Caring for cancer patients with comorbidity

Chair: Associate Professor Diana Sarfati
Why do we care?

Comorbidity:
• is common among cancer patients.
• has a major impact on patients.
• has a major impact on health services.
• is an important driver of inequities.
• the effects of comorbidities are modifiable.
Aims of symposium:

• 1) To describe how cancer and other chronic conditions interact, and how comorbidity can be measured in cancer patient populations.

• 2) To provide up to date Australian and New Zealand evidence relating to the prevalence and impact of comorbidity among cancer patients.

• 3) To describe research relating to the impact of comorbidity on patients, and on clinical decision-making.

• 4) To describe an approach to reduce adverse outcomes among cancer patients due to drug regimes that do not take account of comorbidity and other patient factors.

• 5) To describe an intervention designed to assist in the management of cancer patients with complex health needs and enhance self-management.
How does comorbidity interact with cancer?

Associate Professor Diana Sarfati
How does cancer interact with comorbidity

• Why do cancer and other chronic conditions coexist?
• How does comorbidity impact on:
  – Diagnosis of cancer?
  – Treatment for cancer?
  – Outcomes from cancer?
  – Inequalities in outcomes from cancer?
How does cancer interact with comorbidity

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Why do cancer and other chronic conditions co-exist?

- Cancer and other conditions share common risk factors
- Comorbidity may cause cancer
- Comorbidity may protect from cancer
- There may be common genetic or physiological pathways between cancer and comorbidity.
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Common risk factors...
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A multiple choice question....

There is evidence from high quality studies that:

a. Patients with comorbidity tend to have their cancer diagnosed *earlier* than those without.

b. Patients with comorbidity tend to have their cancer diagnosed *later* than those without.

c. Patients with comorbidity tend to have their cancer diagnosed at around the *same time* as those without.

d. All of the above.
A multiple choice question....

There is evidence from high quality studies that:

a. Patients with comorbidity tend to have their cancer diagnosed **earlier** than those without.

b. Patients with comorbidity tend to have their cancer diagnosed **later** than those without.

c. Patients with comorbidity tend to have their cancer diagnosed at around the **same time** as those without.

d. **All of the above.**
Impact on diagnosis

- Competing demands hypothesis
- Surveillance hypothesis
- Death from other causes hypothesis

Fleming 2006
How does cancer interact with comorbidity

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Another multichoice question....

There is evidence from high quality studies that:

a. Patients with comorbidity tend have to have more treatment for their cancer than those without.

b. Patients with comorbidity tend have to have less treatment for their cancer than those without.

c. Patients with comorbidity tend have to have similar treatment for their cancer than those without.

d. All of the above.
There is evidence from high quality studies that:

a. Patients with comorbidity tend to have more treatment for their cancer than those without.

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d. All of the above.
Impact on treatment

• Why?
  – Concern by clinician that treatment may be less effective among those with comorbidity
  – Concern by clinician or patient that comorbidity will increase toxicity of treatment.
  – Life expectancy is insufficient to justify treatment
  – Patient more likely to decline treatment
Impact on treatment

– 190 patients with stage III colon cancer
– Those with comorbidity were considerably less likely to receive chemotherapy
  • 84% without comorbidity (Charlson comorbidity score=0) cf
  • 19% with comorbidity (Charlson comorbidity score of 3+)
– Among those with highest comorbidity there was around a 60% reduction in excess risk of death if offered chemotherapy.

How does cancer interact with comorbidity

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Comorbidity has been found to have an adverse impact on survival in every cancer site investigated.
Impact on survival:

• Why does comorbidity affect survival
  – Direct effect
  – Indirect effect because of reduced cancer treatment
  – Effect of comorbidity on cancer progression
    • Recurrence more likely in those with diabetes even in context of RCT (Meyerhardt et al 2003)
Impact on other outcomes

- Quality of life
- Costs of care
How does cancer interact with comorbidity

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Percentage difference in cancer mortality between Māori compared to non-Māori, patients diagnosed 1991-2004

Non-Māori have poorer survival

Māori have poorer survival

- Oesophagus
- Testis
- Cervix
- Uterus
- Kidney
- Melanoma
- Prostate
- Head, neck and larynx
- Breast (female)
- Colorectum
- POOLED ESTIMATE

Non-Hodgkin’s lymphoma
- Liver
- Lung
- Stomach
- Leukaemia
- Hodgkin’s lymphoma
- Pancreas
- Ovary
- Bladder
- Brain
- Thyroid gland

Ethnic inequities in colon cancer survival

Comorbidity and treatment/health service factors each accounted for a third of the survival difference.

