme funded by HRC

Māori PhD scholarship from University of Otago
What is equity?

Key questions:

1. What is the likely impact of the CRC programme on inequalities in health for Māori compared to non-Māori?
2. How can we push the model (the screening programme) to achieve ‘equitable’ outcomes and processes for Māori?
3. How does CRC screening compare to other cancer interventions?
## What is equity?

<table>
<thead>
<tr>
<th>Health equity as an outcome</th>
<th>Equitable processes required to achieve health equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equality of health between Māori and non-Māori in New Zealand.</td>
<td>Fair processes and non-discrimination in the opportunity for access and utilisation of healthcare given health need, and high quality of care for all New Zealanders.</td>
</tr>
<tr>
<td></td>
<td>The achievement of health equity for Māori depends upon addressing broader social conditions (including racism).</td>
</tr>
</tbody>
</table>
Equity framework

- Non-discrimination in cost-effectiveness assessments (e.g. standardising life expectancy) (see McLeod et al Population Health Metrics 2016)
- Using modelling to explore equity-relevant scenarios (e.g equal access, equal treatment, equal outcome)
- Giving greater value to health gains for those with the least health (e.g equity weights)
- Directly measuring the impact of interventions on inequalities in health
CRC screening background

- NZ **national rollout** of CRC screening programme biennial FOBT for men and women aged 60-74 years
- Explicit commitment to have an ‘equity focus’

- NZ CRC pilot programme from 2010
  - Biennial FOBT for men and women aged 50-74 years
  - Lower coverage for Māori (45%) vs non-Māori 58%
- Māori have lower incidence of CRC than non-Maori but worse survival
CRC screening model

Total population aged 30+ years

Screened
age 50-74 years

- Death from CRC
- Death from another cause

Unscreened

- Death from CRC
- Death from another cause
Key questions

1. What is the likely impact of the CRC screening programme on inequalities in health for Māori compared to non-Māori?
2. How can we push the model to achieve outcome and process equity for Māori?
3. How does CRC screening compare to other cancer interventions?
Impact on inequalities for Māori?

1. Lower health gains

<table>
<thead>
<tr>
<th>Age std (30-74yr total population) QALYs gained per capita</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Māori</td>
<td>0.047</td>
</tr>
<tr>
<td>Māori</td>
<td>0.027</td>
</tr>
</tbody>
</table>

Due to lower background life expectancy,
Lower CRC incidence,
And lower expected screening coverage (based on pilot round 1)
2. Quality-adjusted life-expectancy
Increased inequalities in QALE

- QALE increases more for non-Māori than for Māori with CRC screening.

- Non-Māori gained an additional 7.2 (-3.9, 17.8 in women aged 30-34) to 25.6 (12.5, 40.3 in men aged 60-64) healthy days over Māori.

- CRC screening is likely to increase absolute and relative inequalities in QALE.
Key questions

1. What is the likely impact of the CRC screening programme on inequalities in health for Māori compared to non-Māori?

2. How can we push the model to achieve outcome and process equity for Māori?

3. How does CRC screening compare to other cancer interventions?
<table>
<thead>
<tr>
<th></th>
<th>Never screened</th>
<th>Screened per round</th>
<th>Per capita QALY gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Māori</td>
<td>0.3160</td>
<td>0.5830</td>
<td>0.047</td>
</tr>
<tr>
<td>Māori</td>
<td>0.3898</td>
<td>0.4540</td>
<td>0.027</td>
</tr>
<tr>
<td>Māori (10%)</td>
<td>0.3574</td>
<td>0.4994</td>
<td>0.03</td>
</tr>
<tr>
<td>Māori (20%)</td>
<td>0.3250</td>
<td>0.5448</td>
<td>0.033</td>
</tr>
<tr>
<td>Māori (30%)</td>
<td>0.2926</td>
<td>0.5902</td>
<td>0.036</td>
</tr>
<tr>
<td>Māori (40%)</td>
<td>0.2602</td>
<td>0.6356</td>
<td>0.040</td>
</tr>
<tr>
<td>Māori (50%)</td>
<td>0.2278</td>
<td>0.6810</td>
<td>0.043</td>
</tr>
<tr>
<td>Māori (60%)</td>
<td>0.1954</td>
<td>0.7264</td>
<td>0.048</td>
</tr>
</tbody>
</table>
## Screening age range

