Welcome to the RGP of Toronto network webinar!

“Clinical Screening in the Geriatric Population” will begin in a few moments. Here are some setup tips:

- Hover your mouse at the bottom of your screen to bring up the (dark grey) menu bar

By default, your computer speakers are used for audio (this is preferred)

Click here to test their volume

If computer audio is inadequate, click “Leave Computer Audio” and dial in by phone using the number provided in your email or calendar invitation (note: you will be muted during the webinar)

Participate in the webinar by clicking the “Chat” icon to bring up the chat window.

**Make sure the Chat window is set to “All panelists and attendees” so that everyone can view your typed comments**
RGP of Toronto Network Webinar

Clinical Screening in the Geriatric Population

July 11 2018, 12-1pm

Screening and Triage
Dr. Katherine Krause, PGY5
Geriatric Medicine, University of Toronto

Screening for MCI and Dementia
Dr. Mauli Mehta, PGY5
Geriatric Medicine, University of Toronto
Screening and Triage in a Geriatric Population

Katie Krause
PGY5 Geriatrics
Sunnybrook Webinar Series
Conflicts of Interest

• None
Outline of Presentation

• Overview of screening in medicine
• Importance of screening
• Screening in geriatric medicine
• Differences between screening and triage in practice
• Overview of triage and its importance
• Triage in geriatric medicine
Questions for you!

1. Do you know the different between a screening and triage?

2. Who uses a screening tool in their working life?

3. Who uses tools that triage patients or clients in their working life?
Screening

• The objective of medical screening is to identify disease in its preclinical state

US Commission of Chronic Illness (1951)

“The presumptive identification of unrecognized disease or defect by the application of tests, examinations, or other procedures which can be applied rapidly”
Screening

• Rose and Barker (1978) indicated that in order to determine whether screening is beneficial, doctors had to answer 3 questions:

1. Does earlier treatment **improve the prognosis**?
2. How valid and **repeatable** is the screening test?
3. What is the **yield** of the screening service?
Screening

• Only in the 20th century were these conditions able to be met:
  • Appropriate test
  • Validity
  • Availability

• Not intended to be diagnostic

• Those with suspicious findings must be referred for diagnosis and necessary treatment
Screening

• Mental tests for officers, drafted and enlisted (1917)

• The purpose: ”to eliminate from the Army at the earliest possible moment those recruits whose defective intelligence would make them a menace to the military organization”

• Army Alpha
  • 50 min with 100-200 men at once
  • Large populations
  • Repeatable
  • Administered rapidly
  • ‘High degree of validity’ – 7749 men for excluded from service

1. A company advanced 6 miles and retreated 2 miles. How far was it then from its first position?
2. A dealer bought some mules for $1,200. He sold them for $1,500, making $50 on each mule. How many mules were there?
Screening

• Screening is now commonplace in medicine:
  • Cancer: breast, colon, cervical
  • Metabolic: thyroid, diabetes
  • Infections: syphilis, TORCH

• Integration of screening in medicine has lead to improved health outcomes for various illnesses
  • Improved detection
  • Early identification and implementation of treatment
  • Prevention of complications
  • Improved survival

Morabia and Zhang 2004
Canadian Cancer Society
Screening

• Limitations:
  • False positives
  • False negatives
  • Overdiagnosis/overtreatment
  • May lead to additional testing
Geriatric Screening

- Many screening programs APPLY to geriatric populations
  - Dr. Mehta will discuss screening in MCI and dementia
    - STAY TUNED!

- Can we screen for who should be seen by a geriatrician??
- Standardized approach can improve care quality and outcomes\(^1\)
  - Tools are being developed and adapted to screen older adults for appropriateness
    - Assessment Urgency Algorithm (AUA)

CTFPHC 2015
1. Boorsma et al. 2006
Geriatric Screening

• Assessment Urgency Algorithm (AUA)
  • RAPID risk screening tool for older adults based on 6 domains to guide referrals
    • Self-reliance Indicator (Decision-making and ADLs)
    • Caregiver stress
    • Mood
    • Self-rated health
    • Presence of unstable medical conditions
    • Dyspnea
Geriatric Screening

• Now used in:
  • ED
  • Physiotherapy clinics across Ontario
  • Seniors mental health
  • Family health teams
Is screening the same as triage?

