

# How long do I have to live, doc? Prognostication Tools in Palliative Care

## A practical approach workshop

Dr. Irene Ying

[irene.ying@sunnybrook.ca](mailto:irene.ying@sunnybrook.ca)

 @IYingTO

Dr. Giovanna Sirianni

[giovanna.sirianni@sunnybrook.ca](mailto:giovanna.sirianni@sunnybrook.ca)

 @gio\_sirianni

Dr. Giulia Perri

[gperri@baycrest.org](mailto:gperri@baycrest.org)



# What is your favourite thing about autumn?

● Select Live Poll



Live Poll

● Select this Session

Saturday, October 26, 2019

**#202-19 - HOW  
LONG DO I HAVE  
TO LIVE DOC?  
PROGNOSTICATION  
TOOLS IN THE  
PALLIATIVE CARE  
APPROACH**

📍 Provincial North - 2nd  
Floor

🕒 1:00 PM - 2:00 PM

● Enter Session PIN Session PIN

9641

and  
press

CONNECT

# Disclosure Slides

**Faculty: Dr. Irene Ying, Dr. Giovanna Sirianni, Dr. Giulia Perri**

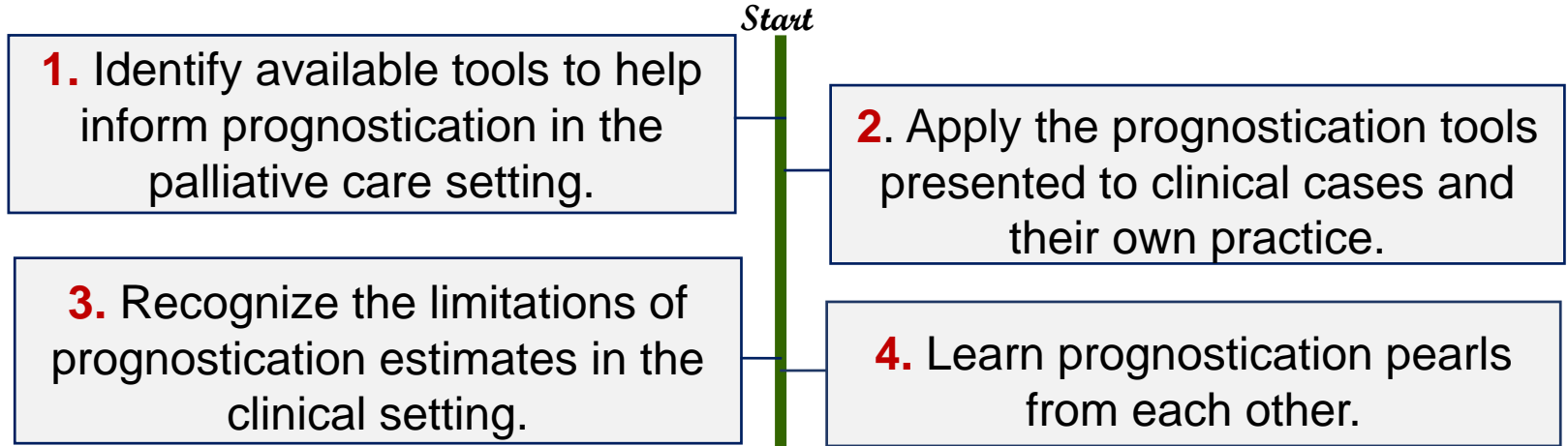
## **Relationships with commercial interests:**

- Grants/Research Support: None
- Speakers Bureau/Honoraria: None
- Consulting Fees: None
- Other: None

**No conflicts of interest to declare.**

**Mitigating bias: N/A**

# Learning Objectives:



**Any burning questions?**

**Getting to know each other.**

**Why is the skill of prognostication important  
*to you?***

# Importance of Prognostication

## Perspective of the Clinician:

1. Residents and caregivers will ask us.
2. Guides goals of care discussions and treatment options.
3. Helps connect residents to the right services.

# Importance of Prognostication

## Perspective of the Resident:

1. To prepare for the end of life.
2. To make the most of the life they had left.
3. To make medical or health-related decisions.



**Fill in the blank:**

**As clinicians, we *tend* to avoid discussions on prognosis because \_\_\_\_\_**

# Barriers to Communicating Prognosis

- Lack of training on the skill of prognosticating.
- Time consuming.
- Wait to be asked by our resident/SDM.
- Resident/SDM want a precise answer and we can't give it.
- Fear of being wrong.
- Fear of negative impact the patient-doctor relationship.
- Fear of “taking away” hope.
- Fear of doing more harm.

