Building an Improved Understanding of Cancer Cost Accumulation

A pragmatic approach to costing cancer across tumour types and sub-groups of cohorts

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[1] Monitor Deloitte, [2] Macmillan Cancer Support

Overview of population subgroups for patients with colorectal cancer detected in H1 2007

		Dependency Group					
		0 - 1 Year	1 - 2 Years	2 - 3 Years	3 - 4 Years	Depdnt. at 4 yrs +	
Does Not Develop Secondary or Additional Primary Cancer (54%)	Patient dropout by dependency duration	11.4%	5.2%	2.3%	4.3%	31.5%	
		205	93	41	77	569	n = 985
	Avg. age at diagnosis	71	75	72	68	65	
	Avg. Trust tariff revenue	£ 10,175	£ 22,644	£ 19,966	£ 18,556	£ 24,523	£ 20,703
	% of revenue which is cancer	75%	61%	52%	58%	54%	
	No Chemo, Radio or Surgery	37%	14%	13%	10%	3%	
	Surgery Only	31%	30%	36%	43%	35%	
	Chemo / Radio Only	15%	18%	11%	11%	9%	
	Chemo / Radio and Surgery	17%	38%	40%	36%	53%	
Develops Secondary or Additional Primary Cancer (46%)	Patient dropout by dependency duration	13.1%	6.9%	5.4%	4.0%	16.0%	
		237	124	98	72	289	n = 820
	Avg. age at diagnosis	87	66	66	65	63	
	Avg. Trust tariff revenue	£ 15,211	£ 32,386	£ 44,546	£ 53,887	£ 44,292	£ 34,959
	% of revenue which is cancer	86%	86%	85%	84%	74%	
	No Chemo, Radio or Surgery	25%	4%	5%	3%	1%	
	Surgery Only	13%	6%	6%	13%	10%	
	Chemo / Radio Only	31%	27%	22%	14%	9%	
	Chemo / Radio and Surgery	31%	63%	67%	70%	80%	
					Total n of patients		1,805
					Average Trust tariff revenue		£ 27,180

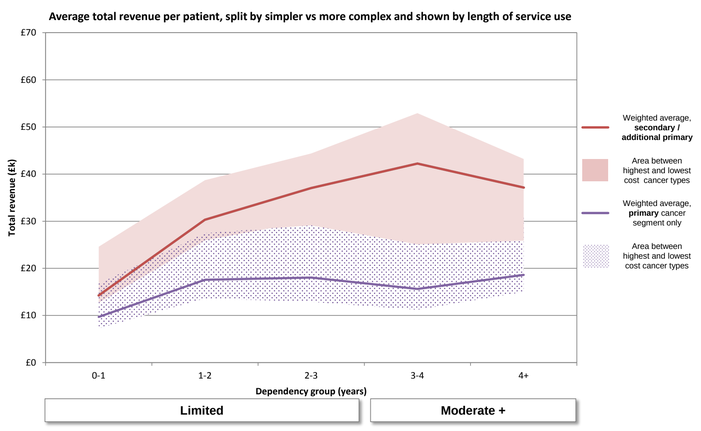
Background

Growth in cancer incidence[1] combined with increased survival rates is driving substantial growth in the survivorship population in the UK[2]. This, in combination with continued pressure on NHS spending, will put unprecedented strain on the resources allocated to treat cancer. However, there is a relatively limited body of evidence on understanding the drivers of cost accumulation for cancer patients. This study aims to begin to address this in a pragmatic way.

Method

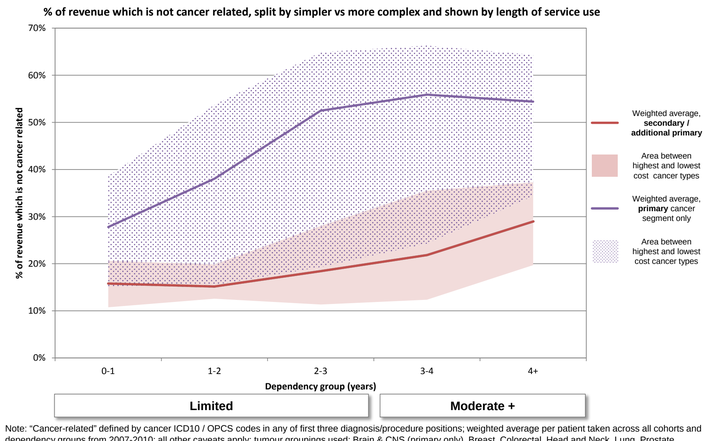
Pseudo-anonymised inpatient, outpatient and A&E HES data were used to identify cohorts of patients across eight tumour groupings[3]. Subgroups were created to reflect complexity and the length of time they continued to use hospital services. Finally activity for these patients was categorized into seven types of cancer treatment including a best effort costing of chemotherapy and radiotherapy[4].

