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Public Health Scotland

Scottish Routes from Diagnosis: Comorbidities

Summary

MACMILLAN CANCER SUPPORT

Acknowledgements

The analysis presented in this report uses data shared by patients and collected by the NHS as part of their care and support.

Thank you to the Macmillan-ISD Steering Group and to the Scottish Routes from Diagnosis Clinical Advisory Group for clinical and research support and advice in relation to the Scottish Routes from Diagnosis project.

Background

Scottish Routes from Diagnosis (SRfD) was a project between Public Health Scotland (Formerly ISD) and Macmillan, which investigated survivorship outcomes and experiences of residents of Scotland with the four most common types of cancer found in Scotland: breast, prostate, colorectal and lung, using national datasets from 2007 and 2012.

The project developed survivorship Outcome Groups (OGs), which capture the survivorship experiences in four different groups and allows comparisons across (as well as within) cancer types. Reporting patient factors, pathways, and outcomes using these outcome groups allows for investigation into the very different experiences people can have following a cancer diagnosis, both within a particular cancer type and across different types.

For a full explanation of the Outcome Groups and methodology of SRfD, please refer to the initial context and methodology publication.

Please note that this publication is based on data relating to cancer prior to the COVID-19 pandemic. Consequently, caution may be required in generalising these results to later time periods.

Comorbidities

This report presents a summary of the key findings only and focuses on the 2012 cohorts; for all analysis, definitions and context please refer to the full Comorbidities report.

Comorbidities – Summary of key findings Comorbidity prior to cancer diagnosis

- At least one quarter of people in all cohorts had a diagnosis of one or more chronic conditions prior to the cancer diagnosis. This ranged from 26% for **breast** cancer to almost half of **lung** cancer patients (47%).
- The most prevalent condition for all cohorts was hypertension, with almost 1 in 10 in all cohorts. Coronary Heart Disease (CHD) was prevalent in all cohorts ranging from 5% for the **breast** cancer cohort and up to 15% for **lung** cancer.
- It was more common to have two or more conditions (multimorbidity) than to have just one condition prior to the cancer diagnosis for all cohorts. The **lung** cancer cohort had the highest rate of multimorbidity at the time of cancer diagnosis: just under a third (32%) already had multimorbidity prior to cancer diagnosis with two or more conditions, and one fifth (20%) of the **lung** cancer cohort had three or more conditions.
- The distribution of drugs prescribed in primary care prior to cancer diagnosis for the **lung** cancer cohort was markedly different to the other cohorts. Just under a third (31%) had less than 5 drug prescriptions while just over a third (34%) had 10 or more prescriptions (a proxy of multimorbidity) in the period prior to cancer diagnosis. One in five of the **colorectal (CRC)** and **breast** cohort (20% and 18%, respectively) and just under one in six (16%) of the **prostate** cohort were in the multimorbidity group with 10 or more prescriptions.

Socio-demographics

- Age was associated with an increased risk of multimorbidity (two or more chronic conditions and/or 10 or more drug prescriptions prior to cancer diagnosis). The rate of multimorbidity by age group was relatively similar for the **CRC, breast** and **prostate** cohorts. The rate of multimorbidity for those with **lung** cancer for each age group was equivalent or higher than the rate of multimorbidity of people 10 years older within the other cancer cohorts.
- Females diagnosed with **lung** cancer were more likely than males to have multimorbidity for all age groups except 45-54 and 75-84, in which the rate was very similar.
- The rate of multimorbidity was similar for males and females aged over 45 to 84 for the **CRC** cohort. Younger females were more likely to have multimorbidity than younger males (3% of males diagnosed with **CRC** compared to 12% of females) and older males (over 85) were more likely to have multimorbidity than older females (58% compared to 52%).
- The proportion of people with multimorbidity was highest for those living in the most deprived areas across all four cohorts. The majority of people diagnosed with lung cancer in the most deprived quintile already had multimorbidity at the time of the cancer diagnosis (52%).

