

**Title:** Specialist palliative care and health care costs at the end of life

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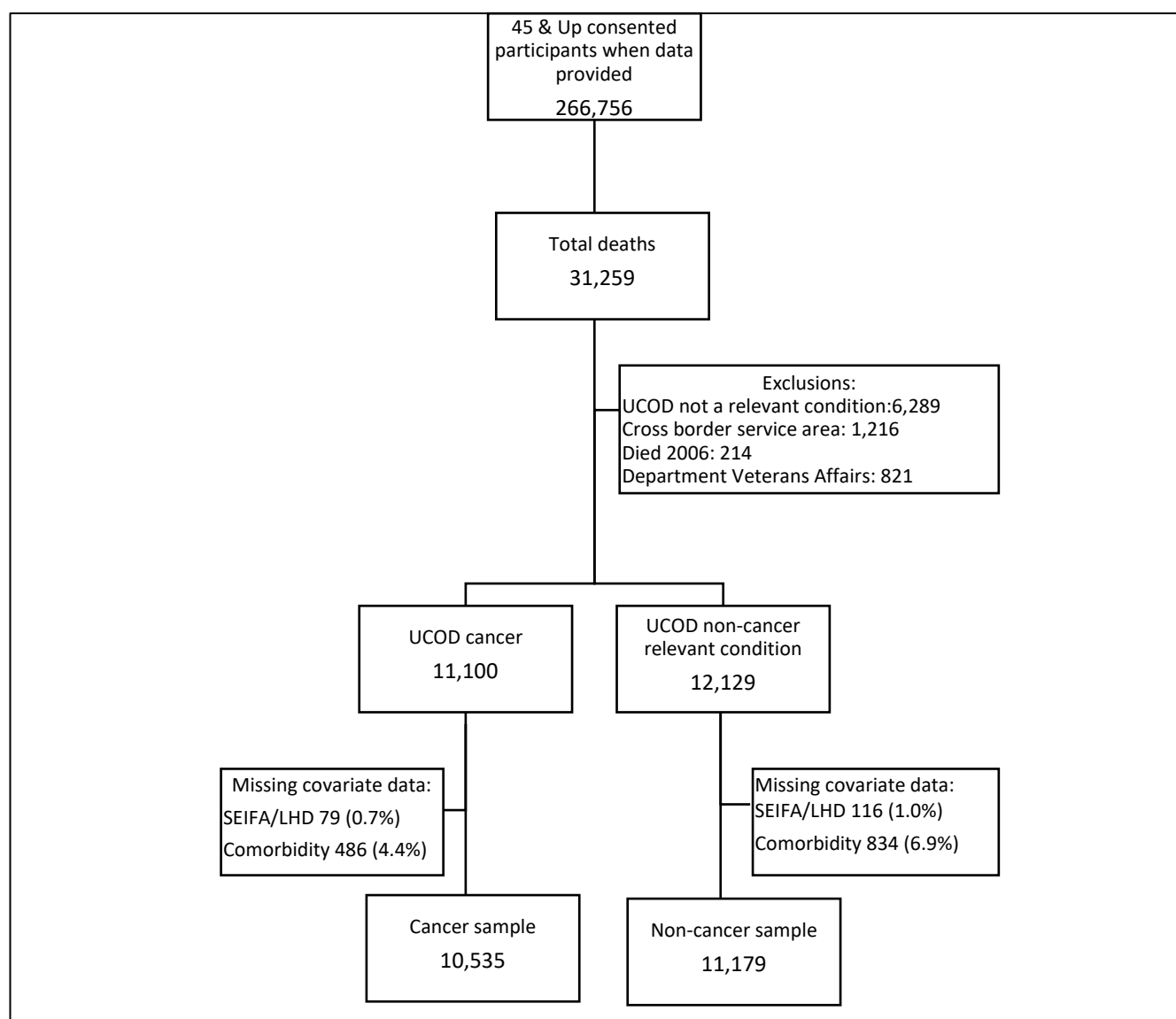
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**Conflict of interest**

All authors have no conflicts of interest to declare.

**Figure S1: Flowchart of participants included in the study**



Abbreviation: UCOD underlying cause of death.

### Missing covariates

There were two types of covariates with missing data:

- 1) Regional variables: Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socioeconomic Advantage (IRSA) and Local Health District (LHD) of residence had missing data for 79 participants in the cancer cohort and 116 in the non-cancer cohort. The geographical information provided to the 45 and Up Study was not always sufficient to allow for coding of the regional variables (particularly SEIFA). Further information is provided in the technical note on geocoded data available at <https://www.saxinstitute.org.au/solutions/45-and-up-study/use-the-45-and-up-study/data-and-technical-information/>
- 2) Comorbidity score in the penultimate year of life: The Rx Risk comorbidity score is calculated based on the use of medicines identified in the Pharmaceutical Benefits Scheme (PBS) data. There were no recorded PBS prescriptions filled in the penultimate year of life for 486 participants in the cancer cohort and 834 in the non-cancer cohort. This may be due to non-use or use of medicines which did not attract a government benefit.

## ICD10 codes for underlying\* causes of death used to define the study sample

Cancer: C00-C97, D45, D46, D47.1, D47.3, D47.5

COPD: J40-J44, J47

Dementia/Alzheimer's disease: F00-F03, G30

Heart failure: I50

Ischaemic heart disease: I20-I25

Stroke: I60-I64

Huntington disease: G10, F02.2

Motor neurone disease: G12.2

Multiple sclerosis: G35

Muscular dystrophy: G71.0

Parkinson disease: G20-G22

Renal failure: N17-N19

Liver failure: K70.4, K71.1, K72

\* Contributing cause of death was used for 6 participants with underlying cause of death HIV/AIDS

## Coding of covariates using 45 and Up survey items

Age at death was calculated from the *Age* variable at the Baseline survey.

Male indicator variable was coded 1 if the *Sex* variable was 1(Male) at the Baseline survey.

The following variables used data from the most recent survey prior to death (Baseline or Wave 2):

Self-rated health was coded 1 if the *Ratehealth* survey variable was 1, 2, or 3 (excellent, very good or good)

Residential aged care was coded 1 if the *Currenthousing* survey variable was 5 (Nursing home) or 6 (hostel for the aged) or if the APDC data included an inpatient episode indicating admitted from or discharged to aged care.

Household income >\$40,000 pa was coded 1 if the *Income* variable was 6, 7, or 8 at baseline or 6 to 13 at Wave 2. An indicator for missing income was included and coded 1 if income was not provided and 0 otherwise.

Private health insurance was coded 1 if the *insurprivateextras* was 1 or *insurprivatenoextras* was 1 and 0 otherwise. An additional variable was included to indicate those with missing income data.

Local Health District (LHD) of residence and decile of the Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socioeconomic Advantage (IRSA) estimated by the 45 and Up Study based on address at time of survey.

45 and Up Study questionnaires and data dictionaries available at <https://www.saxinstitute.org.au/our-work/45-up-study/questionnaires/>

## Administrative data sets

**The Medicare Benefits Schedule (MBS) data** includes information about services which qualify for a benefit from the Australian Government. The data collection includes information on all claims processed and covers most medical services provided by private providers in Australia including general practice and specialist visits, as well as diagnostic tests provided outside of public hospitals. It is available to all Australian residents who hold a Medicare card but may exclude a small number of services which did not attract a benefit. Further information is available at <https://www.aihw.gov.au/about-our-data/our-data-collections/medicare-benefits-schedule-mbs>. The 45 and Up Study receives regular data updates on claims made by participants. The data variables available can be found at: <https://www.saxinstitute.org.au/solutions/45-and-up-study/use-the-45-and-up-study/data-and-technical-information/>

**The Pharmaceutical Benefits Scheme (PBS) data** includes information on all prescription medicines dispensed which qualify for a benefit from the Australian Government and for which a claim has been processed. It now includes information provided by pharmacies on medicines dispensed where the price of the medicine was less than the patient co-payment and therefore did not attract a government benefit, although that was not the case during the years of the current study. However, given the age of the decedents in our study, the majority would have been eligible for the concessional co-payment which would always be less than the cost of the drug. It is available to all Australian residents who hold a Medicare card. The data will be comprehensive in identifying costs to government but will not include costs of medicines not listed on the PBS. Further information is available at <https://www.aihw.gov.au/about-our-data/our-data-collections/pharmaceutical-benefits-scheme>. The 45 and Up Study receives regular data updates on claims made by participants. The data variables available can be found at: <https://www.saxinstitute.org.au/solutions/45-and-up-study/use-the-45-and-up-study/data-and-technical-information/>

