



National Hospice and Palliative Care Organization  
**Palliative Care Resource Series**

**THE IMPORTANCE OF RISK  
STRATIFICATION FOR REFERRALS  
TO PALLIATIVE CARE PROGRAMS**

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## HISTORY OF PALLIATIVE CARE REFERRALS

Palliative Care consultation has been shown to improve quality of life; improve patient and family satisfaction with care; improve symptom management; decrease cost of care; and even prolong life when compared with usual care. Early palliative care referral has also been associated with longer lengths of stay in hospice programs, fewer in-hospital deaths, and less caregiver bereavement distress. (Ref. 1-5)

Traditionally, referrals to palliative care programs have been initiated by healthcare providers or upon request of patients and families. The referrals tend to occur late (if at all), blunting the potential benefits to patients and families and diluting impact on quality and cost of care. Barriers to provider referral include lack of knowledge about the benefits of early palliative care interventions, fear of losing control, and feelings of failure. (Ref. 6) Even among well-informed clinicians who value palliative services, it may not occur to refer appropriate patients when the typical busy clinician is focused on episodic care goals.

In order to survive and thrive while continuing to provide access to much needed services, palliative care programs need to migrate from dependence on grant support and philanthropy to becoming self-sustaining programs. Palliative care integration into systems of care is becoming increasingly attractive to insurers and organizations that provide comprehensive population-based care because of the evolution of healthcare delivery from a fee-for-service volume-based model to a value-based system emphasizing quality and cost-savings.

## INTRODUCTION: RISK STRATIFICATION

Prospective identification of those patient and families likely to benefit from palliative services has the potential to optimize referrals to both inpatient and community-based palliative care programs. Systems of identification need to be easy to use and integrated into the patient information systems in use by referring providers and institutions. Automatic triggering bypasses many of the barriers to referral to palliative care, especially if integrated into the daily computerized medical record of each patient.

Population health employs risk stratification to identify patients at risk of specific outcomes, e.g. high per-capita cost, high volume healthcare utilization, frequent hospitalizations, frequent emergency room visits, high risk of medical complications, or high mortality rates.

Insurers, both private and government, have developed proprietary computerized algorithms that analyze healthcare utilization data of covered individuals to identify those with the highest per capita cost or those with diagnostic codes known to incur high utilization and expense. These systems are not readily available to front-line providers, and will not be reviewed in this paper.

This paper will review those systems currently available to front-line clinicians, both in the field of palliative care and in the broader healthcare system. A short review of possible tools to identify patients considered “high-risk”, i.e., the sickest and most vulnerable patients who have high care

needs and are high utilizers of costly medical interventions, will be presented. Some tools are specific to the field of palliative care while others were developed for different purposes, but could prove useful in identifying patients who would benefit from palliative interventions.

