

Routes to Diagnosis: Exploring Emergency Presentations

NCIN Data Briefing

Background

The Routes to Diagnosis studyⁱ showed that 24% of newly diagnosed cancers in 2006-2008 (excluding non-melanoma skin cancer) first presented into secondary care as an Emergency Presentation. Relative survival estimates for Emergency Presentations were significantly lower than for other Routes across all sites. The Emergency Presentation Route comprises different emergency pathways into secondary care, including A&E attendance, emergency GP referrals to an inpatient setting (non – two week wait referrals) and emergency admissions to either an inpatient or outpatient setting.

This data briefing looks at the breakdown of Emergency Presentations by the different emergency pathways and explores whether there are differences by cancer site and whether outcomes differ by each emergency subgroup.

Emergency subgroups

In the Routes to Diagnosis study Emergency Presentations are assigned using inpatient and outpatient HES data. When assigning a Route several pathways are grouped together into the Emergency Presentation Route. These different pathways are assigned as emergencies based on the source of referral (for pathways which started as a referral to an outpatient setting) or admission method (for pathways which started as a referral to an inpatient setting). Table 1 shows these different emergency pathways. Some pathways are similar in nature and contain a very small proportion of patients and they have therefore been grouped together into emergency subgroups.

For all cancers combined, nearly 60% of Emergency Presentations were inpatient admissions following an A&E attendance (A&E), 30% were inpatient admissions following an emergency referral from a GP (GP), 4% were other emergency admissions to inpatients (IP emergency) and 6% were emergency referrals to outpatients (OP emergency).

Table 1: Breakdown of Emergency pathways by admission method or source of referral

Admission method or source of referral	Description	Distribution (all cancers)	Emergency subgroup
Emergency: via Accident and Emergency (A&E) services	Admitted to inpatients from the A&E department	59.4%	A&E
Emergency: via general practitioner (GP)	Admitted to inpatients from a GP as an emergency referral	30.4%	GP
Emergency: via Bed Bureau, including the Central Bureau	Admitted to inpatients from the Bed Bureau ⁱⁱ as an emergency referral	2.8%	IP emergency
Emergency: via consultant outpatient clinic	Admitted to inpatients from a consultant outpatient clinic	1.3%	IP emergency
Following an accident and emergency attendance	Referred from A&E attendance to outpatients under the care of referring consultant	0.3%	OP emergency
Following an emergency admission	Referred to outpatients following an emergency inpatient admission	3.1%	OP emergency
Referral from an accident and emergency department	Referred from A&E attendance to outpatients under the care of different consultant	2.6%	OP emergency

KEY MESSAGE:

Nearly 60% of Emergency Presentations resulting in a new diagnosis of cancer come through A&E, with 30% being emergency referrals from GPs.

Emergency referrals to outpatients are higher for certain cancers. Survival estimates for this group are higher than other emergency subgroups and more comparable to survival from “managed” Routes.

Table 2: Emergency presentations and subgroups by site, all ages, England, 2006-2008

