# A prospective observational study of prevalence and outcomes of patients with Gold Standard Framework criteria in a tertiary regional Australian Hospital

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▶ Additional material is published online only. To view please visit the journal online (http://dx.doi.org/10.1136/bmjspcare-2015-000864).

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Received 8 February 2015
Revised 7 July 2015
Accepted 6 September 2015

**To cite:** Milnes S, Orford NR, Berkeley L, *et al*. *BMJ Supportive & Palliative Care* Published Online First: [*please include* Day Month Year] doi:10.1136/bmjspcare-2015-000864

## ABSTRACT

**Objectives** Report the use of an objective tool, UK Gold Standards Framework (GSF) criteria, to describe the prevalence, recognition and outcomes of patients with palliative care needs in an Australian acute health setting. The rationale for this is to enable hospital doctors to identify patients who should have a patient-centred discussion about goals of care in hospital.

**Design** Prospective, observational, cohort study.

**Participants** Adult in-patients during two separate 24 h periods.

**Main outcome measures** Prevalence of in-patients with GSF criteria, documentation of treatment limitations, hospital and 1 year survival, admission and discharge destination and multivariate regression analysis of factors associated with the presence of hospital treatment limitations and 1 year survival.

**Results** Of 626 in-patients reviewed, 171 (27.3%) had at least one GSF criterion, with documentation of a treatment limitation discussion in 60 (30.5%) of those patients who had GSF criteria. Hospital mortality was 9.9%, 1 year mortality 50.3% and 3-year mortality 70.2% in patients with GSF criteria. One-year mortality was highest in patients with GSF cancer (73%), renal failure (67%) and heart failure (60%) criteria. Multivariate analysis revealed age, hospital length of stay and presence of the GSF chronic obstructive pulmonary disease criteria were independently associated with the likelihood of an in-hospital treatment limitation. Non-survivors at 3 years were more likely to have a GSF cancer (25% vs 6%, p=0.004), neurological (10% vs 3%, p=0.04), or frailty (45% vs 3%, p=0.04) criteria. After multivariate logistic regression GSF cancer criteria, renal failure criteria and the presence of two or more GSF clinical criteria were independently associated with increased risk of death at 3 years. Patients returning home to live reduced from 69% (preadmission) to 27% after discharge.

**Conclusions** The use of an objective clinical tool identifies a high prevalence of patients with palliative care needs in the acute tertiary Australian hospital setting, with a high 1 year mortality and poor return to independence in this population. The low rate of documentation of discussions about treatment limitations in this population suggests palliative care needs are not recognised and discussed in the majority of patients.

**Trial registration number** 11/121.

## INTRODUCTION

The combination of an ageing population with complex health needs has led to a large proportion of patients that experience decline and eventual death in the acute hospital setting.[1–5] The recognition of patients with palliative care needs in this setting, combined with successful communication and shared decision-making, should lead to better patient-centered rather than disease-centered care and improved patient satisfaction and outcomes.[3 5–9]

Identification of patients with palliative care needs is problematic in the acute hospital setting, but improved recognition using an objective tool has been demonstrated.[10] The UK Gold Standards Framework (GSF) is an objective tool that provides a guide for identification of patients who are nearing the end of their life and could benefit from a palliative approach to their care. The GSF criteria

include clinical indicator criteria, to assist practitioners to identify patients and tools to manage discussions in these specific patient populations. The GSF Centre for End-of-Life Care runs programmes across health disciplines, including both primary and tertiary centers, with outcomes focused on patient-centered care, cross-boundary care and coordinated care.[11] The application of GSF criteria as a means of identifying patients for whom care is appropriately directed toward palliative care needs has been well validated.[10 12 13]

Following identification of patients, a palliative care approach is advocated and this should be accompanied by treatment limitation (TL) or advance care plan documentation. A clearly defined list of what constitutes palliative care needs, or at what point in the disease trajectory this occurs, is not available.[14] There is congruence of opinion that palliative care needs include a combination of symptom control, psychological support, comfort care, end-of-life planning, shared decision-making, spiritual or religious issues, family and relational support, treatment limitation discussions and orders.[1 3 5 10 13–25] These needs are relevant for patients with both cancer and non-cancer conditions.[11] The documentation process is one way to identify if relevant components of palliative care needs are being met and should include the current condition, a measure of competence, discussion of treatment preferences, patient's goals for long-term outcomes, values, and identification of surrogate decisionmakers.[3 26] To date, there is limited evidence describing this process in the acute hospital setting.[3]

This study aimed to report the use of an objective tool—the GSF criteria—to describe the prevalence, recognition, documentation and outcomes of patients with palliative care needs in an Australian acute health setting.

