Long-term hospital use trajectories of people newly diagnosed with cancer: A retrospective population-level cohort study

Rebecca Mitchell[1], Geoff Delaney[2], Gaston Arnolda[1], Winston Liauw[3], Reidar Lystad[1], Jeffrey Braithwaite[1]

[1]Australian Institute of Health Innovation, Macquarie University, Australia
[2]Maridulu Budyari Gumal – Sydney Partnership for Health, Education, Research and Enterprise, University of NSW, Australia
[3]Cancer Care Centre, St George Hospital, Australia

Background

- Decline in overall cancer mortality rate (Santucci et al, 2020)
- High number of long-term cancer survivors
- Comorbid conditions, incl. psychological distress, associated with hospital use for people with cancer (Mausbach et al, 2020)
- Population-based studies with >12 month follow-up after cancer diagnosis (Shaw et al, 2018)
- Snapshot of healthcare utilisation & resource demand

Background & aim

- In Australia each year:
  - ~151,000 people newly diagnosed with cancer (AIHW, 2021)
  - ~1.3 million hospital admissions are cancer-related (6% all admissions) (AIHW, 2021)
- Aim: Identify characteristics of group-based trajectories of hospital service use in the 3 years after an individual was diagnosed with cancer; & determine factors predictive of group membership

Method

- Population-level retrospective cohort study in New South Wales, Australia
- People aged ≥30 years newly diagnosed cancer
- Diagnosis during 1 January 2018 to 31 December 2018
- Followed for 3 years: from 1 Jan 2018 to 31 December 2021
- Only included people alive 3 years after diagnosis date
- Chemotherapy & radiotherapy – outpatient data

Method: data sources

NSW Cancer Registry
(back to 1972)