Cancer site	Number of cases	Number of Emergency Presentations	Emergency Presentation proportion	Breakdown of Emergency Presentations			
				A&E	GP	Other IP	Other OP
Bladder	25,639	4,853	19%	60.7%	26.5%	3.2%	9.6%
<i>Confidence Interval</i>				60.7% 62.1%	25.3% 27.8%	2.7% 3.7%	8.8% 10.5%
Breast	110,173	5,332	5%	63.1%	25.3%	3.2%	8.5%
<i>Confidence Interval</i>				63.0% 64.3%	24.1% 26.5%	2.7% 3.7%	7.8% 9.3%
Cervix	7,000	881	13%	66.7%	21.5%	3.9%	7.9%
<i>Confidence Interval</i>				66.4% 69.8%	18.9% 24.3%	2.8% 5.3%	6.3% 9.9%
Central nervous system (CNS)	11,697	7,278	62%	70.5%	23.6%	3.3%	2.6%
<i>Confidence Interval</i>				70.4% 71.5%	22.6% 24.6%	2.9% 3.8%	2.3% 3.0%
Colorectal	91,416	23,827	26%	57.6%	33.5%	3.7%	5.2%
<i>Confidence Interval</i>				57.6% 58.2%	32.9% 34.1%	3.5% 4.0%	4.9% 5.5%
Head and neck – larynx	5,200	582	11%	63.6%	16.0%	5.0%	15.5%
<i>Confidence Interval</i>				63.1% 67.4%	13.2% 19.2%	3.5% 7.1%	12.8% 18.6%
Head and neck - Oral cavity	5,992	388	6%	45.1%	11.3%	8.2%	35.3%
<i>Confidence Interval</i>				44.6% 50.1%	8.6% 14.9%	5.9% 11.4%	30.7% 40.2%
Head and neck - Oropharynx	3,859	330	9%	51.8%	17.3%	3.9%	27.0%
<i>Confidence Interval</i>				51.2% 57.2%	13.6% 21.7%	2.3% 6.6%	22.5% 32.0%
Head and neck – thyroid	5,304	401	8%	47.4%	20.7%	4.0%	27.9%
<i>Confidence Interval</i>				46.9% 52.3%	17.0% 24.9%	2.5% 6.4%	23.8% 32.5%
Hodgkin lymphoma	3,644	625	17%	54.4%	30.6%	4.2%	10.9%
<i>Confidence Interval</i>				54.0% 58.3%	27.1% 34.3%	2.9% 6.0%	8.7% 13.6%
Kidney and unspecified urinary organs	20,594	5,181	25%	58.4%	28.7%	3.6%	9.4%
<i>Confidence Interval</i>				58.3% 59.7%	27.5% 29.9%	3.1% 4.1%	8.6% 10.2%
Leukaemia: acute myeloid	6,365	3,407	54%	58.8%	34.7%	3.8%	2.8%
<i>Confidence Interval</i>				58.7% 60.4%	33.1% 36.3%	3.2% 4.5%	2.3% 3.4%
Leukaemia: chronic lymphocytic	6,835	1,723	25%	60.1%	31.6%	2.9%	5.3%
<i>Confidence Interval</i>				60.0% 62.4%	29.5% 33.9%	2.2% 3.8%	4.4% 6.5%
Liver	8,576	4,133	48%	56.5%	35.2%	5.1%	3.1%
<i>Confidence Interval</i>				56.5% 58.0%	33.8% 36.7%	4.5% 5.8%	2.6% 3.7%
Lung	96,735	37,381	39%	63.4%	27.4%	4.3%	4.9%
<i>Confidence Interval</i>				63.4% 63.9%	27.0% 27.9%	4.1% 4.5%	4.7% 5.1%
Melanoma	26,660	740	3%	49.7%	20.3%	4.6%	25.4%
<i>Confidence Interval</i>				49.4% 53.3%	17.5% 23.3%	3.3% 6.4%	22.4% 28.7%
Mesothelioma	6,179	2,207	36%	58.5%	28.3%	5.9%	7.3%
<i>Confidence Interval</i>				58.4% 60.5%	26.4% 30.2%	5.0% 7.0%	6.3% 8.5%
Multiple myeloma	11,221	4,120	37%	58.2%	31.4%	4.8%	5.6%
<i>Confidence Interval</i>				58.1% 59.7%	30.0% 32.9%	4.2% 5.5%	4.9% 6.3%
Non-Hodgkin lymphoma	25,413	6,982	27%	58.0%	31.0%	4.8%	6.1%
<i>Confidence Interval</i>				58.0% 59.2%	30.0% 32.1%	4.3% 5.3%	5.6% 6.7%
Oesophagus	19,449	4,198	22%	55.8%	33.8%	4.4%	6.0%
<i>Confidence Interval</i>				55.8% 57.3%	32.3% 35.2%	3.8% 5.1%	5.3% 6.8%
Other malignant neoplasms	50,110	23,293	46%	59.1%	33.0%	4.3%	3.6%
<i>Confidence Interval</i>				59.1% 59.8%	32.4% 33.6%	4.1% 4.6%	3.4% 3.8%
Ovary	16,026	5,145	32%	54.5%	36.1%	4.7%	4.7%
<i>Confidence Interval</i>				54.5% 55.9%	34.8% 37.4%	4.2% 5.4%	4.1% 5.3%
Pancreas	19,896	9,949	50%	53.8%	38.1%	4.9%	3.2%
<i>Confidence Interval</i>				53.8% 54.8%	37.2% 39.1%	4.5% 5.3%	2.8% 3.5%
Prostate	92,922	9,155	10%	53.3%	28.1%	3.4%	15.3%
<i>Confidence Interval</i>				53.3% 54.3%	27.2% 29.0%	3.0% 3.7%	14.5% 16.0%
Sarcoma: connective and soft tissue	3,447	548	16%	52.7%	27.7%	3.1%	16.4%
<i>Confidence Interval</i>				52.3% 56.9%	24.2% 31.6%	1.9% 4.9%	13.6% 19.8%
Stomach	18,613	6,085	33%	60.0%	31.1%	4.2%	4.6%
<i>Confidence Interval</i>				60.0% 61.2%	30.0% 32.3%	3.8% 4.8%	4.1% 5.2%
Testis	5,070	532	10%	54.9%	22.9%	9.8%	12.4%
<i>Confidence Interval</i>				54.5% 59.1%	19.6% 26.7%	7.5% 12.6%	9.9% 15.5%
Uterus	18,462	1,544	8%	59.1%	21.1%	3.1%	16.7%
<i>Confidence Interval</i>				58.9% 61.5%	19.2% 23.2%	2.4% 4.1%	14.9% 18.7%
Vulva	2,733	222	8%	53.6%	26.1%	3.6%	16.7%
<i>Confidence Interval</i>				52.6% 60.0%	20.8% 32.3%	1.8% 6.9%	12.3% 22.1%
Total	725,230	171,042	24%	59.4%	30.4%	4.1%	6.0%
<i>Confidence Interval</i>				59.4% 59.7%	30.2% 30.6%	4.0% 4.2%	5.9% 6.1%