<table>
<thead>
<tr>
<th></th>
<th>Māori</th>
<th>Non-Māori</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 year</td>
<td>Age range 60-64</td>
<td>Healthy days 3.21</td>
</tr>
<tr>
<td>10 year</td>
<td>60-69</td>
<td>+1.60</td>
</tr>
<tr>
<td>15 year</td>
<td>55-69</td>
<td>+2.15</td>
</tr>
<tr>
<td>20 year</td>
<td>50-69</td>
<td>+1.12</td>
</tr>
<tr>
<td>25 year</td>
<td>50-74</td>
<td>+1.64</td>
</tr>
<tr>
<td>30 year</td>
<td>45-74</td>
<td>+0.85</td>
</tr>
<tr>
<td>35 year</td>
<td>45-79</td>
<td>+0.95</td>
</tr>
</tbody>
</table>
Health officials under pressure for earlier bowel cancer screening for Māori

6:49 am on 2 October 2018

Karen Brown, Health Correspondent

The Ministry of Health is being urged to review a bowel cancer screening decision, to reduce health inequity.
Key questions

1. What is the likely impact of the CRC screening programme on inequalities in health for Māori compared to non-Māori?
2. How can we push the model to achieve outcome and process equity for Māori?
3. How does CRC screening compare to other cancer interventions?
<table>
<thead>
<tr>
<th>Framework output</th>
<th>CRC screening</th>
<th>Trastuzumab (females only)</th>
<th>Tobacco taxation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total QALYs gained by Māori</strong></td>
<td>6,578 (4,760 to 8,730)</td>
<td>128 (125 to 130) in women only</td>
<td>12,400 (6,600 to 21,100)</td>
</tr>
<tr>
<td><strong>Population per eligible person QALYs gained</strong></td>
<td>0.026 (0.020 to 0.034) per capita for those aged over 30 years</td>
<td>1.38 (1.35 to 1.40) per case in females aged over 30 years</td>
<td>0.018 (0.01 to 0.031) per capita for those aged over 35 years</td>
</tr>
<tr>
<td><strong>Per capita gain in healthy days over non-Māori</strong></td>
<td>14.39 days gained by <strong>non-Māori</strong> over Māori females over non-Māori females</td>
<td>0.113 days gained by Māori females over non-Māori females</td>
<td>13.69 days gained by Māori over non-Māori</td>
</tr>
<tr>
<td><strong>Cost effectiveness (ICER)</strong></td>
<td>$10,500 ($4500 to $17900)</td>
<td>$59,300 ($39,200 to $83,700)</td>
<td>Dominates/Cost saving</td>
</tr>
</tbody>
</table>
Defining equity is critical
Modelling is a useful tool in assisting with the equity agenda
Achieving ‘health equity’ from the CRC screening programme in NZ will be challenging.
Considering the equity impacts at the time of intervention selection is important.
Co-authors of the paper:

- Dr Giorgi Kvizhinadze
- Dr Matt Boyd
- Assoc Prof Jan Barendregt
- Prof Diana Sarfati
- Prof Nick Wilson
- Prof Tony Blakely

Melissa.Mcleod@otago.ac.nz
Process equity

![Bar chart showing QALY gains from CRC screening with increased health gain due to equal screening participation, equal CRC survival by stage, and equal participation and survival.]

- 29% increase due to equal screening participation
- 1% increase due to equal CRC survival by stage
- 31% increase due to equal participation and survival

Increased health gain due to...

