CANCER COMORBIDITIES AND HOSPITAL ADMISSION

A Scottish Routes from Diagnosis study

Emily Moore[1], Cheryl Denny[1], Claire LeBlanc[2]

1. Information Services Division, NHS Scotland **emilymoore3@nhs.net** 2. Macmillan Cancer Support

Background

Many people diagnosed with cancer also have comorbid conditions which may impact significantly on their health and quality of life, and may also impact on cancer treatment decisions. As part of the Scottish Routes from Diagnosis (SRfD) project we investigated the contribution of non-cancer conditions to secondary care use in cancer patients, before and beyond diagnosis.

Methods

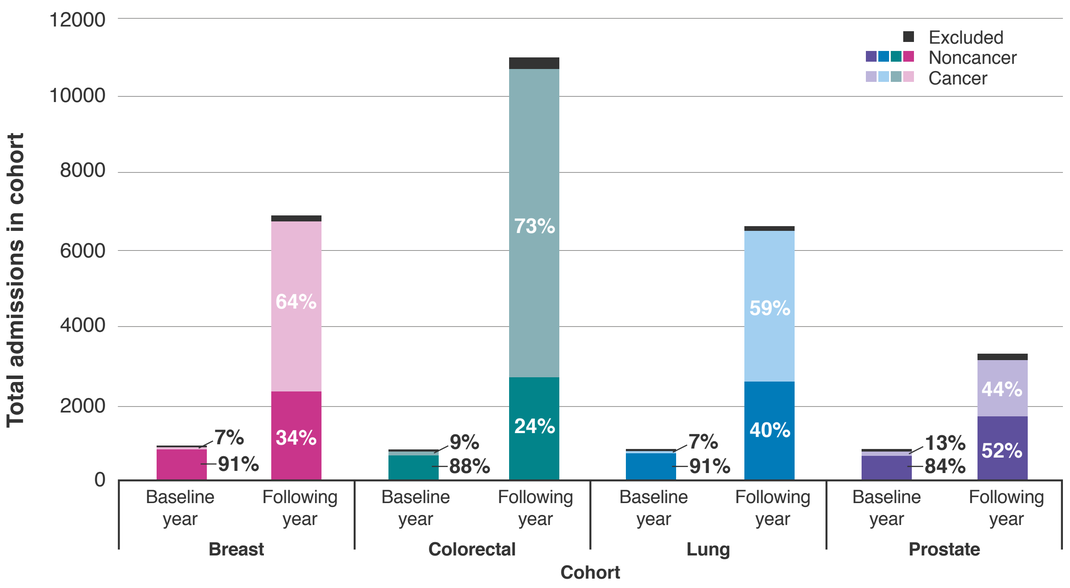
We used routinely collected data to define cohorts of patients diagnosed with the four most common cancers in Scotland in 2012 (female Breast, Prostate, Colorectal and Lung cancers). For persons living longer than a year from their cancer diagnosis, we linked acute hospital inpatient admissions data for a baseline year from 6-18 months before[1] diagnosis and compared this with the 12-month period immediately following their cancer diagnosis. We divided hospital stays into cancer admissions (any diagnosis from chapter II: Neoplasm of the ICD-10[2]) and non-cancer admissions based on the main diagnosis for the stay, with some exclusions[3]. Specific conditions as cause of admission were investigated[4].

Results

As would be expected, admissions for cancer dominate admissions after the cohort cancer diagnosis compared to baseline. However, non-cancer admissions also increase substantially post cancer diagnosis, increasing by 190% in the breast cohort, 148% in the prostate cancer cohorts and more than tripling in the lung (262% increase) and colorectal (279% increase) cancer cohorts.

In the year following cancer diagnosis, just over half (52%) of total inpatient admissions in the prostate cancer cohort are for non-cancer reasons, as are a substantial minority in the other cohorts - breast (34%), colorectal (24%) lung (40%) (Figure 1).

Figure 1: Number of admissions for cancer/non-cancer causes in the baseline year and the year following cancer diagnosis in the four cohorts.



