Practical Prognostication In the Elderly

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Disclosures

- None
Objective

- By the end of this presentation, the audience will have used multiple prognostication tools to estimate the life expectancy of an elderly patient across multiple settings.
Why Is Accurate Prognostication Important?

- We’re pretty crummy at it by nature\(^1\)
- Patients want accurate information, and their involvement in care planning improves outcomes\(^2\)
- Hospice remains underutilized\(^3\)
- Over- and undertreatment of older adults remains problematic\(^4\)
Ms. B
Case #1

- Ms. B is an 82 year old woman who lives alone in a senior highrise
- PMH: Mild dementia, moderate non-oxygen dependent COPD, HTN, former smoker
- Ambulates short distances with a 2-wheeled walker, requires help with shopping, financial matters and appointments but is independent for all self-care
Case #1 (cont)

- Meds: HCTZ, donepezil, aspirin
- Patient rates her own health as “good”
- BMI = 22.1
- Exam remarkable only for a somewhat frail woman, lungs are clear, mild cognitive slowing
- MOCA = 25/30
- She has been clinically stable for the past 12 months without hospitalization
Case #1 (cont)

- What’s Ms. B’s life expectancy?
- What are the odds that she’ll die within 5 years?
- How about over the next 10 years?
ePrognosis

http://eprognosis.ucsf.edu/

- Free compilation of several validated online prognostic tools
- Useful for patients in community, hospital, nursing home, hospice/palliative care unit
Lee-Schonberg Index for Community Dwelling Adults$^{5,6}$

- Community dwelling adults age >50
- All-cause 5- and 10-year mortality
- c-statistic (probability that predicting the outcome is better than chance)
  - Lee index: 82%
  - Schonberg index: 75%
Case #2

- Ms. B does well over the following year, but then contracts bacterial pneumonia.
- Hospitalized for IV antibiotics and steroids.
- Admission albumin=3.6, Cr=1.2.
- Hospital course is complicated by moderate delirium, decreased oral intake and a prolonged stay.
- She is discharged to SNF as she now requires help with nearly all ADLs.
Case #2 (cont)

- How has Ms. B’s life expectancy changed?
- What are the odds that she will die within the next 12 months?

http://eprognosis.ucsf.edu/
Walter Index for Hospitalized Elderly

- Hospitalized adults age >70
- All-cause 1-year mortality
- c-statistic (probability that predicting the outcome is better than chance): 79%
Case #3

- 6 weeks later Ms. B has modestly recovered but requires long-term institutionalization
- Moderately dyspneic with activity though can toilet and dress herself
- Continent of bowel/bladder and has no skin breakdown
- Spends most of her day sitting and watching TV
- Eats well and BMI is stable at 21.5
- MOCA is now 19/30
Case #3 (cont)

- Now what can Ms. B and her family expect?
- What are the odds that she will die within the next 6 months?

http://eprognosis.ucsf.edu/
Mitchell and Porock Indices for Institutionalized Elderly\textsuperscript{8,9}

- Nursing home adults +/- dementia (MDS data set)
- All-cause 6-month mortality
- $c$-statistic (probability that predicting the outcome is better than chance):
  - Mitchell Index: 67%
  - Porock Index: 75%
Case #4

- Ms. B becomes increasingly dyspneic and debilitated over the following year
- Hospice care initiated
- Mostly in bed, very little activity, dependent for most care
- Reduced oral intake
- Increasing confusion
Case #4 (cont)

- How long can Ms. B expect to live with hospice care?

http://eprognosis.ucsf.edu/
Palliative Performance Scale\textsuperscript{10}

- Community-based and inpatient hospice patients (any age)
- Median survival in days
- Discrimination and validation not well assessed
# Palliative Performance Scale (PPS)