# Defining prognostication.

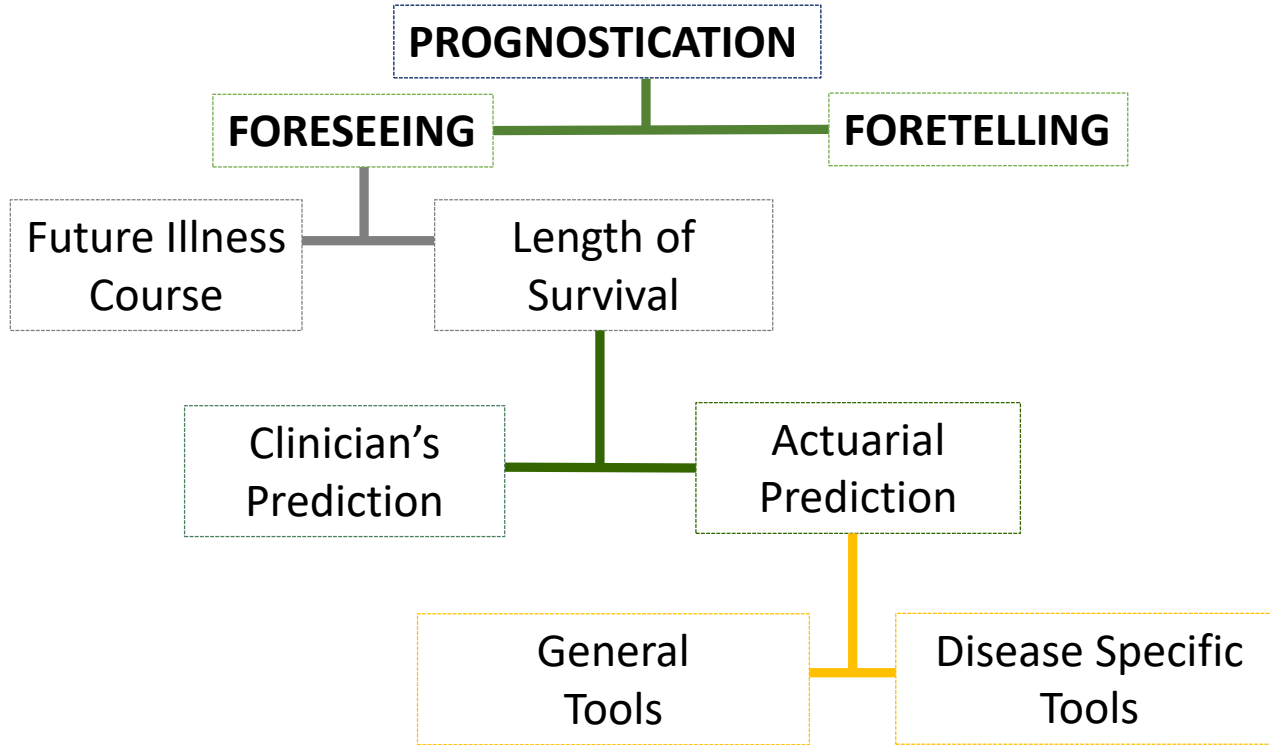


## What do we *really* mean by prognostication?

**Foreseeing:** estimating the likelihood of an outcome due to a medical condition.

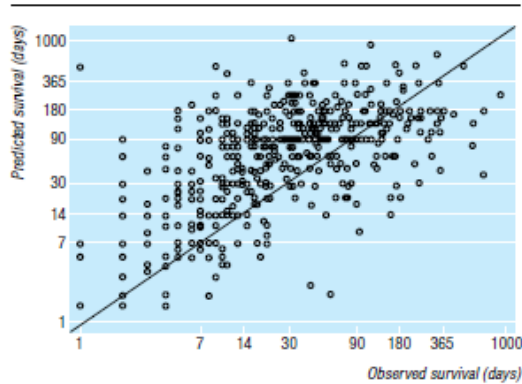
- Length of survival
- Future illness course and impact with or without therapies.

**Foretelling:** Communicating to the resident, their families/caregivers/SDM, clinicians.



# Clinician's Prediction of Survival (CPS)

Predicted versus observed survival in 468 terminally ill hospice patients.



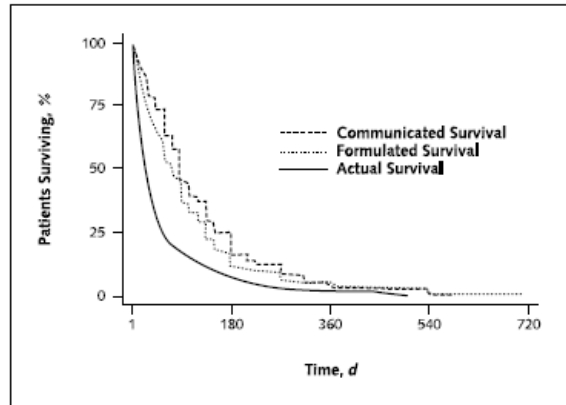
**Inaccurate:** only 20% of prognoses are accurate.

**Overoptimistic:** by a factor of 5.

# Optimistically Optimistic:

## Clinician's Prediction of Survival and *Prognostic Disclosure*

Figure 2. Relationship between communicated, formulated, and actual survival.



n = 326 hospice patients

### Main Conclusions:

Median **formulated** survival:

❖ 75 days

Median **communicated** survival:

❖ 90 days

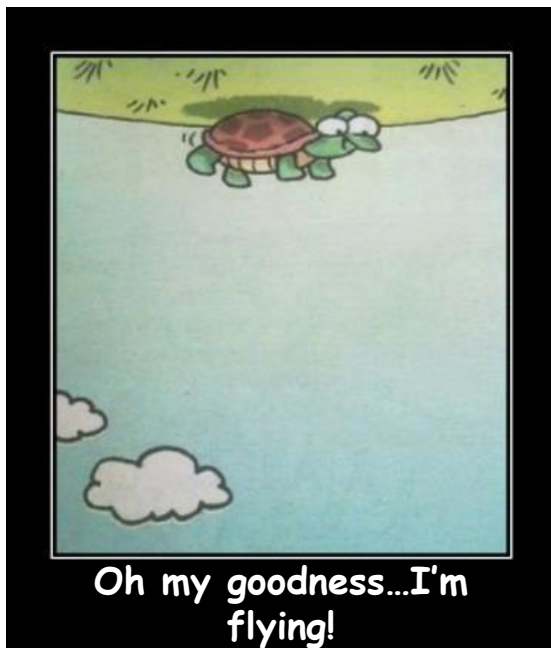
Median **actual** survival:

❖ 26 days

## What's really wrong with being **optimistic**?

**2.5 x:**

Life-extending  
and  
burdensome  
interventions



**No** Palliative Care

**Early Palliative Care Integration Works to:**

- *improves QOL*
- *satisfaction with care*
- *better symptom control*
- *decreases acute care needs*
- *less burdensome interventions*



Surprise!

