

# Predictors of discharge disposition on an acute palliative care unit

David Hausner<sup>1</sup>, Nanor Kevork<sup>1</sup>, Lisa W. Le MSc<sup>2</sup>, Camilla Zimmermann MD, PhD<sup>1,3,4</sup>

<sup>1</sup>Division of Palliative Care, Department of Supportive Care; <sup>2</sup>Department of Biostatistics; <sup>3</sup>Division of Medical Oncology and Hematology, Department of Medicine; <sup>4</sup>Department of Psychiatry; Princess Margaret Cancer Centre, University Health Network, Toronto, Ontario, Canada

## Introduction

- Acute palliative care units (APCUs) admit patients with cancer for symptom control, transition to longer-term inpatient settings as community PCU/hospice (CPCU/H) or for end-of-life care.
- Many times these admissions serve as a junction for decision making and determination of goals of care in view of the changing clinical status of the patients. Prognostication is essential in discussing these issues as well as for discharge planning.<sup>1</sup>
- Previous studies have identified different clinical predictors of survival in patients with advanced cancer<sup>2</sup> and a few prognostic scoring systems have been developed.<sup>3</sup> In the APCU setting number of predictors associated with patient's outcome were described.<sup>4</sup> Yet, no model of predicting patients' outcomes has been widely used in this setting.
- We retrospectively evaluated predictors of patients' discharge disposition on an APCU in a comprehensive cancer centre.

## Methods

**Setting** - Princess Margaret Cancer Centre is a comprehensive cancer centre running a 12-bed APCU, admitting approximately 350 patients with advanced cancer per year, for an average stay of 10 days.

**Design** - In a retrospective analysis we examined medical records of patients admitted to the APCU during 2015. We recorded *demographics, administrative data* (source of admission, reason for admission, length of stay, discharge destination) and *clinical measures* as Edmonton Symptom Assessment System (ESAS), Palliative Performance Scale (PPS) and the short Confusion Assessment Method (CAM) for delirium screening.

**Statistical analysis** - ESAS distress score (EDS) was calculated by summing nine symptom intensity scores, excluding insomnia and constipation. A subscore composed of fatigue, drowsiness, shortness of breath and appetite (FDSA) was evaluated, as these symptoms have been previously correlated with shorter survival.<sup>5</sup>

Univariable and multivariable analyses identified predictors of patients' discharge disposition in a 3-level multinomial logistic regression. The primary analysis used home discharge as reference (patients discharged home vs. died or discharged to CPCU/H), while a secondary analysis used discharge to CPCU/H as reference (CPCU/H vs. died or home).

## Results

There were 308 admissions during year 2015. For this analysis, we used one record (most recent admission) per patient. 280 patient were included. Their demographics, administrative data and clinical characteristics are illustrated in table 1.

**Clinical measurements** - Median PPS on admission was 50% (10-80). Thirty patients (10.7%) were diagnosed with delirium, 22 (73.3%) of them died on the unit, while 6 (20%) were discharged to CPCU/H and 2 (6.6%) returned home. Baseline ESAS recordings were available for 208 (74.3%). Those with a missing ESAS had lower PPS on admission (median PPS 20 vs 50), a shorter length of stay (median 6 days vs. 13 days) and a higher death rate (68.1% vs 51.4%).

**Predictors of discharge disposition** - On multivariable analysis (table 2):

- Compared with patients who were discharged home, those who died on the APCU were less likely to be older (OR 0.97, p=0.01), or be admitted for symptom control vs. transition (OR 0.06, p<0.0001); and more likely to have higher FDSA score 21-40 (OR 3.02, p=0.004).
- Compared with patients who were discharged home, those who were discharged to CPCU/H were less likely to have been admitted for symptom control (vs. transition) (OR 0.06, p<0.0001).
- CPCU/H as reference: compared with patients who were transferred to CPCU/H, those who died on the APCU were less likely to be older (OR 0.97, p=0.01), and more likely to have been admitted for terminal care (vs. transition) (OR 5.44, p=0.002).