Māori Default analysis
Age-specific incidence rates of colorectal cancer in 2014 by 5-year age and ethnic group (Ministry of Health, 2015)
### Non-discrimination

<table>
<thead>
<tr>
<th>Population group</th>
<th>QALYs gained (% change from default)</th>
<th>ICER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>104,000</td>
<td>$2,530</td>
</tr>
<tr>
<td>Non-Māori</td>
<td>96,600</td>
<td>$2,090</td>
</tr>
<tr>
<td>Māori</td>
<td>7,060</td>
<td>$8,650</td>
</tr>
<tr>
<td>1. Māori background mortality and trend replaced with non-Māori values</td>
<td>Māori</td>
<td>9,140 (29%)</td>
</tr>
<tr>
<td>2. Māori background morbidity replaced with non-Māori values</td>
<td>Māori</td>
<td>7,320 (3%)</td>
</tr>
<tr>
<td>3. (1 and 2)</td>
<td>Māori</td>
<td>9,490 (34%)</td>
</tr>
<tr>
<td>4. Māori CRC incidence trends replaced with non-Māori values</td>
<td>Māori</td>
<td>5,920 (-17%)</td>
</tr>
<tr>
<td>5. Māori CRC incidence replaced with non-Māori values</td>
<td>Māori</td>
<td>8,730 (23%)</td>
</tr>
<tr>
<td>6. (4 and 5)</td>
<td>Māori</td>
<td>7,200 (-2%)</td>
</tr>
</tbody>
</table>
Challenges and Solutions for cervical cancer screening in Samoa

Dr Malama Tafuna’I
Senior Clinical Lecturer
National University of Samoa
World Cancer Congress Kuala Lumpur 2018

Samoa
• Burden - High
• No National Cervical Cancer Prevention Program
• Opportunistic**
• Limited Infrastructure to develop Cxca Prevention program
  • Human resources (specialised)
  • ?Primary Health Care infrastructure
• Physical resources
• Finances
• Socio-cultural issues
• Similar to other PI countries
Acceptability of Self-Sampling HPV Tests Amongst Health workers and women from both urban and rural settings in Samoa

- Interviewed health workers x 6
- Focus group discussions x2 – Urban and Rural
- Explored what they knew about cervical cancer and its prevention
- I explained cervical cancer and its prevention - HPV

Themes that came out of study:

- Education
- significance of cultural beliefs and values,
- the value of benefits,
- the concerns with literacy and health literacy,
- the need for options,
- the different challenges that they face and
- empowerment.
Challenges:

- Education (literacy/Health literacy)
  - Awareness
  - Knowledge
    - Health Workers
    - People (Understanding BENEFIT)
- Barriers/Issues
  - Infrastructure
  - Commitment - Govt
  - Funding – competing concerns
  - Lack of Resources – Human/physical
  - Access
  - Finances
  - Logistics
  - Lack of understanding of the western health model
- Sociocultural
  - Fatalistic belief – Ma’I Palagi
  - cultural modesty
  - Ambiguity of language making understanding and comprehension difficult
  - Traditional beliefs around origin of sickness / poor understanding of “preventative” medicine
  - Distrust of the western health model*
Solutions:

- Political Commitment
  - Funding
  - Development of services
- Identify the Champion Services/People
  - Primary care vs Public Health vs Hospital specialty or Collaborative model but who drives this
- Programme Development
  - **Stakeholder engagement Inclusive of communities/Women** – Empowered and want to be part of the discussion about their health. Prepared to discuss openly
  - Development of programme and services / resources
    - Culturally appropriate
      - Integrates cultural beliefs and values and Benefits address the things that are important to us as communities and as a people
      - Appropriate terminologies in local language targeting communities and women (*language/translation*)
      - Delivered by own people
      - Readily accessible in communities but to have options “One size DOES not fit all”
    - Choose the “right test”
      - HPV – Self sampling vaginal swab test vs Pap smear vs VIA
Estimated age-standardized incidence rates (World) in 2018, all cancers, both sexes, all ages

ASR (World) per 100 000
- ≥ 253.9
- 183.8-253.9
- 138.3-183.8
- 106.5-138.3
- < 106.5
- Not applicable
- No data

All rights reserved. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization / International Agency for Research on Cancer concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Data source: GLOBOCAN 2018
Graph production: IARC