## PALLIATIVE CARE TOOLS TO IDENTIFY HIGH RISK PATIENTS

- The **At Home Support Program** of Hospice of Michigan has developed proprietary computerized risk stratification algorithms for use in identifying patients for referral to palliative care. The software and support are available to others who wish to purchase them. (Ref. 7)
- The **Center to Advance Palliative Care (CAPC)** has developed criteria for hospitalized patients to trigger palliative care referral, both upon admission to the hospital, and on each subsequent hospital day. (See tables 1 & 2) (Ref. 8)
- **CAPC has also endorsed a framework developed by Kelly et al.** which stratifies older adults with serious illness into 3 categories which guide intensity of palliative interventions.
  - ◆ Patients in Category A have a serious condition and/or functional impairment, which places them in a moderate risk category that may benefit from screening for needs amenable to specialized services.
  - ◆ Category B patients have serious conditions and/or functional impairment **AND** utilization of resources. These patients are in the moderate to high risk category, and may benefit from a needs assessment and receipt of specialized palliative services.
  - ◆ Category C patients have a serious condition **AND** functional impairment **AND** high utilization of healthcare services (at least one hospitalization or nursing home stay in preceding year). Patients in this category have a 47% chance of repeat hospitalization in the coming year, have 4 times the Medicare spending, and have a 28% mortality rate in the subsequent year (see figure 1). (Ref. 9)
  - ◆ Wide adoption of this framework will require routine assessment of functional status in patients who are hospitalized, which is not currently occurring. If the framework is to be applied to the outpatient setting, the same requirement for routine functional assessment needs to be initiated by healthcare providers.
- The **Palliative Prognostic Score (PaP)** utilizes presence or absence of dyspnea and anorexia, Karnofsky Performance Status, clinical prediction of survival, and lab values of total white blood cell count and lymphocyte count to derive a score to stratify patients into the chance of 30-day survival:
  - ◆ Risk Group A patients with a total score of 0 - 5.5 have over a 70% chance of surviving past 30 days
  - ◆ Group B, with a total score of 5.6 - 11, have a 30-70% chance of 30-day survival
  - ◆ Group C, with a total score of 11.1 - 17.5, have less than a 30% chance of 30-day survival. (Ref. 10 & 11)
- The **Palliative Performance Scale (PPS)**, originally developed as a functional assessment tool, has been found to correlate to survival estimates for both cancer and non-cancer patients in several studies. In a heterogeneous hospice population, PPS score was a strong predictor of 6-month mortality: 89% mortality rate for PPS scores of 30 - 40, 81% mortality for PPS scores > 50. (Ref. 12 – 16)
- The **Palliative Prognostic Index (PPI)**, which combines estimates of function as measured by the PPS with estimates of oral intake and presence or absence of dyspnea and delirium, predicts short-term survival (score >6 indicates survival <3 weeks). (Ref. 15)

■ **The CARING Criteria** is a simple screening tool which identifies chronically-ill patients at high risk of 1-yr. mortality:

- C Primary diagnosis of Cancer
- A  $\geq 2$  hospital Admissions for a chronic illness in previous year
- R Residence in a nursing home
- I ICU admission with multi-organ failure
- N Meeting  $\geq 2$  NHPCO Non-Cancer...
- G Guidelines for admission

A score of  $\leq 4$  indicates low risk; score of 5-12 indicates medium risk; score  $\geq 13$  indicates high risk (49%) of 1-yr. mortality. (Ref. 17)

■ **Glare Screening Tool for Identifying Unmet Palliative Care Needs in Patients with Cancer.**

Glare developed an 11-point scoring system to identify cancer patients in need of palliative consultation based on:

- ◆ the presence of locally advanced or metastatic cancer
- ◆ functional status as measured by ECOG Score
- ◆ and the presence or absence of a serious complication of cancer impacting survival
- ◆ a serious co-morbidity, or any other condition complicating care combined with 6 other criteria (uncontrolled symptoms, moderate- severe distress, patient or family concerns about decision-making, care team need for assist in decision-making, patient or family request for palliative care, and prolonged hospital stay). A score of  $\geq 5$  is used to trigger automatic palliative consultation. (Ref. 18)

A potential drawback of relying on systems specifically developed within the context of hospice and palliative care is that they are not widely utilized by the referral community at large, and it may present challenges to palliative programs to request that these tools be integrated into referrer's usual care processes and/or clinical management information systems.

## NON-PALLIATIVE CARE TOOLS TO IDENTIFY HIGH RISK PATIENTS

If your palliative care program has a relationship with particular insurers, Accountable Care Organizations, hospitals, Chronic Illness Providers, or Case Management Services it would be useful to inquire what risk stratification measures each uses to identify high-risk, high-need patients, and if the option of palliative consultation or interventions can be embedded into their systems. This may generate appropriate referrals without requiring healthcare providers to insert new screening tools into their standard evaluation processes.

Different tools identify different categories of patients, for instance:

- those at high risk of mortality in the coming 1 to 2 years
- those at risk for 30-day re-hospitalization
- those at risk for frequent ER visits
- or those at risk for facility placement.

## Prognostic Tools

Several prognostic calculators are now available online for use by healthcare providers.

