

# Reasons for emergency department visits among advanced cancer patients in their last week of life

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## Abstract

For advanced cancer patients, an emergency department (ED) visit in the last week of life may result in aggressive care that is inappropriate and futile. The objective of this study is to explore the characteristics of advanced cancer patients who present to ED in the last week of life. Specifically, we describe the spectrum of presenting symptoms. This was a retrospective cross-sectional study of ED attendances in the Singapore General Hospital during a one-year period. The electronic medical record system was used to retrieve demographic data, characteristics of the ED visits and presenting complaints. A total of 145 patients with advanced cancer dying in hospital within seven days of an ED visit were included. Breathlessness was the most common reason for presenting to ED (85 patients, 58.62%), followed by pain (50 patients, 34.48%), generalised weakness or lethargy (39 patients, 26.90%) and decreased appetite or anorexia (35 patients, 24.14%). Strategies to improve end-of-life care can focus on pre-emptive management of breathlessness and pain. Community programmes can also help prepare families for symptoms like generalised weakness and appetite loss which may signal a progression of the disease. Supportive and palliative care interventions will need to be implemented in the ED setting to better manage the symptoms suffered by these advanced cancer patients.

## Keywords

Emergency department, palliative care, cancer

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## Introduction

Emergency departments (EDs) are not places where people want to die. For those with acute problems, urgent medical care and active resuscitation seek to prevent death. For those who already have a terminal illness such as advanced cancer, the ED may not be the preferred place to spend their last days.<sup>1</sup>

However, an increasing number of advanced cancer patients are presenting to the ED.<sup>2</sup> Some present with symptoms arising from an undiagnosed advanced malignancy, while others rightly seek urgent medical care due to complications from cancer treatment.<sup>3</sup> However, some terminal cancer patients being cared for in the community visit the ED because of uncontrolled symptoms such as pain or breathlessness.<sup>4,5</sup> For these patients, an inappropriately aggressive approach set within a chaotic environment with long wait times leads to futile investigations and interventions, and hampers the delivery of optimal supportive and palliative care.<sup>6,7</sup>

Community-based palliative care services present an alternative form of medical care for advanced cancer

patients, with growing evidence that such services may reduce the odds of an ED visit or hospital admission in the last weeks of life.<sup>8–11</sup> Community-based palliative care teams can pre-empt the development of symptoms and proactively manage them, thereby helping vulnerable patients at the end of life avoid the stressful ED environment, and also decrease the pressure on overcrowded EDs.<sup>9</sup>

The objective of this study was to explore the characteristics of advanced cancer patients who present to the ED in their

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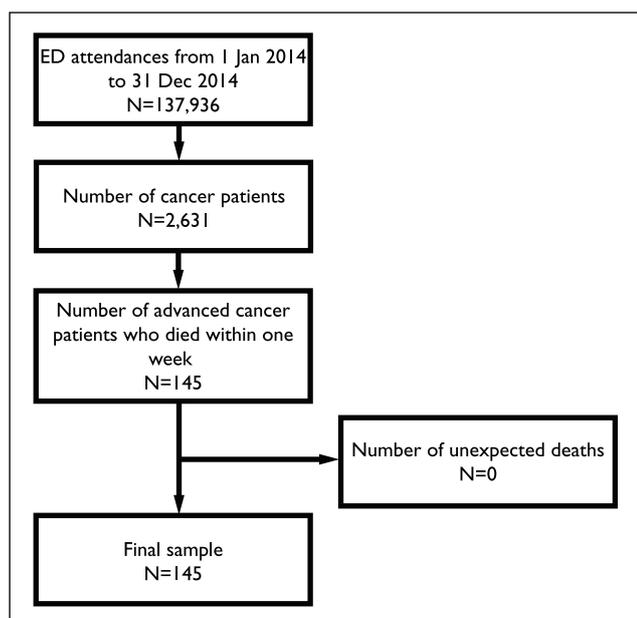
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**Figure 1.** Flow diagram for case identification. ED: emergency department.

last week of life, while progressing on an expected dying trajectory. Specifically, we wanted to determine the spectrum of symptoms that triggered an ED visit at the patients' end of life.

