Risk stratification of seniors in the ED: How? When? By whom? And what for?

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Lead Geriatrician, WWLHIN

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Disclosures

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• Research funding from Alzheimer's Society of Canada, Heart and Stroke Foundation of Ontario, TechValueNet, CIHR, and NRC-IRAP/Mespere Lifesciences

• Fellow, interRAI: not involved in development of AUA
More disclosures

GO HABS!
Topics

• Frailty or risk?

• Clash of the paradigms: Geriatrics vs. the ED

• Implications: need to risk stratify

• The AUA

• KW implementation
Is this scenario familiar?

- 94 year old man is seen in a tertiary HF clinic
  - 4 ED visits in last two months with HF, one resulting in admission

- Past history
  - Mild Alzheimer’s disease: saw geriatrician a year prior and discharged from clinic
    - Not seen by geriatrics or GEM since
  - Atrial fibrillation
  - Gout
Cardiac status

• Mild left ventricular systolic dysfunction
  • EF about 45%
  • No significant valvular problems
  • No significant renal insufficiency
  • On appropriate heart failure medications
Audience participation!

What’s the problem??
Functional status

• Independent in ADLs

• He is not depressed, aggressive or psychotic

• Repeats war stories+++}

• Financially secure
Caregiving situation

- Lives with daughter who looks after meals, meds and finances
- She is separated
- Her adult son with mental health issues needs support
Caregiving situation

• She is very stressed

• She has never received education about HF care

• They eat out a lot…
Frailty
Bergman 2007

• State of reduced physiologic fitness and reserve resulting in vulnerability to stressors and leading to poor outcomes

What does that really mean?
“Fundamental Equations” of geriatrics

• Frailty = Vulnerability

• Frailty x Stressor = Risk of a bad outcome
Example of delirium

Predisposing factors
- High vulnerability (frail)

Triggers
- Noxious stressor

Low vulnerability
- Less noxious stressor

Adapted from Inouye JAMA 1996
What do you see here?

Ronald Wilson Reagan
• February 6, 1911 – June 5, 2004
• 40th president of the USA (1981-1989)
• Died of Alzheimer’s disease at age 93
  • at home

Audience participation!
• Was Ronald Reagan frail?
• Was he at risk?
• If so, at risk of what?
Frailty revisited: concurrence of...

- comorbidities
- age-related physiological changes
- disabilities
- geriatric syndromes (falls, delirium, incontinence, etc…)
- gaps in social support

- Multiple deficits interacting with one another leading to a progressive erosion of fitness and increased vulnerability
Frailty outcomes

• Functional decline
• Falls
• Health service use: primary care, ED, acute care, home care, institutionalization
• Caregiver stress
• Death
The case of heart failure …

Yellow arrow = ED visit

Red arrow = death

Medical Complexity and Frailty
Symptom burden and need for symptom palliation

Optimization of therapy, including device therapy

Terminal phase

Independent community living

Rehabilitative / community support services

Institutionalization / Hospice palliative care

Heckman et al, Reviews in Clinical Gerontology 2014 (in press)
Frailty and deficit accumulation

• Concept: The more things wrong with you, the more frail you are

• Secondary analysis from Canadian Study on Health and Aging
  • Random sampling of 10267 persons 65 years+
  • 2914 underwent structured clinical assessment at baseline
  • 1338 survivors assessed 5 years later
  • 64% women, age 82.0 (SD 7.4)

• Developed Frailty Index of 70 deficits associated with cognitive and functional decline
Appendix 1: List of variables used by the Canadian Study of Health and Aging to construct the 70-item CSHA Frailty Index

- Changes in everyday activities
  - Head and neck problems
  - Poor muscle tone in neck
  - Bradykinesia, facial
  - Problems getting dressed
  - Problems with bathing
  - Problems carrying out personal grooming
  - Urinary incontinence
  - Toileting problems
  - Bulk difficulties
  - Rectal problems
  - Gastrointestinal problems
  - Problems cooking
  - Sucking problems
  - Problems going out alone
  - Impaired mobility
  - Musculoskeletal problems
  - Bradykinesia of the limbs
  - Poor muscle tone in limbs
  - Poor limb coordination
  - Poor coordination, trunk
  - Poor standing posture
  - Irregular gait pattern
  - Falls

- Mood problems
  - Feeling sad, blue, depressed
  - History of depressed mood
  - Tiredness all the time
  - Depression (clinical impression)
  - Sleep changes