**Q:** Can we use the “surprise question” to prognosticate?

a.Yes

b.No

# The Surprise Question



- **Who:** Dr. Joanne Lynn, MD
- **When:** In the 90's
- **Where:** Washington for use in primary care, advanced cancer and dialysis patients
- **What:** “Would you be surprised if this patient died in the next 12 months?”
- **Why:** to identify patients with a worse prognosis and appropriateness for palliative care

# The “surprise question” for predicting death in seriously ill patients: a systematic review and meta-analysis

James Downar MDCM MHSc, Russell Goldman MD MPH, Ruxandra Pinto PhD, Marina Englesakis MLIS, Neill K.J. Adhikari MDCM MSc

- 16 studies (11,621 patients)
- Serious illness (both CA and non-CA)

## Main Findings:

- Sensitivity 67%, Specificity 80%
- LR+ 3.4, LR-0.41, PPV 37%, NPV 93%
- High false positive rate
- Better performance in cancer (LR+ 4.2)
- Very poor performance in non-cancer (LR+2.7)

# Advanced Dementia

# Dementia numbers in Canada

**25,000**

The number of new cases diagnosed every year

**564,000**

Canadians currently living with dementia

**937,000**

Canadians who will be living with dementia in 15 years

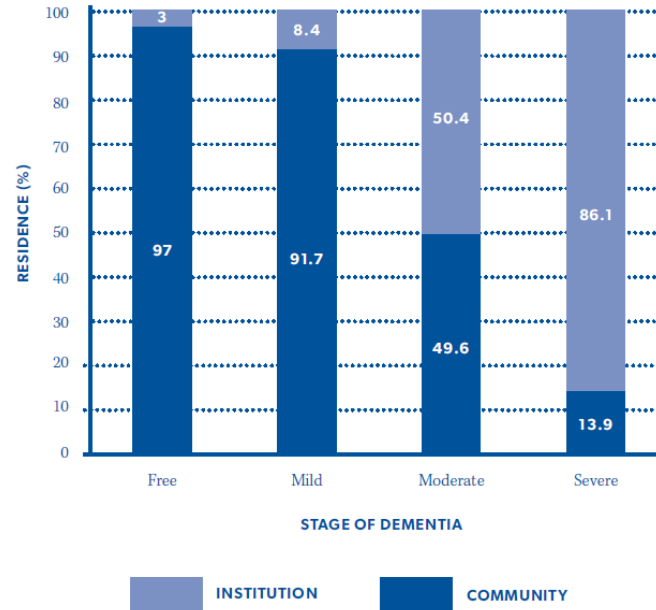
**1.1 million**

Canadians affected directly or indirectly

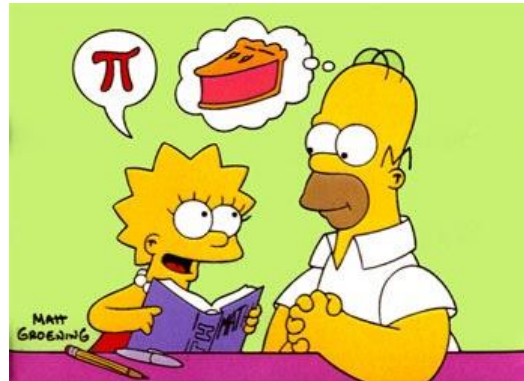
**\$10.4 billion**

Annual cost to Canadians to care for those living with dementia

## Percentages of Residents with Dementia Living in the Community versus in Institutions by Stage of Dementia, Canada



# Advanced Dementia





# Common Language: Defining Advanced Dementia

Global Deterioration Scale (GDS), Stage 7:

- Profound memory deficits
- Minimal verbal abilities
- Inability to ambulate independently
- Inability to perform activities of daily living
- Bladder and bowel incontinence

# Meet Mr. K





- 83 yrs
- Widow
- LTC
- Advanced Dementia
- HTN
- CHF
- A.fib
- CVA

**Function:** Mostly in bed.

**Nutrition:** Dysphagia: minced/nectar thick liquid. Total dependence with meals. Needs cueing. 3/4 meals not eaten.

Weight within normal range, lost 10% in the last 6 months.

**PLST:** No CPR, all other measures, including transfers to acute care.

---

# Mr. K's prognosis is:

- a) More than 1 year
- b) 6-12 months
- c) 3-6 months
- d) < 3 months
- e) I don't know
- f) other

Session PIN: 9641

# Summary of Prognostic Tools in Advanced Dementia

## General Tools

- RAI-MDS CHES Scale\*  
(Hirdes et al. JAGS 2003;51(1):96-100)
- MDS Mortality Risk Index – Revised (MMRI-R)\*  
(Prorock et al. BMC Research Notes, 2010. 16:3:200-208)
- Flacker 1 Year Newly Admitted Revised Index\*  
(Flacker et al. JAGS 2003; 51:213-221)
- Flacker 1 Year Long Stay Revised Index\*  
(Flacker et al. JAGS 2003; 51:213-221)
- *Big Life Elderly Calculator*  
<https://www.projectbiglife.ca/elderly>  
(Tanuseputro et al. JAMDA 2015;16(10):874-83)

## Dementia Specific Tools

- ADEPT tool\*  
(Mitchell et al. JPSM. 2010; 40(5): 639-651)
- FAST tool  
Functional Assessment Staging Tool(NHPCO)

\* Available at [www.eprognosis.com](http://www.eprognosis.com)

# Test Accuracy: c-statistic

**If the c-stat is:**

- < 0.5** very poor model
- = 0.5** (same as random chance)
- > 0.7** good model
- > 0.8** strong model
- = 1.0** perfect model

# Summary of Prognostic Tools in Advanced Dementia

## General Tools

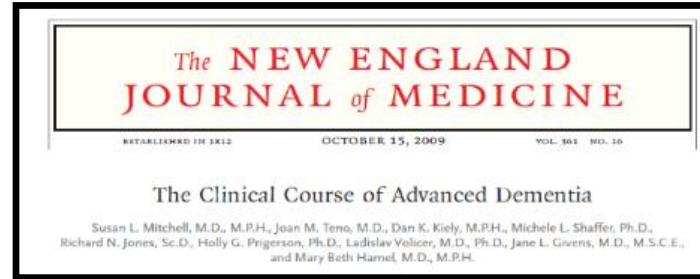
- RAI-MDS CHES Scale\* **c-stat: 0.7**  
(Hirdes et al. JAGS 2003;51(1):96-100)
- MDS Mortality Risk Index – Revised (MMRI-R)\* **c-stat: 0.7**  
(Prorock et al. BMC Research Notes, 2010. 16:3:200-208)
- Flacker 1 Year Newly Admitted Revised Index\* **c-stat: 0.7**  
(Flacker et al. JAGS 2003; 51:213-221)
- Flacker 1 Year Long Stay Revised Index\* **c-stat: 0.7**  
(Flacker et al. JAGS 2003; 51:213-221)
- *Big Life Elderly Calculator* **c-stat: 0.7**  
(<https://www.projectbiglife.ca/elderly>)  
(Tanuseputro et al. JAMDA 2015;16(10):874-83)