## Text

This was a retrospective cross-sectional study of ED attendances during a one-year period (1 January–31 December 2014). The study was conducted in the Singapore General Hospital's ED, which treats more than 135,000 patients a year, and is a 24-hour service for all adult emergencies.

Patients were identified by a keyword search of the medical history in the ED electronic medical records. The keywords 'cancer', 'metastasis' and 'malignant' were used to identify potentially eligible patients with an existing diagnosis of advanced cancer. Advanced cancer was defined as Stage 4 solid tumour. For haematological malignancies, we included patients with progressive or relapsed diseases refractory to any treatment. We included only those who died as an inpatient within seven days of presenting to the ED. We excluded patients who died within the intensive care unit or high dependency unit, during surgery or other medical procedures, and those who were listed as coroner's cases, as these may indicate that the death was unexpected.

The electronic medical record system was used to retrieve demographic data, characteristics of the ED visits and presenting complaints. To minimise bias, we collected data on all eligible patient records over one calendar year.

This study was approved by the Singhealth Centralised Institutional Review Board.

Of the 137,936 patients who visited the ED during the study period, 2631 had a pre-existing diagnosis of advanced cancer and 145 died in hospital within seven days of ED attendance. After removing patients following the exclusion criteria, we had a remaining sample of 145 patients (Figure 1).

**Table 1.** Patient characteristics ( $n = 145$ ).

Characteristic	Number of patients (%)
Male	85 (58.62%)
Age, mean $\pm$ standard deviation	65.56 $\pm$ 13.15
<u>Race</u>	
Chinese	112 (77.78%)
Malay	22 (15.28%)
Indian	7 (4.86%)
Others	3 (2.08%)
<u>Marital status</u>	
Married	94 (64.83%)
Widowed	17 (11.72%)
Divorced	5 (3.45%)
Single	16 (11.03%)
Unknown	13 (8.97%)
<u>Comorbidities</u>	
Diabetes	23 (15.86%)
Hypertension	60 (41.38%)
Hyperlipidaemia	47 (32.41%)
Coronary artery disease/ischaeamic heart disease	16 (11.03%)
<u>Primary site of cancer</u>	
Colorectal	15 (10.42%)
Lung	49 (34.03%)
Hepatobiliary or pancreas	31 (21.40%)
Breast	10 (6.94%)
Other GI	14 (9.62%)
Head and neck	11 (7.64%)
Lymphoma or leukaemia	7 (4.86%)
Prostate or genitourinary	3 (2.08%)
Others or unknown	5 (3.45%)
<u>Time of admission</u>	
0800–1559	65 (44.83%)
1600–2359	59 (40.69%)
0000–0759	21 (14.48%)
<u>Number of previous ED visits in the last six months</u>	
0	56 (38.62%)
1–2	72 (49.66%)
3–4	17 (11.72%)
<u>Triage category</u>	
P1: Critically ill	99 (68.28%)
P2: Major (ill and non-ambulant)	45 (31.03%)
P3: Minor (ambulant)	1 (0.69%)
Admitted to hospital	140 (96.55%)
<u>Reason for visit</u>	
Dyspnoea/Shortness of breath ( $n = 85$ )	85 (58.62%)
Pain other than chest pain ( $n = 50$ )	50 (34.48%)
Generalised weakness/lethargy ( $n = 39$ )	39 (26.90%)
Decreased appetite/anorexia ( $n = 35$ )	35 (24.14%)
Drowsiness/Unresponsive ( $n = 30$ )	30 (20.69%)
Fever ( $n = 25$ )	25 (17.24%)
Productive cough ( $n = 25$ )	25 (17.24%)
Peripheral oedema/swelling ( $n = 17$ )	17 (11.72%)

GI: gastrointestinal; ED: emergency department.