- Restlessness
- Memory changes
- Short-term memory impairment
- Long-term memory impairment
- Changes in general mental functioning
- Onset of cognitive symptoms
- Clouding or delirium
- Paranoid features
- History relevant to cognitive impairment or loss
- Family history relevant to cognitive impairment or loss
- Impaired vibration
- Tremor at rest
- Postural tremor
- Intention tremor
- History of Parkinson’s disease
- Family history of degenerative disease
- Seizures, partial complex
- Seizures, generalized
- Syncope or blackouts
- Headache
- Cerebrovascular problems
- History of stroke
- History of diabetes mellitus
- Arterial hypertension
- Peripheral pulses
- Cardiac problems
- Myocardial infarction
- Arrhythmia
- Congestive heart failure
- Lung problems
- Respiratory problems
- History of thyroid disease
- Thyroid problems
- Skin problems
- Malignant disease
- Breast problems
- Abdominal problems
- Presence of snout reflex
- Presence of the palmomental reflex
- Other medical history

65% is bad, regardless of how you get there
Data from the Canadian National Population Health Study
Song et al J Am Geriatr Soc 2010

- Dose response relationship
- Predicts mortality

Figure 2. The Kaplan-Meier cumulative survival probability for people with three levels of the Frailty Index. The Frailty Index had been graded to be equivalent to the phenotypic definition: nonfrail (<0.08, dashed line), prefrail (0.08–0.24, dot-dashed line), and frail (≥0.25, solid line). A dose-response relationship was observed.
CSHA Clinical Frailty Scale

Correlates well with Frailty Index

Predicts frailty outcomes

**Key indicator: “slowed up”**

*Note that there is a gradient of severity …

… more

later…*

Rockwood et al CMAJ 2005
Institutionalization

Rockwood et al CMAJ 2005
Additional consequences of frailty

- Geriatric syndromes
  - Cognitive impairment
  - Functional decline
  - Incontinence
  - Falls
  - Sarcopenia
  - Caregiver stress
  - Atypical disease presentation
HOW SHOULD WE APPROACH THE FRAIL?
Comprehensive Geriatric Assessment
Abellan 2010

Multidimensional interdisciplinary process focused on determining a frail older persons’ medical, psychological and functional capacity in order to develop a coordinated and integrated plan for treatment and long-term follow-up

1. comprehensive data collection
2. development of a comprehensive management plan
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociodemographic</td>
<td>Living situation and means of transportation</td>
</tr>
<tr>
<td></td>
<td>Informal Caregiver and other social supports</td>
</tr>
<tr>
<td></td>
<td>Elder abuse</td>
</tr>
<tr>
<td></td>
<td>Advance directives</td>
</tr>
<tr>
<td>Cognition</td>
<td>Overall performance</td>
</tr>
<tr>
<td></td>
<td>Behavioural issues and psychosis</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>Mood and Anxiety</td>
</tr>
<tr>
<td>Function</td>
<td>Basic Activities of Daily Living (BADLs)</td>
</tr>
<tr>
<td></td>
<td>Instrumental Activities of Daily Living (IADLs)</td>
</tr>
<tr>
<td>Mobility</td>
<td>Gait problems and gait aids</td>
</tr>
<tr>
<td></td>
<td>Falls</td>
</tr>
<tr>
<td>Senses</td>
<td>Vision and Hearing</td>
</tr>
<tr>
<td>Elimination</td>
<td>Bladder and bowel function</td>
</tr>
<tr>
<td>Health indicators</td>
<td>Nutrition</td>
</tr>
<tr>
<td></td>
<td>Pain</td>
</tr>
<tr>
<td></td>
<td>Cardiorespiratory</td>
</tr>
<tr>
<td></td>
<td>Skin integrity</td>
</tr>
<tr>
<td></td>
<td>Substance abuse</td>
</tr>
<tr>
<td>Medical</td>
<td>Primary prevention (e.g. immunization)</td>
</tr>
<tr>
<td></td>
<td>Secondary and tertiary (optimal chronic illness management)</td>
</tr>
<tr>
<td></td>
<td>Polypharmacy / medication review</td>
</tr>
</tbody>
</table>
Geriatric Assessment works

• CGA leads to
  • More optimal prescribing
  • Better function, cognition
  • Less institutionalization
  • Less hospitalization
  • Lower mortality

• But it takes time… hence conflicts with the ED paradigm
Different Paradigms

**Emergency Medicine**
- Single problem
- Acute disease
- Diagnose and Treat
- Rapid disposition

**Geriatrics**
- Comprehensive Geriatric Assessment
- Multiple medical, functional and social problems
- Acute, sub-acute, and chronic … all in one!
- Control symptoms, enhance function, support quality of life goals
- Continuity of care

Geriatric syndromes often remain undiagnosed or unattended to in the ED
Carpenter 2011; Rutschmann 2005

Yet, they are clearly related to ED post-discharge outcomes
Grey 2013; Costa 2014
Multinational interRAI ED Study

Gray et al, Annals Emerg Med 2013

• Prospective observational cohort study
  • ED patients aged 75 years or older
  • 13 sites: Australia, Belgium, Canada, Germany, Iceland, India, Sweden

• 2,475 patients approached, 2,282 (92.2%) consented
  • 98 to 549 across nations

• Mean age 83.2 yrs, 41% male, 7% from LTC

• Last 90 days: 36% ED visits, 28% hospital admissions
### Table 2. Prevalence estimates for functional deficits.