## METHODS

The study was a prospective observational cohort study conducted at University Hospital Geelong, a tertiary regional hospital servicing the South-Western Victoria region. Ethics approval was obtained from the Barwon Health Research and Ethics Committee prior to start of the study. The aims of the study were to determine the prevalence of in-patients with GSF prognostic criteria, the prevalence and validity of documented TLs, clinical characteristics and long-term outcomes in this population. Patients only needed one of the GSF clinical criteria to be included in the study.

All adult patients (>18 years age) admitted to an acute hospital bed during two separate 24 h periods, 1 month apart in November and December 2011 were screened for inclusion. Paediatric, maternity, psychiatric and day surgery patients were excluded. Participants were identified using the daily electronic hospital admission database, followed by manual review of the in-patient population for evidence of a treatment limitation discussion. Criteria for initiation of treatment limitation were created using the clinical criteria from the UK GSF prognostic indicator criteria (see online supplementary appendix A).[13] In addition patients were classified by admission category into one of three clinical trajectories (cancer, organ system failure or frailty/comorbidity/dementia), based on the GSF Prognostic Indicator Guidance.

Demographic and clinical information collected from the hospital electronic database and patient record included age, date of hospital admission, admission diagnosis, hospital outcome, discharge destination and hospital length of stay (LOS). One-year and 3-year survival was determined through linkage with the Australian Institute of Health and Welfare (AIHW) National Death Index (NDI). Information collected regarding TLs included presence of pre-existing treatment limitation, criteria for consideration of treatment limitation, seniority and position of doctor completing TL, documentation of competency of patient and patient and surrogate discussion and TLs set. Pre-existing TLs consisted of documentation found in the medical records and included alert forms from previous admissions, advance care plans completed in primary care setting, information from general practitioner letters and/or other specialist referrals. In-hospital TL was defined as the presence of the completed institutional TL document in the current patient medical record for the current hospital admission. Included in the institutional TL document is instruction about basic and advanced resuscitation, invasive ventilation and admission to intensive care unit.

Statistical analysis was performed using SAS V.9.4 (SAS Institute Inc, Cary, North Carolina, USA). All data was assessed for normality. Comparisons between groups were performed using $\chi^2$ tests for equal proportions or Fishers exact tests where numbers were small. Normally distributed variables were compared using student t tests and reported as means (SEs) while non-normally distributed data were compared using Wilcoxon rank sum tests and reported as medians (IQR). GSF trajectories were compared using $\chi^2$ tests for equal proportion, analysis of variance for normally distributed variables and Kruskal-Wallis tests otherwise. Survival analysis and analysis of in hospital TL was performed using multivariate logistic regression with results reported as ORs (95% CI). Multivariate models were constructed using both stepwise selection and backwards elimination techniques before undergoing a final assessment for clinical and biological plausibility. A two-sided p value of 0.05 was considered to be statistically significant.

## RESULTS

A total of 626 patients fulfilled the inclusion criteria during the two study periods, with GSF clinical criteria present in 171 (27.3%) patients. TL discussions

were documented in 60 (35.1%) patients with GSF clinical criteria. The documentation of TLs was complete in only 23 (13.5%) patients (figure1). Patient demographics and clinical characteristics including reason for hospital admission, of patients with GSF clinical criteria are presented in table 1.

The median age was 82 years (IQR 74–88), and the median length of hospital stay on the day of the study was 10 days (IQR 6–17). The most common reasons for admission were fracture/dislocation (15.2%), general frailty/fall (12.9%), cancer (12.9%) and infection (11.1%). Prior to admission 45 (26.3%) patients with GSF criteria had a pre-existing TL.

Patients with GSF clinical criteria had an overall hospital mortality rate of 9.9%, 1 year mortality of 50.3% and 3-year mortality of 70.2%. The incidence and outcomes of each of the GSF clinical criteria are presented in table 2.

The most common GSF clinical criteria were frailty (80.1%), followed by cancer (19.3%), dementia (12.9%), chronic obstructive pulmonary disease (COPD; 11.7%) and stroke (7.6%). Analysis of outcome by disease groups based on illness trajectory is presented in table 2. The cancer trajectory group were significantly younger and had less frailty. There were no significant differences in hospital, 90-day, 1 year or 3-year survival (table 2). Hospital mortality was relatively low in all illness trajectory groups, with the majority of deaths occurring after hospital discharge. When analysed by admission diagnosis (see online supplementary appendix B), hospital mortality was highest in patients with GSF heart failure (30%) and renal failure (22.2%). In contrast the 3-year mortality was highest in patients with GSF cancer (90.1%), renal failure (88.9%), dementia (81.8%) and COPD (85%) criteria. Only 31% of patients with a pre-existing TL had this documented while in hospital, and this cohort had a 3-year mortality of 73.3%. The level of accommodation before and after hospital admission is presented in table 3. The proportion of patients with GSF clinical criteria living at home (either independently or with a carer) decreased from 68.4% before hospital admission to 27.5% following discharge.

