Prognostication of Advanced Cancer Patients

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Definition

- ***The science of estimating the likelihood of an outcome (eg, death, disability) due to a medical condition (e.g. cancer, heart failure, COPD)***

- The goal of accurate prognostication is to provide patients better understanding of their expected survival and allow them to make informed medical and social choices regarding their treatment path at the end of life (life-prolonging or palliative), also to give time to meet their psychological and spiritual needs.

Issues

- Not much information about Prognosis in most medical textbooks
- Medical students and residents receive little training in how to estimate or communicate prognosis
- Clinicians are reluctant to discuss prognostic information: negative effect on the patient-doctor relationship, or the patient's psychological state by taking 'the hope away'

- Lack of certainty in prognostic information.

- Available prognostic tools lack the accuracy, generalizability, and usability for routine clinical use.

- Prognostic tools are more accurate at predicting short term than long term prognosis.

Physician errors in prognostication

- A study confirmed that only 20% of physicians could accurately predict the prognosis. (BMJ 2000)
  - Studies suggest that clinicians consistently overestimate the survival
  - Experienced clinicians better than less experienced clinicians
  - Longer durations of patient-physician relationships associated with greater error in predicting survival and a more optimistic prognosis (can't give up)

- Physician biases such as:

- Prior negative experience, "chagrin factor" (e.g. telling another patient she would die shortly, only to be wrong and she lives for years)
- Over-reliance on the importance of one particular test (eg, serum albumin levels)
- Enthusiasm for a new treatment (e.g. new chemo/immune therapeutic agents for advanced cancer)
- More reliance on diagnostic predictors (e.g. type of cancer) and demographic factors (e.g. age, gender) rather than functional status of the patient (tend to predict better e.g. ADL, IADL)

Summary of studies comparing physicians' estimated survival to patients' actual survival

Investigator	Median estimated survival, weeks	Median actual survival, weeks	Estimated survival/ actual survival
Parkes 1972	4.5*	2*	1.8
Evans 1985	NR	NR	3.2¶
Heyse-Moore 1987	8	2	4
Forster 1988	7Δ	3.5	2
Maltoni 1994	6	5	1.2
Maltoni 1995	6	4.6	1.3
Oxenham 1998	3	2.1	1.4
Maltoni 1999	6	4.7	1.3
Christakis 2000	NR	3.4	5.3¶

" IT DOESN'T LOOK GOOD, BOB! "

PATIENT/FAMILY READINESS TO DISCUSS PROGNOSIS

- In a study of 60 white, Chinese, Latino, and African American disabled older adults, 75 percent wanted to know their prognosis; results were similar across all ethnic groups.

- In another study of 214 adults living in the community with end stage disease (Cancer, CRF, CCF, COPD etc), over half of subjects wanted to discuss prognosis with their doctor.

  (J Am Geriatric Soc. 2003)

- Clinicians should be aware about variation between different cultures

When to discuss prognosis

- When the patient is not acutely ill and be able to process and understand information, and is not overwhelmed by anxiety due to a serious medical event.
- Unfortunately, these discussions too often are initiated after acute deteriorations or progression of disease.
- A study of 1231 patients with stage IV lung/colorectal cancer found that patients who have end-of-life discussions with their physician earlier than the last month of life were less likely to receive highly aggressive care, such as hospitalizations and chemotherapy. (J Clin Oncology. 2012)

How to discuss prognosis

S – Set the stage
1. Clearly introduced herself/himself
2. Clearly stated his/her role in the care of the patient

P – Perception
1. Determined the level of knowledge the survivors possessed prior to their arrival in the waiting room
2. Took note of the news receiver's vocabulary

I - Inform
1. Briefly indicated the chronology of events leading up to the death of the patient.
2. Used language appropriate for the survivor's culture and educational level
3. Avoided using euphemisms

K- Knowledge
1. Allowed the survivor to react to the information and ask questions or express concerns.
2. Answered ALL questions in the appropriate manner

E – Empathy
1. Used proper statements to show concern for the grieving
2. Validated emotions of the grieving

S – Summary and Strategy
1. Avoided showing any physician guilt for the loss/poor prognosis
2. Established personal availability to answer questions for the survivor at a later date
3. Ended the discussion and departed in an appropriate manner.


QUIT BEATING AROUND THE BUSH AND JUST TELL ME HOW BAD IT IS, DOC!!!
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Prognostic tools

- Integration of clinician estimates, performance status and clinical signs/symptoms is the best current tool of predicting survival among palliative patients.
- Most prognostication metrics are targeted at patients receiving palliative care only; metrics that are focused on advanced cancer patients undergoing active treatment are less common, and no specific tool is recommended.
- Two separate studies used following prognostic criteria: KPS [>60 versus ≤60], location of the primary cancer [breast versus non-breast], site of metastatic disease [bone only versus others], number of metastatic sites, low serum albumin, and LDH concentration ***(J Clin.Oncol 2008).***
- Systematic review (383 articles) of cancer presentations with a median survival of six months or less showed little evidence that treatment improved survival in the terminal stages of disease ***(J Palliat Med. Feb 2012)***