<table>
<thead>
<tr>
<th>Activities of Daily Living</th>
<th>Percentage (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bathing (supervision/assistance)</strong></td>
<td>40 (38.0–42.0)</td>
</tr>
<tr>
<td><strong>Personal hygiene (supervision/assistance)</strong></td>
<td>23.7 (22.0–25.4)</td>
</tr>
<tr>
<td><strong>Dressing lower body (supervision/assistance)</strong></td>
<td>28.5 (26.6–30.4)</td>
</tr>
<tr>
<td><strong>Locomotion (supervision/assistance)</strong></td>
<td>25.8 (24.0–27.6)</td>
</tr>
<tr>
<td><strong>Cognitive skills for daily decision making (supervision/assistance)</strong></td>
<td>20.0 (18.4–21.6)</td>
</tr>
<tr>
<td><strong>Instrumental ADL capacity managing medications (supervision/assistance)</strong></td>
<td>39.1 (37.1–41.1)</td>
</tr>
</tbody>
</table>

![Graph showing prevalence across countries](graph.png)
Table 5
Multivariate Model for Any ED or Hospital Use within 28 Days Post–index ED Visit, Among ED Patients Discharged to a Community Setting, Standard and Country-level Multilevel Generalized Model

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Standard Logistic</th>
<th>Multilevel Logistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Any premorbid ADL impairment</td>
<td>1.74</td>
<td>1.20–2.54</td>
</tr>
<tr>
<td>Expresses anhedonia</td>
<td>1.70</td>
<td>1.20–2.50</td>
</tr>
<tr>
<td>Any past ED visits (last 90 days)</td>
<td>2.10</td>
<td>1.44–3.02</td>
</tr>
<tr>
<td>ROC AUC (95% CI)*</td>
<td>0.67 (0.62–0.71)</td>
<td></td>
</tr>
<tr>
<td>Hosmer-Lemeshow goodness-of-fit</td>
<td>$\chi^2 = 2.34$, $p = 0.80$</td>
<td></td>
</tr>
</tbody>
</table>

ADL = activities of daily living; AOR = adjusted odds ratio; ROC AUC = area under the receiver operating characteristic.
Table 2
Median and 90th Percentile Hospital LOS Among Admitted ED Patients, by Country

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Australia</th>
<th>Belgium</th>
<th>Canada</th>
<th>Germany</th>
<th>Iceland</th>
<th>India</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS (days), median (IQR)</td>
<td>7 (4–13)</td>
<td>4 (2–7)</td>
<td>8 (4–17)</td>
<td>12 (5–28)</td>
<td>7 (4–12)</td>
<td>6 (3–11)</td>
<td>6 (4–8)</td>
<td>6 (3–9)</td>
</tr>
<tr>
<td>90th percentile (days)</td>
<td>24</td>
<td>11</td>
<td>37</td>
<td>57</td>
<td>18</td>
<td>20</td>
<td>15</td>
<td>14</td>
</tr>
</tbody>
</table>

IQR = interquartile range; LOS = length of stay.

Table 3
Multivariate Model for 90th Percentile Hospital LOS, Among Admitted ED Patients, Standard and Country-level Multilevel Generalized Model

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Standard Logistic</th>
<th></th>
<th>Multilevel Logistic</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOR</td>
<td>95% CI</td>
<td>AOR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Lives alone</td>
<td>1.76</td>
<td>1.21-3.49</td>
<td>1.78</td>
<td>1.32-2.40</td>
</tr>
<tr>
<td>Distressed informal caregiver(s)</td>
<td>1.65</td>
<td>1.12-2.45</td>
<td>1.69</td>
<td>1.10-2.61</td>
</tr>
<tr>
<td>Impaired locomotion (admission)</td>
<td>1.97</td>
<td>1.30-3.00</td>
<td>1.94</td>
<td>1.25-3.00</td>
</tr>
<tr>
<td>Poor self-report health (premorbid)</td>
<td>1.86</td>
<td>1.30-2.60</td>
<td>1.84</td>
<td>1.34-2.51</td>
</tr>
<tr>
<td>Traumatic injury</td>
<td>2.17</td>
<td>1.35-3.50</td>
<td>2.18</td>
<td>1.68-2.82</td>
</tr>
<tr>
<td>ROC AUC (95% CI)</td>
<td>0.70 (0.65-0.74)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hosmer-Lemeshow goodness of fit</td>
<td>$\chi^2 = 7.61, p = 0.37$</td>
<td></td>
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</tr>
</tbody>
</table>