- The [ePrognosis](#) website provides access to tools for those living in the community, those living in a nursing home, those who are hospitalized, and outpatients with advanced cancer. (Ref. 19)
- [Farmacologiaclinica](#) is another site that allows access to several tools, including the BODE Index for COPD, Charlson Comorbidity Index, the PPI and the PaP. (Ref. 20)
- The [HD Mortality Predictor](#) is available for those with end-stage renal disease. (Ref. 21)
- The [GRACE ACS Risk and Mortality Calculator](#) assesses the risk for in-hospital, 6 mo., and 3 yr. mortality for those patients with acute coronary syndrome (ACS). (Ref. 22)
- [The Seattle Heart Failure Model](#) is a calculator of projected survival at baseline and after interventions for patients with congestive heart failure (CHF). (Ref. 23)

Other useful tools which are not online include the following:

- The **Minimum Data Set Mortality Risk Index (MMRI)**. Using data from the Minimum Data Set that is routinely collected on patients in a nursing home setting (demographics, diseases, clinical signs and symptoms, adverse events), the risk of 1-yr. mortality for a particular nursing home patient can be estimated. (Ref. 24)
- The **Flacker Mortality Score** identifies probability of residents dying within a year (Score 0-2 is 7%; 3-6 is 19%, 7-10 is 50%, 11+ is 86%). (Ref. 25)
- The **HELP Index**, used in the Veterans Administration system, predicts 6 mo. mortality in nursing home residents (Ref. 26)
- The **Prognostic Index** for elderly adults developed by Walter et al. scores risk based on variables including male sex, ADL dependency at discharge, comorbid conditions of CHF and cancer, and admission creatinine and albumin levels for estimates of 1 yr. mortality after hospitalization (See Table 3). (Ref. 27)

Disease specific tools exist to identify patients with advanced chronic illness and help to estimate survival. These include the following:

- **BODE Index** for patients with advanced COPD (Ref. 28 & 29)
- **MELD Score** for patients with advanced liver disease (originally developed to prioritize patients for liver transplant) (Ref. 30 & 31)
- **ADEPT** for patients with advanced dementia (Ref. 32)
- **New York Heart Association (NYHA) Classification** system for heart failure. (Ref. 33)

## Tools to predict hospital readmission and frequent emergency room visits

Since hospitals are at risk of paying penalties to Medicare for excess 30-day readmissions related to the same diagnosis, many hospitals use tools to predict risk of 30-day readmission. They proactively intervene and try to prevent readmission through more intensive in-hospital education or transition case-management programs. The identified patients are often those who would benefit from community palliative care referrals. One such tool is the **LACE Index** (Ref. 34), based on:

- Length of index hospital stay,
- Acuity of the index admission,
- Comorbidities as measured by the Charlson Comorbidity Score, and
- Emergency department utilization in the 6 months prior to the index admission.

The **LACE+ Index** expands upon the original model. It is more accurate, but more complicated to complete. (Ref. 35)

Similarly, a risk tool has been developed for older persons requiring treatment in the emergency room: **The Triage Risk Screening Tool (TRST)** assesses:

- cognitive impairment
- difficulty swallowing or transferring or recent falls
- patients taking  $\geq 5$  prescription medications
- emergency department visits in the prior 30 days or hospitalization in the prior 90 days
- RN professional recommendation

Older persons with  $\geq 2$  risk factors are significantly more likely to return to the emergency department or require hospitalization within the following 120-day period. (Ref. 36) Palliative care program referral could be used as an intervention to decrease repeat emergency department visits or prevent frequent hospitalizations.

Another tool used to prevent hospital readmission by some programs is the **Project BOOST Risk Assessment**, which utilizes the '8Ps' to guide pro-active targeted interventions to reduce re-hospitalization rates. (See Table 4) All of the interventions fall within the scope of practice of palliative care programs. (Ref. 37)

#### **Advanced Illness Management Programs and Transition Programs tools**

Programs specifically aimed at managing patients with advanced chronic illness (usually within a comprehensive integrated health delivery system, or aligned with one that is reliant on value-based reimbursement) also use tools to identify appropriate patients for referral.