• NO!
Triage

• The original concepts of triage were focused on mass casualty situations

• Triage, from French ‘trier’, originally 1792, applied to a process of sorting patients by Baron Dominique Jean Larrey, Surgeon in Chief to Napoleon’s Imperial Guard
  
  • Developed originally for sorting surgical patients in battlefield settings
  • Also contributed to the organization of a care system for the ongoing management of casualties

Robertson-Steel 2006
Triage

• 1900s saw triage emerging in the ED in the US, Canada, UK, and Europe
  • Brief clinical assessment determining the time and sequence in which a patient should be seen by a **limited resource**

• Triage is a dynamic process as the persons status can change

Robertson-Steel 2006
Triage

• For those requiring routine care, triage takes on a different purpose
  • Identification of patients who require more urgent assessment
  • Goal is reduction of morbidity from disease
  • Common thread:

  **Limited resource!**
Triage - Geriatrics

• Not a lot of literature in this area
• Many ‘homegrown’ triage tools

• No formal tool – patient-specific, clinician judgement
• Adapted tool – from another service or sector
• Specific tool – characteristics and timeframes, mostly very urgent issues (1 or 2 urgent examples)
Triage - Geriatrics

• Example: No formal tool
  • ‘RN, NP, Geriatrician reviews referrals with ‘gestalt’ view of needs based on written referral
  • If GP calls, patient given more urgent status
  • If ‘urgent’ indicated on referral, patient given more urgent status
  • ‘Seen more urgently if recently in ED’

• No specific timeframes
Triage - Geriatrics

• **Priority 1 (red)**
  - Failure to thrive with identifiable risks to self
  - Health care provider screening/identified as priority/urgent on referral
  - Imminent hospital admission and/or recurrent ER presentations secondary to geriatric syndrome
  - Suspected Delirium
  - New responsive behavior (community patient)
    - *For any patients with the above information, a telephone call is required.*

• **Priority 2 (Yellow)**
  - Frequent falls
  - Caregiver burnout

• **Priority 3 (no colour)**
  - Not at risk of hospitalization
  - Community supports in place
  - LTC resident
  - All other reasons for referral
**Table 2: Wait Time Standards**

<table>
<thead>
<tr>
<th>Triage Category</th>
<th>Examples (not all inclusive)</th>
<th>Standard Wait Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urgent</strong></td>
<td>Rapid functional decline&lt;br&gt;Pre-op cognitive assessment&lt;br&gt;Rapid cognitive decline</td>
<td>Within 14 days</td>
</tr>
<tr>
<td><strong>Non-Urgent</strong></td>
<td>Frail elderly with multiple problems&lt;br&gt;Memory disorders&lt;br&gt;Frail elderly with multiple medications&lt;br&gt;Falls</td>
<td>Within 56 days</td>
</tr>
<tr>
<td><strong>Non-Urgent Day Hospital</strong></td>
<td>Frail elderly with multiple problems&lt;br&gt;Memory disorders&lt;br&gt;Frail elderly with multiple medications&lt;br&gt;Falls</td>
<td>Within 84 days</td>
</tr>
</tbody>
</table>
Our Project

• Our study aims to create the first ever Canada-wide expert consensus administrative triage tool for the prioritization of patients in a geriatric outpatient clinic.
  • This will help expedite services to highly vulnerable older adults which may ultimately reduce burden on acute care centers and emergency departments.
    • Poll active geriatricians across Canada
    • Modified Delphi technique
    • Creation of a ranked list of patient characteristics
    • Final expert panel
Questions for you!

1. Is triage in geriatrics outpatient clinics necessary?

2. Which patient characteristics, in your opinion, would be considered URGENT within a triage tool for a geriatric outpatient clinic?
   - Pick all that apply
   - If you chose ‘other’, you can respond in the discussion box below
Thank you!

- Questions after Dr. Mehta’s presentation
References

Screening in MCI and Dementia

Webinar Presentation
Mauli Mehta
July 11, 2018
Overview

• Background of Dementia and MCI
• Screening principles applied to Dementia/ MCI
• Current Recommendations
Background - Dementia

• DSM-V: “Major neurocognitive disorder”

• Cognitive decline that is significant enough to interfere with independence in instrumental activities of daily living (IADLs)

• Major dementia syndromes include:
  • Alzheimer's disease (AD)
  • Vascular dementia (VaD)
  • Frontotemporal dementia (FTD)
  • Dementia with Lewy Bodies
  • Parkinson’s disease with dementia (PDD)
  • Dementia of mixed etiology
Background - MCI

• DSM-V: “Mild neurocognitive disorder”

• Cognitive impairment is not severe enough to interfere with independence in daily life

• Cognitive decline as evidenced by
  • self/informant/clinician report
  • impairment on objective cognitive tasks +/- evidence of decline over time on objective tasks
Natural History

• Dementia
  • The most common types are irreversible and usually progressive.
  • Early stages generally affect IADLs, ability to learn and retain new information. As dementia progresses, patients are unable to carry out basic ADLs.
  • Onset and progression is highly variable and depends on the etiology or type.