AOR = adjusted odds ratio; ROC AUC = area under the receiver operating characteristic curve.
Designing a Senior Friendly ED

1. Evidence Based Practice Model
2. Nursing Clinical Delivery Involvement or Leadership
3. High-Risk Screening
4. Focused Geriatric Assessment
5. Initiation of Care and Disposition Planning in the ED
6. Interprofessional and Capacity-Building Work Practices
7. Post-ED Discharge Follow-up With Patients
8. Establishment of Evaluation and Monitoring Processes

A review of intervention studies suggest that at least 75% of these are needed for measurable success.

SO, HOW DO WE ASSESS RISK?
ISAR

- Can usually be completed in less than 5 minutes
- All questions must be answered
- Scores of 2 or more considered high risk
- Moderately predictive of repeat ED visit, hospitalization

**Problem: high trigger rates**

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Before the illness or injury that brought you to the Emergency, did you need someone to help you on a regular basis?</td>
<td>☐</td>
<td>☐</td>
<td>1</td>
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<tr>
<td>2. Since the illness or injury that brought you to the Emergency, have you needed more help than usual to take care of yourself?</td>
<td>☐</td>
<td>☐</td>
<td>1</td>
</tr>
<tr>
<td>3. Have you been hospitalized for one or more nights during the past 6 months (excluding a stay in the Emergency Department)?</td>
<td>☐</td>
<td>☐</td>
<td>1</td>
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<tr>
<td>4. In general, do you see well?</td>
<td>☐</td>
<td>☐</td>
<td>1</td>
</tr>
<tr>
<td>5. In general, do you have serious problems with your memory?</td>
<td>☐</td>
<td>☐</td>
<td>1</td>
</tr>
<tr>
<td>6. Do you take more than three different medications every day?</td>
<td>☐</td>
<td>☐</td>
<td>1</td>
</tr>
</tbody>
</table>
TRST

- Generally brief (though item “6” seems to suggest that some sort of assessment is required)
- All questions must be answered
- Scores of 2 or more considered high risk
- Moderately predictive of ED use, hospitalization and institutionalization

- **Problem: high trigger rates**

- **Problem: some items actually protective**

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<td>6.</td>
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www.interrai.org
TRST (Meldon et al., 2003)

Figure 3. Results of the logistic regression fitting each of the six triage risk screening tool (TRST) items on composite outcome. Odds ratios and 95% confidence intervals are shown for individual items of the TRST for the composite outcome within 120 days. ED = emergency department.
THE ASSESSMENT URGENCY ALGORITHM
Development Study

- Focus groups: GEM nurses, ED physicians
  - Predict: referral to special geriatric services or home care, admission, long-stay/ALC

- Created ED assessment based on items from:
  - interRAI Community intake assessment
  - Items clinicians felt important for ED patients

- Assessed ED patients age 75 +
  - Mean Age: 83 (SD: 5.2), 60% Female
  - CTAS (Triage Acuity):
    - Resuscitation: 0%
    - Emergent: 21%
    - Urgent: 48%
    - Less Urgent: 24%
    - Non-Urgent: 7%

<table>
<thead>
<tr>
<th>#</th>
<th>Hospitals</th>
<th>Number of ED assessments (N=860)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cambridge Memorial Hospital</td>
<td>119</td>
</tr>
<tr>
<td>2</td>
<td>Grand River Hospital</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>Grey Bruce Health Services</td>
<td>126</td>
</tr>
<tr>
<td>4</td>
<td>Haliburton Highlands Health Services</td>
<td>34</td>
</tr>
<tr>
<td>5</td>
<td>Peterborough Regional Health Centre</td>
<td>175</td>
</tr>
<tr>
<td>6</td>
<td>St. Joseph’s Health Centre</td>
<td>120</td>
</tr>
<tr>
<td>7</td>
<td>St. Mary’s Hospital</td>
<td>225</td>
</tr>
<tr>
<td>8</td>
<td>Trillium Health Centre</td>
<td>20</td>
</tr>
</tbody>
</table>

Courtesy: Dr. Andrew Costa
Assessment Urgency Algorithm

Self-reliance Indicator
- Self-reliant
- Impaired

Self-rated Health: Excellent or Good
- No
- Yes
  - Dyspnea OR Unstable Condition
    - No
    - Yes
      - 2
      - 3
  - Unstable Condition
    - No
    - Yes
      - 1
      - 3