Univariate analysis revealed age, hospital LOS and presence of GSF COPD criteria were associated with documentation of in-hospital TL (table 4).

The presence of other GSF clinical criteria was not associated with documentation of a TL. After multivariate logistic regression the same three factors, age, hospital LOS and GSF COPD criteria remained independently associated with the likelihood of an

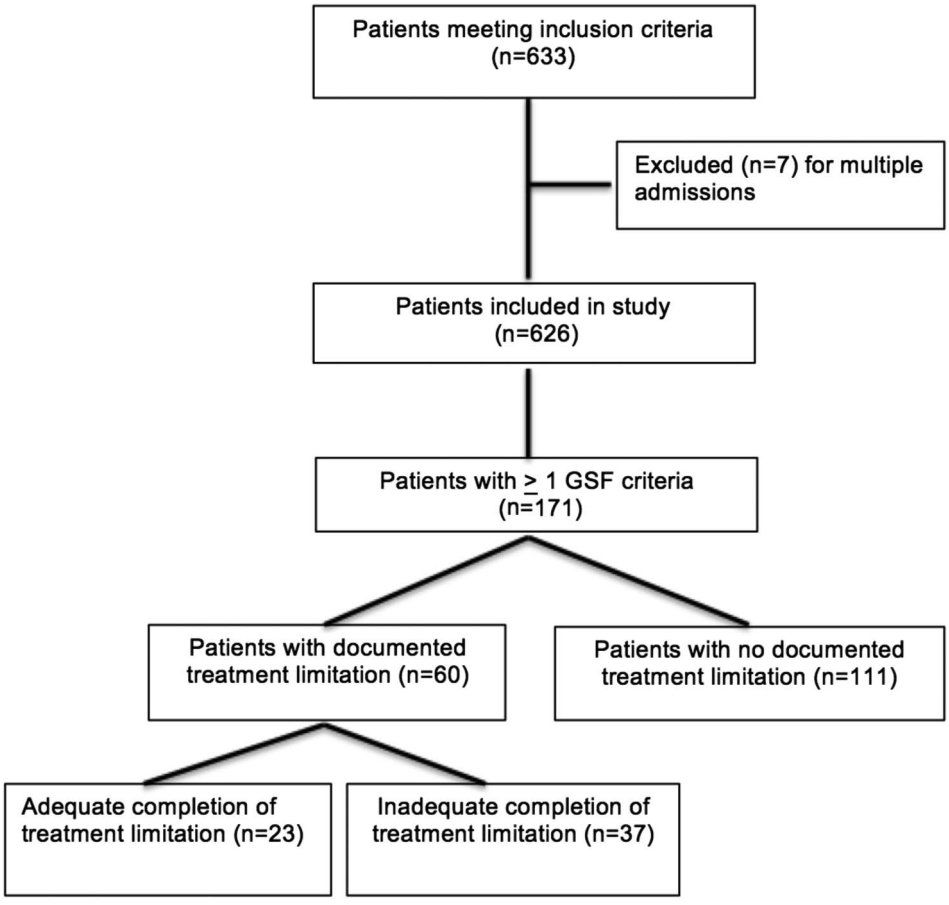


**Figure 1** Details of in-patient inclusion according to Gold Standards Framework (GSF) criteria.

**Table 1** Demographics, clinical characteristic and prehospital treatment limitation status (data are shown as median (IQR) or no (%))

| | |
|---|---|
| Number | 171 |
| Age | 82 (74, 88) |
| Hospital LOS on study day | 10 (6, 17) |
| Admission diagnosis | |
| Fracture/dislocation | 26 (15.2) |
| General frailty/fall | 22 (12.9) |
| Cancer or cancer-related problem | 22 (12.9) |
| Infection | 19 (11.1) |
| Exacerbation COPD | 16 (9.4) |
| Other | 13 (7.6) |
| Pneumonia | 10 (5.8) |
| Stroke | 10 (5.8) |
| Renal failure | 9 (5.3) |
| Gastrointestinal bleeding and obstruction | 9 (5.3) |
| Chronic heart disease | 7 (4.1) |
| Neurological disease | 4 (2.4) |
| AMI | 4 (2.4) |
| Prehospital treatment limitation | 45 (26.3) |
| MEPOA | 25 (14.7) |
| Advanced care directive | 21 (12.3) |
| Previous hospital treatment limit | 17 (9.9) |
| Statement of choices | 15 (8.8) |
| Refusal of treatment certificate | 5 (2.9) |

AMI, acute myocardial infarction; COPD, chronic obstructive pulmonary disease; LOS, length of stay; MEPOA, medical enduring power of attorney.

in-hospital TL (table 5). This can be interpreted as for every additional year of age patients are 5% more likely to have an in-hospital TL, for every additional day in hospital patients were 4% more likely to have an in-hospital TL and patients with COPD were more than three times more likely to have an in-hospital TL.