• MCI
  • May have some clinical utility for predicting later dementia.
  • Rates of stability, progression, and regression of MCI vary between studies. Variation likely reflects the complex underlying pathology, differences in diagnostic criteria, and differences in population settings and participants.
Rationale for screening in Older Adults

• 29 - 76% of patients with dementia or probable dementia are not diagnosed by primary care physicians.
• Sensitivity of a clinician's diagnosis appears to be strongly related to dementia severity.
• Rapidly growing population at risk for dementia
• Pharmaceutical agents for treatment of AD
• Media attention to the human suffering associated with AD
• Growing potential of research to improve the outlook for affected patients and their families
Benefits of Early Detection

• Social
  • Right/ need to know
  • Financial/ social planning
  • POA planning and advance directives
  • Safety (driving, medications, cooking)
  • Early education of caregivers on how to manage the patient

• Medical
  • Management of comorbid conditions (consent, medication management, treatment modifications)
  • Treat reversible causes and risk factor management
  • Compliance strategies
  • Initiation of treatment early
  • Crisis avoidance

Ashford J.W. et al. Should older adults be screened for dementia. It is important to screen for evidence of dementia. *Alzheimers Dement.* 2007;3(2):75-80
Barriers of early detection

• Biggest barriers:
  • Time restrictions
  • Psychological effects and work-up for false-positives
  • Adverse effects from labelling

• Poorly studied

Ashford J.W. et al. Should older adults be screened for dementia. It is important to screen for evidence of dementia. *Alzheimers Dement.* 2007;3(2):75-80
Reviewing screening principles

• Must be common
• Must have sensitive and specific tests available for detection
• Must have efficacious treatment
• If treatment exists, treated patients must have better outcomes than untreated patients
• Benefits from screening must outweigh the harms
Must be Common

- Alzheimer Society’s Statistics:
  - 500,000 Canadians living with dementia
  - 25,000 new cases diagnosed every year
  - By 2031, that number is expected to rise to 937,000
  - 1 in 11 over 65 has dementia
  - 1 in 4 has a family member with dementia
  - 1 in 2 Canadians know a person with dementia
- Prevalence of dementia is strongly related to increasing age. Estimated mean prevalence in the United States and Canada:
  - 60 – 64 yrs.: 0.8%
  - 65 – 69 yrs.: 1.7%
  - 70 – 74 yrs.: 3.3%
  - 75 – 79 yrs.: 6.5%
  - 80 – 84 yrs.: 12.8%
  - 85 + yrs.: 30.1%
- Median prevalence 26.4% for MCI

Alzheimer Society Website: http://alzheimer.ca/en/Home/Get-involved/Advocacy/Latest-info-stats
Sensitive and Specific Tests
Screening Test

• Basic purpose of screening tests is to indicate likelihood of genuine cognitive impairment

• Screening tool must:
  • high sensitivity and specificity
  • high positive predictive value
  • easy to administer
  • achievable in the minimum time possible
  • obtain indices of key cognitive domains in a brief consultation

• Problems encountered:
  • Overemphasis on memory dysfunction with neglect of other domains such as language, praxis or executive function
  • Emphasis on cut-off scores rather than profiles of impairment
Cognitive Tests to Detect Dementia
A Systematic Review and Meta-analysis

Kelvin K. F. Tsoi, PhD; Joyce Y. C. Chan, MPH; Hoyee W. Hirai, MSc; Samuel Y. S. Wong, MD; Timothy C. Y. Kwok, MD, PhD

*JAMA Intern Med.* 2015;175(9):1450-1458
Study Design

• Systematic review and meta-analysis of 149 studies
• Assessed the accuracy of MMSE and 10 other screening tests for the detection of dementia.
• Inclusion:
  • involved participants studied for the detection of dementia associated with Alzheimer disease, vascular dementia, or Parkinson disease in any clinical or community setting
  • Screened patients or caregivers with a face-to-face interview
  • Used standard diagnostic criteria as the criterion for defining dementia
  • Reported the number of participants with dementia and evaluated the accuracy of the screening tests, including sensitivity, specificity, or data that could be used to derive those values.
• Exclusion
  • Not written in English
  • administration time longer than 20 minutes
  • Test was identified in fewer than 4 studies in the literature search
  • If was administered to participants with visual impairment.
Table 1. Characteristics of the 11 Screening Tests for Dementia