Self-rated Mood: Sad, Depressed, Hopeless
- No
- Yes
  - Support in Personal Hygiene ADL
    - No
    - Yes
      - 4
      - 5

Family Overwhelmed
- No
- Yes
  - 6

Courtesy: Dr. Andrew Costa
<table>
<thead>
<tr>
<th>Assessment Urgency Algorithm (Ref=Low Risk)</th>
<th>Triggering Rate</th>
<th>Comprehensive Assessment Required</th>
<th>Admitted to Acute Care from Emergency Room</th>
<th>Long Stay/ALC Patient, if Admitted to Acute Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Odds Ratio (95% CL)</td>
<td>ROC AUC</td>
<td>Odds Ratio (95% CL)</td>
</tr>
<tr>
<td>High Risk</td>
<td>36.8 (308)</td>
<td>6.84 (4.80-9.74)</td>
<td>.71</td>
<td>3.18 (2.29-4.40)</td>
</tr>
<tr>
<td>Medium Risk</td>
<td>23.8 (199)</td>
<td>3.12 (2.12-4.59)</td>
<td></td>
<td>1.30 (0.90-1.88)</td>
</tr>
</tbody>
</table>

**ISAR (Ref=0.1)**

<table>
<thead>
<tr>
<th>ISAR (Ref=0.1)</th>
<th>2+</th>
</tr>
</thead>
<tbody>
<tr>
<td>58.8 (507)</td>
<td>4.22 (3.12-5.71)</td>
</tr>
<tr>
<td>2.55 (1.91-3.39)</td>
<td>.61</td>
</tr>
<tr>
<td>2.02 (0.86-4.73)</td>
<td>.57</td>
</tr>
</tbody>
</table>

**TRST (Ref=0.1)**

<table>
<thead>
<tr>
<th>TRST (Ref=0.1)</th>
<th>2+</th>
</tr>
</thead>
<tbody>
<tr>
<td>71.8 (594)</td>
<td>4.82 (3.34-6.97)</td>
</tr>
<tr>
<td>1.40 (1.02-1.91)</td>
<td>.53</td>
</tr>
<tr>
<td>1.48 (0.60-3.66)</td>
<td>.53</td>
</tr>
</tbody>
</table>

Hirdes, Costa, Gray, et al. Age and Aging (Submitted)
MOPED Study

N = 2,101

Saskatoon City, Royal University, & St. Paul’s Hospitals
SktnHR, Saskatchewan

Grace Hospital
Winnipeg, WRHA, Manitoba

Queen Elizabeth II Health Sciences Centre
Halifax, Capital District Health Authority, Nova Scotia

Royal Jubilee & Nanaimo Regional General Hospitals
VIHA, British Columbia

Regina General & Pasqua Hospital
RQHR, Saskatchewan

Royal Victoria Hospital
Barrie, Ontario

Courtesy: Dr. Andrew Costa
## AUA Performance Validation, MOPED Study

<table>
<thead>
<tr>
<th>AUA</th>
<th>90-Day Re-visit for Patients Discharged Home (N=624)</th>
<th>ALC Patient if Admitted to Acute Care (N=936)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>AUC (95% CI)</td>
</tr>
<tr>
<td>High Risk</td>
<td>1.8 (1.2-2.8)</td>
<td>.59</td>
</tr>
<tr>
<td>Med. Risk</td>
<td>1.6 (1.0-2.3)</td>
<td>(0.55 – 0.64)</td>
</tr>
</tbody>
</table>

Courtesy: Dr. Andrew Costa
Proportion Designated “ALC” among Patients Admitted by Assessment Urgency & CTAS, MOPED

Overall Prevalence: 18%

Courtesy: Dr. Andrew Costa
Cumulative Percentage of Geriatric Conditions, MOPED

**interRAI Assessment Urgency**

- 0% (Low (4-5))
- 20% (Medium (3-4))
- 40% (High (1-3))
- 60% (3+ items)
- 80% (2 items)
- 100% (1 item)

**Triage Acuity (CTAS)**

- 0% (0 items)
- 20% (1 item)
- 40% (2 items)
- 80% (3+ items)

**Items:**
- Signs of Depression
- ADL Impairment
- Cognitive Impairment
- Signs of Caregiver Distress
- Behaviours

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Multinational Emergency Department Study

N = 2,282

- Canada
- Iceland (MOPED Study)
- Sweden
- Germany
- Belgium
- India
- Australia
Assessment Urgency Distribution by Discharge Destination, MOPED