Following diagnosis, a much higher proportion of persons have at least one non-cancer admission, increasing from 18% to 54% in the lung cancer cohort (Table 1), and from 10% to 28% in the breast cohort.

There were differences in common reasons for admission across cohorts (Table 1).

There is evidence of cancer site specific patterns with bladder dysfunction a major cause of admission in the prostate cancer cohort and COPD and pneumonia common in the lung cancer cohort.

Infections admissions (sepsis, cellulitis, pneumonia) affect many more people post diagnosis than at baseline across the cohorts, this is most notable in the breast cancer cohort.

The numbers of people admitted for kidney and heart failure are relatively small, but increased significantly in the post diagnosis period compared to before diagnosis (Table 1).

Results continued

Table 1: Number of people in each cohort living at least a year from diagnosis, numbers with at least one non-cancer admission, and with admission(s) for selected conditions in the baseline year and in the year following cancer diagnosis.

	Breast (n=4189)		Colorectal (n=2792)		Lung (n = 1815)		Prostate (n= 2843)	
	1yr baseline	1yr following	1yr baseline	1yr following	1yr baseline	1yr following	1yr baseline	1yr following
N people with any non-cancer admission (%)	435 (10%)	1163 (28%)	344 (12%)	1106 (40%)	329 (18%)	976 (54%)	360 (13%)	754 (27%)
Condition								
Anaemia	6	13	8	57	4	11	5	19
Sepsis	2	159	6	32	2	47	1	24
COPD	17	33	17	24	56	178	18	17
Pneumonia	7	66	10	20	27	168	13	36
Bladder Dysfunction	8	1	7	16	6	16	20	107
Cellulitis	10	80	3	19	5	16	10	11
Myocardial infarction	8	18	20	37	13	23	30	22
Chronic ischaemic heart disease†	13	8	10	27	12	18	15	16
Heart failure	3	15	9	11	8	13	11	29
Kidney Failure	2	16	8	39	3	17	6	24

† Excl. myocardial infarction

Conclusions

Post cancer diagnosis, both the number of admissions and the number of people admitted for non-cancer causes increased greatly, indicating a general increase in the burden of comorbidity following a cancer diagnosis. However, this burden is unevenly distributed, many people (the majority, except in the lung cohort) had no non-cancer admissions post diagnosis. The number of people admitted for several severe, potentially life threatening conditions increased in all cohorts after cancer diagnosis. Increased infections may be attributable to the impact of cancer and its treatment on immunity, and the potential for post-surgical infection. An increase in people hospitalised for other conditions such as heart and kidney disease could represent either newly arising conditions, or worsening of a pre-existing condition.

This analysis provides only a partial picture of the impact of comorbidity on hospital stays, particularly as we did not include the group of people with short survival, whose hospital use may be different. Future analyses will investigate admissions in this group, and also the length of stay attributable to non-cancer causes, to further quantify the contribution of comorbidity to hospital use in cancer patients.

References

1. The 6-month period before cancer diagnosis is excluded, to avoid capturing any increase in admissions in the run up to cancer diagnosis.

2. World Health Organisation. International Statistical Classification of Diseases and Related Health Problems 10th Revision. http://apps.who.int/classifications/icd10/browse/2016/en

3. Admissions with a diagnosis code from Chapter XXI Factors influencing health status and contact with health services, were excluded from the count.

4. Specific conditions with some relevance to cancer – either as potential treatment limiters, or potential consequences of cancer and treatment - were chosen on the basis of clinical advice. We present only a selection of the chosen conditions here for brevity.

ICD10 codes for conditions: COPD J40-J44; Pneumonia J100, J110, J12 - J14, J15-J18; Cellulitis L00-L03, L983, H601, N730-N732, K122; Liver failure K720, K721, K729, K704, K711; Kidney failure N17-N19, I120, I131, I132; Bladder dysfunction R32X, F980, N393, N394, R33X, F453, N23X; Sepsis A40, A41, A021, A227, A267, A327, A427, B377, O85X; Anaemia D50-D64; Heart Failure I50, I110, I130, I132; Myocardial Infarction I21, I22; Chronic IHD (excl MI), I20, I23-I25.

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