Emergency Department visits

Hospital admissions

NSW outpatient visits

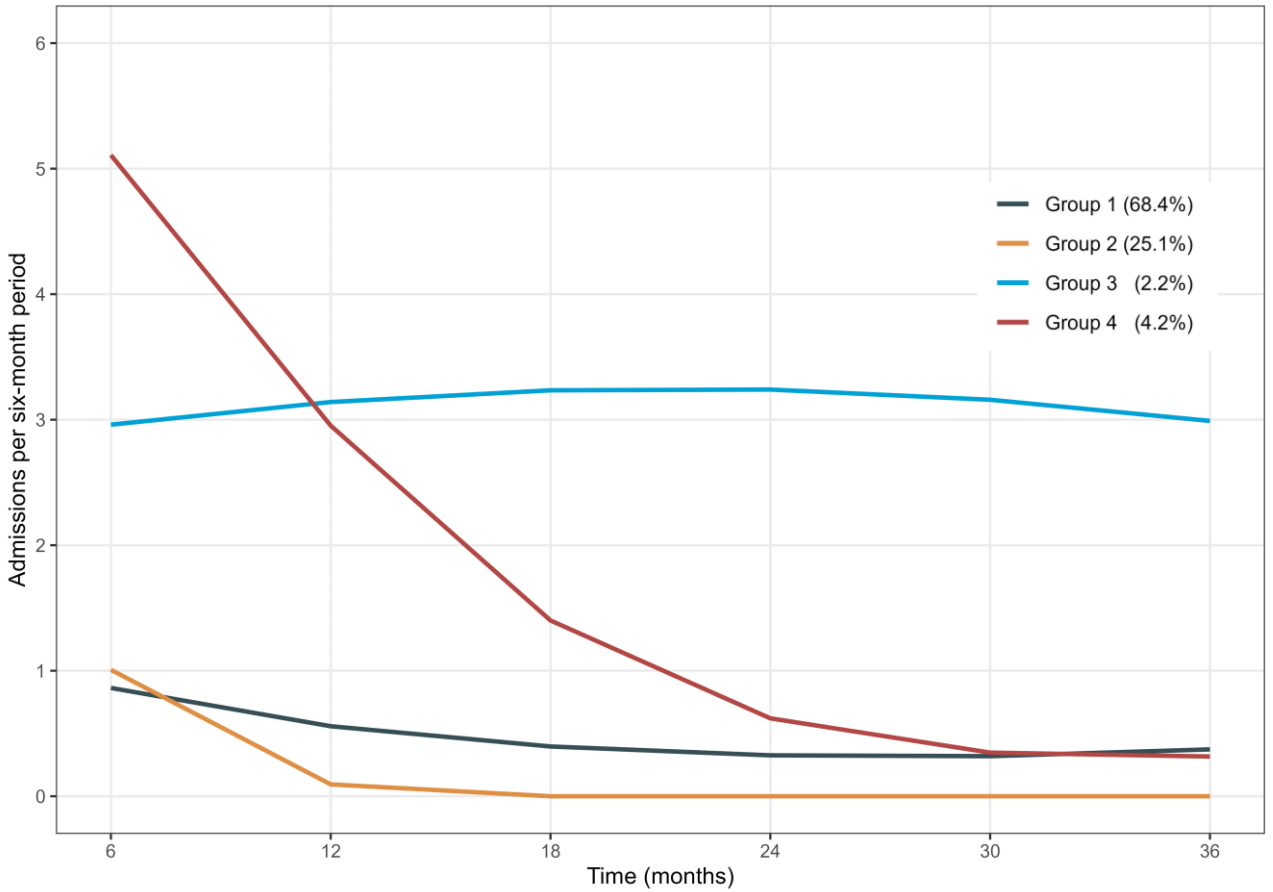
Mortality

Method: statistical analysis

- Group based trajectory modelling: examined course & frequency of hospital service use up to 3 years after a diagnosis of cancer in 2018
- Multinominal, multivariable logistic regression: examined predictors of hospital user group trajectories
- Covariates included: age at diagnosis, sex, cancer type, cancer spread, history of cancer, Charlson comorbidities (excl. cancer: 0, 1, ≥2), depression, anxiety, alcohol or tobacco use, urban/rural residence, socioeconomic status, chemotherapy or radiotherapy, public/private hospital at last admission