<table>
<thead>
<tr>
<th>1 - Low</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6 - High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>20%</td>
<td>17%</td>
<td>26%</td>
<td>30%</td>
<td>17%</td>
</tr>
<tr>
<td>Acute Care</td>
<td>6%</td>
<td>4%</td>
<td>14%</td>
<td>10%</td>
<td>16%</td>
</tr>
</tbody>
</table>

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AUA Distribution by Discharge Destination, Multinational Sample

- **Community**
- **Acute Care**

<table>
<thead>
<tr>
<th>Discharge Level</th>
<th>Community</th>
<th>Acute Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Low</td>
<td>17%</td>
<td>6%</td>
</tr>
<tr>
<td>2</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>3</td>
<td>16%</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td>5</td>
<td>13%</td>
<td>26%</td>
</tr>
<tr>
<td>6 - High</td>
<td>37%</td>
<td>24%</td>
</tr>
</tbody>
</table>
HOW IS THE AUA USED?
ED Screener

- Free!
- Collects no information
- Platforms:
  - Apple iPhone/iPad/iPod
  - Google Android
Time to Complete by ED Screener Score

<table>
<thead>
<tr>
<th>Screener Score</th>
<th>Mt Sinai, Toronto (N=1073)</th>
<th>University Hospital, Prague (N=126)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td>1</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td>4</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td>5</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td>6</td>
<td>48</td>
<td>67</td>
</tr>
</tbody>
</table>

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### Home care clients by AUA, Ontario, 2012-3

Note: these data are from home care clients. Those at lower levels like sicker than usual senior.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living Alone</td>
<td>36.8%</td>
<td>31.8%</td>
<td>35.7%</td>
<td>27.4%</td>
<td>16.3%</td>
<td>19.5%</td>
</tr>
<tr>
<td>CPS 3+</td>
<td>3.1%</td>
<td>2.7%</td>
<td>4.2%</td>
<td>8.9%</td>
<td>24.6%</td>
<td>22.3%</td>
</tr>
<tr>
<td>ADL Hierarchy 3+</td>
<td>3.4%</td>
<td>4.0%</td>
<td>3.6%</td>
<td>8.8%</td>
<td>29.8%</td>
<td>21.4%</td>
</tr>
<tr>
<td>DRS 3+</td>
<td>14.3%</td>
<td>19.5%</td>
<td>23.3%</td>
<td>16.6%</td>
<td>19.0%</td>
<td>29.4%</td>
</tr>
<tr>
<td>Pain 2+</td>
<td>51.8%</td>
<td>59.8%</td>
<td>59.2%</td>
<td>58.7%</td>
<td>54.5%</td>
<td>57.1%</td>
</tr>
<tr>
<td>CHESS 3+</td>
<td>14.0%</td>
<td>15.1%</td>
<td>20.5%</td>
<td>19.5%</td>
<td>21.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>IADL involvement 8+</td>
<td>4.2%</td>
<td>4.9%</td>
<td>5.5%</td>
<td>13.5%</td>
<td>36.0%</td>
<td>30.4%</td>
</tr>
<tr>
<td>ADL</td>
<td>15.5%</td>
<td>17.2%</td>
<td>17.1%</td>
<td>37.1%</td>
<td>64.8%</td>
<td>55.5%</td>
</tr>
<tr>
<td>Behaviour</td>
<td>3.8%</td>
<td>3.5%</td>
<td>5.9%</td>
<td>8.0%</td>
<td>15.0%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Urinary Incontinence</td>
<td>24.4%</td>
<td>26.6%</td>
<td>29.1%</td>
<td>44.6%</td>
<td>51.1%</td>
<td>48.6%</td>
</tr>
<tr>
<td>Cardio-respiratory</td>
<td>41.7%</td>
<td>40.5%</td>
<td>53.7%</td>
<td>49.3%</td>
<td>44.9%</td>
<td>47.9%</td>
</tr>
<tr>
<td>Communication</td>
<td>12.7%</td>
<td>12.1%</td>
<td>16.0%</td>
<td>20.3%</td>
<td>26.6%</td>
<td>27.5%</td>
</tr>
<tr>
<td>Appropriate Medication</td>
<td>19.3%</td>
<td>21.5%</td>
<td>28.4%</td>
<td>29.8%</td>
<td>29.1%</td>
<td>29.5%</td>
</tr>
<tr>
<td>Falls</td>
<td>30.0%</td>
<td>33.1%</td>
<td>35.5%</td>
<td>41.4%</td>
<td>43.5%</td>
<td>44.8%</td>
</tr>
<tr>
<td>Pain</td>
<td>52.6%</td>
<td>60.4%</td>
<td>59.8%</td>
<td>59.0%</td>
<td>54.9%</td>
<td>57.5%</td>
</tr>
<tr>
<td>Institutional Risk</td>
<td>14.2%</td>
<td>15.4%</td>
<td>19.0%</td>
<td>25.0%</td>
<td>30.7%</td>
<td>35.1%</td>
</tr>
</tbody>
</table>
AUA at Grand River Hospital