Table 1 – Patient's characteristics

Characteristics	No. (%)	Characteristics	No. (%)
<b>Gender</b>		<b>Length of stay</b>	
Female	131 (46.8%)	in days,	10
Male	149 (53.2%)	Median (range)	(1-105)
<b>Age</b>		<b>Discharge disposition</b>	
in years,	65.5	Died on APCU	156 (55.7%)
Median (range)	(19-96)	Home	63 (22.5%)
		CPCU/H	61 (21.8%)
<b>Cancer Diagnosis</b>		<b>EDS</b>	
Gastrointestinal	69 (24.6%)	EDS 0-30	46 (16.4%)
Respiratory	59 (21.1%)	EDS 31-60	143 (51.1%)
Genitourinary	32 (11.4%)	EDS 61-90	17 (6.1%)
Gynecologic	31 (11.1%)	EDS missing	74 (26.4%)
		<b>FDSA</b>	
<b>Source of admission</b>		FDSA 0-20	97 (34.6%)
Inpatients	109 (38.9%)	FDSA 21-40	110 (39.3%)
Home	93 (33.2%)	FDSA missing	73 (26.1%)
Outpatients	67 (23.9%)		
ER or ICU	11 (3.9%)		
<b>Reason for admission</b>		<b>Delirium screening</b>	
Symptom control	155 (55.4%)	CAM negative	250 (89.3%)
Transitional care	65 (23.2%)	CAM positive	30 (10.7%)
Terminal care	60 (21.4%)		

Table 2 – Multivariable analysis

Variable	Odds ratio (95% confidence intervals)	p-value
<b>1. Dying on APCU vs. discharge home</b>		
<b>Age</b>	0.97 (0.94-0.99)	0.01
<b>Reason for admission to APCU</b>		
Symptom control vs. transition	0.06 (0.02-0.23)	<0.0001
Terminal care vs. transition	1.31 (0.25-6.94)	0.75
<b>FDSA</b>		
FDSA 21-40 vs. 0-20	3.02 (1.43-6.39)	0.004
FDSA missing vs. 0-20	1.18 (0.44-3.13)	0.75
<b>2. Discharge to CPCU/H vs. discharge home</b>		
<b>Age</b>	1.00 (0.97-1.03)	0.77
<b>Reason for admission to APCU</b>		
Symptom control vs. transition	0.06 (0.02-0.25)	<0.0001
Terminal care vs. transition	0.24 (0.04-1.58)	0.14
<b>FDSA</b>		
FDSA 21-40 vs. 0-20	1.72 (0.76-3.91)	0.19
FDSA missing vs. 0-20	0.59 (0.19-1.81)	0.36
<b>3. Dying on APCU vs. discharge to CPCU/H</b>		
<b>Age</b>	0.97 (0.95-0.99)	0.01
<b>Reason for admission to APCU</b>		
Symptom control vs. transition	0.98 (0.47-2.05)	0.96
Terminal care vs. transition	5.44 (1.85-15.97)	0.002
<b>FDSA</b>		
FDSA 21-40 vs. 0-20	1.75 (0.86-3.57)	0.12
FDSA missing vs. 0-20	1.99 (0.82-4.83)	0.13

## Conclusions

- Age, reason for admission and symptom burden on admission are variables that can inform clinicians about probable discharge disposition on an APCU.
- Fatigue, drowsiness, shortness of breath and appetite comprise a symptom cluster that will need further validation with regards to its prognostic qualities.

## References

- Glare PA et al; Palliative medicine review: prognostication. J Palliat Med 2008 Jan-Feb;11(1):84-103.
- Gripp S et al; Survival prediction in terminally ill cancer patients by clinical estimates, laboratory tests, and self-rated anxiety and depression. J Clin Oncol 2007 Aug 1;25(22):3313-3320.
- Ripamonti CI et al; Predictive models in palliative care. Cancer 2009 Jul 1;115(13 Suppl):3128-3134.
- Hui D et al; Discharge outcomes and survival of patients with advanced cancer admitted to an acute palliative care unit at a comprehensive cancer centre. J Palliat Med 2010 Jan;13(1):49-57.
- Cheung W et al; The association of physical and psychological symptom burden with time to death among palliative cancer outpatients. J Pain Symptom Manage 2009 Mar;37(3):297-304.