<table>
<thead>
<tr>
<th>%</th>
<th>Ambulation</th>
<th>Activity Level Evidence of Disease</th>
<th>Self-Care</th>
<th>Intake</th>
<th>Level of Consciousness</th>
<th>Estimated Median Survival in Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Full</td>
<td>Normal No Disease</td>
<td>Full</td>
<td>Normal</td>
<td>Full</td>
<td>N/A</td>
</tr>
<tr>
<td>90</td>
<td>Full</td>
<td>Normal Some Disease</td>
<td>Full</td>
<td>Normal</td>
<td>Full</td>
<td>N/A</td>
</tr>
<tr>
<td>80</td>
<td>Full</td>
<td>Normal with Effort Some Disease</td>
<td>Full</td>
<td>Normal or Reduced</td>
<td>Full</td>
<td>108</td>
</tr>
<tr>
<td>70</td>
<td>Reduced</td>
<td>Can’t do normal job or work Some Disease</td>
<td>Full</td>
<td>As above</td>
<td>Full</td>
<td>145</td>
</tr>
<tr>
<td>60</td>
<td>Reduced</td>
<td>Can’t do hobbies or housework Significant Disease</td>
<td>Occasional Assistance Needed</td>
<td>As above</td>
<td>Full or Confusion</td>
<td>29</td>
</tr>
<tr>
<td>50</td>
<td>Mainly sit/lie</td>
<td>Can’t do any work Extensive Disease</td>
<td>Considerable Assistance Needed</td>
<td>As above</td>
<td>Full or Confusion</td>
<td>30</td>
</tr>
<tr>
<td>40</td>
<td>Mainly in Bed</td>
<td>As above</td>
<td>Mainly Assistance</td>
<td>As above</td>
<td>Full or Drowsy or Confusion</td>
<td>18</td>
</tr>
<tr>
<td>30</td>
<td>Bed Bound</td>
<td>As above</td>
<td>Total Care</td>
<td>Reduced</td>
<td>As above</td>
<td>8</td>
</tr>
<tr>
<td>20</td>
<td>Bed Bound</td>
<td>As above</td>
<td>As above</td>
<td>Minimal</td>
<td>As above</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Bed Bound</td>
<td>As above</td>
<td>As above</td>
<td>Mouth Care Only</td>
<td>Drowsy or Coma</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>Death</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
</tbody>
</table>

(a) Survival post-admission to an inpatient palliative unit, all diagnoses (Vick 2002).
(b) Days until inpatient death following admission to an acute hospice unit, diagnoses not specified (Anderson 1996).
(c) Survival post admission to an inpatient palliative unit, cancer patients only (Morita 1999).
Disease-Specific Tools

Source: Murray, S.A. et al.

- Cancer (n=5)
- Organ failure (n=6)
- Physical and cognitive frailty (n=7)
- Other (n=2)
Disease-Specific Tools: CHF

- Seattle Heart Failure Model\textsuperscript{11}
  - [https://depts.washington.edu/shfm/](https://depts.washington.edu/shfm/)
  - Excellent validity and generalizability
  - Able to easily compare survival with various potential interventions
  - Somewhat complicated input data
Disease-Specific Tools: COPD

- BODE Index\textsuperscript{12}
  - Requires special testing (6 min walk)
  - c-statistic (probability that predicting the outcome is better than chance)
    - BODE: 74%
    - FEV\textsubscript{1} alone: 65%
Disease-Specific Tools: CKD

- Prognostic tools are lacking and data is conflicting
- Kidney Failure Risk Equation\textsuperscript{13}
  - [http://kidneyfailurerisk.com/](http://kidneyfailurerisk.com/)
  - Estimates risk of progression to ESRD at 2- and 5- years
  - Very simple to use and lay-friendly
Disease-Specific Tools: Cancer

- Ask your oncologist
- Treatment options, and prognostic estimates, are constantly evolving
- ECOG/KPS/PPS for general sense of life expectancy
Disease-Specific Tools: ICU

- APACHE II Score\textsuperscript{14,15}
  - \url{https://www.mdcalc.com/apache-ii-score}
  - Risk of hospital death after admission to ICU
  - Uses easily available data
  - May not be generalizable to patients with specific medical conditions
Summary

- Prognostication is challenging due to a number of factors
  - Familiarity bias, patient/family/provider emotional barriers, time constraints
- Patients and families want truthful information to help make informed decisions
- Disease- and non-disease-specific tools are available and relatively accurate
- More research focusing on functional recovery rather than simple survival
References

References