<table>
<thead>
<tr>
<th>Screening Test (Administration Time)</th>
<th>Total Score&lt;sup&gt;a&lt;/sup&gt;</th>
<th>No. of Questions&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Components of Screening Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMSE (6-10 min)&lt;sup&gt;7&lt;/sup&gt;</td>
<td>0-30</td>
<td>20&lt;sup&gt;c,d&lt;/sup&gt;</td>
<td>Orientation, memory, language, attention, and visuospatial</td>
</tr>
<tr>
<td>Very brief (≤5 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shulman et al&lt;sup&gt;29&lt;/sup&gt;</td>
<td>0-5/1-6</td>
<td>1</td>
<td>Visuospatial and executive function</td>
</tr>
<tr>
<td>Sunderland et al&lt;sup&gt;28&lt;/sup&gt;</td>
<td>1-10</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mini-Cog test&lt;sup&gt;10&lt;/sup&gt;</td>
<td>0-5</td>
<td>2</td>
<td>Memory, visuospatial, and executive function</td>
</tr>
<tr>
<td>MIS&lt;sup&gt;30&lt;/sup&gt;</td>
<td>0-8</td>
<td>1&lt;sup&gt;e&lt;/sup&gt;</td>
<td>Memory</td>
</tr>
<tr>
<td>VF test&lt;sup&gt;13&lt;/sup&gt;</td>
<td>NA&lt;sup&gt;f&lt;/sup&gt;</td>
<td>1</td>
<td>Memory and language</td>
</tr>
<tr>
<td>Brief (≤10 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMT&lt;sup&gt;27&lt;/sup&gt;</td>
<td>0-10</td>
<td>10</td>
<td>Orientation, memory, and attention</td>
</tr>
<tr>
<td>GPCOG&lt;sup&gt;9,11&lt;/sup&gt;</td>
<td>0-15</td>
<td>15</td>
<td>Orientation, memory, language, visuospatial, executive function, and other daily living functions</td>
</tr>
<tr>
<td>MoCA&lt;sup&gt;31&lt;/sup&gt;</td>
<td>0-30</td>
<td>18&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Orientation, memory, language, attention, and executive function</td>
</tr>
<tr>
<td>Detailed (≤20 min)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACE-R&lt;sup&gt;9&lt;/sup&gt;</td>
<td>0-100</td>
<td>39&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Orientation, memory, language, attention, visuospatial, and executive function</td>
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<tr>
<td>IQCODE&lt;sup&gt;11&lt;/sup&gt;</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Short form&lt;sup&gt;13&lt;/sup&gt;</td>
<td>16-80</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Long form&lt;sup&gt;12&lt;/sup&gt;</td>
<td>26-130</td>
<td>26</td>
<td>Orientation, memory, language, and other daily living functions</td>
</tr>
<tr>
<td>3MS&lt;sup&gt;32&lt;/sup&gt;</td>
<td>0-100</td>
<td>34&lt;sup&gt;c,d&lt;/sup&gt;</td>
<td>Orientation, memory, language, attention, and visuospatial</td>
</tr>
</tbody>
</table>

Abbreviations: ACE-R, Addenbrooke’s Cognitive Examination Revised; AMT, Abbreviated Mental Test; CDT, Clock Drawing Test; GPCOG, General Practitioner Assessment of Cognition; IQCODE, Informant Questionnaire on Cognitive Decline in Elderly; MIS, Memory Impairment Screen; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; 3MS, modified Mini-Mental State Examination; NA, not applicable; VF, verbal fluency.

<sup>a</sup> High score stands for good cognitive function, except for the IQCODE test.

<sup>b</sup> Number of questions only include questions that counting marks.

<sup>c</sup> For the orientation part, year, month, date, day, and season are counted as 5 questions.

<sup>d</sup> For the naming test, the test has to ask the name of each item, so each item counts as one question.

<sup>e</sup> Only count the free recall and not the cued recall (cued recall conduct only if unable to perform free recall).

<sup>f</sup> No maximum score for the VF test.

<sup>g</sup> Six of 15 marks were asked for informants.

<sup>h</sup> The test is only for feedback from informants, and a high score indicates severe cognitive deficits.
Results

• Most common screening test used was MMSE (68.5%) followed by MoCA (13.4%)
• Patients mainly from community or clinic settings (80.3%)
• MCI:
  • MMSE - 0.62 sensitivity (95% CI, 0.52-0.71) and 0.87 specificity (95% CI, 0.80-0.92)
  • MOCA - 0.89 sensitivity (95% CI, 0.84-0.92) and 0.75 specificity (95% CI, 0.62-0.85)
### Table 3. Meta-analyses for Diagnostic Accuracy on Dementia