Two C3 projects:

Effect of comorbidity on care and cancer survival inequalities  
(C3 Quant)

Cancer care journeys and clinical decision-making   
(C3 Qual)
The ‘C3’ Studies: Cancer, Comorbidity and Care

MoH National Health Board

- Cancer Registry (n=14,096)
- Hospitalisation and other Databases
- Mortality Database

Notes Review (Upper GI & Rectal, n=718)

Study Cohort
- Ethnicity

Demographics
- Tumour Comorbidity

Health Care

Survival
Measuring Comorbidity

1. No gold standard exists.

2. Measure depends on:
   1. Specificity vs generalisability requirements
   2. Data availability
   3. Resource availability
   4. Study questions

3. Recommendations:
   1. Administrative data (large populations)
   2. Inclusive of conditions
   3. More than one data source
Two approaches to measuring comorbidity in cancer populations

Hospitalisation data for 5 years prior to diagnosis
- Identification of all important concurrent conditions that were likely to have an impact on function or length of life
- n=50 conditions
- C3 Index

Pharmaceutical data in year* prior to diagnosis
- Identification of all important concurrent conditions that were likely to have an impact on function or length of life
- n=19 conditions
- PBCI

*excl 3 months immediately prior

The C3 Index:

is a cancer-specific compilation of comorbid conditions, weighted according to their association with non-cancer death.


(font sizes = condition weights)
Selected findings from the C3 Study

Dr Jason Gurney
Cancer Registry (n=14,096)

Hospitalisation and other Databases

Mortality Database

Notes Review (Upper GI & Rectal, n=718)

Study Cohort Ethnicity

Demographics Tumour Comorbidity Health Care

Survival
Comorbidity is highly-prevalent among cancer patients...

...but prevalence varies by cancer type.
Māori cancer patients tend to have a greater comorbidity burden.
A high comorbidity burden increases likelihood of mortality...
Blood Disorders

(G Condition causes death, even after adjusting for covariates)

Adjusted* All-Cause Excess Mortality (%)

Diabetes (With Complications)

Congestive Heart Failure

Hypertension

*For age, sex, site, stage
Using the C3 Index, we aggregate patient comorbidity into one cancer-specific ‘score’...

...which is very useful when you want to present a lot of information at once.
Adjusted* All-Cause Excess Mortality (%)

*For age, sex, site, stage
Does **comorbidity** influence treatment receipt?
Summary

Comorbidity is **highly-prevalent** among cancer patients...

...but prevalence **varies** by cancer type.
Summary

A high comorbidity burden increases likelihood of mortality.

(...and reduces likelihood of treatment...)
The C3 Index is a valid, cancer-specific aggregate measure of comorbidity that uses routinely-collected hospitalisation data.
C3 Quant Investigators

Effect of comorbidity on cancer and cancer survival inequalities

- Diana Sarfati (PI)
- Jason Gurney
- Chris Cunningham
- James Stanley
- Lis Ellison-Loschmann
- Jonathan Koea
- Liz Dennett
- Andrew Simpson
- Tony Blakely
- Clare Salmond
- Virginia Signal
- Ruth Cunningham
- Esther Swart
- Josh Chamberlain
- Bee Lim
- Clare McSherry
- Jennifer Haubrock
- Ken Richardson
- Nasser Bagheri
Where to next?
Where to next?

• Comorbidity
  – Impacts treatment receipt and cancer outcomes
  – Ensuring adequate cancer treatment for those with comorbidity
  – Ensure adequate comorbidity treatment for those with cancer
  – Considering measuring/monitoring comorbidity