Comparison of non-survivors and survivors at 3 years showed that patients who died were more likely to have a GSF cancer criteria (25% vs 5.9%, p=0.004), and less likely to have neurological criteria (10% vs 3.%, p=0.04; table 6). Patients who died were more likely to have had in-hospital TLs, although this did not reach statistical significance (39 vs 25%, p=0.09; table 6).

After multivariate logistic regression GSF cancer criteria, renal failure criteria and the presence of two or more GSF clinical criteria were independently associated with increased risk of death at 3 years (table 7).

## DISCUSSION

This study describes the high prevalence of patients who may benefit from the recognition and management of their palliative care needs, using an objective clinical tool in an acute tertiary Australian hospital setting. In the cohort of patients with GSF clinical criteria, only 35% had evidence that their palliative care needs were identified, with adequate documentation of discussions about TLs present in only 13.5% of

**Table 2** Number of patients meeting each of the GSF clinical criteria and outcomes categorised by clinical trajectory (data are shown as median (IQR) or no (%))

| Variable | All | Cancer | Frailty/comorbidity/dementia | Organ system failure | p Value |
|---|---|---|---|---|---|
| Number | 171 | 22 | 32 | 117 | – |
| Age | 78.7 (12.5) | 69.8 (13.5) | 82.2 (10.4) | 79.5 (12.2) | <0.001 |
| GSF Criteria | | | | | |
| Cancer | 33 (19.3) | 18 (81.8) | 5 (15.6) | 10 (8.5) | <0.0001 |
| Heart failure | 10 (5.8) | 1 (4.5) | 1 (3.1) | 8 (6.8) | 0.7 |
| COPD | 20 (11.7) | 0 (0) | 1 (3.1) | 19 (16.2) | 0.03 |
| Renal failure | 9 (5.3) | 0 (0) | 1 (3.1) | 8 (6.8) | 0.35 |
| Neurological disease | 8 (4.7) | 0 (0) | 3 (9.4) | 5 (4.3) | 0.26 |
| Frailty | 137 (80.1) | 11 (50) | 30 (93.8) | 96 (82.1) | <0.001 |
| Dementia | 22 (12.9) | 0 (0) | 5 (15.6) | 17 (14.5) | 0.15 |
| Stroke | 13 (7.6) | 1 (4.5) | 0 (0) | 12 (10.3) | 0.13 |
| 2 or more criteria | 72 (42.1) | 9 (40.9) | 11 (34.4) | 52 (44.4) | 0.59 |
| Treatment limitation | | | | | |
| Prehospital | 45 (26.3) | 1 (4.5) | 8 (25) | 36 (30.8) | 0.04 |
| In-hospital TL | 60 (35.1) | 5 (22.7) | 11 (34.4) | 44 (37.6) | 0.41 |
| Outcome | | | | | |
| Hospital LOS | 10 (6–17) | 6 (3–21) | 9 (6.5–14) | 11 (6–17) | 0.08 |
| Hospital mortality | 17 (9.9) | 1 (4.5) | 3 (9.4) | 13 (11.1) | 0.64 |
| 90-day mortality | 62 (36.3) | 12 (54.5) | 11 (34.4) | 39 (33.3) | 0.16 |
| 1 year mortality | 86 (50.3) | 15 (68.2) | 17 (53.1) | 54 (46.2) | 0.16 |
| 3-year mortality | 120 (70.2) | 18 (81.8) | 23 (71.9) | 79 (67.5) | 0.4 |

COPD, chronic obstructive pulmonary disease; GSF, Gold Standards Framework; LOS, length of stay; TL, treatment limitation.