**The NSW Emergency Department Data Collection (EDDC)** includes information on all public hospital emergency department episodes in New South Wales (NSW) reported by participating hospitals. All but a small number of rural hospitals participate in this collection so the data captures the majority of episodes in NSW but may underreport some presentations at small rural hospitals. More details are available at <https://www.cherel.org.au/datasets>

**The NSW Admitted Patient Data Collection (APDC)** includes information on all inpatient episodes from all public and private hospitals in New South Wales (NSW). DRG codes were not available for private hospitals for the years 2015-16 and were assigned using variables in the dataset and Clarisoft coding software (<https://www.clarisoft.com.au/>). More information about the APDC is available at <https://www.cherel.org.au/datasets>

**The NSW Registry of Births Deaths and Marriages death data (RBDM)** includes information on all deaths recorded in New South Wales (NSW), including date and age of death but does not include cause of death.

**The NSW Cause of Death Unit Record File (COD-URF)** includes information on all deaths recorded in New South Wales (NSW), including coded cause of death using ICD-10 codes. The data derives from the Australian Coordinating Registry and Australian Bureau of Statistics and includes the underlying cause of death and up to 20 contributing causes. This dataset is updated less frequently than the other datasets and only included deaths to December 2016 at the time of data extraction. Further information on the mortality datasets is available at <https://www.cherel.org.au/datasets>

Table S1: Cancer cohort risk-adjusted regression models: total costs<sup>a</sup> over 1, 3, 6, 9 and 12 months before death (n=10,535)

|                                   | 30 days     |         | 90 days     |         | 180 days    |         | 270 days    |         | 365 days    |         |
|-----------------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                   | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      |
| First SPC to death:               |             |         |             |         |             |         |             |         |             |         |
| <=7 days                          | 822         | (665)   | 254         | (1,083) | -906        | (1,371) | -767        | (1,496) | -120        | (1,740) |
| >7 and <=30 days                  | -961*       | (455)   | 768         | (869)   | 3,263**     | (1,207) | 4,251**     | (1,404) | 6,051***    | (1,532) |
| >30 and <=180 days                | -2,395***   | (409)   | 3,079***    | (779)   | 8,435***    | (1,122) | 9,843***    | (1,245) | 11,351***   | (1,366) |
| >180 and <=365 days               | -2,810***   | (579)   | -2,845*     | (1,112) | -716        | (1,674) | 7,250***    | (2,165) | 15,590***   | (2,537) |
| Male                              | 110         | (336)   | -454        | (539)   | -1,083      | (705)   | -857        | (803)   | -508        | (879)   |
| Age                               | -95***      | (16)    | -249***     | (27)    | -400***     | (36)    | -478***     | (42)    | -534***     | (46)    |
| Hospital days lag year            | -7          | (8)     | 2           | (14)    | 28          | (20)    | 67**        | (22)    | 153***      | (28)    |
| Residential aged care             | -2,007***   | (311)   | 2,381***    | (654)   | 8,639***    | (985)   | 11,898***   | (1,158) | 14,270***   | (1,265) |
| Health good/v.good/excellent      | -14         | (321)   | 347         | (516)   | 336         | (677)   | -359        | (801)   | -632        | (882)   |
| Rx-Risk comorbidity lag year      | -131***     | (39)    | -228***     | (63)    | -223**      | (84)    | -167        | (97)    | 20          | (108)   |
| Radiotherapy final year           | -490        | (300)   | 555         | (492)   | 2,786***    | (651)   | 4,759***    | (746)   | 6,600***    | (811)   |
| Chemotherapy final year           | -180        | (365)   | 1,541**     | (577)   | 5,708***    | (752)   | 9,593***    | (864)   | 12,339***   | (945)   |
| Private health insurance          | 1,048**     | (338)   | 1,758***    | (516)   | 2,141**     | (666)   | 2,689***    | (773)   | 3,009***    | (840)   |
| Last inpatient episode acute care | 12,394***   | (341)   | 14,398***   | (578)   | 14,278***   | (764)   | 13,881***   | (883)   | 13,519***   | (969)   |
| Inpatient palliative care episode | 12,263***   | (287)   | 15,286***   | (536)   | 15,344***   | (741)   | 15,479***   | (866)   | 15,764***   | (960)   |
| Intensive care final year         | 9,268***    | (710)   | 17,027***   | (1,053) | 26,446***   | (1,354) | 36,018***   | (1,529) | 42,024***   | (1,662) |
| Household income missing          | 214         | (347)   | 612         | (567)   | -199        | (711)   | -254        | (827)   | -78         | (917)   |
| Household income>\$40,000pa       | -133        | (434)   | -461        | (677)   | 201         | (911)   | 74          | (1,049) | 930         | (1,151) |
| Underlying cause of death:        |             |         |             |         |             |         |             |         |             |         |
| Lung cancer                       | 797         | (725)   | 152         | (1,174) | -1,072      | (1,520) | -3,695*     | (1,825) | -5,765**    | (2,108) |
| Colorectal cancer                 | 1,667       | (857)   | 1,854       | (1,341) | 2,136       | (1,719) | 1,751       | (2,035) | 2,386       | (2,337) |
| Prostate cancer                   | 1,360       | (728)   | 2,450*      | (1,232) | 3,608*      | (1,629) | 3,491       | (1,969) | 3,388       | (2,257) |
| Breast cancer                     | -137        | (895)   | -3,015*     | (1,388) | -5,088**    | (1,812) | -7,717***   | (2,142) | -9,218***   | (2,437) |
| Pancreatic cancer                 | 1,529       | (825)   | 666         | (1,335) | 645         | (1,820) | -978        | (2,127) | -2,383      | (2,391) |
| Melanoma                          | 834         | (865)   | 2,483       | (1,558) | 3,981       | (2,152) | 3,115       | (2,555) | 2,418       | (2,878) |
| Haematological cancer             | 5,896***    | (868)   | 10,880***   | (1,403) | 15,783***   | (1,830) | 17,710***   | (2,165) | 19,363***   | (2,481) |
| Other cancer                      | 659         | (688)   | 1,179       | (1,137) | 1,715       | (1,488) | 1,056       | (1,797) | 512         | (2,085) |
| Constant                          | 10,937***   | (1,887) | 28,247***   | (3,390) | 45,350***   | (4,315) | 55,087***   | (4,974) | 59,408***   | (5,342) |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error. Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S2: Non-cancer cohort risk-adjusted regression models: total costs<sup>a</sup> over 1, 3, 6, 9 and 12 months before death (n=11,179)

