

Emergency admissions in the last year of life for people dying of Cancer in Northern Ireland in 2015

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SUMMARY

1N.Ireland Cancer Registry, 2 Macmillan Cancer Support

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Headline Figures – IN SUMMARY

- 4,316 people died of cancer in Northern Ireland (NI) in 2015.
- Three quarters (74% n=3,134) had at least one emergency admission in their last year of life with 1 in 6 (17%) having 3 or more.
- This represented a total of 6,041 emergency admissions of which one third (33%) occurred 9am-5pm Monday to Friday.
- Just over half (53%) occurred 5pm-9am Monday to Friday (likely reflects admission hours after attending the Emergency Department (ED) earlier). One in 9 (11%) occurred at the weekend, and 2% on public holidays.
- Late diagnosis was a feature with almost a quarter (1 in 4; 23%) being admitted as an emergency 1 to 3 months before diagnosis.

Background

- There is increased interest in the place and timing of end-of-life care for people dying from cancer. Emergency hospital admissions for end-of-life cancer patients may indicate gaps in routine cancer care including palliative care or acute oncology services.

Indicators of poor-quality end of life care include ¹:

- a short interval between last chemotherapy and death,
- a high proportion of hospital deaths compared to home deaths,
- frequent emergency room visits,
- high number of days near the end of life spent in hospital or Intensive Care Units,
- hospital admission near to death.

Indicators of good-quality care include ¹:

- communication,
- shared decision making,
- advance directives and
- pain and symptom management.
- This summary is from a report which follows from two previous NICR reports investigating reasons why cancer patients die in acute hospitals ² and factors enabling cancer patients to die at home ³. The aim of this work was to examine the demographic, disease and environmental characteristics of people dying from cancer admitted as an emergency in the last year of life, compared to those with no emergency admissions, in order to identify patient groups most affected by potential service gaps.

Methods- WHAT WE DID

Data on disease and socio-demographic characteristics of 4,316 people dying from cancer (ICD10 C00-C99) in 2015 were linked securely to Patient Administration System (PAS) episodes relating to emergency admissions for the same patients between 1st January 2014 and 31st December 2015.

- Data linkage and analysis was carried out in STATA (version 14, STATA Corp, LLC). Descriptive statistics were used to present characteristics of people dying from cancer who did or did not have an emergency admission recorded in the last year of life using frequency tables with numbers and valid percentages. Where applicable, data are presented as means and standard deviations. Chi-square analysis was used to test comparisons between groups.
- Socio-economic group and rurality were based on postcode of residence at time of death.

Results - WHAT WE FOUND

Demographic, Disease and Environmental Characteristics and Emergency Admissions

Sex: - A higher proportion of males (76%) had at least one emergency admission recorded in the last year of life when compared to females (73%) ($p=0.018$).

Tumour Diagnosis: - Patients with lymphoma ($n=147$; 82%), mesothelioma ($n=41$; 81%), myeloma ($n=90$; 80%), brain and other CNS ($n=104$; 80%), leukaemia ($n=130$; 79%) or lung cancer ($n=1010$; 78%) had higher rates of at least one emergency admission recorded in the last year of life compared with those diagnosed with non-melanoma skin cancer ($n=35$; 46%), connective tissue cancer ($n=20$; 55%), melanoma ($n=56$; 57%), female genital cancer ($n=92$; 64%), head and neck cancer ($n=137$; 64%) or Cancer of Unknown Primary (CUP; $n=162$; 64%).

- A higher proportion of people with haematological (blood) cancer (42%) or lung cancer or mesothelioma (43%) had at least one emergency admission recorded in their last 28 days of life compared with those diagnosed with head & neck cancer (29%), or brain and CNS cancer (29%) ($p<0.001$).

- A higher proportion of people with a diagnosis of haematological cancer (45%), CUP (43%), lung cancer or mesothelioma (40%) or urinary cancer (40%) died before discharge following an emergency admission ($p<0.001$).