- The **Transitional Care Model (TCM) Hospital Discharge Criteria for High Risk Older Adults** stratifies patients on the basis of advanced age ( $> 80$  y.o.); presence of functional deficits; presence of behavioral or psychiatric issues; number of active co-morbid illnesses; number of prescribed medications; hospitalization in the previous 30 days; inadequate support systems; and documented non-adherence to therapeutic regimen. Presence of 2 or more risk factors triggers further assessment and more intense discharge planning. Cognitive impairment is an independent risk factor that triggers post-discharge interventions. (Ref. 38)
- The **California Quality Collaborative (CQC)** has among its Complex Management Toolkit a **Risk Stratification Report** which incorporates some of the same elements as the **TCM Model** plus diagnosis of cancer in the past 2 yrs., and long-term care codes and scores to stratify the population served into high-risk categories. (Ref. 39)

Several instruments identify frailty in vulnerable elders.

- **Vulnerable Elders Survey (VES-13)**, with evaluation based on age, difficulty with physical activity, and difficulty with performing discretely identified tasks. A score  $> 3$  indicates frailty, which warrants further evaluation for appropriate supportive interventions. (Ref. 40)
- The **Timed Get-Up and Go Test** which can be done easily in an office setting to identify seniors at high risk of falling, could be used as a surrogate marker to identify patients for appropriate palliative interventions. (Ref. 41)

- The **Malnutrition Universal Screening Tool (MUST)** not only identifies those with significant malnutrition, but has also been shown to correlate with increased mortality risk. It is a 5-step instrument, with the first 3 steps focusing on indicators of malnutrition (low BMI, significant unplanned wt. loss, effects of acute disease), the 4th step calculating the score (0= low, 1= medium,  $\geq 2$ = high risk), and the 5th step providing management guidelines based on risk score. (Ref. 42)

Other ways of risk stratification include **Adjusted Clinical Groups** developed by The Johns Hopkins University (Ref. 43), **Hierarchical Conditions Category** used by CMS (Ref. 44), **Elder Risk Assessment** developed to identify community dwelling adults at high-risk for hospitalization or emergency department visits (Ref. 45), and **Minnesota Health Care Home Tiering**. (Ref. 46)

## THE BOTTOM LINE

Palliative care forms an essential part of a comprehensive healthcare system, with the proven potential to improve care outcomes and decrease costs, both in the fee-for-service arena as well as in the new value and quality-based systems evolving into the predominant healthcare delivery model.

Palliative care programs existing in the fee-for-service world generally do not cover their operating expense through provider-based billing. They have the potential when partnering with hospitals and other entities to help decrease facility costs and increase quality of and patient satisfaction with care significantly when utilized appropriately. Increasingly, palliative care programs have been able to negotiate arrangements with other entities to provide financial and other resources to allow palliative care programs to operate independently of grant support. Palliative care in the value-based systems of care, such as Accountable Care Organizations and vertically integrated health systems, can operate under the model of shared-savings/ shared-risk, capitated care, or some other contractual arrangement for reimbursement of costs.

Identifying and serving individuals in the population most likely to benefit from palliative interventions and most likely to generate cost savings for healthcare entities is essential to the continued fiscal viability of palliative programs. In order to be able to implement a risk identification system, the system must be:

- quick and easy to administer
- available at the point of care
- integrated into the clinical patient information system (preferably computer-based)
- able to automatically trigger patients for palliative care referrals

Potential partners of palliative care programs are already using systems to lower financial risk and improve quality of care. Determine which systems they use and how those systems might be used to automatically trigger referrals to inpatient and community-based palliative care programs. Collect data to not only provide patient identification, but also to monitor quality, utilization, and value-added services provided by your palliative care program.