Emergency subgroups by cancer site

Table 2 shows that for the majority of sites, a similar proportion of Emergencies present through each emergency subgroup. The highest proportion of A&E emergencies was seen for cancers of the central nervous system (70% of emergencies) whilst the highest proportion of GP emergencies was seen for pancreatic cancer (38%). Differences from the overall proportions are observed for head and neck cancers, sex specific cancers, melanoma and sarcomas. These sites have a significantly higher proportion of emergency referrals to an outpatient setting compared to all cancers combined, ranging from 12% (testis) to 35% (oral cavity). For both oral cavity and oropharynx, a greater proportion of emergencies were diagnosed through the OP emergency subgroup than as emergency GP referrals.

Children, teenagers and young adults

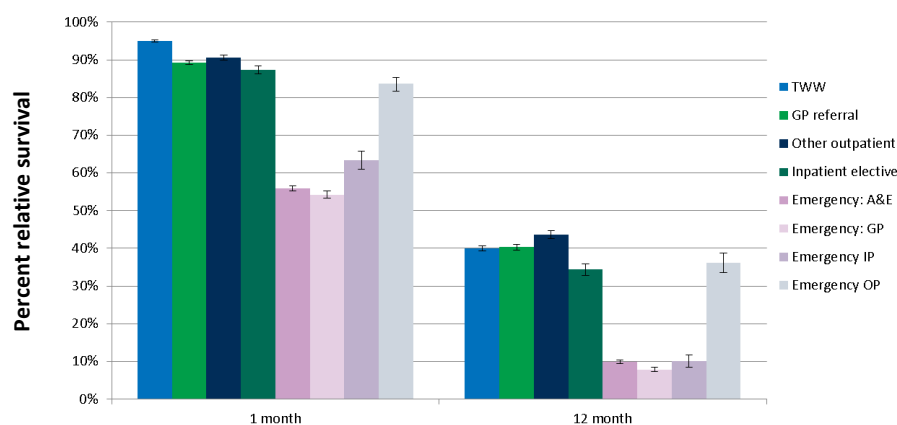
Whilst a higher proportion of childhood (aged 0-14) cancers were classified as Emergency Presentations (54% compared to 24% for all ages), the proportion by emergency subgroup doesn't differ greatly from the all age distribution with the exception of sarcoma (connective and soft tissue) which showed a noticeably lower proportion of GP emergencies (16%) and a higher proportion of OP emergencies (31%).