- **Deprivation Quintile/ Rurality:** - There were no differences in the proportions of people dying with cancer who did or did not have an emergency admission recorded by deprivation quintile ($p=0.708$) or rurality ($p=0.082$).
- **Stage at Diagnosis:** - A higher proportion of those diagnosed at stages III (77%) and IV (80%) and a lower proportion of those diagnosed at stage I (6%) had at least one emergency admission recorded ($p<0.001$).
- **Age at Time of death:** - A lower proportion of people aged 0-24 years, 80-89 years or 90 years and over had at least one emergency admission in the last year of life compared to other ages ($p<0.001$).

Frequency of admissions

- Three quarters of (74%) people who died of cancer in 2015 had at least one emergency admission in their last year of life and 1 in 6 (17%) had 3 or more.
- **TUMOUR TYPE: Three or more emergency admissions:-** A higher proportion of people with a haematological cancer (21%), prostate (22%), colorectal or anal cancers (20%) or urinary cancer (19%) had three or more emergency admissions recorded in the last year of life compared with those diagnosed with a CUP(7%), brain and other CNS (12%) or head and neck cancer (13%) ($p<0.001$).

AGE: The proportion of people with three or more emergency admissions varied by age (0 to 39 years; 27%, 40 to 49 years; 31%, 50 to 59 years; 26%, 60 to 69 years, 21%; 70 to 79 years, 16%; 80+ years, 11%; $p<0.001$).

Cancer Type relating to Emergency Admission

- 1 in 4 (25%) of all emergency admissions of cancer patients in their last year of life occurred in people with lung cancer.
- 1 in 8 (12%) had colorectal or anal cancer
- 1 in 9 (11%) had a haematological cancer
- 1 in 17 had prostate cancer (6%) or breast cancer (6%)

Time since diagnosis

- 1 in 9 (11%) people were diagnosed on their emergency admission. Equivalent to 8% of all cancer deaths (including those with no emergency admission recorded) in 2015
- Almost 1 in 4 (23%) were admitted as an emergency one to three months before their cancer diagnosis – equivalent to 1 in 6 (17%) cancer deaths (including those with no emergency admission recorded).
- Over 1 in 5 (22%) had an emergency admission in the six months following their cancer diagnosis.
- Almost 1 in 4 (24%) who were admitted in their last year of life had been diagnosed one to five years previously, while 1 in 10 (10%) had been diagnosed more than five years before.

Time from last admission to death

- 1 in 6 (17%) died within 7 days of their last emergency admission with 95% of these patients dying in hospital.
- Almost 1 in 3 (30%) died within 14 days.
- Almost 1 in 2 (49%) died within 28 days.
- 1 in 6 (17%) died within 3 to 12 months of their last emergency admission.