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**Table 1: Criteria for Palliative Care Assessment at the Time of Admission**

<b>Primary Criteria</b>
Potentially life-limiting or life-threatening condition and:
The "surprise question": You would not be surprised if the patient died within 12 mo. or before adulthood
Frequent hospital admission (>1 for the same condition within several months)
Admission for difficult symptom management (physical or psychological)
Complex care requirements (e.g., functional dependence, complex support needed at home (e.g., vent/ parenteral antibiotics/ artificial feedings)
Functional decline, feeding intolerance, and/or unintended significant wt. loss
<b>Secondary Criteria</b>
Admission from long-term care or medical foster home
Elderly patient, cognitively impaired, with acute hip fracture
Metastatic or locally advanced incurable cancer
Chronic home oxygen use
Out-of-hospital cardiac arrest
Current or past hospice program enrollee
Limited social support
No history of completing advance care planning

**Table 2: Criteria for a Palliative Care Assessment During Each Hospital Day**

**Primary Criteria**

Potentially life-limiting or life-threatening illness and:

The “surprise question”: You would not be surprised if the patient died within 12 mo. or before adulthood

Difficult-to-control symptoms (physical or psychological)

ICU stay > 7 days

Lack of Goals of Care clarity and documentation

Disagreement or uncertainty among patients, staff, and/or family re:

- Major medical treatment decisions
- Resuscitation preferences
- Use of non-oral feeding or hydration

**Secondary Criteria**

Awaiting or deemed ineligible for, solid-organ transplantation

Patient/ family/ surrogate emotional, spiritual, or relational distress

Patient/ family/ surrogate request for palliative care or hospice

Patient considered a potential candidate, or medical team seeking consult for:

- Feeding tube placement
- Tracheostomy
- Renal replacement therapy
- Ethics consultation
- LVAD or AIDC placement
- LTAC hospital or medical foster home disposition
- Bone marrow transplantation (high-risk patient)

Figure 1: Three sub-definitions of serious illness

**Table 3: Validation of Prognostic Index: 1-Year Mortality in Derivation and Validation Cohorts by Risk Strata**

Risk Strata	Derivation Cohort		Validation Cohort	
	No. Who Died/ No. at Risk	% (95% Confidence Interval)	No. Who Died/ No. at Risk	% (95% Confidence Interval)
<b>Logistic Regression Model</b>				
Quartile of Risk				
1	51/379	13 (10-16)	59/633	9 (7-11)
2	82/401	20 (16-24)	64/267	23 (18-28)
3	130/349	37 (32-42)	104/258	40 (34-46)
4	229/366	63 (58-68)	171/269	64 (58-70)
ROC curve area*	0.75		0.80	
<b>Bedside Risk Scoring System</b>				
Risk group, points†				
0-1	46/356	13 (10-16)	14/364	4 (2-6)
2-3	77/382	20 (16-24)	74/391	19 (15-23)
4-6	176/475	37 (33-41)	137/399	34 (29-39)
>6	193/282	68 (63-73)	173/273	64 (58-70)
ROC curve area*	0.75		0.79	

\* Area under the receiver operating characteristic (ROC) curve is reported for overall score. † Male sex, 1 point; activities of daily living (ADL) dependency: 2 points for 1-4 ADLs and 5 points for all ADLs; congestive heart failure, 2 points; cancer: 3 points for solitary and 8 points for metastatic; creatinine level higher than 3 mg/dl (265 μmol/L), 2 points; albumin: 1 point for levels between 3 and 3.4 g/dl and 2 points for levels lower than 3 g/dl.

Walker JAMA 2001

**Table 4: Project BOOST Risk Assessment - 8Ps**

**P**roblem with medications: polypharmacy or high risk medications

**P**sychological: Screen + for depression/ history of depression &/or anxiety; presence of substance abuse

**P**rincipal diagnosis: hospitalized related to cancer, stroke, diabetes complications, COPD, CHF

**P**hysical limitations: impaired ADLs, difficulties with medication administration, participation in post-discharge planning

**P**oor health literacy

**P**oor social support

**P**rior hospitalization

**P**alliative care: "surprise question" answer "no"

Society of Hospital Medicine Project BOOST® Implementation Toolkit: Risk Assessment – 8P