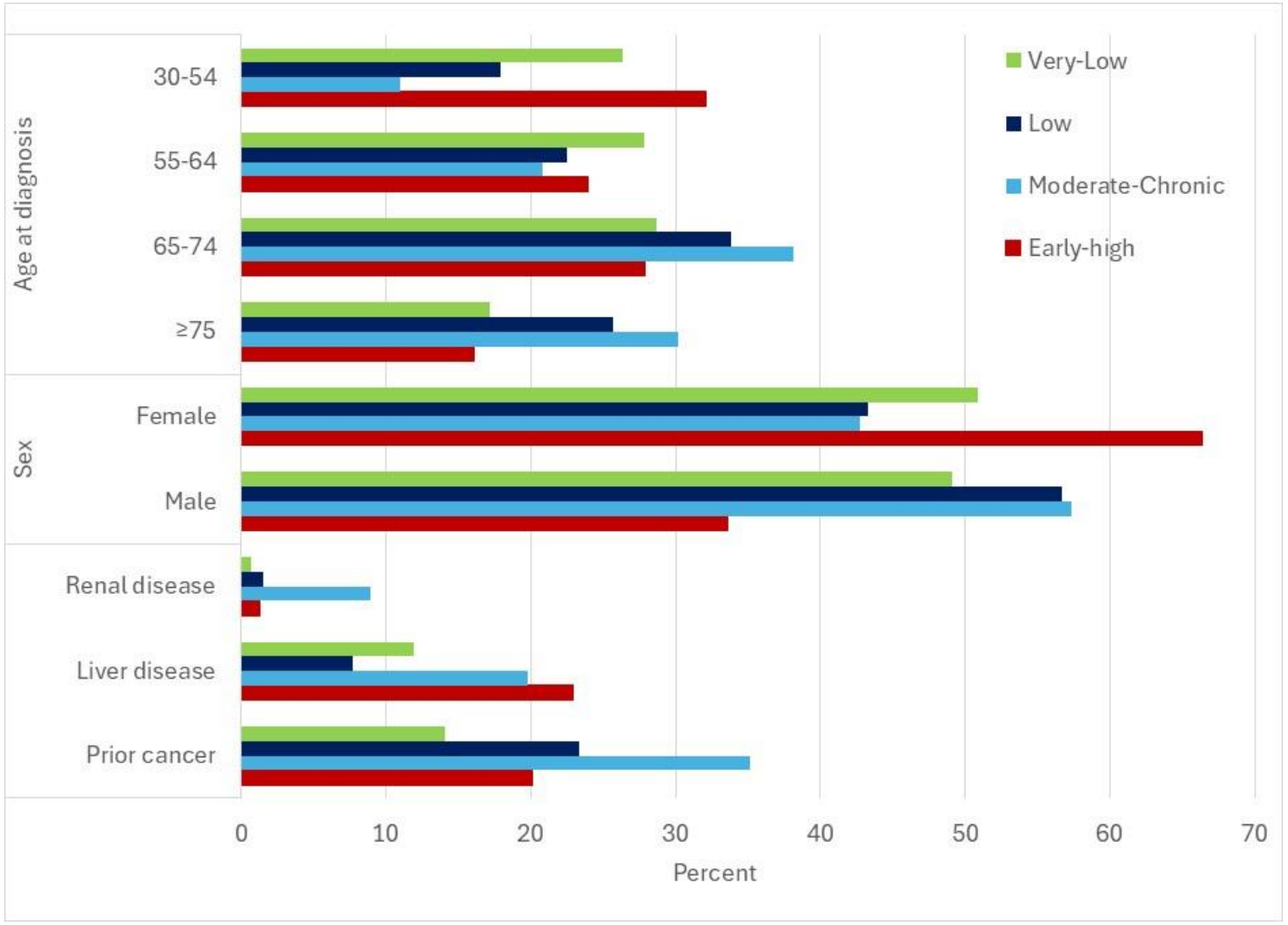
Results

- 44,577 new cancer diagnosis in 2018
- 29,086 (65.2%) hospitalised within 3 years of diagnosis
- 4 distinct trajectory groups
  - **Group 1**: Low (68.4%)
  - **Group 2**: Very low (25.1%)
  - **Group 3**: Moderate-Chronic (2.2%)
  - **Group 4**: Early-High (4.2%)



[1] Y-axis scale 1=1-2, 2=3-4, 3=5-6, 4=7-8, 5=9-10 or 6=≥11 hospitalisations.