**Table 3** Prehospital accommodation and discharge destination for patients with 1 or more GSF clinical criteria (data are shown as median (IQR) or no (%))

| | Admission | Discharge |
|---|---|---|
| Accommodation | | |
| Home—independent | 75 (43.8) | 21 (12.3) |
| Home with carer | 42 (24.6) | 26 (15.2) |
| Nursing home | 42 (24.6) | 50 (29.2) |
| Subacute (rehab) | 12 (7.0) | 41 (24.0) |
| Palliative care | 0 (0) | 12 (7.0) |
| Other acute hospital | 0 (0) | 4 (2.3) |
| Deceased | 0 (0) | 17 (9.9) |

GSF, Gold Standards Framework.

patients. The GSF clinical criteria hospital patient cohort was elderly, with multiple comorbidities, a relatively long hospital stay at the time of the study and poor outcomes as evidenced by high 1 year mortality and reduced independence and return to independent living.

Identification of patients with palliative care needs in the acute hospital setting is problematic. The description and definition of patients whose illness trajectory approaches the end of life and have palliative care needs vary, particularly when subjective assessment is used.[10 13–15 17 20 27] This study used the GSF clinical criteria as an objective tool to identify patients who may be nearing the end of their life, and could benefit from a palliative approach. The recognition and provision of a palliative approach to this patient group was defined by the presence of the institutional TL form, the final step in a process of clarifying needs and preferences, addressing symptom support, advance care planning and identification of goals of care.

The identification of a high prevalence of patients with GSF clinical criteria coupled with low recognition by doctors reinforces previous studies reporting the identification of a larger population of hospital in-patients with palliative care needs with the use of objective measures compared to subjective reporting. A French observational study identified 13% of acute care beds on a single day were occupied by patients requiring palliative care using subjective reporting, while 9.4% of in-patients were subjectively identified as palliative in a general hospital prevalence study in Belgium.[15 17] In contrast, studies using objective tools describe a similar proportion of patients with palliative care needs to this study. A UK survey of two hospitals reported 36% of patients that responded to a survey had palliative care needs using objective GSF criteria,[13] while a review of deaths in a UK hospital identified 45.6% of patients as potentially identifiable as being in the last year of life using objective tools.[14] A study reporting the application of GSF criteria in the UK acute hospital setting revealed more than a third of hospital in-patients met criteria, with under-recognition of this need by nursing and medical staff.[10]

The difficulties hospital doctors have in identifying, discussing and documenting palliative care needs are well described.[2 3 5 6 16 28–33] Possible explanations for this gap are that health professionals are unable to identify patients with palliative care needs, there are

**Table 4** Factors associated with documentation of in-hospital treatment limitation using univariate analysis (data are shown as median (IQR) or no (%))

| Variable | No in-hospital TL | In-hospital TL | p Value |
|---|---|---|---|
| Number | 111 | 60 | – |
| Age (years) | 81 (70–87) | 84 (77–90) | 0.015 |
| Hospital LOS (days) | 8 (5–16) | 12 (9–19) | 0.005 |
| Cancer | 23 (20.7) | 10 (16.7) | 0.52 |
| Heart failure | 5 (4.5) | 5 (8.3) | 0.31 |
| COPD | 9 (8.1) | 11 (18.3) | 0.047 |
| Renal failure | 7 (6.3) | 2 (3.3) | 0.41 |
| Neurological disease | 5 (4.5) | 3 (5.0) | 0.88 |
| Frailty | 90 (81.1) | 47 (78.3) | 0.67 |
| Dementia | 12 (10.8) | 10 (16.7) | 0.28 |
| Stroke | 8 (7.2) | 5 (8.3) | 0.79 |
| 2 or more criteria? | 45 (40.5) | 27 (45.0) | 0.57 |

COPD, chronic obstructive pulmonary disease.

**Table 5** Factors that predict in-hospital treatment limitation using multivariate logistic regression

| Variable | OR (95% CI) | p Value |
|---|---|---|
| Age (years) | 1.05 (1.01 to 1.08) | 0.006 |
| COPD | 3.38 (1.26 to 9.10) | 0.02 |
| Hospital LOS (days) | 1.04 (1.00 to 1.07) | 0.02 |

COPD, chronic obstructive pulmonary disease; LOS, length of stay.

**Table 6** Analysis of factors associated with 3-year mortality in patients with GSF clinical criteria (data are shown as median (IQR), mean (SD) or no (%))

| | Survived | Died | p Value |
|---|---|---|---|
| Number | 51 | 120 | |
| Age (years) | 78.1 (13.6) | 79.0 (12.1) | 0.66 |
| Hospital LOS (days) | 11 (6–21) | 9 (6–16) | 0.45 |
| Cancer | 3 (5.9) | 30 (25.0) | 0.004 |
| Heart failure | 4 (7.8) | 6 (5.0) | 0.47 |
| COPD | 3 (5.9) | 17 (14.2) | 0.12 |
| Renal failure | 1 (2.0) | 8 (6.7) | 0.21 |
| Neurological disease | 5 (9.8) | 3 (2.5) | 0.04 |
| Frailty | 45 (88.2) | 92 (76.7) | 0.08 |
| Dementia | 4 (7.8) | 18 (15.0) | 0.2 |
| Stroke | 6 (11.8) | 7 (5.8) | 0.18 |
| In-hospital TL | 13 (25.5) | 47 (39.2) | 0.09 |
| 2 or more criteria | 19 (37.3) | 53 (44.2 | 0.4 |

COPD, chronic obstructive pulmonary disease; GSF, Gold Standards Framework; LOS, length of stay; TL, treatment limitation.