## Dementia Specific Tools

- ADEPT tool\* **c-stat: 0.7**  
(Mitchell et al. JPSM. 2010; 40(5): 639-651)
- FAST tool **c-stat: 0.55**  
Functional Assessment Staging Tool(NHRCO)

\* Available at [www.eprognosis.com](http://www.eprognosis.com)

# Prognosticating in Advanced Dementia



## Median Survival is 1.3 years

- ❖ 18-month mortality rate = 55%
- ❖ 6 month mortality rate = 25%



# Prognosticating in Advanced Dementia

Top 3 Complications	Incidence over 18 months
1. Eating Problem	86%
2. Febrile Episode	53%
3. Pneumonia	41%

# ADEPT Score (*Advanced DEmentia Prognosis Test*)

## Clinical Indicators

1. Recent LTCH Admission
2. Advancing Age
3. Male
4. Short of Breath
5. Pressure Ulcer > Stage 2
6. Completely Dependent on ADLs
7. Bedbound
8. Insufficient Oral Intake
9. Bowel Incontinence
10. BMI < 18.5
11. Weight Loss
12. CHF

<b>Advanced Dementia Prognostic Tool (ADEPT)</b> Patient Characteristics, Point Scores, and Associated Six-Month Survival Probabilities	
<b>Characteristics</b>	<b>Points in Risk Score</b>
Recent NH admission (within 90 days)	3.3
Age	
65-69	1.0
70-74	2.0
75-79	3.0
80-84	4.0
85-89	5.0
90-94	6.0
95-99	7.0
>100	8.0
Male	3.3
Shortness of breath	2.7
At least one pressure ulcer > Stage 2	2.2
ADL score = 28 <sup>a</sup>	2.1
Bedfast most of day	2.1
Insufficient oral intake	2.0
Bowel incontinence <sup>c</sup>	1.9
BMI < 18.5 kg/m	1.8
Weight loss <sup>d</sup>	1.6
Congestive heart failure	1.5

<b>ADEPT Scoring</b>		
<b>Total Risk Score</b>	<b>Observed Probability of Death</b>	
	<b>6-month</b>	<b>12-month</b>
1 (minimum score)	0.01	0.06
>1-2	0.04	0.08
>2-3	0.05	0.11
>3-4	0.06	0.13
>4-5	0.06	0.15
>6-7	0.10	0.23
>7-8	0.12	0.26
>8-9	0.15	0.30
>9-10	0.17	0.33
>10-11	0.21	0.37
>11-12	0.25	0.42
>12-13	0.29	0.47
>13-14	0.34	0.52
>14-15	0.40	0.57
>15-16	0.46	0.62
>16-17	0.52	0.67
>17-18	0.57	0.71
>18-19	0.64	0.76
>19-20	0.67	0.79
>20-21	0.73	0.84
>21-22	0.77	0.87
>22-23	0.83	0.90
>23-24	0.83	0.91
>24-25	0.88	0/94
>25-26	0.88	0.96
>26-27	0.88	0.90
>27-28	0.95	1.00
>28-32	1.00	1.00

**Advanced Dementia Prognostic Tool (ADEPT)**  
 Patient Characteristics, Point Scores, and Associated Six-  
 Month Survival Probabilities

Characteristics	Points in Risk Score
Recent NH admission (within 90 days)	3.3
Age	
65-69	1.0
70-74	2.0
75-79	3.0
80-84	4.0
85-89	5.0
90-94	6.0
95-99	7.0
>100	8.0
Male	3.3
Shortness of breath	2.7
At least one pressure ulcer > Stage 2	2.2
ADL score = 28	2.1
Bedfast most of day	2.1
Insufficient oral intake	2.0
Bowel incontinence	1.9
BMI < 18.5 kg/m	1.8
Weight loss	1.6
Congestive heart failure	1.5

**TOTAL POINTS = 21.8**

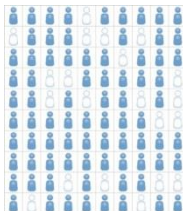
ADEPT Scoring		
Total Risk Score	Observed Probability of Death	
	6-month	12-month
1 (minimum score)	0.01	0.06
>1-2	0.04	0.08
>2-3	0.05	0.11
>3-4	0.06	0.13
>4-5	0.06	0.15
>6-7	0.10	0.23
>7-8	0.12	0.26
>8-9	0.15	0.30
>9-10	0.17	0.33
>10-11	0.21	0.37
>11-12	0.25	0.42
>12-13	0.29	0.47
>13-14	0.34	0.52
>14-15	0.40	0.57
>15-16	0.46	0.62
>16-17	0.52	0.67
>17-18	0.57	0.71
>18-19	0.64	0.76
>19-20	0.67	0.79
>20-21	0.73	0.84
>21-22	0.77	0.87
>22-23	0.83	0.90
>23-24	0.83	0.91
>24-25	0.88	0/94
>25-26	0.88	0.96
>26-27	0.88	0.90
>27-28	0.95	1.00
>28-32	1.00	1.00

# So what would you actually say?



## Prognostic Tools

**ADEPT:** Risk of 6-month mortality: 77% and 12-month risk of mortality: 87%



**MMRI-R:** Risk of 6-month mortality is 79%

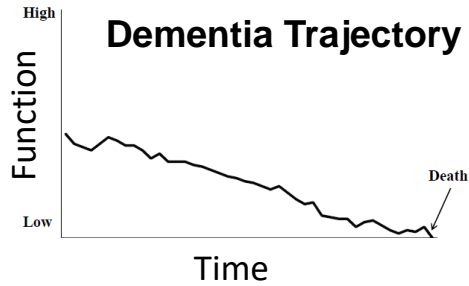
[www.ePrognosis.org](http://www.ePrognosis.org)

**Flacker Index:** Risk of 1-year mortality is 82%

"Out of 100 LTC home residents with similar features, 77 will die and 23 will survive over the next half year.

Risk calculators **cannot** predict the future for any one individual. Risk calculators give an estimate of **how many** people with similar risk factors will live and die, but they cannot identify **who** will live and who will die."