• Intent: Assess ED patients aged 65 years and over

• Referral pathway designed to be used by staff in the ED: Triage or Nurse conducting preliminary assessment

• Key informant / stakeholder consultation (interviews and focus groups): Pathway have key features:
  • Simple to execute and supportive of clinical judgment
  • Optimize utilization of existing system resources
  • Maximize self-care opportunities

• Draft pathways for ED patients 65 years and older and discharged to the community
  • Letters for Patient and Primary Care
  • Contact information and/or referrals for community services

• IT infrastructure and integration into EMR: ~250 assessments, linked to ED and DAD data

• Planning evaluation framework, wait-time tracking and stakeholder education
Patient information

- Fall prevention
- Medication reviews
- Memory loss
- Continence services
- Mood
- Preventive services: exercise, immunizations
<table>
<thead>
<tr>
<th>AUA Score and Features</th>
<th>Referral Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong>&lt;br&gt;Self-reliant in ADLs or IADLs; no unstable health conditions or dyspnea&lt;br&gt;Self-rated health excellent or good</td>
<td>Enhance capacity for self management</td>
</tr>
<tr>
<td><strong>Level 2</strong>&lt;br&gt;Self-reliant in ADLs or IADLs; no unstable health conditions or Dyspnea&lt;br&gt;Self-rated health is fair or poor</td>
<td>Enhance capacity for self management, no referral req’d UNLESS: if concern expressed with ability to manage at home, refer to CSS.</td>
</tr>
<tr>
<td><strong>Level 3</strong>&lt;br&gt;Self-reliant in ADLs or IADLs; Has unstable health condition(s) or dyspnea</td>
<td>If health reported “Excellent” of “Good”: Enhance capacity for self management. If health reported as “Poor” or “Fair”: Refer to GEM or CCAC</td>
</tr>
<tr>
<td>AUA Score and Features</td>
<td>Referral Pathway</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td><strong>Level 4</strong>&lt;br&gt;Unable to complete ADLs or IADLs but no support required in hygiene ADLs; reports mood as not sad, depressed, or hopeless&lt;br&gt;Family not overwhelmed</td>
<td>Refer to GEM or CCAC. Enhanced capacity for self management remains a high priority.</td>
</tr>
<tr>
<td><strong>Level 5</strong>&lt;br&gt;Unable to complete ADLs or IADLs, support required in hygiene ADLs; reports mood as not sad, depressed, or hopeless&lt;br&gt;Family reports not overwhelmed</td>
<td>Refer to GEM and CCAC</td>
</tr>
<tr>
<td><strong>Level 6</strong>&lt;br&gt;Unable to complete ADLs or IADLs, family reports not overwhelmed but reports mood is sad, depressed, or hopeless&lt;br&gt;OR Unable to complete ADLs or IADLs and family reports being overwhelmed</td>
<td>Refer to GEM and CCAC</td>
</tr>
</tbody>
</table>
Dear Doctor:

Your patient _______________________ was seen in our emergency department on __________.

The final diagnosis was ________________________________.

Your patient was found to have an AUA score of 3, which places your patient at moderate risk for poor outcomes related to geriatric-related problems (e.g., revisit to the ED for same complaint).

AUA score of 3 means:

- Generally Self-reliant in basic and instrumental activities of daily living
- Having one or more unstable health conditions or chronic shortness of breath
- Self-described health status:
  - Good to Excellent

Your patient was assessed in the ED by CCAC / Social Work / GEM Nurse and the following referrals were arranged:

- [ ] CCAC
- [ ] Alzheimer Society
- [ ] Transit
- [ ] Other:

**New Medications:**

Your patient was instructed to arrange an appointment with you within 2 weeks of this ED visit. PLEASE ENSURE THAT THIS OCCURS.

As your patient is in the AUA 3 category, please consider assessing for:

- [✓] Pain
- [✓] Urinary incontinence
- [✓] Mild cognitive impairment
- [✓] Depression

Thank you.
GRAND RIVER HOSPITAL

DISCHARGE RECOMMENDATIONS
GERIATRIC EMERGENCY MANAGEMENT

FOR: ______________________ DATE: ______________________

(client name)

In order to ensure that seniors receive the best possible care in our emergency department, we routinely perform a brief seniors’ risk assessment. We determine whether a person is at increased risk for falls, requiring extra help at home, or benefiting from seeing a nurse, therapist or physician specialized in seniors’ health.