Broad patterns of segment costs by simpler and more complex cases, cross major cancers



Note: Weighted average per patient taken across all cohorts and dependency groups from 2007-2010; all other caveats apply; tumour groupings used: Brain & CNS (primary only), Breast, Colorectal, Head and Neck, Lung, Prostate Bladder & Renal, Upper GI, Other; Source: HES 2006-12, Monitor analysis

Increasing financial impact of non-cancer issues for cancer survivors, cross major cancers



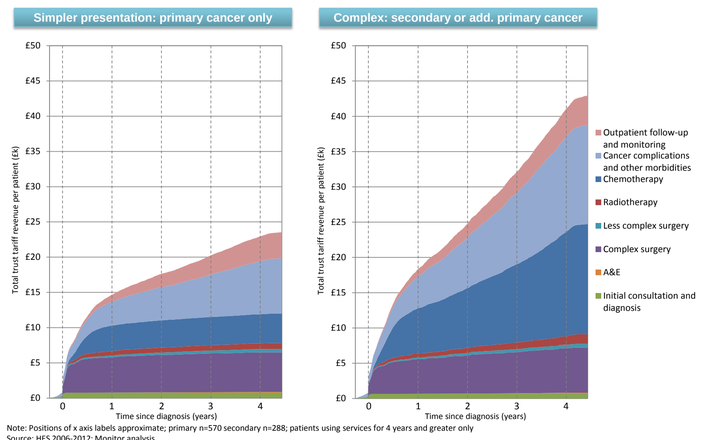
Note: "Cancer-related" defined by cancer ICD10 / OPCS codes in any of first three diagnosis/procedure positions; weighted average per patient taken across all cohorts and dependency groups from 2007-2010; all other caveats apply; tumour groupings used: Brain & CNS (primary only), Breast, Colorectal, Head and Neck, Lung, Prostate Bladder & Renal, Upper GI, Other; Source: HES 2006-12, Monitor analysis

Results

Overall, there was a substantial variance in cost accumulation across patient groups, driven by the complexity of their cancer primarily due to differing chemotherapy costs. When comparing the sub groups within cancers, or across cancers, we see similar patterns of relative cost variation i.e. a non-linear relationship between cost and length of service use with lower costs for patients with <1 year of service use and those who survive and use healthcare services through the end of the period of analysis.

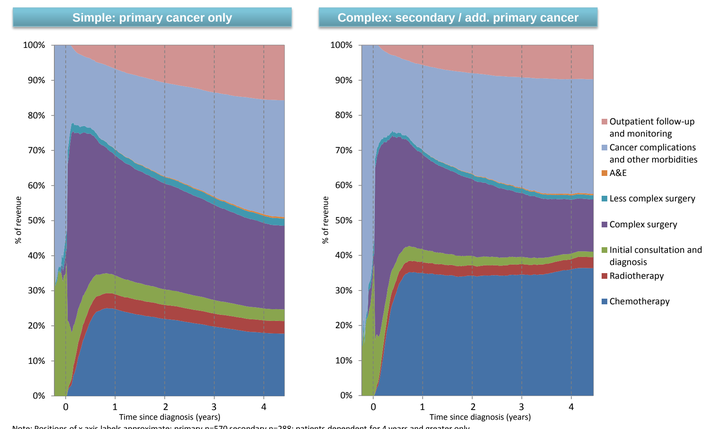
Analysis of 'dependent at 4+ years' subgroup, colorectal cancer

Overview of cost drivers



Note: Positions of x axis labels approximate; primary n=570 secondary n=288; patients using services for 4 years and greater only
Source: HES 2006-2012; Monitor analysis

Cumulative % breakdown, share of total Trust tariff revenue



Note: Positions of x axis labels approximate; primary n=570 secondary n=288; patients dependent for 4 years and greater only
Source: HES 2006-2012; Monitor analysis

Conclusion

This pragmatic approach to costing cancer hospital activity reveals interesting insights into cancer populations and is a useful tool in aiding cancer system strategy development.

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In collaboration with Monitor Deloitte.

References

[1] Mistry M, Parkin DM, Ahmad A, et al. Cancer incidence in the UK: Projections to the year 2030. Br J Cancer 2011;105(11):1795-803.

[2] Maddams et al. Projections of cancer prevalence in the United Kingdom, 2010-2040. Br J Cancer. 2012 Sep 25;107(7):1195-202

[3] Using ICD-10 coding – groups chosen were: Breast; Brain & CNS; Colorectal; Haematological; Head & Neck; Lung; Prostate, Bladder & Renal; Upper GI; and Other

[4] All HES data grouped into HRGSs using 2010-11 FY groupers (NHS IC) and subsequently costed against National Reference Costs 2010-11, with Trust tariff revenue applied from National Tariff 2010-11; chemotherapy and radiotherapy activity identified through a HRG, OPCS and consultant treatment speciality algorithm and, because largely off-tariff, assigned a revenue equal to cost at the event level