|                                   | 30 days     |         | 90 days     |         | 180 days    |         | 270 days    |         | 365 days    |         |
|-----------------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                   | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      |
| First SPC to death:               |             |         |             |         |             |         |             |         |             |         |
| <=7 days                          | 2,354       | (1,222) | 4,229*      | (1,924) | 5,742*      | (2,494) | 7,545**     | (2,881) | 9,029**     | (3,067) |
| >7 and <=30 days                  | 685         | (1,043) | 2,653       | (1,901) | 4,285       | (2,953) | 3,582       | (3,173) | 5,824       | (3,819) |
| >30 and <=180 days                | -2,778**    | (1,016) | 4,407*      | (1,855) | 10,862***   | (2,834) | 13,740***   | (3,225) | 16,456***   | (4,000) |
| >180 and <=365 days               | -4,345***   | (1,163) | -6,223*     | (2,445) | -5,872      | (3,274) | 3,201       | (4,671) | 13,739*     | (6,635) |
| Male                              | 728**       | (266)   | 1,703***    | (404)   | 2,283***    | (541)   | 2,644***    | (617)   | 2,984***    | (689)   |
| Age                               | -49**       | (17)    | -85***      | (25)    | -168***     | (36)    | -222***     | (40)    | -255***     | (45)    |
| Hospital days lag year            | 13*         | (6)     | 50***       | (11)    | 95***       | (14)    | 138***      | (16)    | 205***      | (18)    |
| Residential aged care             | 187         | (243)   | 4,311***    | (425)   | 10,232***   | (683)   | 14,578***   | (793)   | 18,414***   | (894)   |
| Health good/v.good/excellent      | 25          | (275)   | 352         | (422)   | -422        | (571)   | -696        | (647)   | -1,086      | (722)   |
| Rx-Risk comorbidity lag year      | -48         | (32)    | -32         | (50)    | 58          | (63)    | 161*        | (71)    | 274***      | (79)    |
| Radiotherapy final year           | 747*        | (342)   | 2,286***    | (518)   | 4,066***    | (680)   | 5,380***    | (777)   | 6,487***    | (885)   |
| Chemotherapy final year           | 2,020       | (1,596) | 8,604*      | (3,940) | 15,705**    | (4,871) | 18,737***   | (5,107) | 23,651***   | (5,388) |
| Private health insurance          | 456         | (292)   | 813         | (453)   | 1,492*      | (585)   | 1,539*      | (662)   | 1,630*      | (738)   |
| Last inpatient episode acute care | 10,137***   | (290)   | 10,679***   | (477)   | 10,585***   | (641)   | 10,690***   | (726)   | 10,762***   | (808)   |
| Inpatient palliative care episode | 15,739***   | (642)   | 19,383***   | (1,002) | 21,835***   | (1,391) | 22,816***   | (1,504) | 23,120***   | (1,639) |
| Intensive care final year         | 14,333***   | (841)   | 22,149***   | (1,165) | 28,836***   | (1,507) | 34,898***   | (1,696) | 40,044***   | (1,864) |
| Household income missing          | -163        | (304)   | -332        | (440)   | -200        | (566)   | -568        | (647)   | -857        | (730)   |
| Household income>\$40,000pa       | -531        | (457)   | -620        | (734)   | -566        | (1,025) | 659         | (1,240) | 719         | (1,370) |
| Underlying cause of death:        |             |         |             |         |             |         |             |         |             |         |
| COPD                              | 1,955***    | (546)   | 4,631***    | (864)   | 7,757***    | (1,159) | 8,895***    | (1,336) | 10,869***   | (1,540) |
| Dementia/Alzheimer's disease      | 1,020*      | (408)   | 1,028       | (675)   | 277         | (892)   | 325         | (1,061) | -106        | (1,247) |
| Heart failure/IHD                 | 1,724***    | (404)   | 3,719***    | (655)   | 5,979***    | (881)   | 7,478***    | (1,047) | 8,527***    | (1,208) |
| Stroke                            | 2,014***    | (528)   | 2,761***    | (814)   | 4,364***    | (1,130) | 5,111***    | (1,285) | 4,978***    | (1,445) |
| Renal/liver failure               | 3,438***    | (686)   | 8,055***    | (1,141) | 11,248***   | (1,526) | 12,823***   | (1,748) | 15,095***   | (2,026) |
| Constant                          | 4,067       | (2,167) | 7,636*      | (3,111) | 14,935***   | (4,132) | 20,957***   | (4,774) | 26,105***   | (5,334) |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error; COPD Chronic Obstructive Pulmonary Disease; IHD Ischaemic Heart Disease.

Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S3: Sensitivity of non-cancer cohort cost analysis to comorbid cancer: total costs<sup>a</sup> over 1 and 12 months before death

|                                   | Excluded if cancer was a contributing cause of death<br>N=10,315 |         |             |         | Excluded if used cancer treatment<br>N=8,397 |         |             |         |
|-----------------------------------|------------------------------------------------------------------|---------|-------------|---------|----------------------------------------------|---------|-------------|---------|
|                                   | 30 days                                                          |         | 365 days    |         | 30 days                                      |         | 365 days    |         |
|                                   | Coefficient                                                      | SE      | Coefficient | SE      | Coefficient                                  | SE      | Coefficient | SE      |
| First SPC to death:               |                                                                  |         |             |         |                                              |         |             |         |
| <=7 days                          | 2,940*                                                           | (1,329) | 10,638**    | (3,255) | 2,922*                                       | (1,472) | 9,752**     | (3,417) |
| >7 and <=30 days                  | 561                                                              | (1,139) | 7,457       | (4,141) | -422                                         | (1,203) | 3,321       | (3,353) |
| >30 and <=180 days                | -2,604*                                                          | (1,150) | 14,993***   | (4,247) | -3,077*                                      | (1,408) | 14,442**    | (5,077) |
| >180 and <=365 days               | -5,012***                                                        | (1,461) | 19,869*     | (8,485) | -4,706**                                     | (1,484) | 17,698*     | (8,697) |
| Male                              | 680*                                                             | (280)   | 2,588***    | (718)   | 645*                                         | (305)   | 3,113***    | (758)   |
| Age                               | -45*                                                             | (18)    | -233***     | (46)    | -36*                                         | (18)    | -203***     | (49)    |
| Hospital days lag year            | 14*                                                              | (7)     | 206***      | (19)    | 9                                            | (8)     | 181***      | (21)    |
| Residential aged care             | 163                                                              | (254)   | 18,037***   | (903)   | 360                                          | (277)   | 17,296***   | (962)   |
| Health good/v.good/excellent      | -4                                                               | (292)   | -1,053      | (759)   | 259                                          | (306)   | -954        | (799)   |
| Rx-Risk comorbidity lag year      | -49                                                              | (34)    | 269**       | (83)    | -54                                          | (34)    | 265**       | (86)    |
| Radiotherapy final year           | 840*                                                             | (373)   | 6,733***    | (958)   |                                              |         |             |         |
| Chemotherapy final year           | 5,082                                                            | (2,682) | 30,569**    | (9,575) |                                              |         |             |         |
| Private health insurance          | 422                                                              | (311)   | 1,275       | (768)   | 675*                                         | (318)   | 1,374       | (798)   |
| Last inpatient episode acute care | 10,063***                                                        | (303)   | 10,451***   | (843)   | 10,012***                                    | (328)   | 10,692***   | (901)   |
| Inpatient palliative care episode | 15,859***                                                        | (683)   | 22,428***   | (1,627) | 15,609***                                    | (760)   | 22,748***   | (1,656) |
| Intensive care final year         | 14,748***                                                        | (893)   | 39,985***   | (1,924) | 14,660***                                    | (1,028) | 39,542***   | (2,243) |
| Household income missing          | -172                                                             | (318)   | -615        | (764)   | 90                                           | (330)   | -365        | (806)   |
| Household income>\$40,000pa       | -694                                                             | (482)   | 587         | (1,436) | -339                                         | (531)   | 1,793       | (1,621) |
| Underlying cause of death:        |                                                                  |         |             |         |                                              |         |             |         |
| COPD                              | 2,103***                                                         | (587)   | 11,652***   | (1,626) | 2,019***                                     | (572)   | 9,575***    | (1,686) |
| Dementia/Alzheimer's disease      | 1,126**                                                          | (427)   | 117         | (1,282) | 959*                                         | (432)   | -220        | (1,350) |
| Heart failure/IHD                 | 1,774***                                                         | (422)   | 8,747***    | (1,238) | 1,482***                                     | (419)   | 7,041***    | (1,331) |
| Stroke                            | 1,886***                                                         | (552)   | 4,894***    | (1,479) | 1,869**                                      | (575)   | 4,906**     | (1,639) |
| Renal/liver failure               | 3,534***                                                         | (720)   | 15,382***   | (2,091) | 4,219***                                     | (797)   | 14,659***   | (2,196) |
| Constant                          | 3,451                                                            | (2,280) | 23,780***   | (5,401) | 4,263                                        | (2,375) | 25,955***   | (5,816) |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error; COPD Chronic Obstructive Pulmonary Disease; IHD Ischaemic Heart Disease.

Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S4: Robustness of main results to the choice of covariates: cancer cohort

|                     | 30 days     |     |     | 90 days     |      |     | 180 days    |      |     | 270 days    |      |     | 365 days    |      |     |
|---------------------|-------------|-----|-----|-------------|------|-----|-------------|------|-----|-------------|------|-----|-------------|------|-----|
|                     | Coefficient | SE  |     | Coefficient | SE   |     | Coefficient | SE   |     | Coefficient | SE   |     | Coefficient | SE   |     |
| Baseline covariates |             |     |     |             |      |     |             |      |     |             |      |     |             |      |     |
| First SPC to death: |             |     |     |             |      |     |             |      |     |             |      |     |             |      |     |
| <=7 days            | 822         | 665 |     | 254         | 1083 |     | -906        | 1371 |     | -767        | 1496 |     | -120        | 1740 |     |
| >7 and <=30 days    | -961        | 455 | *   | 768         | 869  |     | 3263        | 1207 | **  | 4251        | 1404 | **  | 6051        | 1532 | *** |
| >30 and <=180 days  | -2395       | 409 | *** | 3079        | 779  | *** | 8435        | 1122 | *** | 9843        | 1245 | *** | 11351       | 1366 | *** |
| >180 and <=365 days | -2810       | 579 | *** | -2845       | 1112 | *   | -716        | 1674 |     | 7250        | 2165 | **  | 15590       | 2537 | *** |
| Double selection    |             |     |     |             |      |     |             |      |     |             |      |     |             |      |     |
| First SPC to death: |             |     |     |             |      |     |             |      |     |             |      |     |             |      |     |
| <=7 days            | 886         | 665 |     | 168         | 1077 |     | -1248       | 1364 |     | -1107       | 1484 |     | -645        | 1732 |     |
| >7 and <=30 days    | -785        | 452 |     | 1012        | 855  |     | 3485        | 1182 | **  | 4486        | 1373 | *** | 6376        | 1499 | *** |
| >30 and <=180 days  | -2190       | 401 | *** | 3482        | 764  | *** | 8954        | 1096 | *** | 10551       | 1216 | *** | 12153       | 1335 | *** |
| >180 and <=365 days | -2757       | 582 | *** | -2650       | 1104 | **  | -350        | 1667 |     | 7926        | 2128 | *** | 16240       | 2510 | *** |

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. SE standard error. Results for “Baseline covariates” reproduce those provided in Table S1. “Double selection” results are produced by allowing for variable selection after starting with a much larger set of candidate covariates. The baseline list of covariates is augmented by adding squared terms for the 3 continuous variables (age, Rx-Risk comorbidity score and hospital length of stay in penultimate year of life) then all two-way interactions with this extended list and the type of cancer are added to yield 449 candidate covariates. The Stata16 implementation of the double selection method is then used to produce the results.

Table S5: Robustness of main results to the choice of covariates: non-cancer cohort

|                            | 30 days     |      |     | 90 days     |      |    | 180 days    |      |     | 270 days    |      |     | 365 days    |      |     |
|----------------------------|-------------|------|-----|-------------|------|----|-------------|------|-----|-------------|------|-----|-------------|------|-----|
|                            | Coefficient | SE   |     | Coefficient | SE   |    | Coefficient | SE   |     | Coefficient | SE   |     | Coefficient | SE   |     |
| <b>Baseline covariates</b> |             |      |     |             |      |    |             |      |     |             |      |     |             |      |     |
| First SPC to death:        |             |      |     |             |      |    |             |      |     |             |      |     |             |      |     |
| <=7 days                   | 2354        | 1222 |     | 4229        | 1924 | *  | 5742        | 2494 | *   | 7545        | 2881 | **  | 9029        | 3067 | **  |
| >7 and <=30 days           | 685         | 1043 |     | 2653        | 1901 |    | 4285        | 2953 |     | 3582        | 3173 |     | 5824        | 3819 |     |
| >30 and <=180 days         | -2778       | 1016 | **  | 4407        | 1855 | *  | 10862       | 2834 | *** | 13740       | 3225 | *** | 16456       | 4000 | *** |
| >180 and <=365 days        | -4345       | 1163 | *** | -6223       | 2445 | *  | -5872       | 3274 |     | 3201        | 4671 |     | 13739       | 6635 | *   |
| <b>Double selection</b>    |             |      |     |             |      |    |             |      |     |             |      |     |             |      |     |
| First SPC to death:        |             |      |     |             |      |    |             |      |     |             |      |     |             |      |     |
| <=7 days                   | 2233        | 1216 |     | 3907        | 1945 | *  | 5275        | 2529 | *   | 7193        | 2916 | *** | 8019        | 3094 | **  |
| >7 and <=30 days           | 872         | 1072 |     | 2887        | 1925 |    | 4842        | 2972 |     | 3623        | 3199 |     | 5404        | 3849 |     |
| >30 and <=180 days         | -2448       | 1051 | **  | 4646        | 1888 | ** | 11034       | 2849 | *** | 13369       | 3273 | *** | 15843       | 4085 | *** |
| >180 and <=365 days        | -3556       | 1162 | **  | -5236       | 2409 | *  | -5011       | 3202 |     | 3163        | 4620 |     | 12851       | 6516 | *   |

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. SE standard error. Results for “Baseline covariates” reproduce those provided in Table S2. “Double selection” results are produced by allowing for variable selection after starting with a much larger set of candidate covariates. The baseline list of covariates is augmented by adding squared terms for the 3 continuous variables (age, Rx-Risk comorbidity score and hospital length of stay in penultimate year of life) then all two-way interactions with this extended list and the cause of death are added to yield 281 candidate covariates. The Stata16 implementation of the double selection method is then used to produce the results.

Table S6: Cancer cohort risk-adjusted regression models: hospital costs<sup>a</sup> over 1, 3, 6, 9 and 12 months before death (n=10,535)

|                                   | 30 days     |         | 90 days     |         | 180 days    |         | 270 days    |         | 365 days    |         |
|-----------------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                   | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      |
| First SPC to death:               |             |         |             |         |             |         |             |         |             |         |
| <=7 days                          | 116         | (622)   | -1,130      | (975)   | -2,537*     | (1,212) | -3,049*     | (1,301) | -2,762      | (1,495) |
| >7 and <=30 days                  | -1,151**    | (428)   | -270        | (793)   | 1,251       | (1,087) | 1,550       | (1,234) | 2,965*      | (1,338) |
| >30 and <=180 days                | -1,883***   | (390)   | 3,309***    | (726)   | 7,669***    | (1,035) | 8,168***    | (1,126) | 8,970***    | (1,222) |
| >180 and <=365 days               | -2,410***   | (545)   | -1,890      | (1,050) | 322         | (1,572) | 6,601**     | (2,006) | 12,999***   | (2,304) |
| Male                              | 10          | (322)   | -825        | (507)   | -1,448*     | (652)   | -1,291      | (733)   | -1,103      | (796)   |
| Age                               | -75***      | (15)    | -187***     | (25)    | -280***     | (33)    | -319***     | (38)    | -341***     | (41)    |
| Hospital days lag year            | -5          | (8)     | 7           | (13)    | 35          | (18)    | 73***       | (21)    | 143***      | (25)    |
| Residential aged care             | -1,949***   | (299)   | 2,599***    | (621)   | 8,752***    | (924)   | 12,107***   | (1,088) | 14,289***   | (1,173) |
| Health good/v.good/excellent      | -65         | (309)   | 161         | (487)   | -34         | (628)   | -807        | (739)   | -1,014      | (807)   |
| Rx-Risk comorbidity lag year      | -122**      | (37)    | -216***     | (59)    | -255***     | (77)    | -288**      | (88)    | -258**      | (98)    |
| Radiotherapy final year           | -510        | (285)   | -89         | (459)   | 1,029       | (597)   | 2,011**     | (679)   | 2,808***    | (729)   |
| Chemotherapy final year           | -784*       | (346)   | -1,026      | (531)   | -92         | (680)   | 656         | (773)   | 739         | (834)   |
| Private health insurance          | -135        | (326)   | -874        | (486)   | -1,888**    | (618)   | -2,476***   | (707)   | -3,185***   | (759)   |
| Last inpatient episode acute care | 11,444***   | (323)   | 12,691***   | (530)   | 12,280***   | (688)   | 11,745***   | (785)   | 11,476***   | (852)   |
| Inpatient palliative care episode | 12,390***   | (271)   | 15,354***   | (496)   | 15,517***   | (671)   | 15,637***   | (779)   | 15,879***   | (851)   |
| Intensive care final year         | 8,327***    | (677)   | 14,838***   | (979)   | 23,140***   | (1,254) | 31,498***   | (1,419) | 36,731***   | (1,541) |
| Household income missing          | 93          | (330)   | 520         | (531)   | -112        | (659)   | -210        | (753)   | -96         | (832)   |
| Household income>\$40,000pa       | -262        | (410)   | -679        | (620)   | -457        | (811)   | -836        | (929)   | -451        | (1,008) |
| Underlying cause of death:        |             |         |             |         |             |         |             |         |             |         |
| Lung cancer                       | 889         | (678)   | 335         | (1,085) | -857        | (1,403) | -2,996      | (1,659) | -4,344*     | (1,874) |
| Colorectal cancer                 | 1,683*      | (815)   | 1,892       | (1,253) | 1,639       | (1,592) | 853         | (1,854) | 819         | (2,081) |
| Prostate cancer                   | 1,267       | (681)   | 2,177       | (1,137) | 2,396       | (1,501) | 1,632       | (1,791) | 814         | (1,999) |
| Breast cancer                     | -49         | (842)   | -2,502      | (1,287) | -4,393**    | (1,666) | -6,715***   | (1,940) | -8,156***   | (2,174) |
| Pancreatic cancer                 | 1,836*      | (782)   | 1,481       | (1,247) | 1,792       | (1,707) | 1,019       | (1,965) | 407         | (2,158) |
| Melanoma                          | 125         | (767)   | -530        | (1,299) | -2,009      | (1,669) | -3,727      | (1,940) | -4,864*     | (2,176) |
| Haematological cancer             | 5,364***    | (810)   | 9,638***    | (1,292) | 13,302***   | (1,676) | 14,461***   | (1,960) | 15,395***   | (2,208) |
| Other cancer                      | 830         | (640)   | 1,563       | (1,045) | 2,111       | (1,372) | 1,709       | (1,635) | 1,422       | (1,853) |
| Constant                          | 9,432***    | (1,786) | 23,761***   | (3,139) | 36,863***   | (3,992) | 44,664***   | (4,567) | 46,795***   | (4,851) |