Predictors of survival in patients with advanced cancer under palliative care

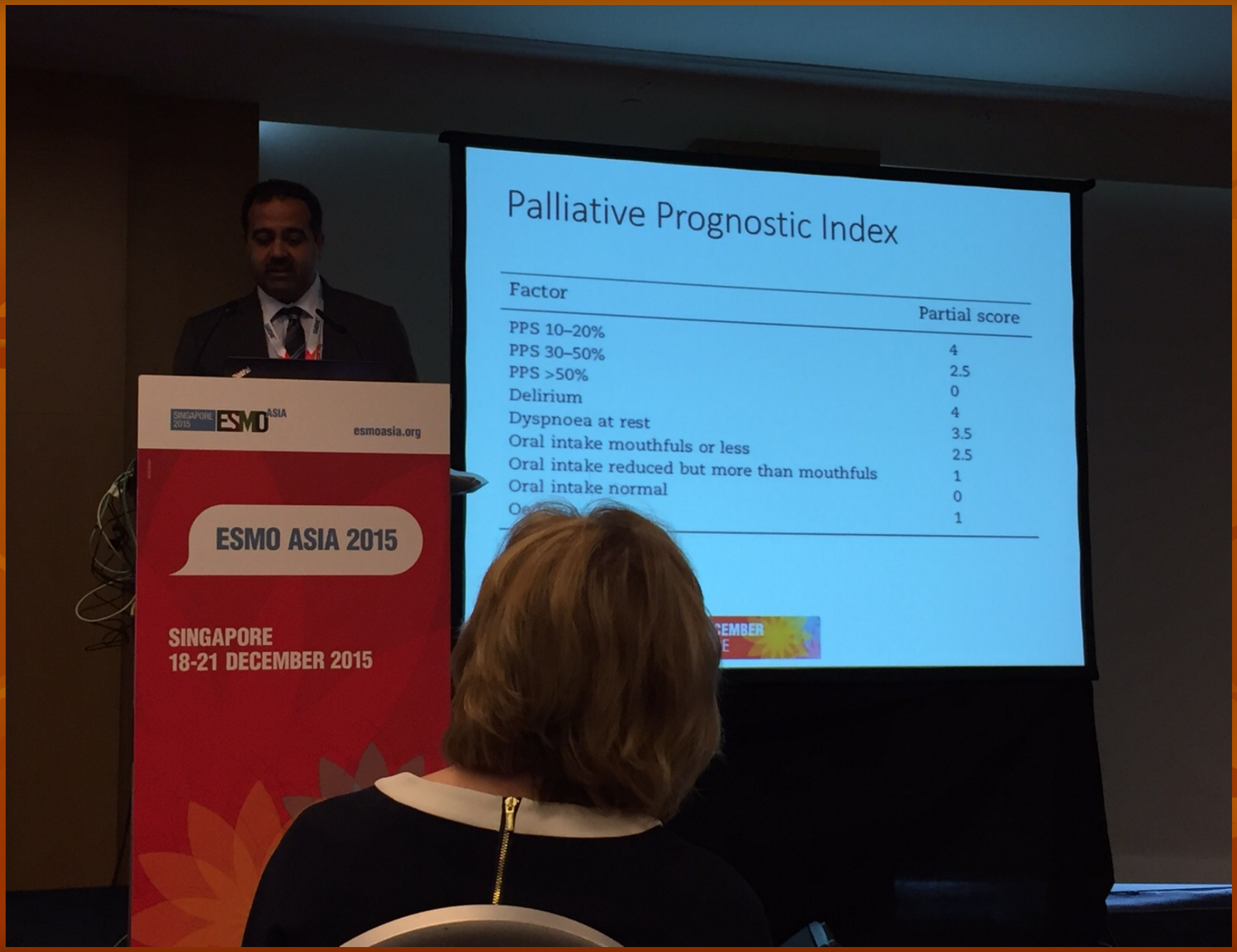
Index Survival	Value	Median	References
Karnofsky Performance Status	10 to 20	7 to 16 days	Evans 1985, Maltoni 1994, Maltoni 1995, Reuben 1998, Morita 1999, Llobera 2000, Bruera 1992
	30 to 40	8 to 50 days	
	>50	50 to 90 days	
Anorexia	Present	<58 days	Maltoni 1995, Llobera 2000, Bruera 1992
Confusion	Present	<38 days	Llobera 2000, Bruera 1992
Dysphagia	Present	<30 days	Maltoni 1995
Dyspnea	Present	<30 days	Maltoni 1995
Xerostomia	Present	<50 days	Bruera 1992
Physician estimate	3 months	30 days	Parkes 1972, Heyse-Moore 1987, Christakis 2000