For cancers diagnosed in teenagers and young adults (TYA, aged 15-24), a similar distribution by emergency subgroup was seen for each cancer site compared to the distribution for that site for all ages combined. Differences were seen for a small number of cancers; Colorectal cancer in TYA does have a slightly higher proportion of A&E emergencies (71% compared to 58% for all ages) with fewer GP emergencies, acute myeloid leukaemia has a slightly lower proportion of A&E emergencies for TYA (47% compared to 59% for all ages) with a lower proportion of GP emergencies and ovarian cancer showed a higher proportion of OP emergencies (17% compared to 5% for all ages).

Survival by emergency subgroup

The Routes to Diagnosis study showed that Emergency Presentations have poorer one-year relative survival than other Routes. Figure 1 shows that for lung cancer there is also variation in relative survival estimates between different types of emergency subgroup. The OP emergency pathway has higher relative survival estimates than other emergency subgroups whereas relative survival estimates for the A&E and GP emergency pathways produce similar survival estimates at both one month and one year.

Figure 1: 1-month and 12-month relative survival estimates for lung cancer for non-emergency Routes and Emergency subgroups, England, 2006-2008



The higher relative survival estimates for the emergency OP pathway shows survival estimates that are closer to the "managed" presentation Routes of Two Week Wait, other GP referrals and non-emergency inpatient and outpatient Routes. Further work will be undertaken to try and understand more about these emergency referrals that do not lead to the poorer survival seen from other emergency pathways.

One year survival estimates are shown in table 3 by broad age group for four selected cancer sites. Across age groups and sites, the general pattern of survival for OP Emergency subgroup being higher and more similar to non-emergency Routes is repeated.

Table 3: 12-month relative survival estimates by emergency subgroup and TWW Route by site and age group, England, 2006-2008 followed up to 2009.