# Eventualities...



- **Clinical Course**
  - Eating problems (85%),
  - Infections (50% in the last 3 months; 40% use abx in the last 2 weeks)
- **Transfers from LTCH to Acute Care**
  - 1.6 in the last 3 months, 30% die in acute care in ON
- **Medication Rationalization**

# Cancer

# Cancer Numbers in Canada

**1 in 2**

Canadians will develop cancer in their lifetimes

**1 in 4**

Canadians will die of cancer

**80,800**

The number of Canadians who died of Cancer in 2017



# Cancer Numbers in Ontario

## Lung cancer

Is the leading cause of cancer deaths in men and women in Ontario

**7,100**

Ontarians died of lung cancer in 2017

# Meet Ms. B



---

## Ms. B

73 y.o. F, Metastatic NSCLC lung to bone, brain, spine, EGFR mutation+

Progressed on afatinib, tagrisso, started on cis/pem, previously received whole brain radiation and XRT to spine for spinal cord compression

Admitted now for worsening leg weakness

---

**Function:** PPS 50%, ECOG 3, cognitively intact, no dyspnea, +weight loss and anorexia

---

**SDM:** Sister is default SDM

---

**PLST:** No CPR, all other measures, including transfers to acute care

---

## Ms. B: Worsening back pain and bilateral leg weakness

- Admitted to acute care to rule out spinal cord compression
- Ongoing issues with count recovery (anemia/thrombocytopenia)
- Not a candidate for further spine XRT or systemic therapy

### **MRI spine:**

- Progression of disease at site where she previously was radiated x 2

Question:

How much time?

# Ms. B's prognosis is:

- a) 1-7 days?
- b) 2-4 weeks?
- c) 2-3 months?
- d) > 3 months?
- e) I don't know
- f) other

Session PIN: 9641

*Review Article*

# Prognostic Tools in Patients With Advanced Cancer: A Systematic Review



Claribel P.L. Simmons, MBChB, MRCP, Donald C. McMillan, PhD, Kerry McWilliams, MBChB, MRCP, Tonje A. Sande, MD, PhD, Kenneth C. Fearon, MD<sup>†</sup>, Sharon Tuck, BSc, Marie T. Fallon, MD, and Barry J. Laird, MD  
*University of Edinburgh (C.P.L.S., K.M., T.A.S., K.C.F., S.T, M.T.F, B.J.L.), Edinburgh; Department of Surgical Sciences (D.C.M.), University of Glasgow, Glasgow, UK; and European Palliative Care Research Centre (B.J.L.), Norwegian University of Science and Technology, Trondheim, Norway*

# Prognostic Tools in Advanced Cancer

**Palliative Performance Scale**  
*1996*

**Palliative Prognostic Index**  
*1999*

~~**B1-CRP Index**~~  
~~*2007*~~

**Delirium-PaP**  
*2011*

**Palliative Prognostic Score (PaP)**  
*1999*

**Glasgow Prognostic Score**  
*2003*  
&  
**Modified Glasgow Prognostic Score**  
*2007*

**Prognosis in Palliative Care Study A&B**  
*2011*



# Palliative Performance Scale

- Oldest, studied in greatest number of patients
- Studied primarily in inpatient settings and in patients with cancer (but also studied in ambulatory cancer setting)
- Appears to be a good predictor of mortality for patients in palliative care units
- PPS is most accurate in predicting early deaths (<2 weeks)



## ***Palliative Performance Scale (PPSv2)***

*version 2*

<b>PPS Level</b>	<b>Ambulation</b>	<b>Activity &amp; Evidence of Disease</b>	<b>Self-Care</b>	<b>Intake</b>	<b>Conscious Level</b>
100%	Full	Normal activity & work No evidence of disease	Full	Normal	Full
90%	Full	Normal activity & work Some evidence of disease	Full	Normal	Full
80%	Full	Normal activity <i>with</i> Effort Some evidence of disease	Full	Normal or reduced	Full
70%	Reduced	Unable Normal Job/Work Significant disease	Full	Normal or reduced	Full
60%	Reduced	Unable hobby/house work Significant disease	Occasional assistance necessary	Normal or reduced	Full or Confusion
50%	Mainly Sit/Lie	Unable to do any work Extensive disease	Considerable assistance required	Normal or reduced	Full or Confusion
40%	Mainly in Bed	Unable to do most activity Extensive disease	Mainly assistance	Normal or reduced	Full or Drowsy +/- Confusion
30%	Totally Bed Bound	Unable to do any activity Extensive disease	Total Care	Normal or reduced	Full or Drowsy +/- Confusion
20%	Totally Bed Bound	Unable to do any activity Extensive disease	Total Care	Minimal to sips	Full or Drowsy +/- Confusion
10%	Totally Bed Bound	Unable to do any activity Extensive disease	Total Care	Mouth care only	Drowsy or Coma +/- Confusion
0%	Death	-	-	-	-

# Palliative Performance Scale

3 distinct bands present for median survival for cancer patients admitted to PCU:

- 10%-20%: Median survival 6 days
- 30%-50%: Median survival 41 days
- 60%-70%: Median survival 108 days

# Comparing Tools: Performance Status

## c-stats

ECOG 0.64

PPS 0.63

KPS 0.63

## Back to Ms. B



PPS 50%: Median survival 41 days

**But her PPS was 50% even before her cancer diagnosis!**

# What about rate of decline?

Prognostic tools are only a “snapshot” in time



# Revisiting the Palliative Performance Scale: Change in scores during disease trajectory predicts survival

## Abstract

**Background:** The Palliative Performance Scale (PPS) on admission is a predictor of survival. However, it is not highly discriminating for mid-range scores. 'PPS Change' between two time points considers the disease trajectory, and may improve the scale's utility.

**Aim:** The aim of this study is to determine if a change in PPS scores between two significant time points predicts survival.

**Design:** This prospective cohort study examined 'Change on Admission', 'Change at Week 1', and 'Change at Week 2'. We followed patients until death or 6 months, whichever was earlier. Cox regressions were used to determine if the Change scores were predictors of survival, adjusting for age, sex, diagnosis category, Charlson Index, and Do-Not-Resuscitate order.