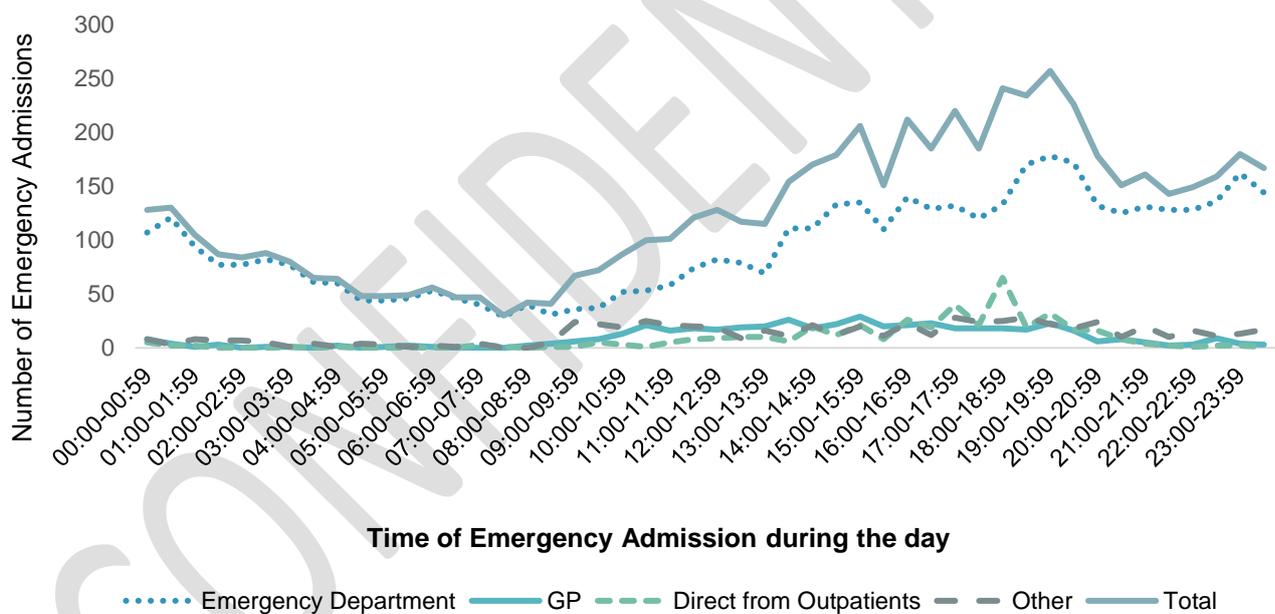
Route to Admission

- 3 in 4 (75%) of emergency admissions in last year of life occurred through ED
- 1 in 14 (7%) were admitted direct from outpatients.
- 1 in 13 (8%) were admitted as an emergency by a GP.
- 1 in 10 (10%) were admitted through another emergency route (such as acute care at home, ambulatory assessment, critical care medical unit, paramedic admission).

Timing of admission

- Of cancer patients who had a hospital admission in their last year of life; One third (33%) of emergency admissions occurred 9am-5pm Monday to Friday.
- Just over half (53%) occurred 5pm-9am Monday to Friday (this likely reflects admission hours after attending ED earlier). One in 9 (11%) occurred at the weekend, and 2% on public holidays.

Time (during the day) that Emergency Admission took place by Method of Emergency Admission



Length of hospital stay for cancer patients with an emergency admission who died in 2015

- Half (51%, n=824) had an inpatient stay of 7 days or less following their 1st emergency admission, including 143 patients (5%) who were discharged on the same day they were admitted.
- Almost 1 in 4 (23%, n=713) had an inpatient stay of between 8 and 14 days.
- Just over 1 in 5 (21%, n=643) had a total inpatient stay (total number of days following all admissions in last year of life) of more than 28 days in their last year of life.
- Of those who had a least one emergency admission in the last month of life (n=1,546) almost two thirds (64%, n=990) died before discharge representing 23% of all cancer deaths in 2015.

Place of death following an emergency admission

- Of those who had an emergency admission recorded in the last 28 days of life (n=1546) **less than 1 in 5 (18%) died at home** compared with 2 in 5 (43%) of those who did not have such an emergency admission (p<0.001). Also patients with a history of emergency admission in the last 28 days of life were 3 times more likely to die in hospital, 72% vs 24% (p<0.001).
- Over a third (36%) of cancer patients diagnosed in 2015 (n=1125) died before discharge from hospital following an emergency admission representing 27% of all cancer deaths (including those with no emergency admission recorded) in 2015
- There were no differences in the proportion of emergency admissions recorded for those people who died before discharge and those who were discharged to home or other hospital (p=0.778).
- 1 in 12 (8%) had at least one further emergency admission following a palliative care record.

Reason for admission

- The most common reasons were fever/inflammation (24%), respiratory problems (11%), brain/other CNS symptoms (6%) or digestive problems (6%).
- For patients admitted via the emergency department the most common reasons were adverse effects of device/procedure/medication (90%), dizziness/disorientation/fall/coma (86%), brain or CNS symptoms (85%), cardiac symptoms (84%), fever/inflammation/infection (82%), pain (83%), sepsis (82%), or constipation (81%).
- For those admitted via other routes the most common causes were anaemia (45%), nausea and vomiting (38%), blood cancer or other blood abnormality (37%), nerve root/plexus or spinal cord compressions (33%) or ascites (33%).

Late diagnosis

- **Almost a quarter (23%)** were admitted as an emergency **one to three months before their cancer diagnosis** – equivalent to 17% of cancer deaths (including those with no emergency admission recorded) indicating possible lost opportunities for an earlier diagnosis.
- 1 in 9 (11%) people were diagnosed with cancer on the same day of their emergency admission indicating late diagnosis. This is equivalent to 8%, 1 in 12 cancer deaths (including those who did not have an emergency admission recorded).