Table 1 shows the characteristics of these patients. Of the 145 patients, five (3.45%) died in ED and the remaining 140 (96.55%) were admitted to the hospital. Breathlessness was the most common reason for presenting to ED (85 patients,

58.62%), followed by pain (50 patients, 34.48%), generalised weakness or lethargy (39 patients, 26.90%) and decreased appetite or anorexia (35 patients, 24.14%). Infection or sepsis was diagnosed in 20 patients (13.79%), hypotension was diagnosed in 11 patients (7.59%) and fluid overload was diagnosed in five patients (3.45%). These may represent potentially treatable conditions, depending on other factors such as severity and underlying disease burden, which were not measured in this study.

## Conclusions

For advanced cancer patients who attend the ED in the last week of life, the most common presenting symptoms in order are: breathlessness, pain, generalised weakness or lethargy, and decreased appetite or anorexia. Community-based palliative services can be developed to target these common symptoms through pre-emptive management strategies, as well as on-call support for home-based management of these symptoms. This can help reduce unnecessary ED visits.

While the symptoms of breathlessness and pain can be relieved with medical treatment, lethargy and reduced appetite are more challenging to reverse. These are general symptoms associated with progression of disease and may indicate that the patient is approaching the terminal phase. Addressing these symptoms may require patient and family education so that they are equipped with information and coping strategies, such as standby medications, to manage these expected symptoms at home. On-call support from the home care team that knows the patient's history of illness may also help. Advance care planning discussions may also be useful in establishing a common understanding of the stage of illness and goals of clinical care. The establishment of a plan of care through these discussions may clarify the potential benefits, or lack thereof, of an ED visit in certain situations, such as when the presenting symptoms are lethargy or decreased appetite in the context of a terminal cancer progressing to the end-of-life phase in the last days.

Nonetheless, the onset of new or worsening physical symptoms may still warrant an ED visit. This is because the symptoms may represent a potentially reversible condition that justifies a medical assessment and trial of treatment. This may involve investigations such as blood tests and x-ray imaging, as well as therapies such as intravenous antibiotics or intravenous diuretics that can be administered only in the hospital setting.

Novel service interventions to address this can be explored, such as community clinics that can perform basic investigations like blood tests and administer treatments like intravenous diuretics for fluid overload. In the local context, there are several community programmes that attempt to address this health service need.<sup>12–14</sup> Tan et al. reported on an integrated hospice home care programme that lowered the frequency of ED visits.<sup>14</sup> Another home-based programme tailored for end-stage heart failure patients has also been shown to reduce hospital readmissions.<sup>12</sup>

Advanced cancer patients may still present to the ED, regardless of the service initiatives to manage problems in the community. This may be due to several reasons, including the limited capacity of home hospice services, severe

symptoms that cannot be managed in the community setting, and inability of families to cope with care at home. In these situations, patients would then present to ED as it is a safety net where medical care is accessible 24 hours a day, seven days a week. Therefore, supportive and palliative care interventions also need to be integrated into the ED setting to better manage these advanced cancer patients who attend ED in the last week of life.<sup>15</sup> This may include the training and education of ED staff on symptom management, having a clinical practice guideline for the management of common symptoms, and having a process in place so that patients who do attend ED can be moved to a more appropriate care setting, such as an inpatient hospice, in a timely manner. Prior advance care planning or extent of care discussions with the primary physician can also be better documented and made readily available for easy access by ED staff when needed.

This study has several limitations. Firstly, the use of narrow inclusion criteria resulted in a small sample size. Specifically, we focused on advanced cancer patients who died in hospital within a short time frame of seven days from ED presentation, because ED visits in the last weeks or months of life have previously been studied.<sup>5</sup> However, this approach might have excluded patients such as those who were discharged from ED and subsequently died within seven days at home. Secondly, as a retrospective case record study, the results may be subject to documentation bias.

Future research with a prospective design can better characterise the palliative care needs of advanced cancer patients who currently access medical care through the ED. Interventions such as integration of palliative care in the ED and targeted community services could be developed and tested to explore their effect on utilisation of ED services.

## Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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