Results: Characteristics of group-based trajectories of hospital admissions

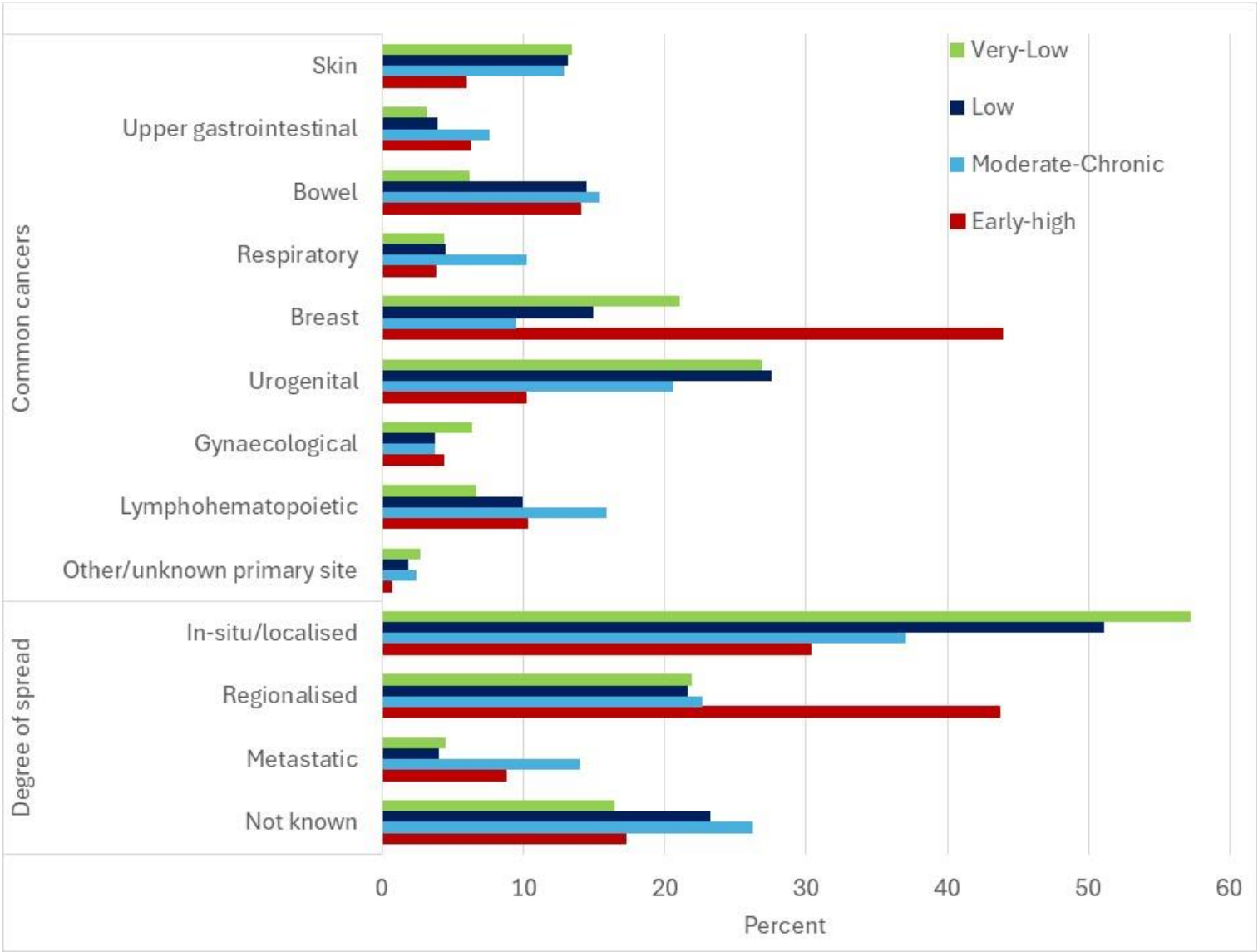


Multinominal multivariable results

Compared to Low users:

- *Moderate-Chronic* **older ages** at least 1.8 times higher likelihood compared to 30-54 years of admissions
- *Very-Low & Moderate-Chronic* with **liver disease** at least 1.5 times higher likelihood of admissions
- *Moderate-Chronic & Early-High* with **renal disease** at least 3 times higher likelihood of admissions

Results: Characteristics of group-based trajectories of hospital admissions



Multinominal multivariable results

Compared to Low users:

- *Very-Low & Early-High* **breast cancer** at least 1.6 times higher likelihood compared to skin cancer of admissions
- *Moderate-Chronic & Early-High* with **metastatic cancer** at least 1.6 times higher likelihood compared to in-situ/localised of admissions

Strengths & limitations

- Population-level study & information from multiple data sources
- Considered all cancer types
- Residents living near state borders may be treated in other states
- No information on other health service use e.g. primary care
- Mental disorder using hospital diagnoses – only represent the most serious cases

Conclusions & implications

- Establish characteristics & patterns of hospital service use
- Heterogenous use of hospital services
- Some commonalities across different types & stages of cancer
- Influenced by physical (e.g. pain, fever) or psychological (e.g. anxiety, depression) symptom management
- Cancer treatment & management plans – consider comorbidities
- Multi-disciplinary shared care co-ordination

https://shorturl.at/e9ap3

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- Further information: r.mitchell@mq.edu.au

@HealthDataProf