Table 7 Analysis of factors that predict mortality at 3 years using multivariate logistic regression

| Criteria | HR | 95% CI | p Value |
|---|---|---|---|
| Cancer | 2.70 | 1.76 to 4.15 | <0.0001 |
| Renal failure | 3.15 | 1.49 to 6.64 | 0.003 |
| GSF-2 or more | 1.49 | 1.08 to 2.07 | 0.017 |

GSF, Gold Standards Framework.

barriers to health professionals having discussions with patients about values, end-of-life needs and shared decision-making, or the process occurs but is not documented.[3 21 30–32 34]

In this study the factors associated with an in-hospital TL were age, hospital LOS and the GSF COPD criteria. Age is not used in objective tools of palliative care need as it has not been shown to be an independent indicator of this need,[13] although a systematic review identified age as a consistent subjective criteria for considerations of end-of-life decisions in the critical care setting.[16] Although hospital LOS was associated with in-hospital TL, the nature of this association, cause or effect, is not clear and is beyond the scope of this study. The finding that COPD was the only GSF clinical criteria associated with an increase likelihood of in-hospital TL could suggest health professionals are aware of specific patient populations with palliative care needs, but due to lack of education, clinical experience or skills in communication, are unable to identify others.

Shared decision-making and communication skills are particularly relevant in the hospital setting when trying to provide patient-centred care for patients with palliative care needs.[35–38] Patient-centered care should aim to coordinate patient goals and treatment goals, with decisions being informed by relevant and material considerations for the patient. These include but are not limited to; likelihood of meaningful survival, minimising suffering, maintenance of current quality of life and retaining independence.[39 40] For medical staff to provide this, they must be able to explore patients' values and goals for care, ensure their authentic preferences are taken into account and consider the patient as part of the treating team.[9 34 39 41] Programmes to improve performance through training in identification, communication and support have met with success, including improvements in compliance with patient's wishes and patient and family satisfaction.[3 28 31] Indeed, it is argued that the core elements of palliative care should be a routine part of care delivered by all practitioners.[19]

This study is the first to report long-term survival and discharge destination for patients who have GSF clinical criteria in the acute hospital setting. The difference between hospital and 1 year mortality highlights the limitations of using hospital-based outcomes to identify patients with palliative care needs. This was demonstrated by 69 of the 86 patients (80.2%) with GSF clinical criteria who died in the year after hospital discharge. This outcome may not be recognised by health providers in the acute hospital setting. In addition the highest risk of death was associated with GSF clinical criteria that were associated with relatively low hospital mortality. Similarly, in patients who met a GSF clinical criteria there was a 61% relative decrease in patients returning home to live (independent or with carer). These considerations of discharge destination and long-term survival are important for hospital doctors to recognise, as they could influence decisions both they and the patient could make about future care.

The use of community-based advanced care planning (ACP), could improve identification and care of patients with palliative care needs who present to acute hospitals.[3] However, despite the presence of an active community-based ACP programme in the population serviced by the hospital in this study, only 26.3% of patients with GSF clinical criteria had a pre-existing ACP and only one-third of these patients had their existing ACP documented in hospital. This suggests the current model of ACP in the primary care setting is not capturing an important patient population. The current model for ACP in the primary care setting within our region involves patients identified by a general practitioner (GP), having a discussion with a trained ACP nurse who visits each practice. Fifteen GP practices are involved in the programme with a population of approximately 250 000. Models that provide specific collaboration across boundaries to flag these patients for ACP discussions, such as that provided by Gold Standards Framework Centre for End-of-Life Care, may address these issues. This model has been validated in various settings across the healthcare spectrum and has a focus on patient-centered care to "…provide the right care for the right patient at the right time".[11] Identification of patients with GSF clinical criteria in the community setting and coordinated cross-boundary care into the acute hospital setting, improved patient satisfaction and provided better coordinated care with increased alignment of treatment goals and patient goals.[12 13 27]

There are a number of limitations to this study. The prospective identification of patients with GSF clinical criteria using guideline definitions and the assessment of presence of TL discussions were performed using medical records in hospital wards, with no patient or caregiver contact. There may have been discussions about patient values and preferences that were not documented. Relying on only the TL document as evidence of a discussion with patients meeting GSF may miss undocumented discussions. While there is evidence for use of all prognostic indicators from the GSF, clinical indicators from the GSF were the only criteria used in this study.