<table>
<thead>
<tr>
<th>Screening Test</th>
<th>No. of Study Cohorts</th>
<th>Pooled (95% CI)</th>
<th>Pooled LR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sensitivity</td>
<td>Specificity</td>
</tr>
<tr>
<td>MMSE(^7)</td>
<td>108</td>
<td>0.81 (0.78-0.84)</td>
<td>0.89 (0.87-0.91)</td>
</tr>
<tr>
<td><strong>Very brief (≤5 min)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDT</td>
<td>9</td>
<td>0.83 (0.75-0.89)</td>
<td>0.84 (0.69-0.92)</td>
</tr>
<tr>
<td>Shulman et al(^{29})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunderland et al(^{48})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mini-Cog test(^{10})</strong></td>
<td>9</td>
<td>0.91 (0.80-0.96)</td>
<td>0.86 (0.74-0.93)</td>
</tr>
<tr>
<td><strong>MIS(^{30})</strong></td>
<td>6</td>
<td>0.797 (0.68-0.86)</td>
<td>0.91 (0.84-0.96)</td>
</tr>
<tr>
<td><strong>VF test(^{33})</strong></td>
<td>7</td>
<td>0.80 (0.73-0.86)</td>
<td>0.82 (0.73-0.88)</td>
</tr>
<tr>
<td><strong>Brief (≤10 min)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMT(^{27})</td>
<td>14</td>
<td>0.88 (0.82-0.92)</td>
<td>0.85 (0.81-0.89)</td>
</tr>
<tr>
<td><strong>GPCOG(^{11})</strong></td>
<td>5</td>
<td>0.92 (0.81-0.97)</td>
<td>0.87 (0.83-0.90)</td>
</tr>
<tr>
<td>MoCA(^{31})</td>
<td>20</td>
<td>0.91 (0.84-0.95)</td>
<td>0.81 (0.71-0.88)</td>
</tr>
<tr>
<td><strong>Detailed (≤20 min)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ACE-R(^{9})</strong></td>
<td>13</td>
<td>0.92 (0.90-0.94)</td>
<td>0.89 (0.84-0.93)</td>
</tr>
<tr>
<td>IQCODE</td>
<td></td>
<td></td>
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<tr>
<td>Short form(^{13})</td>
<td>7</td>
<td>0.89 (0.85-0.92)</td>
<td>0.82 (0.63-0.93)</td>
</tr>
<tr>
<td>Long form(^{12})</td>
<td>17</td>
<td>0.84 (0.81-0.87)</td>
<td>0.82 (0.75-0.87)</td>
</tr>
<tr>
<td>3MS(^{32})</td>
<td>9</td>
<td>0.86 (0.83-0.89)</td>
<td>0.85 (0.74-0.92)</td>
</tr>
</tbody>
</table>

Abbreviations: ACE-R, Addenbrooke's Cognitive Examination Revised; AMT, Abbreviated Mental Test; CDT, Clock Drawing Test; GPCOG, General Practitioner Assessment of Cognition; IQCODE, Informant Questionnaire on Cognitive Decline in Elderly; LR, logistic regression; MIS, Memory Impairment Screen; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; 3MS, modified Mini-Mental State Examination; VF, verbal fluency.
Summary

- Mini-Cog test and the ACE-R had better diagnostic performance for dementia when compared to MMSE

- MoCA had better diagnostic performance for MCI compared to MMSE

Discussion...

What screening tests are used in your clinic?
Must have efficacious treatment
## Meta-Analyses for AChEIs and Memantine on Global Cognitive Function, Measured by the ADAS-Cog

<table>
<thead>
<tr>
<th>Study</th>
<th>Baseline Disorder</th>
<th>N Analyzed</th>
<th>Months Followup</th>
<th>Difference in Mean Change (95% CI)</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Donepezil</td>
<td>MCI</td>
<td>27</td>
<td>11</td>
<td>0.01 (-0.8, 0.88)</td>
<td>7.61</td>
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<tr>
<td>Doody, 2006</td>
<td>MCI</td>
<td>27</td>
<td>11</td>
<td>0.10 (-0.88, 0.66)</td>
<td>7.61</td>
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<tr>
<td>Feldman, 2001</td>
<td>AD</td>
<td>18</td>
<td>29</td>
<td>1.80 (2.29, 13.01)</td>
<td>15.03</td>
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<tr>
<td>Tanaka, 2001</td>
<td>AD</td>
<td>14</td>
<td>29</td>
<td>0.79 (0.13, 1.37)</td>
<td>10.50</td>
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<tr>
<td>Rogers, 1998A</td>
<td>AD</td>
<td>18</td>
<td>16</td>
<td>0.80 (-0.18, 0.36)</td>
<td>5.10</td>
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<tr>
<td>Mazzia, 2006A</td>
<td>AD</td>
<td>18</td>
<td>7</td>
<td>1.49 (-0.82, 3.76)</td>
<td>0.69</td>
</tr>
<tr>
<td>Rogers, 1998B</td>
<td>AD</td>
<td>19</td>
<td>7</td>
<td>1.23 (-0.54, 2.13)</td>
<td>7.11</td>
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<tr>
<td>Winsted, 2001</td>
<td>AD</td>
<td>19</td>
<td>16</td>
<td>1.42 (0.83, 2.28)</td>
<td>10.57</td>
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<tr>
<td>Rogers, 1996A</td>
<td>AD</td>
<td>19</td>
<td>7</td>
<td>1.26 (0.57, 2.15)</td>
<td>8.43</td>
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<tr>
<td>Requena, 2002A</td>
<td>AD</td>
<td>20</td>
<td>7</td>
<td>2.01 (1.19, 2.90)</td>
<td>8.43</td>
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<tr>
<td>Holmes, 2004A</td>
<td>AD</td>
<td>20</td>
<td>9</td>
<td>1.70 (0.17, 3.32)</td>
<td>3.00</td>
</tr>
<tr>
<td>South, 2004A</td>
<td>AD</td>
<td>24</td>
<td>16</td>
<td>-1.02 (-2.73, 0.63)</td>
<td>3.00</td>
</tr>
<tr>
<td>Courneya, 2004</td>
<td>AD</td>
<td>15</td>
<td>16</td>
<td>0.83 (0.89, 1.78)</td>
<td>11.42</td>
</tr>
<tr>
<td>Wilkinson, 2003</td>
<td>VaD</td>
<td>21</td>
<td>16</td>
<td>1.08 (0.40, 1.78)</td>
<td>8.43</td>
</tr>
<tr>
<td>Mon, 2012</td>
<td>LBD</td>
<td>19</td>
<td>6</td>
<td>2.40 (0.89, 3.93)</td>
<td>3.17</td>
</tr>
<tr>
<td>Subtotal (I-squared = 122.8%, p = 0.001)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Rivastigmine