Today you were assessed in the Emergency Department. Please review the recommendations from Grand River Hospital. If you have further questions or concerns contact:

Geriatric Emergency Management (GEM) Nurse #519-749-4300 x 5951

The GEM nurse provides a specialized assessment for people over the age of 65. It is common for the GEM nurse to talk to you about a variety of topics, including:

- Medical history
- Medication list
- Memory changes
- Mood and nerves
- Washing/Dressing/Walking/Cooking
- Home safety

The recommendations below are based off the GEM nurse’s assessment findings.

<table>
<thead>
<tr>
<th>MEDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Medications:</td>
</tr>
<tr>
<td>□ Take your discharge prescription to your community pharmacist</td>
</tr>
<tr>
<td>□ Your prescription was faxed to your community pharmacist: Pharmacy Name: ___________ Number: ___________</td>
</tr>
<tr>
<td>Pick up medications □ They will be dropped off at your house □</td>
</tr>
<tr>
<td>□ Take medications you no longer use to your community pharmacist for disposal.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERVICE RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>These community resources have been recommended for you. Please contact:</td>
</tr>
<tr>
<td>□ Alzheimer Society # 519-742-1422</td>
</tr>
<tr>
<td>□ Transit #____________________</td>
</tr>
<tr>
<td>□ Day Program #______________</td>
</tr>
<tr>
<td>□ Senior Centre #____________</td>
</tr>
<tr>
<td>□ Meals on Wheels # 519-772-8787</td>
</tr>
<tr>
<td>□ Primary Care Memory Clinic #____________________</td>
</tr>
<tr>
<td>□ Specialized Geriatric Services #____________________</td>
</tr>
<tr>
<td>□ Other: __________________________________________</td>
</tr>
<tr>
<td>□ The CCAC will be contacting you about: # 519-748-2222</td>
</tr>
<tr>
<td>□ Nursing □ Physiotherapy □ Occupational Therapy □ Social Work</td>
</tr>
<tr>
<td>□ Personal Care □ Dietician □ Speech Language Pathology Services</td>
</tr>
<tr>
<td>□ Other: __________________________________________</td>
</tr>
<tr>
<td>□ Other: __________________________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDITIONAL COMMENTS/RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ PLEASE MAKE SURE THAT YOU BOOK AN APPOINTMENT TO SEE YOUR FAMILY DOCTOR IN THE NEXT 2 WEEKS.</td>
</tr>
<tr>
<td>We have sent a notice to your family doctor and he/she is expecting your call!</td>
</tr>
<tr>
<td>Attached to this letter, you will find information on important health and wellness issues. Please review this information and prepare questions for your doctor about those that matter to you.</td>
</tr>
<tr>
<td>Your health and wellbeing are important to us all!</td>
</tr>
<tr>
<td>□ Reviewed with client by __________________________ on ____________________</td>
</tr>
<tr>
<td>(Signature) (Date)</td>
</tr>
<tr>
<td>Family member present: □ Yes □ No</td>
</tr>
</tbody>
</table>

#519-749-4300 x 5951
Learnings to date

- IT infrastructure critical: CIO involvement
- Engage ED leadership: even a 1 minute change can be disruptive
  - TRST will be abandoned
- Perception that this will open a “can of worms” and lead to liability
- This is NOT a tool to decide who needs hospitalization
  - May identify issues that influence decision to admit
- Involve primary care
  - Capacity building will be required
Anticipated benefits

• More appropriate use of existing resources
  • Not just who to see but when

• Evidenced-based mechanism to define service and human resource needs

• Common assessment language: CCAC / interRAI HC
  • Promote this primary care
The Cases: Frailty ≠ Risk (necessarily)

• Ronald Reagan:
  • CSHA 6  AUA 4 or 5

• HF patient
  • CSHA 5  AUA 6
Final thoughts

• Frailty or risk: geriatrics is everyone’s business
  • Major underlying driver of ED use: patients are there for a good reason

• In ED, can’t do CGA on all seniors: don’t need to either
  • But need to ID those who need a closer look and when to take that look

• Optimize
  • Patient capacity for self-care
  • Front-line staff understanding of risk
  • Use of community resources: Primary care, CCAC, CSS
  • Skills of GEM and other specialized geriatric services

• Develop systematic data to determine health human resource / service gaps and needs
Chronic Disease Management

- Low-intensity CDM 75% (AUA 1–3)
- Mid-intensity CDM 15–20% (AUA 3–4)
- High-intensity CDM 5–10% (AUA 5–6)
Frailty x Stressor = Risk of bad outcome

Questions?