- Although age had a very strong association with multimorbidity, there was a substantial excess of multimorbidity prior to cancer diagnosis in young and middle-aged adults living in the most deprived areas for each of the four cancer cohorts. The prevalence of multimorbidity in the least deprived areas was equivalent to the prevalence around ten years earlier in the most deprived areas.
- The social gradient for **lung** cancer diagnosis was greater for those with multimorbidity, as people living in the most deprived areas with evidence of multimorbidity had a four times higher age standardised rate than the least deprived quintile. The standardised rate of **lung** cancer was around two times higher for those living in the most deprived quintile compared to the least deprived for those with no evidence of multimorbidity.
- For women with no evidence of multimorbidity, the truncated standardised rates of **breast** cancer increased as deprivation decreased (reflecting the overall trend across the whole breast cohort), however, the opposite trend occurs for those with evidence of multimorbidity, as the rate of breast cancer increased as deprivation increased.

The impact of comorbidities on cancer diagnosis

- The proportion of people with cancer detected as an incidental finding increased with severity of comorbidity for all four cohorts**.**
- Those with severe comorbidities were at least two times more likely to have unknown stage of cancer compared to those with no Charlson Comorbidity Index (CCI) score (no hospital admissions prior to diagnosis). For those with severe comorbidities this represented a considerable proportion as at least one fifth had unknown stage in all four cohorts (23% for **breast**, 26% for **lung**, 28% for **CRC**, and 42% for **prostate**).
- An association between comorbidity and cancer stage at diagnosis was evident for the **breast** cohort: 1 in 10 of those with severe comorbidities had stage 4 breast cancer compared to 1 in 20 with no or zero CCI score. This could be associated with the differences in underlying age profile by comorbidity group and access to screening.
- There was some evidence of an association between comorbidity and stage of diagnosis for **CRC**. Around 45% of those with no or zero CCI score had Dukes' stage A or B compared to 31% of those with a severe comorbidity.
- The proportion of people diagnosed with stage 4 **lung** cancer was greater for those with no or zero CCI score (around 50%) than those with any Charlson condition (36% for those with a CCI score of one, 38% for a score of two and 40% for a CCI of three or more). The higher proportions for those with no hospital admissions (no CCI) relative to those with a CCI score might be due to increased contact with healthcare services leading to an earlier diagnosis.

The impact of comorbidities on cancer treatment

- The cancer treatment intent at diagnosis of more than half of all people with severe comorbidities was palliative/non-curative for all four cohorts. For the **breast** cancer cohort less than 15% with no CCI or zero CCI had palliative intent compared to 52% of those with severe comorbidity.
- People with any Charlson comorbidity prior to cancer diagnosis were considerably less likely to receive chemotherapy within their cancer treatment for **breast, colorectal** and **lung** cancer than those without comorbidities. Such differences were more obvious for those with **breast** cancer as more than a third with no CCI score have SACT within their treatment compared to less than a fifth with a CCI score of 1 or 2 and 5% of those with severe comorbidities.
- People with any Charlson comorbidity were also less likely to have surgery within their cancer treatment pathway than those without any comorbidities for **breast** and **CRC**. For **breast** cancer, just 43% of people with severe comorbidities received surgery compared to 90% of people with no CCI score.
- The proportion of the cohort who received no treatment was higher for people with any CCI comorbidity (score of 1 or more) than those with no CCI score or a zero CCI score for those diagnosed with **breast, colorectal** or **lung** cancer.

Comorbidities as a consequence of cancer and treatment

- The most common time for first incidence of sepsis was in the first year after cancer diagnosis, approximately 3-9 months after diagnosis for **breast, colorectal** and **lung** cancer. Overall, people with **lung** cancer were more likely to have sepsis after cancer diagnosis (50 per 1,000 PYAR) than the other cohorts (15-23 per 1,000 PYAR). For those with limited survival (those who die within 12 months) the rate was considerably higher for people with **breast** and **colorectal** cancer with around 300 per 1,000 PYAR compared to 200 for prostate and 150 for lung cancer.
- The overall rate of kidney disease after cancer diagnosis was highest for the **lung** cancer cohort (79 per 1,000 PYAR) and strongly related to mortality for all cohorts. For those with limited survival, people with **prostate** cancer had the highest rate of kidney disease (566 per 1,000 person years at risk). After hypertension, kidney disease was the most common hospital admission diagnosis in the time period from 19 months to 5 years in the **breast** and **CRC** cohorts with 8% and 16%, respectively.

Further Information

Further information on the Scottish Routes from Diagnosis project, or other work resulting from our partnership, can be found on the Macmillan or the Public Health Scotland websites or by contacting us at phs.macmillan@phs.scot or HealthData@macmillan.org.uk.