<table>
<thead>
<tr>
<th>Study</th>
<th>Baseline Disorder</th>
<th>N Analyzed</th>
<th>Months Followup</th>
<th>Difference in Mean Change (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zesman, 2005A</td>
<td>AD</td>
<td>13</td>
<td>4</td>
<td>-0.35 (-0.47, -0.23)</td>
<td>17.64</td>
</tr>
<tr>
<td>Winsted, 2007</td>
<td>AD</td>
<td>18</td>
<td>5</td>
<td>0.88 (0.23, 1.37)</td>
<td>15.19</td>
</tr>
<tr>
<td>Feldman, 2007</td>
<td>AD</td>
<td>18</td>
<td>49</td>
<td>1.70 (0.26, 3.24)</td>
<td>15.56</td>
</tr>
<tr>
<td>Rosse, 1996</td>
<td>AD</td>
<td>19</td>
<td>7</td>
<td>0.08 (-0.33, 0.33)</td>
<td>10.44</td>
</tr>
<tr>
<td>Agid, 1998</td>
<td>AD</td>
<td>40</td>
<td>3</td>
<td>0.30 (-0.46, 0.16)</td>
<td>14.68</td>
</tr>
<tr>
<td>Mol, 2007</td>
<td>VaD</td>
<td>13</td>
<td>2</td>
<td>0.70 (-0.69, 2.19)</td>
<td>6.21</td>
</tr>
<tr>
<td>Bolland, 2008</td>
<td>AD</td>
<td>19</td>
<td>10</td>
<td>0.03 (-0.18, 0.28)</td>
<td>14.61</td>
</tr>
<tr>
<td>Subtotal (I-squared = 90.9%, p = 0.000)</td>
<td></td>
<td></td>
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</tbody>
</table>

### Memantine

<table>
<thead>
<tr>
<th>Study</th>
<th>Baseline Disorder</th>
<th>N Analyzed</th>
<th>Months Followup</th>
<th>Difference in Mean Change (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winsted, 2009</td>
<td>AD</td>
<td>18</td>
<td>2</td>
<td>1.26 (-0.20, 2.78)</td>
<td>37.60</td>
</tr>
<tr>
<td>Knapp, 1994A</td>
<td>AD</td>
<td>18</td>
<td>10</td>
<td>0.00 (-0.56, 0.56)</td>
<td>62.40</td>
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<tr>
<td>Subtotal (I-squared = 0.0%, p = 0.473)</td>
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</table>

### Memantine

<table>
<thead>
<tr>
<th>Study</th>
<th>Baseline Disorder</th>
<th>N Analyzed</th>
<th>Months Followup</th>
<th>Difference in Mean Change (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reisberg, 2003</td>
<td>AD</td>
<td>8</td>
<td>9</td>
<td>0.70 (0.10, 1.39)</td>
<td>23.34</td>
</tr>
<tr>
<td>Porsteinsson, 2004AD</td>
<td>AD</td>
<td>16</td>
<td>8</td>
<td>0.50 (-0.11, 1.11)</td>
<td>28.54</td>
</tr>
<tr>
<td>Wilkerson, 2012</td>
<td>AD</td>
<td>16</td>
<td>21</td>
<td>0.24 (-0.14, 0.61)</td>
<td>10.37</td>
</tr>
<tr>
<td>Orgogozo, 2000V</td>
<td>VaD</td>
<td>16</td>
<td>9</td>
<td>1.53 (0.23, 2.83)</td>
<td>14.10</td>
</tr>
<tr>
<td>Winsted, 2002</td>
<td>AD</td>
<td>17</td>
<td>7</td>
<td>-0.27 (-1.05, 0.51)</td>
<td>19.76</td>
</tr>
<tr>
<td>Subtotal (I-squared = 36.7%, p = 0.176)</td>
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</tbody>
</table>