**Setting/Participants:** The sample consisted of patients referred to the palliative care service.

**Results:** All three Change scores were independent predictors of survival. The greater the change, the poorer the prognosis. At week 1, when compared to 'PPS Change  $\leq$  10%', 'Change 11%–30%' and 'Change  $>$  30%' increased the hazard ratios by 1.70 (95% CI 1.10–2.63) and 3.14 (95% CI 1.77–5.59), respectively. At week 2, when compared to 'PPS Change  $\leq$  10%', 'Change 11%–30%' and 'Change  $>$  30%' increased the hazard ratios by almost 3- and 8-fold, respectively. The same magnitude of Change scores also has higher hazard ratios as patients' hospitalization progressed.

**Conclusions:** The magnitude of change in PPS score during the disease trajectory is associated with one's survival and is a potentially useful prognostication tool. Further research is needed to extend on our work.

How does PPS fare for frailty?



## Clinical Frailty Scale\*



**1 Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

---



**2 Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

---



**3 Managing Well** – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.

---



**4 Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being “slowed up”, and/or being tired during the day.

---



**5 Mildly Frail** – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

---



**6 Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



**7 Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

---



**8 Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

---



**9. Terminally Ill** - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

### Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

\* 1. Canadian Study on Health & Aging, Revised 2008.  
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

© 2009. Version 1.2\_EN. All rights reserved. Geriatric Medicine Research, Dalhousie University, Halifax, Canada. Permission granted to copy for research and educational purposes only.

# Enhancing Communication in End-of-Life Care: A Clinical Tool Translating Between the Clinical Frailty Scale and the Palliative Performance Scale

*Daphna Grossman, MD,<sup>a,b</sup> Mark Rootenberg, MA(c), HBSc,<sup>a,c</sup> Giulia-Anna Perri, MD,<sup>a,b</sup> Thirumagal Yogaparan, MD,<sup>d,e</sup> Maria DeLeon, RN, BScN,<sup>f,g</sup> Sue Calabrese, RN, MN,<sup>f,g</sup> Cindy J. Grief, MD, MSc,<sup>b,i</sup> Jennifer Moore, MD,<sup>b,j</sup> Ashlinder Gill, PhD(c), HBSc,<sup>j,k</sup> Kalli Stilos, RN, MScN,<sup>l,m</sup> Patricia Daines, RN, MN,<sup>m,l</sup> Camilla Zimmermann, MD, PhD,<sup>n,o</sup> and Paolo Mazzotta, MD, MSc<sup>b,j</sup>*

---

**Table 3. Proposed Conversion Chart Outlining Corresponding Clinical Frailty Scale (CFS) and Palliative Performance Scale (PPS) Scores**

---

<b>CFS</b>	<b>PPS</b>
3–4	70–90
5	60
6	40–50
7	10–30

---

## Research



## Introducing the Palliative Performance Scale to clinicians: the Grampian experience

Gordon Linklater<sup>1</sup>, Sally Lawton<sup>1</sup>, Shona Fielding<sup>2</sup>, Lisa Macaulay<sup>1</sup>, David Carroll<sup>1</sup> and Dong Pang<sup>3</sup>

[Author affiliations](#) +

### Abstract

**Objectives** The Palliative Performance Scale (PPS) was introduced across NHS Grampian. Our aim was to determine how practical and useful the PPS was for clinicians looking after palliative patients in a variety of settings.

**Methods** A prospective audit approach was used in primary, secondary and nursing home care settings who. Demographic and assessment data were gathered for 3 months; feedback was gathered at the end of the data collection phase. Patient follow-up status was determined at 12 months.

**Results** Fifteen clinical sites participated and feedback was obtained from all clinical areas (n=30). Most respondents found the PPS easy to use and that it helped recognise disease progression in cancer patients, but not in patients with dementia/frailty. Assessment data were gathered on 666 patients. Sixty per cent had a malignant diagnosis and 62.5% of the sample died within 12 months. Lower PPS scores at initial assessment indicated poorer prognosis. Median survival figures differed from previously published data. **Falling PPS scores increased the risk of death compared with patients whose PPS scores remained static or improved.**

**Conclusion** Clinicians found the PPS to be a quick, useful way of assessing and reviewing functional changes in palliative patients. **However, it may not identify the subtle changes in individuals with advanced dementia.** The survival figures confirm that caution is needed in generalising survival data across different settings and populations. Further work is needed to examine changing functional status in patients with non-malignant diseases or dementia/frailty.



# THE PiPs PROGNOSTICATOR



[Home](#)

[PIPS A](#)

[PIPS B](#)

## This is PIPS-B

The PiPS-B score is as least as good as a multi-professional clinical estimate of survival and is significantly more accurate than a uni-professional estimate (i.e. doctor or nurse). To calculate the PiPS-B score you must complete all of the items on this on-line form.

Please note - this scale should only be used if recent blood result data are available. If recent blood results are not available then you should use [PIPS-A](#) (this will provide a prediction which is at least as accurate as a multi-professional survival estimate).

Diagnosis	Score
Male Genital Organs (No=0, Yes=1)	<input type="checkbox"/> <input type="checkbox"/> ALL fields are required for correct scoring
Distant mets (No=0, Yes=1)	<input type="checkbox"/> <input type="checkbox"/>
Bone mets (No=0, Yes=1)	<input type="checkbox"/> <input type="checkbox"/>



# THE PiPs PROGNOSTICATOR



[Home](#)

[PIPS A](#)

[PIPS B](#)

You are a **doctor** and you predicted that the patient would live for **weeks**

PIPS-A predicts that the patient will live for **weeks**

PiPS- A predicts that the probability of surviving 14 days is **90%**

PIPS-A predicts that the probability of surviving 56 days is **31%**

***Warning:***

***The PiPS score should only be used as an aid to your clinical judgement rather than as a replacement for your prognostic skills***

***Remember that although PIPS-A scores are as good as a multi-professional estimate of survival, there remains a significant degree of uncertainty regarding any individual's prognosis.***

**Have the tools **changed** or **confirmed**  
your prediction for Ms. B?**

**If your prediction is **confirmed**, have  
the tools changed how you  
communicate the prognosis?**

# **Congestive Heart Failure**



# CHF Numbers in Canada

**50,000**

The number of new cases diagnosed every year

**600,000**

Canadians currently living with CHF

**50%**

The percentage of Canadians who think heart failure can be cured

# Congestive Heart Failure (CHF)

- NYHA classification for disease severity
- “Based on data from SUPPORT, Framingham, IMPROVEMENT, and other studies, 1-year mortality estimates are:
  - Class II (mild symptoms)—5%–10%
  - Class III (moderate symptoms)—10%–15%
  - Class IV (severe symptoms)—30%–40%”
- Average 1 year mortality rate in Canada – 33%

# Congestive Heart Failure (CHF)

- Framingham Heart Study (1990–1999): 5-year mortality rate 50% when newly diagnosed
- Challenges with prognostication for 6- to 12-month mortality

# Meet Mrs. S



Image from <https://www.publicdomainpictures.net/en/view-image.php?image=189146&picture=grandma>



84 year old female. She has returned to your LTC facility following her 4<sup>th</sup> admission to hospital in the last year with a CHF exacerbation.