\*p&lt;0.05; \*\*p&lt;0.01; P&lt;0.001. a Australian dollars 2020-21. SE standard error. Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S7: Non-cancer cohort risk-adjusted regression models: hospital costs<sup>a</sup> over 1, 3, 6, 9 and 12 months before death (n=11,179)

|                                   | 30 days     |         | 90 days     |         | 180 days    |         | 270 days    |         | 365 days    |         |
|-----------------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
|                                   | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      |
| First SPC to death:               |             |         |             |         |             |         |             |         |             |         |
| <=7 days                          | 1,280       | (1,122) | 2,519       | (1,700) | 3,644       | (2,162) | 5,081*      | (2,465) | 5,889*      | (2,660) |
| >7 and <=30 days                  | 397         | (1,008) | 2,244       | (1,841) | 3,504       | (2,816) | 2,606       | (2,982) | 4,612       | (3,615) |
| >30 and <=180 days                | -2,428*     | (989)   | 4,180*      | (1,756) | 9,787***    | (2,628) | 11,499***   | (2,954) | 13,233***   | (3,605) |
| >180 and <=365 days               | -4,089***   | (1,073) | -6,099**    | (2,216) | -6,157*     | (2,816) | 1,499       | (4,145) | 10,252      | (5,890) |
| Male                              | 694**       | (258)   | 1,604***    | (386)   | 2,125***    | (506)   | 2,381***    | (572)   | 2,636***    | (638)   |
| Age                               | -39*        | (17)    | -65**       | (24)    | -130***     | (33)    | -172***     | (37)    | -195***     | (41)    |
| Hospital days lag year            | 10          | (6)     | 43***       | (11)    | 81***       | (14)    | 116***      | (15)    | 173***      | (17)    |
| Residential aged care             | 94          | (236)   | 3,971***    | (406)   | 9,491***    | (647)   | 13,521***   | (746)   | 17,088***   | (839)   |
| Health good/v.good/excellent      | -35         | (268)   | 244         | (402)   | -438        | (532)   | -706        | (599)   | -1,074      | (667)   |
| Rx-Risk comorbidity lag year      | -63*        | (32)    | -81         | (47)    | -44         | (59)    | -4          | (66)    | 32          | (73)    |
| Radiotherapy final year           | 659*        | (330)   | 1,865***    | (492)   | 3,095***    | (634)   | 3,943***    | (719)   | 4,635***    | (818)   |
| Chemotherapy final year           | 813         | (1,548) | 4,361       | (3,455) | 7,305       | (4,117) | 6,485       | (4,201) | 7,983       | (4,326) |
| Private health insurance          | -453        | (281)   | -822        | (430)   | -858        | (546)   | -1,468*     | (611)   | -1,982**    | (679)   |
| Last inpatient episode acute care | 9,536***    | (278)   | 9,891***    | (447)   | 9,572***    | (594)   | 9,479***    | (668)   | 9,280***    | (741)   |
| Inpatient palliative care episode | 15,723***   | (632)   | 19,089***   | (957)   | 21,151***   | (1,279) | 21,853***   | (1,374) | 22,092***   | (1,501) |
| Intensive care final year         | 13,275***   | (809)   | 20,035***   | (1,096) | 25,788***   | (1,397) | 30,985***   | (1,563) | 35,579***   | (1,714) |
| Household income missing          | -171        | (296)   | -290        | (424)   | -135        | (539)   | -466        | (610)   | -730        | (687)   |
| Household income>\$40,000pa       | -731        | (417)   | -1,055      | (656)   | -1,250      | (902)   | -278        | (1,089) | -424        | (1,191) |
| Underlying cause of death:        |             |         |             |         |             |         |             |         |             |         |
| COPD                              | 1,922***    | (532)   | 4,418***    | (824)   | 7,501***    | (1,091) | 8,510***    | (1,237) | 10,459***   | (1,420) |
| Dementia/Alzheimer's disease      | 1,098**     | (394)   | 1,362*      | (641)   | 1,066       | (825)   | 1,482       | (970)   | 1,548       | (1,134) |
| Heart failure/IHD                 | 1,463***    | (387)   | 3,245***    | (617)   | 5,378***    | (810)   | 6,724***    | (949)   | 7,745***    | (1,084) |
| Stroke                            | 2,050***    | (512)   | 2,895***    | (773)   | 4,613***    | (1,045) | 5,487***    | (1,175) | 5,493***    | (1,311) |
| Renal/liver failure               | 3,074***    | (665)   | 7,131***    | (1,079) | 10,046***   | (1,422) | 11,302***   | (1,614) | 13,147***   | (1,854) |
| Constant                          | 3,364       | (2,031) | 6,037*      | (2,882) | 11,542**    | (3,787) | 16,170***   | (4,304) | 20,376***   | (4,822) |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error; COPD Chronic Obstructive Pulmonary Disease; IHD Ischaemic Heart Disease.

Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S8: Cancer cohort risk-adjusted regression models: costs<sup>a</sup> for private medical services (MBS) over 1, 3, 6, 9 and 12 months before death (n=10,535)

|                                   | 30 days     |       | 90 days     |       | 180 days    |       | 270 days    |       | 365 days    |       |
|-----------------------------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|                                   | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    |
| First SPC to death:               |             |       |             |       |             |       |             |       |             |       |
| <=7 days                          | 512***      | (112) | 885***      | (198) | 951***      | (251) | 1,227***    | (298) | 1,383***    | (356) |
| >7 and <=30 days                  | 238**       | (79)  | 826***      | (160) | 1,345***    | (218) | 1,579***    | (253) | 1,892***    | (287) |
| >30 and <=180 days                | -288***     | (61)  | 83          | (125) | 963***      | (179) | 1,482***    | (215) | 1,994***    | (246) |
| >180 and <=365 days               | -208*       | (100) | -641***     | (187) | -745**      | (281) | 131         | (381) | 1,387**     | (457) |
| Male                              | 23          | (45)  | 128         | (83)  | 194         | (111) | 154         | (136) | 267         | (155) |
| Age                               | -7**        | (2)   | -28***      | (4)   | -46***      | (6)   | -55***      | (7)   | -62***      | (8)   |
| Hospital days lag year            | -1          | (1)   | -3          | (2)   | -5          | (3)   | -5          | (4)   | 3           | (5)   |
| Residential aged care             | -17         | (40)  | -86         | (86)  | 74          | (134) | 94          | (160) | 144         | (193) |
| Health good/v.good/excellent      | 27          | (42)  | 160*        | (80)  | 214*        | (105) | 264*        | (127) | 204         | (148) |
| Rx-Risk comorbidity lag year      | -17***      | (5)   | -40***      | (10)  | -53***      | (13)  | -61***      | (16)  | -29         | (19)  |
| Radiotherapy final year           | 43          | (42)  | 554***      | (78)  | 1,382***    | (104) | 2,232***    | (127) | 3,062***    | (145) |
| Chemotherapy final year           | 68          | (49)  | 481***      | (95)  | 1,452***    | (124) | 2,521***    | (150) | 3,375***    | (171) |
| Private health insurance          | 1,145***    | (41)  | 2,519***    | (77)  | 3,741***    | (102) | 4,726***    | (123) | 5,604***    | (142) |
| Last inpatient episode acute care | 828***      | (53)  | 1,225***    | (108) | 1,331***    | (139) | 1,312***    | (165) | 1,224***    | (188) |
| Inpatient palliative care episode | 16          | (40)  | -43         | (89)  | -196        | (123) | -238        | (153) | -277        | (179) |
| Intensive care final year         | 1,005***    | (105) | 2,145***    | (187) | 3,409***    | (231) | 4,860***    | (273) | 5,812***    | (302) |
| Household income missing          | 51          | (48)  | 164         | (92)  | 145         | (115) | 100         | (139) | 160         | (158) |
| Household income>\$40,000pa       | 142*        | (64)  | 343**       | (119) | 759***      | (166) | 1,071***    | (202) | 1,400***    | (232) |
| Underlying cause of death:        |             |       |             |       |             |       |             |       |             |       |
| Lung cancer                       | -67         | (163) | -69         | (232) | 27          | (282) | -173        | (353) | -548        | (427) |
| Colorectal cancer                 | -74         | (173) | -225        | (248) | -177        | (304) | -340        | (382) | -380        | (468) |
| Prostate cancer                   | -29         | (161) | -317        | (235) | -381        | (291) | -638        | (370) | -910*       | (455) |
| Breast cancer                     | -50         | (189) | -490        | (268) | -746*       | (330) | -1,236**    | (411) | -1,486**    | (489) |
| Pancreatic cancer                 | -131        | (168) | -268        | (248) | -42         | (317) | -216        | (398) | -405        | (482) |
| Melanoma                          | -114        | (182) | 278         | (304) | 849*        | (373) | 898*        | (450) | 614         | (527) |
| Haematological cancer             | 241         | (178) | 464         | (261) | 869**       | (315) | 849*        | (390) | 854         | (471) |
| Other cancer                      | -55         | (163) | -39         | (230) | 214         | (279) | 141         | (350) | 97          | (428) |
| Constant                          | 225         | (295) | 1,864***    | (550) | 3,453***    | (721) | 4,294***    | (866) | 4,790***    | (968) |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error. Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S9: Non-cancer cohort risk-adjusted regression models: costs<sup>a</sup> for private medical services (MBS) over 1, 3, 6, 9 and 12 months before death (n=11,179)

|                                   | 30 days     |       | 90 days     |       | 180 days    |       | 270 days    |       | 365 days    |         |
|-----------------------------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|---------|
|                                   | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE      |
| First SPC to death:               |             |       |             |       |             |       |             |       |             |         |
| <=7 days                          | 1,104***    | (266) | 1,710***    | (427) | 2,061***    | (611) | 2,558***    | (733) | 3,120***    | (784)   |
| >7 and <=30 days                  | 319*        | (145) | 456         | (305) | 793         | (476) | 1,028       | (546) | 1,432*      | (640)   |
| >30 and <=180 days                | -299**      | (101) | 225         | (276) | 916*        | (429) | 1,785**     | (580) | 2,512***    | (745)   |
| >180 and <=365 days               | -197        | (151) | -172        | (322) | 97          | (556) | 1,194       | (750) | 2,520*      | (1,159) |
| male                              | 21          | (36)  | 87          | (55)  | 164*        | (79)  | 277**       | (94)  | 384***      | (106)   |
| Age (mean centred)                | -2          | (2)   | -4          | (3)   | -11*        | (5)   | -13*        | (6)   | -15*        | (7)     |
| Hospital days lag year            | 2*          | (1)   | 4**         | (1)   | 8***        | (2)   | 11***       | (2)   | 19***       | (3)     |
| Residential aged care             | 64*         | (28)  | 241***      | (56)  | 565***      | (82)  | 799***      | (104) | 991***      | (121)   |
| Health good/v.good/excellent      | 51          | (36)  | 106         | (59)  | 28          | (86)  | 58          | (101) | 72          | (113)   |
| Rx-Risk comorbidity lag year      | 5           | (4)   | 12          | (6)   | 23**        | (9)   | 43***       | (11)  | 70***       | (12)    |
| Radiotherapy final year           | 47          | (48)  | 284***      | (75)  | 683***      | (106) | 1,000***    | (127) | 1,262***    | (146)   |
| Chemotherapy final year           | 562*        | (228) | 1,825**     | (610) | 3,704***    | (860) | 4,867***    | (966) | 6,514***    | (1,067) |
| Private health insurance          | 870***      | (43)  | 1,580***    | (65)  | 2,244***    | (87)  | 2,837***    | (106) | 3,399***    | (118)   |
| Last inpatient episode acute care | 461***      | (41)  | 591***      | (71)  | 713***      | (96)  | 834***      | (114) | 997***      | (130)   |
| Inpatient palliative care episode | 50          | (60)  | 215         | (111) | 433*        | (204) | 468*        | (234) | 382         | (256)   |
| Intensive care final year         | 1,137***    | (118) | 2,095***    | (183) | 2,997***    | (243) | 3,831***    | (285) | 4,364***    | (315)   |
| Household income missing          | 11          | (36)  | -29         | (56)  | -28         | (74)  | -60         | (89)  | -60         | (102)   |
| Household income>\$40,000pa       | 217*        | (89)  | 426**       | (146) | 671***      | (203) | 859***      | (239) | 1,071***    | (270)   |
| Underlying cause of death:        |             |       |             |       |             |       |             |       |             |         |
| COPD                              | 93          | (67)  | 301*        | (120) | 454**       | (162) | 642**       | (200) | 759***      | (230)   |
| Dementia/Alzheimer's disease      | 41          | (52)  | 17          | (88)  | -48         | (127) | -70         | (157) | -202        | (186)   |
| Heart failure/IHD                 | 272***      | (55)  | 577***      | (92)  | 914***      | (129) | 1,231***    | (159) | 1,443***    | (189)   |
| Stroke                            | 36          | (65)  | 82          | (107) | 245         | (164) | 371         | (195) | 473*        | (225)   |
| Renal/liver failure               | 457***      | (95)  | 1,035***    | (169) | 1,458***    | (225) | 1,828***    | (268) | 2,310***    | (326)   |
| Constant                          | -254        | (345) | -252        | (476) | 191         | (637) | 494         | (780) | 376         | (861)   |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error; COPD Chronic Obstructive Pulmonary Disease; IHD Ischaemic Heart Disease.

Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S10: Cancer cohort risk-adjusted regression models: costs<sup>a</sup> for pharmaceuticals (PBS) over 1, 3, 6, 9 and 12 months before death (n=10,535)

|                                   | 30 days     |       | 90 days     |       | 180 days    |         | 270 days    |         | 365 days    |         |
|-----------------------------------|-------------|-------|-------------|-------|-------------|---------|-------------|---------|-------------|---------|
|                                   | Coefficient | SE    | Coefficient | SE    | Coefficient | SE      | Coefficient | SE      | Coefficient | SE      |
| First SPC to death:               |             |       |             |       |             |         |             |         |             |         |
| <=7 days                          | 181*        | (87)  | 492*        | (212) | 680         | (354)   | 1,061*      | (476)   | 1,280*      | (590)   |
| >7 and <=30 days                  | -46         | (57)  | 210         | (169) | 667*        | (301)   | 1,120*      | (456)   | 1,206*      | (529)   |
| >30 and <=180 days                | -186***     | (46)  | -253        | (150) | -148        | (243)   | 236         | (325)   | 441         | (394)   |
| >180 and <=365 days               | -160**      | (58)  | -247        | (176) | -237        | (323)   | 514         | (483)   | 1,163       | (642)   |
| Male                              | 71          | (39)  | 233**       | (86)  | 159         | (156)   | 267         | (204)   | 304         | (246)   |
| Age                               | -11***      | (2)   | -30***      | (4)   | -69***      | (8)     | -97***      | (10)    | -124***     | (13)    |
| Hospital days lag year            | 0           | (1)   | -2          | (2)   | -2          | (3)     | -1          | (5)     | 7           | (6)     |
| Residential aged care             | -26         | (29)  | -117        | (89)  | -180        | (164)   | -307        | (207)   | -194        | (275)   |
| Health good/v.good/excellent      | 27          | (35)  | 26          | (86)  | 155         | (142)   | 197         | (181)   | 199         | (221)   |
| Rx-Risk comorbidity lag year      | 9           | (5)   | 30**        | (11)  | 86***       | (20)    | 181***      | (26)    | 304***      | (31)    |
| Radiotherapy final year           | -12         | (45)  | 101         | (88)  | 366*        | (153)   | 500**       | (191)   | 690**       | (227)   |
| Chemotherapy final year           | 544***      | (51)  | 2,077***    | (128) | 4,315***    | (216)   | 6,356***    | (265)   | 8,146***    | (317)   |
| Private health insurance          | 37          | (38)  | 125         | (90)  | 325*        | (159)   | 504*        | (205)   | 689**       | (240)   |
| Last inpatient episode acute care | 76          | (49)  | 432***      | (108) | 623***      | (187)   | 782**       | (241)   | 777**       | (286)   |
| Inpatient palliative care episode | -129**      | (42)  | -26         | (98)  | 15          | (183)   | 66          | (231)   | 140         | (285)   |
| Intensive care final year         | -67         | (52)  | 30          | (142) | -147        | (273)   | -412        | (321)   | -602        | (378)   |
| Household income missing          | 65          | (52)  | -70         | (99)  | -235        | (152)   | -142        | (210)   | -139        | (247)   |
| Household income>\$40,000pa       | -2          | (52)  | -107        | (132) | -87         | (237)   | -142        | (292)   | -3          | (351)   |
| Underlying cause of death:        |             |       |             |       |             |         |             |         |             |         |
| Lung cancer                       | -50         | (81)  | -149        | (190) | -294        | (314)   | -552        | (445)   | -886        | (573)   |
| Colorectal cancer                 | 44          | (88)  | 170         | (208) | 624         | (359)   | 1,214*      | (512)   | 1,902**     | (656)   |
| Prostate cancer                   | 107         | (85)  | 541**       | (204) | 1,472***    | (350)   | 2,361***    | (485)   | 3,306***    | (617)   |
| Breast cancer                     | -56         | (87)  | -41         | (222) | 18          | (397)   | 241         | (531)   | 430         | (664)   |
| Pancreatic cancer                 | -188*       | (80)  | -581**      | (191) | -1,165***   | (324)   | -1,809***   | (460)   | -2,410***   | (592)   |
| Melanoma                          | 806**       | (294) | 2,678***    | (650) | 5,055***    | (1,186) | 5,889***    | (1,403) | 6,613***    | (1,576) |
| Haematological cancer             | 267**       | (96)  | 744***      | (221) | 1,536***    | (367)   | 2,335***    | (515)   | 3,041***    | (658)   |
| Other cancer                      | -133        | (78)  | -389*       | (185) | -682*       | (304)   | -847        | (433)   | -1,067      | (557)   |
| Constant                          | 1,091***    | (242) | 2,222***    | (495) | 4,526***    | (826)   | 5,505***    | (1,078) | 7,123***    | (1,341) |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error. Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S11: Non-cancer cohort risk-adjusted regression models: costs<sup>a</sup> for pharmaceuticals (PBS) over 1, 3, 6, 9 and 12 months before death (n=11,179)

|                                   | 30 days     |       | 90 days     |       | 180 days    |       | 270 days    |         | 365 days    |         |
|-----------------------------------|-------------|-------|-------------|-------|-------------|-------|-------------|---------|-------------|---------|
|                                   | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE      | Coefficient | SE      |
| First SPC to death:               |             |       |             |       |             |       |             |         |             |         |
| <=7 days                          | 37          | (34)  | 63          | (80)  | 98          | (146) | -15         | (205)   | 88          | (284)   |
| >7 and <=30 days                  | -4          | (57)  | -1          | (130) | 57          | (224) | 32          | (285)   | -129        | (331)   |
| >30 and <=180 days                | -32         | (35)  | 29          | (126) | 184         | (208) | 457         | (330)   | 695         | (456)   |
| >180 and <=365 days               | 10          | (53)  | 162         | (159) | 309         | (293) | 655         | (499)   | 1,127       | (696)   |
| Male                              | -12         | (10)  | -38         | (24)  | -69         | (43)  | -85         | (57)    | -116        | (74)    |
| Age                               | -4***       | (1)   | -11***      | (2)   | -20***      | (3)   | -29***      | (3)     | -36***      | (4)     |
| Hospital days lag year            | 1**         | (0)   | 3***        | (1)   | 6***        | (1)   | 9***        | (2)     | 12***       | (2)     |
| Residential aged care             | 48***       | (11)  | 100***      | (24)  | 145**       | (45)  | 198**       | (64)    | 249**       | (84)    |
| Health good/v.good/excellent      | -16         | (11)  | -28         | (24)  | -48         | (41)  | -82         | (54)    | -126        | (70)    |
| Rx-Risk comorbidity lag year      | 13***       | (1)   | 39***       | (3)   | 79***       | (6)   | 120***      | (7)     | 169***      | (10)    |
| Radiotherapy final year           | 43***       | (13)  | 132***      | (29)  | 273***      | (50)  | 397***      | (71)    | 550***      | (92)    |
| Chemotherapy final year           | 653***      | (161) | 2,357***    | (534) | 4,628***    | (994) | 7,306***    | (1,392) | 9,042***    | (1,652) |
| Private health insurance          | 40***       | (10)  | 65**        | (22)  | 130**       | (40)  | 202***      | (57)    | 255***      | (72)    |
| Last inpatient episode acute care | -4          | (13)  | 52          | (28)  | 146**       | (46)  | 209***      | (62)    | 311***      | (80)    |
| Inpatient palliative care episode | -36         | (22)  | 55          | (52)  | 206*        | (95)  | 442**       | (150)   | 589**       | (188)   |
| Intensive care final year         | 15          | (24)  | 80          | (60)  | 97          | (88)  | 116         | (109)   | 119         | (132)   |
| Household income missing          | -11         | (9)   | -20         | (20)  | -41         | (37)  | -44         | (51)    | -68         | (67)    |
| Household income>\$40,000pa       | -20         | (17)  | 13          | (45)  | 27          | (81)  | 107         | (118)   | 121         | (152)   |
| Underlying cause of death:        |             |       |             |       |             |       |             |         |             |         |
| COPD                              | -104**      | (34)  | -134        | (78)  | -269        | (148) | -336        | (205)   | -436        | (268)   |
| Dementia/Alzheimer's disease      | -157***     | (32)  | -382***     | (68)  | -777***     | (132) | -1,112***   | (187)   | -1,478***   | (247)   |
| Heart failure/IHD                 | -103**      | (33)  | -194**      | (69)  | -406**      | (132) | -561**      | (187)   | -745**      | (245)   |
| Stroke                            | -132***     | (35)  | -278***     | (74)  | -570***     | (142) | -815***     | (199)   | -1,049***   | (261)   |
| Renal/liver failure               | -109**      | (40)  | -163        | (85)  | -309        | (162) | -366        | (230)   | -437        | (304)   |
| Constant                          | 507***      | (83)  | 1,306***    | (177) | 2,516***    | (274) | 3,482***    | (373)   | 4,428***    | (477)   |

\*p<0.05; \*\*p<0.01; P<0.001. a Australian dollars 2020-21. SE standard error; COPD Chronic Obstructive Pulmonary Disease; IHD Ischaemic Heart Disease.