**NOTE:** Weights are from random effects analysis

---

### Meta-Analyses for AChEIs and Memantine on Withdrawals Due to Adverse Events

<table>
<thead>
<tr>
<th>Study</th>
<th>RR (95% CI)</th>
<th>Events, Treatment</th>
<th>Events, Control</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donepezil</td>
<td>1.88 (1.37, 2.61)</td>
<td>45/226</td>
<td>20/121</td>
<td>11.3%</td>
</tr>
<tr>
<td>Rivastigmine</td>
<td>1.42 (0.94, 2.15)</td>
<td>78/644</td>
<td>27/274</td>
<td>14.5%</td>
</tr>
<tr>
<td>Memantine</td>
<td>1.22 (0.72, 2.07)</td>
<td>28/82</td>
<td>16/17</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

**Donepezil**
- **Galantamine**
- **Rivastigmine**
- **Memantine**

### Meta-Analyses for AChEIs and Memantine on Serious Adverse Events

<table>
<thead>
<tr>
<th>Study</th>
<th>RR (95% CI)</th>
<th>Events, Treatment</th>
<th>Events, Control</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donepezil</td>
<td>1.45 (0.95, 2.20)</td>
<td>45/200</td>
<td>30/199</td>
<td>16.4%</td>
</tr>
<tr>
<td>Rivastigmine</td>
<td>0.82 (0.53, 1.27)</td>
<td>40/144</td>
<td>30/274</td>
<td>16.4%</td>
</tr>
<tr>
<td>Memantine</td>
<td>1.07 (0.58, 1.95)</td>
<td>19/144</td>
<td>18/145</td>
<td>7.9%</td>
</tr>
</tbody>
</table>

**Donepezil**
- **Galantamine**
- **Rivastigmine**
- **Memantine**

---

## Meta-Analyses for Psychoeducational Caregiver Interventions on Caregiver Burden

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention Type</th>
<th>N Analyzed</th>
<th>Months Followup</th>
<th>Hedge's g (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hebert 2003</td>
<td>Group</td>
<td>116</td>
<td>4</td>
<td>-0.13 (-0.54, 0.28)</td>
<td>4.53</td>
</tr>
<tr>
<td>Chu 2011</td>
<td>Group</td>
<td>160</td>
<td>4</td>
<td>-0.11 (-0.38, 0.17)</td>
<td>3.20</td>
</tr>
<tr>
<td>O’Riordan 1998</td>
<td>Group</td>
<td>90</td>
<td>5</td>
<td>-0.11 (-0.41, 0.20)</td>
<td>3.02</td>
</tr>
<tr>
<td>Head 2001</td>
<td>Group</td>
<td>94</td>
<td>5</td>
<td>-0.12 (-0.49, 0.26)</td>
<td>3.54</td>
</tr>
<tr>
<td>REACH-Birmingham 2003</td>
<td>Group</td>
<td>90</td>
<td>6</td>
<td>-0.11 (-0.50, 0.29)</td>
<td>3.89</td>
</tr>
<tr>
<td>REACH-Birmingham 2003</td>
<td>Group</td>
<td>163</td>
<td>6</td>
<td>-0.10 (-0.71, 0.13)</td>
<td>2.68</td>
</tr>
<tr>
<td>Callaghan-Thompson 2008</td>
<td>Individual</td>
<td>164</td>
<td>6</td>
<td>-0.10 (-0.69, 0.11)</td>
<td>3.40</td>
</tr>
<tr>
<td>De Rottaso 2011</td>
<td>Individual</td>
<td>113</td>
<td>6</td>
<td>-0.10 (-0.60, 0.12)</td>
<td>4.44</td>
</tr>
<tr>
<td>Head 2005</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.09 (-0.38, 0.20)</td>
<td>3.29</td>
</tr>
<tr>
<td>Utzmann 2007</td>
<td>Individual</td>
<td>132</td>
<td>7</td>
<td>-0.09 (-0.44, 0.24)</td>
<td>3.51</td>
</tr>
<tr>
<td>Griffin 2007</td>
<td>Individual</td>
<td>132</td>
<td>12</td>
<td>-0.09 (-0.44, 0.24)</td>
<td>3.44</td>
</tr>
<tr>
<td>Griffin 2008</td>
<td>Individual</td>
<td>132</td>
<td>12</td>
<td>-0.09 (-0.44, 0.24)</td>
<td>3.44</td>
</tr>
<tr>
<td>REACH-Memphis 2003</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.09 (-0.38, 0.20)</td>
<td>3.29</td>
</tr>
<tr>
<td>REACH-Philadelphia 2003</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.09 (-0.38, 0.20)</td>
<td>3.29</td>
</tr>
<tr>
<td>Tori 2005</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Grifin 2010 ACT</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Martin-Carrasco 2009</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Wright 2001</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>REACH-Boston 2003</td>
<td>Phone/Video</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Fini 2007</td>
<td>Phone/Video</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Lortman 2005</td>
<td>Phone/Video</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Callahan 2006</td>
<td>Callahan Mgmt</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Fortinsky 2009</td>
<td>Callahan Mgmt</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Jansen 2011</td>
<td>Callahan Mgmt</td>
<td>132</td>
<td>6</td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td>-0.07 (-0.71, 0.23)</td>
<td>3.09</td>
</tr>
</tbody>
</table>