PALLIATIVE PERFORMANCE SCALE (PPS)								
%	Ambulation	Activity level Evidence of disease	Self-care	Intake	Level of consciousness	Estimated median survival in days (a)	(b)	(c)
100	Full	Normal *No disease*	Full	Normal	Full	NA	NA	108
90	Full	Normal *Some disease*	Full	Normal	Full			
80	Full	Normal with effort *Some disease*	Full	Normal or reduced	Full			
70	Reduced	Can't do normal job or work *Some disease*	Full	As above	Full	145		
60	Reduced	Can't do hobbies or housework *Significant disease*	Occasional assistance needed	As above	Full or confusion	29	4	
50	Mainly sit/lie	Can't do any work *Extensive disease*	Considerable assistance needed	As above	Full or confusion	30	11	41
40	Mainly in bed	As above	Mainly assistance	As above	Full or drowsy or confusion	18	8	
30	Bed bound	As above	Total care	Reduced	As above	8	5	
20	Bed bound	As above	As above	Minimal	As above	4	2	6
10	Bed bound	As above	As above	Mouth care only	Drowsy or coma	1	1	

Palliative Prognostic Score

Dyspnea	No Yes	0 1
Anorexia	No Yes	0 1.5
Karnofsky Performance Status	> 30 10 – 20	0 2.5
Clinical Prediction of Survival (weeks)	> 12 11 – 12 7 – 10 5 – 6 3 – 4 1 – 2	0 2 2.5 4.5 6 8.5
Total WBC (x10 9/ L)	< 8.5 8.6 – 11 >11	0 0.5 1.5
Lymphocyte Percentage	20 – 40 % 12 – 19.9 % < 12 %	0 1 2.5
RISK GROUP	**30 DAY SURVIVAL**	**TOTAL SCORE**
A	**> 70 %**	**0 – 5.5**
B	**30 – 70 %**	**5.6 – 11**
C	**< 30 %**	**11.1 – 17.5**

Pirovano 1999, Glare 2004


Palliative Prognostic Index
Factor
Partial score
PPS 10–20%
4
PPS 30–50%
2.5
PPS >50%
0
Delirium
4
Dyspnoea at rest
3.5
Oral intake mouthfuls or less
2.5
Oral intake reduced but more than mouthfuls
1
Oral intake normal
0
1
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Palliative Prognostic Index

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Oral intake reduced but more than mouthfuls	1
Oral intake normal	0
Oedema	1

Palliative Prognostic Index

- Higher the score, worse the prognosis.
- Score > 6 , 3 week survival is predicted with a sensitivity of 80% and a specificity of 85%.
- Prospective study on prognostication based on clinical experience (N=150) vs. employing the PPI (N=108), demonstrated a reduction in incorrect survival prediction by 28 days or more (42% vs 23%, P<0.01).

Morita et al. Palliative Medicine; September 2001.

AIM of our Study

- Revalidation of the Index.
- Assess the usefulness of the Index in Cancer and Non-Cancer Palliative patient population.
- Assess the usefulness of the weekly scoring of the Index.

Methods

- 106 patients admitted over a three month period in 16 bedded palliative care unit were included in the study.
- Two main categories: (A) Cancer diagnosis (B) Non-cancer diagnosis
- Further subgroups based on the PPI score on admission:
  - Group 1: PPI < 4
  - Group 2: PPI of > 4 but ≤ 6
  - Group 3: PPI of > 6.
- During admission, the PPI score was reassessed and recorded each week.
- Outcome of each patient was recorded.

Results : Category A (Cancer patients)

Cancer Patients	Number	Median Survival (days)	Average Survival	Males	Females	Mean Age
Group 1 (PPI<4)	27	52	72	21	6	67
Group 2 (PPI 4-6)	15	15	17	8	7	71
Group 3 (PPI>6)	34	5	8.5	18	16	74
Total	76			47	29	

Results: Category B (Non-cancer patients)

Non-cancer Patients	Number	Median Survival (days)	Average Survival (days)	Males	Females	Mean Age (years)
Group 1 (PPI<4)	3	50	138	2	1	60
Group 2 (PPI 4-6)	00					
Group 3 (PPI>6)	27	4	9	15	12	78
Total	30			17	13	

	Positive Predictive Value			Negative Predictive Value			Sensitivity			Specificity		
	Thaker	Stone	Morita	Thaker	Stone	Morita	Thaker	Stone	Morita	Thaker	Stone	Morita
PPI >4	94	91	83	24	64	71	72.5	63	79	66	92	77
PPI >6	87	86	80	38.5	76	87	65	56	83	69	94	85

- Cancer patients with lower PPI (< 4) on admission had average survival of >6 weeks.
- 12 patients had PPI changed throughout the admission, from lower PPI to higher PPI. It helped to predict changing prognosis and notify patients and their families in time.
- Dynamic PPI scoring is also beneficial for discharge planning if low score remains stable during admission.
- PPI is not helpful in non-cancer diagnosis.

Summary

- Prognostication in advanced cancer patients is a difficult but critically important task.
- Integration of clinician estimates with performance status and clinical signs/symptoms (e.g. PPI) is the best way of predicting prognosis.
- Most prognostication metrics are targeted at patients receiving palliative care only.
- There is little evidence that the survival of patients with a purely palliative approach are different compared with patients on anticancer therapy.
- Prognostic studies are required on patients with advanced cancer undergoing active treatment.

THANK YOU


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