In summary this study provides evidence of a large unmet palliative care need in the acute hospital setting

in Australia, and provides support for the use of objective tools to assist in the identification of patients with palliative care needs. The palliative care literature provides evidence that identifying this cohort of patients, practising shared decision-making and discussing their values, goals and treatment preferences, will result in better care and improved patient satisfaction.[10–12]

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**Contributors** SM was responsible for planning, data analysis, manuscript development and revision, guarantor of overall content, development of tables and figures and submitted study. NRO was responsible for planning, data analysis, manuscript development and revision, guarantor of overall content and development of tables and figures. LB was responsible for planning, data collection, data analysis and manuscript revision. NL was responsible for planning and manuscript revision. NS and CC were responsible for manuscript revision. TE was responsible for data collection, manuscript revision and submission process MB was responsible for statistical analysis, manuscript development and revision.

**Competing interests** None declared.

**Ethics approval** Barwon Health Human Ethics Committee.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data sharing statement** The authors agree to sharing the relevant data from this original study in order to progress healthcare improvement in the area of end of life care, identification, communication and decision-making with patients.

## REFERENCES

1 Billingham MJ, Billingham SJ. Congruence between preferred and actual place of death according to the presence of malignant or non-malignant disease: a systematic review and meta-analysis. *BMJ Support Palliat Care* 2013;3:144–54.
2 Campbell ML, Guzman JA. Impact of a proactive apporach to improve end-of-life care in a medical ICU. *Chest* 2003;123:266–71.
3 Detering KM, Hancock AD, Reade MC, *et al*. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. *BMJ* 2010;340:c1345.
4 Gomes B, Higginson IJ. Where people die (1974–2030): past trends, future projections and implications for care. *Palliat Med* 2008;22:33–41.
5 Heyland DK, Tranmer J, O'Callaghan C, *et al*. The seriously ill hospitalized patient: preferred role in end-of-life decision making? *J Crit Care* 2003;18:3–10.
6 Glass KE, Wills CE, Holloman C, *et al*. Shared decision making and other variables as correlates of satisfaction with health care decisions in a United States national survey. *Patient Educ Couns* 2012;88:100–5.
7 Hawkins NA, Ditto PH, Danks JH, *et al*. Micromanaging death: process preferences, values, and goals in end-of-life medical decision making. *Gerontologist* 2005;45:107–17.
8 Hebron AL, McGee S. Precedent autonomy should be respected in life-sustaining treatment decisions. *J Med Ethics* 2014;40:714–16.
9 Shay LA, Lafata JE. Understanding patient perceptions of shared decision making. *Patient Educ Couns* 2014;96:295–301.
10 Gardiner C, Gott M, Ingleton C, *et al*. Extent of palliative care need in the acute hospital setting: a survey of two acute hospitals in the UK. *Palliat Med* 2012;27:76–83.
11 Moore A. Search for dignity: better identification of people in the last year of life could transform end of life care. *Health Serv J* 2012;122:S6–S7.
12 Shaw KL, Clifford C, Thomas K, *et al*. Improving end-of-life care: a critical review of the Gold Standards Framework in primary care. *Palliat Med* 2010;24:317–29.
13 Thomas K, *et al*. The National GSF Centre's guidance for clinicians to support earlier recognition of patients nearing the end of life. Secondary The National GSF Centre's guidance for clinicians to support earlier recognition of patients nearing the end of life. 2011. http://www.goldstandardsframework.org.uk/cd-content/uploads/files/GeneralFiles/PrognosticIndicatorGuidanceOctober2011.pdf
14 Abel J, Rich A, Griffin T, *et al*. End-of-life care in hospital: a descriptive study of all inpatient deaths in 1year. *Palliat Med* 2009;23:616–22.
15 Desmedt MS, de la Kethulle YL, Deveugele MI, *et al*. Palliative inpatients in general hospitals: a one day observational study in Belgium. *BMC Palliative Care* 2011;10:2–9.
16 Frost DW, Cook DJ, Heyland DK, *et al*. Patient and healthcare professional factors influencing end-of-life decision-making during critical illness: a systematic review. *Crit Care Med* 2011;39:1174–89.
17 Morize V, Nguyen DT, Lorente C, *et al*. Descriptive epidemiological survey on a given day in all palliative care patients hospitalized in a French university hospital. *Palliat Med* 1999;13:105–17.
18 Norton SA, Hogan LA, Holloway RG, *et al*. Proactive palliative care in the medical intensive care unit: effects on length of stay for selected high-risk patients. *Crit Care Med* 2007;35:1530–5.
19 Quill TE, Abernethy AP. Generalist plus specialist palliative care—creating a more sustainable model. *N Engl J Med* 2013;368:1173–5.
20 Rosenwax L, McNamara B, Murray K, *et al*. Hospital and emergency department use in the last year of life: a baseline for future modifications to end-of-life care. *Med J Aust* 2011;194:570–3.
21 See MT, Chan WC, Huggan PJ, *et al*. Effectiveness of a patient education intervention in enhancing the self-efficacy of hospitalized patients to recognize and report acute deteriorating conditions. *Patient Educ Couns* 2014;97:122–7.
22 Sprung CL, Cohen SL, Sjokvist P, *et al*., Ethicus Study Group. End-of-life practices in European intensive care units: the Ethicus Study. *JAMA* 2003;290:790–7.
23 Tan L, Delaney A. Medical emergency teams and end-of-life care: a systematic review. *Crit Care Resusc* 2014;16:62–8.
24 To TH, Greene AG, Agar MR, *et al*. A point prevalence survey of hospital inpatients to define the proportion with palliation