**NOTE:** Weights are from random effects analysis

## Meta-Analyses for Psychoeducational Caregiver Interventions on Caregiver Depression

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention Type</th>
<th>N Analyzed</th>
<th>Months Followup</th>
<th>Hedge's g (95% CI)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Losada 2010</td>
<td>Group</td>
<td>118</td>
<td>3</td>
<td>-0.20 (-0.53, 0.13)</td>
<td>3.84</td>
</tr>
<tr>
<td>Chu 2011</td>
<td>Group</td>
<td>160</td>
<td>4</td>
<td>-0.12 (-0.50, 0.26)</td>
<td>3.22</td>
</tr>
<tr>
<td>O’Riordan 1998</td>
<td>Group</td>
<td>90</td>
<td>5</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>Hepburn 2001</td>
<td>Group</td>
<td>90</td>
<td>5</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>REACH-Birmingham 2003</td>
<td>Group</td>
<td>163</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>REACH-Birmingham 2003</td>
<td>Group</td>
<td>163</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>Callaghan-Thompson 2008</td>
<td>Individual</td>
<td>164</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>De Rottaso 2011</td>
<td>Individual</td>
<td>113</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>Callahan 2006</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
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<tr>
<td>Fortinsky 2009</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>Jansen 2011</td>
<td>Individual</td>
<td>132</td>
<td>6</td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td>-0.20 (-0.51, 0.12)</td>
<td>3.02</td>
</tr>
</tbody>
</table>

**NOTE:** Weights are from random effects analysis

### Reviewing screening principles

<table>
<thead>
<tr>
<th>Principles</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must be common</td>
<td>Yes</td>
</tr>
<tr>
<td>Must have sensitive and specific tests available for detection</td>
<td>Yes</td>
</tr>
<tr>
<td>Must have efficacious treatment</td>
<td>Unclear</td>
</tr>
<tr>
<td>If treatment exists, treated patients must have better outcomes than untreated patients</td>
<td>Unclear</td>
</tr>
<tr>
<td>Benefits from screening must outweigh the harms</td>
<td>Unclear</td>
</tr>
</tbody>
</table>
Recommendations

The USPSTF - current evidence is insufficient to assess the balance of benefits and harms of screening for cognitive impairment.

BUT also states “although the overall evidence on routine screening is insufficient, clinicians should remain alert to early signs or symptoms of cognitive impairment (for example, problems with memory or language) and evaluate as appropriate.”

Canadian Consensus Guidelines - no evidence for or against screening


Can help guide clinician decisions of when it may be appropriate to screen for cognitive impairment in the primary care setting.
Some Thoughts...

• Can Screen Patients when:
  • The person, family members, or others express concerns about changes in his or her memory or thinking
  • You observe problems/changes in the patient’s memory or thinking
  • The patient is age 80 or older

• Other risk factors: low education, history of type 2 diabetes, stroke, depression, and trouble managing money or medications.

• Refer to a specialist if needed
New Integrated Cognitive Test (ICA)

- *Cognetivity Neurosciences* waiting for approval for Health Canada
- App based - Clinical validation study ongoing
- ICA test has 5 steps and involves use of images from nature to assess a person’s short term memory
- May help screen for dementia early
Conclusion

• Unclear evidence demonstrating that screening for cognitive impairment improves health outcomes or important patient
• Not recommend for screening at this time
• Age is the biggest risk factor for cognitive impairment. Therefore, if screening is advisable, then using age to target cognitive screening is a reasonable strategy.
Questions and Discussion......

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Thank you for attending this webinar!

You will receive a quick evaluation survey by email – please share your suggestions for future sessions. A link to presentation slides and a recording will be provided.

And please join us for our next presentation, September 12 2018 at 12–1pm

Contact ken.wong@sunnybrook.ca to get on the mailing list for information on upcoming presentations.

Introduction to the Senior Alcohol Misuse Indicator (SAMI) Tool: A senior-friendly approach to screening for alcohol use in older adults

Dr. Bonnie Purcell, PhD, C.Psych
Behavioural Response Team, Geriatric Mental Health Program
London Health Sciences Centre

www.rgptoronto.ca