Costs

As well as having cost in terms of outcomes for people dying of cancer, overly aggressive treatment, including the use of emergency care and an inpatient stay, towards the end of life also has a large monetary cost associated with it. A large proportion of all healthcare expenditure in developed countries is consumed by care for those in the last year of life. In the UK it has been estimated that approximately 10-20% of the National Health Service (NHS) expenditure each year is used to care for those in the last year of their life ⁴. A statistical model which simulated the cost of caring for cancer patients in their last year of life (England) found that a 10% reduction in emergency admissions coupled with a three day reduction in length of stay could equate to a saving of £104 million per year ⁵.

The findings highlight that:

- Late diagnosis of cancer continues to be an issue
- Burden of emergency admissions for cancer patients in the last year of life is high
- A higher proportion of those with an emergency admission in last 28 days of life, died in hospital.
- One in three emergency admissions take place during 'normal working hours' of 9am-5pm Monday to Friday with two thirds taking place outside 'normal working' hours.
- A high proportion of people with a diagnosis of lung or haematological cancer had at least one emergency admission recorded in last year of life. Although not examined in this work we recognise that many of these admissions may be unavoidable due to nature of disease and treatments/interventions required to relieve symptoms.
- Over half (55%) of people who died from cancer in 2015 spent more than seven days in hospital following an emergency admission in their last year of life and almost three quarters (74%) had a total inpatient stay of more than seven days following their emergency admission(s) in the last year of life. The introduction of regional Acute Oncology Service (AOS) should directly address length of stay but that initial monitoring data have shown that there are still issues with length of time from presentation to referral to AO and this will impede efforts to reduce unnecessary time in hospital. Also the time of AOS (9am-5pm Monday to Friday) relates to only a third of admissions.

Recommendations

Recommendation 1: Work needs to continue to promote early detection of cancer through public awareness campaigns and encouraging uptake of established screening programmes.

Recommendation 2: Early identification of patients in their last year of life who would benefit from supportive and palliative care.

Recommendation 3: Additional training for healthcare professionals (in both primary and secondary care) in effective communication and care planning with emphasis on initiating discussions about likelihood of death and preferred place of death. This will facilitate appropriate care planning to enable patients to receive end-of-life care in preferred place of death wherever possible.

Recommendation 4: Establishing a clear point of contact for patients and their carers through which they can be provided with information on how to identify and self-manage consequences of cancer and its treatment and be signposted to the most appropriate places to seek early support for problems (GP, District Nurse, Clinical Nurse Specialist, Specialist Palliative Care etc).

Recommendation 5: Pilot extended hours for the Acute Oncology Service (AOS) from the current AOS hours of 9am to 5pm Monday to Friday and define pathways within the AOS for patients presenting via ED.

Recommendation 6: The further development of community based programmes such as 'Delivering Choice' which includes services such as Rapid response teams and district community link nurses.

WHAT NEXT

Further research which could be undertaken in these areas to:

- Undertake an economic analysis of the cost of emergency admissions for cancer patients in last year of life.
- Determine the optimal time and method to provide information on likelihood of death and advance care planning for people with palliative care needs following a cancer diagnosis.
- Assess the best way to support the emotional and practical needs of informal carers.
- Investigate the appropriateness of emergency admissions for people dying with cancer to provide an estimate of 'appropriate' and 'inappropriate' admissions which potentially could have been managed in a community setting after increased education and support from existing community services.
- Qualitatively explore the needs and decision making of family members and healthcare professionals when considering an emergency admission for people dying of cancer in Northern Ireland.

References

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- (4) Georghiou T and Bardsley M (2014) Exploring the cost of care at the end of life. Nuffield Trust.
- (5) Hatziandreu E, Archontakis F, Daly A (2008) The potential saving of greater use of home and hospice based end of care in England. National Audit Office, available at: <http://nao.org.uk/publications>

Further data on Cancer Incidence, Prevalence and Mortality is available from the N.Ireland Cancer Registry Website: www.qub.ac.uk/nicr and

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Further information on the Macmillan-NICR Partnership work carried out to date in NI is available at: <https://www.qub.ac.uk/research-centres/nicr/Publications/MacmillanNICRPartnership/>. This work uses data provided by patients and collected by the health service as part of their care and support.



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