Models also adjusted for decile of socioeconomic advantage, local health district of residence and year of death.

Table S12: Cancer cohort risk-adjusted place of death: multinomial logit model with hospital as reference

| First SPC to death:                          | Nursing home |       |     | Own home    |       |     |
|----------------------------------------------|--------------|-------|-----|-------------|-------|-----|
|                                              | Coefficient  | SE    |     | Coefficient | SE    |     |
| <=7 days                                     | -1.551       | 0.419 | *** | -0.596      | 0.170 | *** |
| >7 and <=30 days                             | -0.759       | 0.219 | **  | -0.081      | 0.109 |     |
| >30 and <=180 days                           | 0.299        | 0.138 | *   | 0.351       | 0.090 | *** |
| >180 and <=365 days                          | 0.843        | 0.190 | *** | 0.579       | 0.140 | *** |
| Male                                         | -0.203       | 0.088 | *   | -0.206      | 0.057 | *** |
| Age                                          | 0.070        | 0.005 | *** | 0.021       | 0.003 | *** |
| Hospital days lag year                       | 0.003        | 0.002 |     | 0.001       | 0.001 |     |
| Health good/v.good/excellent                 | -0.127       | 0.083 |     | 0.154       | 0.057 | **  |
| Rx-Risk comorbidity lag year                 | 0.022        | 0.010 | *   | 0.012       | 0.007 |     |
| Radiotherapy final year                      | -0.002       | 0.079 |     | 0.051       | 0.054 |     |
| Chemotherapy final year                      | -0.219       | 0.106 | *   | -0.090      | 0.060 |     |
| Private health insurance                     | -0.263       | 0.081 | **  | -0.138      | 0.055 | *   |
| Inpatient palliative care episode            | -1.368       | 0.106 | *** | -2.245      | 0.074 | *** |
| Intensive care final year                    | -0.794       | 0.143 | *** | -0.825      | 0.081 | *** |
| Household income missing                     | -0.163       | 0.089 |     | 0.017       | 0.061 |     |
| Household income>\$40,000pa                  | -0.283       | 0.129 | *   | 0.315       | 0.072 | *** |
| Decile of relative socio-economic advantage: |              |       |     |             |       |     |
| 2                                            | -0.127       | 0.140 |     | 0.107       | 0.095 |     |
| 3                                            | -0.061       | 0.146 |     | 0.182       | 0.100 |     |
| 4                                            | -0.143       | 0.158 |     | 0.249       | 0.101 | *   |
| 5                                            | 0.166        | 0.155 |     | 0.080       | 0.111 |     |
| 6                                            | 0.052        | 0.162 |     | 0.163       | 0.113 |     |
| 7                                            | -0.141       | 0.170 |     | 0.093       | 0.114 |     |
| 8                                            | 0.075        | 0.179 |     | 0.233       | 0.122 |     |
| 9                                            | -0.161       | 0.196 |     | 0.365       | 0.125 | **  |
| 10                                           | -0.318       | 0.202 |     | 0.301       | 0.131 | *   |
| Undelying cause of death:                    |              |       |     |             |       |     |
| Lung cancer                                  | 0.413        | 0.288 |     | -0.163      | 0.163 |     |
| Colorectal cancer                            | 0.330        | 0.301 |     | -0.141      | 0.172 |     |
| Prostate cancer                              | 0.926        | 0.289 | **  | 0.171       | 0.168 |     |
| Breast cancer                                | 0.405        | 0.317 |     | -0.008      | 0.179 |     |
| Pancreatic cancer                            | 0.069        | 0.333 |     | 0.018       | 0.180 |     |
| Melanoma                                     | 0.563        | 0.327 |     | 0.006       | 0.193 |     |
| Haematological cancer                        | 0.208        | 0.290 |     | -0.471      | 0.164 | **  |
| Other cancer                                 | 0.330        | 0.281 |     | 0.028       | 0.155 |     |
| Constant                                     | -6.697       | 0.610 | *** | -2.385      | 0.387 | *** |

\*p<0.05; \*\*p<0.01; P<0.001. SE standard error. Model also adjusted for local health district of residence and year of death.

Table S13: Non-cancer cohort risk-adjusted place of death: multinomial logit model with hospital as reference

|                                              | Nursing home |       |     | Own home    |       |     |
|----------------------------------------------|--------------|-------|-----|-------------|-------|-----|
|                                              | Coefficient  | SE    |     | Coefficient | SE    |     |
| First SPC to death:                          |              |       |     |             |       |     |
| <=7 days                                     | -1.749       | 0.529 | **  | -0.566      | 0.251 | *   |
| >7 and <=30 days                             | 0.294        | 0.331 |     | 0.149       | 0.321 |     |
| >30 and <=180 days                           | 1.113        | 0.288 | *** | 0.426       | 0.289 |     |
| >180 and <=365 days                          | 0.838        | 0.387 | *   | 0.474       | 0.374 |     |
| Male                                         | -0.194       | 0.062 | **  | -0.191      | 0.049 | *** |
| Age                                          | 0.057        | 0.004 | *** | 0.006       | 0.003 | *   |
| Hospital days lag year                       | 0.003        | 0.001 | *   | -0.003      | 0.001 | **  |
| Health good/v.good/excellent                 | 0.064        | 0.063 |     | 0.157       | 0.049 | **  |
| Rx-Risk comorbidity lag year                 | 0.029        | 0.007 | *** | 0.026       | 0.006 | *** |
| Radiotherapy final year                      | -0.179       | 0.072 | *   | -0.336      | 0.056 | *** |
| Chemotherapy final year                      | -0.950       | 0.500 |     | -0.776      | 0.300 | *   |
| Private health insurance                     | -0.097       | 0.065 |     | 0.071       | 0.050 |     |
| Inpatient palliative care episode            | -2.109       | 0.170 | *** | -3.100      | 0.159 | *** |
| Intensive care final year                    | -1.031       | 0.114 | *** | -1.658      | 0.089 | *** |
| Household income missing                     | -0.098       | 0.066 |     | 0.069       | 0.052 |     |
| Household income>\$40,000pa                  | -0.084       | 0.108 |     | 0.057       | 0.079 |     |
| Decile of relative socio-economic advantage: |              |       |     |             |       |     |
| 2                                            | -0.137       | 0.108 |     | -0.025      | 0.087 |     |
| 3                                            | -0.257       | 0.114 | *   | -0.113      | 0.090 |     |
| 4                                            | -0.108       | 0.122 |     | 0.046       | 0.097 |     |
| 5                                            | -0.144       | 0.125 |     | -0.073      | 0.100 |     |
| 6                                            | -0.164       | 0.134 |     | 0.030       | 0.104 |     |
| 7                                            | -0.165       | 0.140 |     | -0.023      | 0.110 |     |
| 8                                            | -0.102       | 0.145 |     | 0.118       | 0.114 |     |
| 9                                            | -0.310       | 0.149 | *   | 0.101       | 0.114 |     |
| 10                                           | -0.089       | 0.150 |     | 0.191       | 0.118 |     |
| Underlying cause of death:                   |              |       |     |             |       |     |
| COPD                                         | 0.259        | 0.170 |     | 0.369       | 0.128 | **  |
| Dementia/Alzheimer's disease                 | 1.716        | 0.162 | *** | 1.768       | 0.128 | *** |
| Heart failure/IHD                            | 0.612        | 0.148 | *** | 1.018       | 0.113 | *** |
| Neurodegenerative disease                    | 1.749        | 0.191 | *** | 1.365       | 0.155 | *** |
| Stroke                                       | 0.414        | 0.158 | **  | 0.193       | 0.124 |     |
| Constant                                     | -6.304       | 0.518 | *** | -1.908      | 0.369 | *** |

\*p<0.05; \*\*p<0.01; P<0.001. SE standard error; COPD Chronic Obstructive Pulmonary Disease; IHD Ischaemic Heart Disease. Model also adjusted for local health district of residence and year of death.