Comorbidities: Mild COPD, diabetes mellitus Type 2, hypothyroidism, osteoporosis

Her PPS is 40.

Mrs. S. and her daughter would like to speak with you about her expected prognosis considering her frequent admissions to hospital.

---

What further information will be helpful to determine prognosis?

# CHF Prognostic factors



# Mrs. S

- NYHA Class 3 (marked limitation of activity, comfortable only at rest)
- PPS = 40
- RR = 20/min
- Systolic BP = 105
- BUN = 34
- Hgb = 112
- Sodium = 128
- Ejection Fraction 20%
- Dry Weight = 54kg





# Mrs. S's prognosis is:

- a) More than 1 year?
- b) 6-12 months?
- c) 3-6 months?
- d) < 3 months?
- e) I don't know
- f) other

Session PIN: 9641

# Prognostic Tools

- Levy et al (2006)
- Provides estimate of mean 1-, 2-, and 5-year survival
- Includes clinical factors, laboratory values, heart disease medications, and device therapies
- C-STAT overall 0.729
  
- [www.SeattleHeartFailureModel.org](http://www.SeattleHeartFailureModel.org)

### Seattle Heart Failure Model Calculator

	Baseline			Intervention		
	1 Year	2 Year	5 Year	1 Year	2 Year	5 Year
<b>Survival</b>	81%	66%	31%	93%	86%	66%
<b>Mortality</b>	19%	34%	69%	7%	14%	34%
<b>Mean life expectancy</b>	3.9 years			7.8 years		

---

**Clinical**

Age:

Gender:

NYHA Class:

Weight (kg):

EF:

Syst BP:

Ischemic

**Medications**

ACE-I

Beta-blocker

ARB

Statin

Allopurinol

Aldosterone blocker

**Diuretics**

Furosemide:

Bumetanide:

Torsemide:

Metolazone:

HCTZ:

Chlorothiazide:

**IV**

**Lab Data**

Hgb (g/dL):

Lymphocyte %:

Uric Acid (mg/dL):

Total Chol (mg/dL):

Sodium:

LBBB

QRS > 150 msec

**Devices**

None

BIV Pacer

ICD

BIV ICD

**Other**

IABP/Vent/UF

Pressors/Inotropes

---

**Interventions**

ACE-I     ARB     Beta-blocker

Aldosterone blocker

**Devices**

None

BiV Pacer     BiV ICD

ICD     LVAD

Note: Some devices may be disabled if CMS clinical criteria are not met

© Copyright 2004–2015 Wayne Levy and David Linker

# Prognostic Tools

- EFFECT model was derived, tested, and intended to be used in patients hospitalized for CHF
- Validated in 24 Ontario hospitals
- C-STAT 0.8 for 30 day mortality and 0.77 for 1 year mortality
- On-line calculator for this risk model is available at:
- <http://www.ccort.ca/Research/CHFRiskModel.aspx>

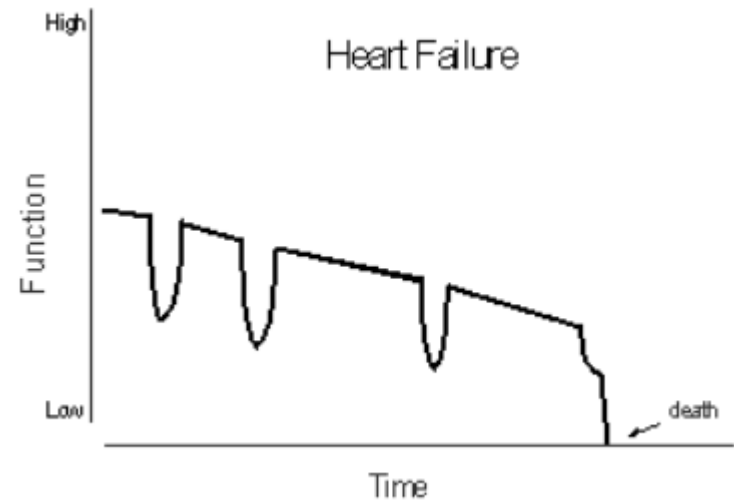
# Back to Mrs. S

- EFFECT:
  - 30 Day Mortality Rate = 32.7%
  - 1 year Mortality Rate = 78.8%
- Seattle Heart Failure Model
  - ❖ 1 year survival 82.3%
  - ❖ 5 year survival 37.7%