	Emergency Subgroups						Non-Emergency Routes					
	A&E		GP		IP Emergency		OP Emergency		TWW	GP referral		
Breast (0-64)	58.2	(53.8 - 62.4)	51.5	(44.9 - 57.8)	53.5	(37 - 67.5)	91.3	(85.6 - 94.8)	98.4	(98.3 - 98.6)	97.7	(97.3 - 98.0)
Breast (65-84)	46.0	(43.3 - 48.8)	40.0	(35.9 - 44.1)	38.2	(26.9 - 49.4)	88.7	(81.8 - 93.1)	96.5	(96.1 - 96.8)	93.0	(92.0 - 93.9)
Breast (85+)	41.3	(38 - 44.7)	38.1	(32.6 - 43.6)	39.4	(22.7 - 55.7)	70.8	(53.6 - 82.6)	93.8	(92.5 - 95.0)	86.2	(82.6 - 89.2)
Head and neck - Oral cavity (0-64)	40.6	(28.3 - 52.4)	25.6	(7.2 - 49.3)	76.2	(42.6 - 91.7)	74.3	(61.9 - 83.1)	83.1	(80.1 - 85.4)	86.7	(83.9 - 89.1)
Head and neck - Oral cavity (65-84)	18.4	(10 - 28.7)	20.6	(5.5 - 42.4)	46.1	(20.7 - 68.3)	85.1	(67.2 - 93.6)	74.8	(71.1 - 78.0)	75.6	(71.4 - 79.2)
Head and neck - Oral cavity (85+)	13.2	(2.8 - 32)	16.0	(1.3 - 45.9)	16.0	(0.1 - 63.4)	54.2	(16.8 - 81)	49.1	(39.2 - 58.3)	53.6	(41.5 - 64.2)
Lung (0-64)	14.4	(13.3 - 15.5)	12.5	(10.9 - 14.1)	14.8	(11.1 - 18.9)	45.0	(40.2 - 49.7)	46.9	(45.7 - 48.1)	47.4	(45.9 - 48.9)
Lung (65-84)	9.3	(8.8 - 9.9)	7.0	(6.4 - 7.7)	9.3	(7.4 - 11.4)	34.5	(31.4 - 37.6)	37.6	(36.8 - 38.4)	38.7	(37.7 - 39.6)
Lung (85+)	6.4	(5.6 - 7.3)	5.5	(4.3 - 6.8)	4.1	(1.7 - 8.3)	16.6	(10.3 - 24.2)	26.9	(24.4 - 29.5)	26.4	(23.8 - 29.1)
Pancreatic (0-64)	15.2	(13 - 17.5)	15.4	(12.7 - 18.4)	15.2	(8.9 - 23.2)	34.8	(24.9 - 44.9)	28.2	(24.5 - 31.9)	38.0	(34.8 - 41.3)
Pancreatic (65-84)	6.3	(5.4 - 7.2)	7.3	(6.2 - 8.6)	7.7	(4.6 - 11.8)	17.3	(11.4 - 24.3)	17.6	(15.6 - 19.6)	22.1	(20.2 - 24.0)
Pancreatic (85+)	4.2	(3 - 5.7)	3.4	(2.2 - 5.1)	4.9	(1.4 - 12.1)	4.3	(0.4 - 16.7)	8.4	(5.1 - 12.6)	7.8	(4.9 - 11.7)

Conclusions and summary

Almost 90% of patients classed as an Emergency Presentation enter secondary care on their way to being diagnosed with a cancer through two emergency subgroups; A&E (59% for all cancers combined) or an emergency referral to inpatients from a GP (30% overall). A similar distribution to these two subgroups is seen for most individual sites. Relative survival estimates for A&E and GP emergencies were similar for four different cancer sites examined. Producing results by these different emergency pathways would allow for further exploration to see if differences exist for specific sites or by equality groups.

Overall, 6% of emergencies are diagnosed through the OP emergency pathway although for head and neck cancers, melanoma and sex-specific sites a much higher proportion of patients first present through this pathway than for other cancers. Relative survival estimates for OP emergencies are higher and more comparable to survival from more managed routes such as TWW, non-emergency GP referrals and other outpatient and inpatient elective Routes. This may imply that these cancers are at an earlier stage than other emergencies yet presenting symptoms have caused an emergency referral. Further work will be undertaken to investigate the presenting symptoms of these cancers in order to understand this further.

ⁱ "Routes to diagnosis for cancer – determining the patient journey using multiple routine data sets" Br J cancer, doi:10.1038/bjc.2012.408

ⁱⁱ The Bed Bureau is the centre for day-to-day communication between General Practitioners, the Patient Services Co-ordinators and clinical staff. It supports the timely admission of emergency and GP admissions to the Trust.

FIND OUT MORE:

NCIN Routes to Diagnosis project: http://ncin.org.uk/publications/routes_to_diagnosis.aspx

Other useful resources within the NCIN partnership:

Cancer Research UK CancerStats – Key facts and detailed statistics for health professionals
<http://info.cancerresearchuk.org/cancerstats/>

The National Cancer Intelligence Network is a UK-wide initiative operated by Public Health England. The NCIN coordinates and develops analysis and intelligence to drive improvements in prevention, standards of care and clinical outcomes for patients.