as the primary goal of care and the need for specialist palliative care. *Intern Med J* 2011;41:430–3.
25 Wunsch H, Linde-Zwirble WT, Harrison DA, *et al*. Use of intensive care services during terminal hospitalizations in England and the United States. *Am J Respir Crit Care Med* 2009;180:875–80.
26 Godfrey G, Pilcher D, Hilton A, *et al*. Treatment limitations at admission to intensive care units in Australia and New Zealand. *Crit Care Med* 2012;40:2082–9.
27 Clark D, Armstrong M, Allan A, *et al*. Imminence of death among hospital inpatients: prevalent cohort study. *Palliat Med* 2014;28:474–9.
28 Bell SK, Pascucci R, Fancy K, *et al*. The educational value of improvisational actors to teach communication and relational skills: perspectives of interprofessional learners, faculty, and actors. *Patient Educ Couns* 2014;96:381–8.
29 Bor R, Miller R, Godman E, *et al*. The meaning of bad news in HIV disease: counselling about dreaded issues revisited. *Couns Psych Q* 1993;6:69–80.
30 Browning DM, Meyer EC, Truog RD, *et al*. Difficult conversations in health care; cultivating relational learning to address the hidden curriculum. *Acad Med* 2007;82:905–13.
31 Truog R. Translating research on communication in the intensive care unit into effective educational strategies. *Crit Care Med* 2010;38:976–7.
32 van Kleffens T, van Leeuwen E. Physicians' evaluations of patients' decisions to refuse oncological treatment. *J Med Ethics* 2005;31:131–6.
33 Veldhuijzen W, Ram PM, van der Weijden T, *et al*. Communication guidelines as a learning tool: an exploration of user preferences in general practice. *Patient Educ Couns* 2013;90:213–19.
34 Jagosh J, Donald Boudreau J, Steinert Y, *et al*. Communication study: the importance of physician listening from the patients' perspective: enhancing diagnosis, healing, and the doctor–patient relationship. *Patient Educ Couns* 2011;85:369–74.
35 Truog RD. Patients and doctors—the evolution of a relationship. *N Engl J Med* 2012;366:581–5.
36 DasGupta S, Charon R. Personal illness narratives: using reflective writing to teach empathy. *Acad Med* 2004;79:351–6.
37 Silverman J. Clinical communication training in continuing medical education: possible, do-able and done? *Patient Educ Couns* 2011;84:141–2.
38 von Fragstein M, Silverman J, Cushing A *et al*., UK Council for Clinical Communication Skills Teaching in Undergraduate Medical Education. UK consensus statement on the content of communication curricula in undergraduate medical education. *Med Educ* 2008;42:1100–7.
39 Huijer M, van Leeuwen E. Personal values and cancer treatment refusal. *J Med Ethics* 2000;26:358–62.
40 Komesaroff P. *Experiments in love and death: medicine, postmodernism, microethics and the body*. Victoria: Melbourne University Publishing, 2008.
41 Rademakers J, Delnoij D, Nijman J. Educational inequalities in patient-centred care: patients' preferences and experiences. *BMC Health Serv Res* 2012;12:261.

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# A prospective observational study of prevalence and outcomes of patients with Gold Standard Framework criteria in a tertiary regional Australian Hospital

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*BMJ Support Palliat Care* published online September 21, 2015



## Notes