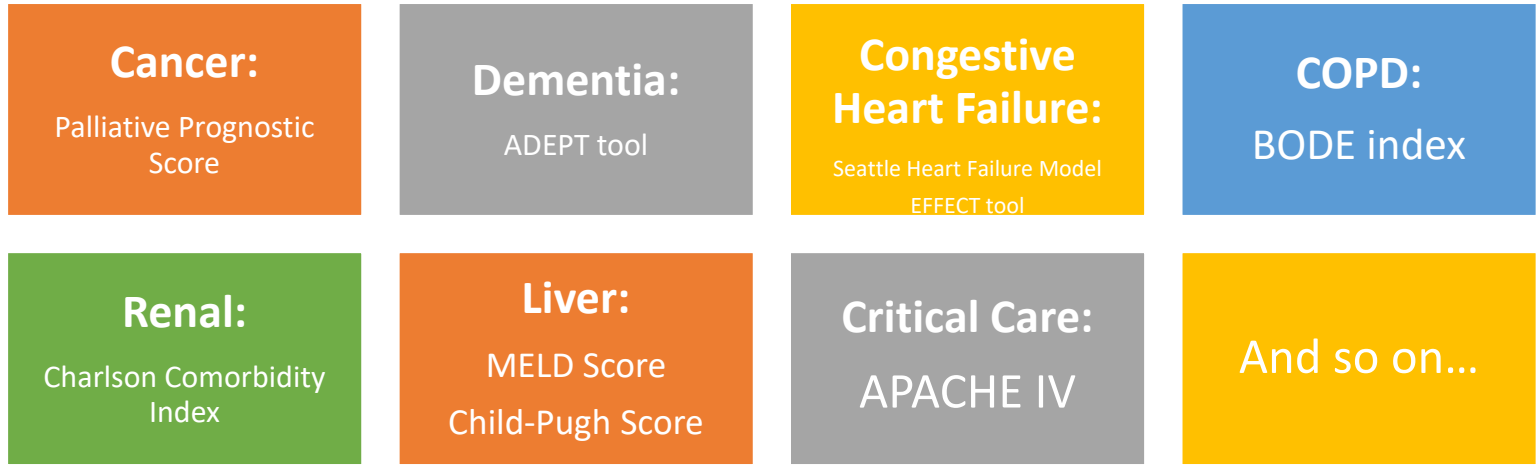
Drawbacks of using prognostic tools  
for CHF?

# Possible Eventualities in CHF

- Average hospital admission days in year of diagnosis: 26.4 days
  - ◆ 50% re-admitted within the first year
- Disease trajectory
- Device activation/deactivation
- Sudden death



## Disease Specific Tools: What do they all have in common?



- ✓ The accuracy of most of these tools range from 0.6 to 0.8.
- ✓ The use of prognostic tools improves the accuracy of CPS.
- ✓ Clinicians should not exclusively rely on these tools to prognosticate.





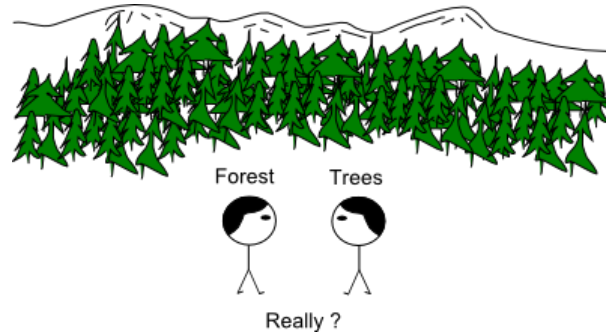
Lessons  
Learned

# Lessons Learned

- I. We are only accurate about 20% of time, so patients/families get inaccurate information 80% of the time.
- II. Be aware of the common pitfalls (guessing, not personalizing population data, avoidance, being blunt)
- III. Using prognostic tools can improve accuracy and reinforce clinical judgment.
- IV. Prognostication is not a proclamation, rather a process that is revisited, revised and refined.
- V. Best to communicate in probabilistic ranges, percentages and caveats.
- VI. A patient is less likely to die in the setting of preserved functional/performance status. Rate of change is generally important.
- VII. A complication or treatment can change the picture temporarily or permanently.
- VIII. Closer to death, patients may want less information while families may need more.
- IX. Hope is like dignity, and can be crushed in an instant. Be culturally and individually sensitive; not all individuals can or want to hear information about prognosis
- X. Asking '*how long do I have*' is partly about prognosis itself but also about need for reassurance in how you will care for them.

# The Prognosis on Prognostication

Prognostication is not an event, but a process that is personalized, dynamic, and provisional.





[gperri@baycrest.org](mailto:gperri@baycrest.org)

[Irene.Ying@sunnybrook.ca](mailto:Irene.Ying@sunnybrook.ca)

[Giovanna.sirianni@sunnybrook.ca](mailto:Giovanna.sirianni@sunnybrook.ca)



Please remember to  
complete your evaluations.

Evaluations can be found on  
the Mobile App.

Thank you.

# References – CHF

- Trends in the incidence and outcomes of heart failure in Ontario, Canada: 1997 to 2007. Darwin F. Yeung, Nicole K. Boom, Helen Guo, Douglas S. Lee, Susan E. Schultz, Jack V. Tu. CMAJ, October 2, 2012, 184(14). DOI:10.1503 /cmaj.111958.
- On the rise: The current and projected future burden of congestive heart failure hospitalization in Canada. Helen Johansen, Barbara Strauss, J Malcolm O Arnold, Gordon Moe, Peter Liu. Can J Cardiol Vol 19 No 4 March 31, 2003.
- Predicting Mortality Among Patients Hospitalized for Heart Failure: Derivation and Validation of a Clinical Model. Douglas S. Lee, Peter C. Austin, Jean L. Rouleau, Peter P. Liu, David Naimark, Jack V. Tu. JAMA, November 19 2003, 290(19): 2581.
- Palliative Care in the Treatment of Advanced Heart Failure. Eric D. Adler, Judith Z. Goldfinger, Jill Kalman, Michelle E. Park and Diane E. Meier. Circulation. 2009;120:2597-2606. doi: 10.1161/CIRCULATIONAHA.109.869123
- Prognostication in heart failure #143. Reisfield GM, Wilson GR. Prognostication in heart failure #143. Journal of Palliative Medicine (2007); 10(1): 245-246.
- Prediction of appropriate timing of palliative care for older adults with non-malignant life-threatening disease: a systematic review. Coventry PA et al. Age and ageing (2005); 34:218-227.
- Evaluation of prognostic criteria for determining hospice eligibility in patients with advanced lung, heart or liver disease. Fox et al. JAMA (1999); 282(17): 1638-1645.
- Levy WC, Mozaffarian D, Linker DT, Sutradhar SC, Anker SD, Cropp AB, Anand I, Maggioni A, Burton P, Sullivan MD, Pitt B, Poole-Wilson PA, Mann DL, Packer M. The Seattle Heart Failure Model: Prediction of Survival in Heart Failure. Circulation 2006; 113; 1424-1433.
- Heart Failure. Heart and Stroke Foundation. <https://www.heartandstroke.ca/heart/conditions/heart-failure>