MILD COGNITIVE IMPAIRMENT: What it is & what to do about it

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Speaker Disclosure Form

Kelly Murphy

“I have had in the past 2 years, a financial interest, arrangement or affiliation with one or more organizations that could be perceived as a direct/indirect conflict of interest in the content of the subject of this or any other program.”

Objectives

• Describe MCI and why raising awareness is important
• Describe current research on behavioural intervention for MCI
MCI (mild cognitive impairment) or CIND (cognitive impairment no dementia)

<table>
<thead>
<tr>
<th>DIAGNOSTIC APPROACH</th>
<th>Recommended Grade</th>
<th>Evidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong>: a mild cognitive decline phase precedes most dementias</td>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td><strong>Diagnosis</strong>: cognitive decline suspected, MMSE range normal, objective cognitive decline noted on a sensitive screen or in-depth neuropsychological testing</td>
<td>B</td>
<td>2</td>
</tr>
</tbody>
</table>

Adapted from Box 1, CMAJ, 2008: 178, pg 1275
Mild Cognitive Impairment: A definition

MCI refers to a decline in thinking abilities, often involving memory, which is greater than expected for normal aging but not severe enough to interfere with a person’s ability to manage their daily activities.
# The Difference Between Normal Aging, MCI, & Dementia

<table>
<thead>
<tr>
<th></th>
<th>Normal Aging</th>
<th>MCI</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive Decline</strong>: some areas of cognition are below age-expectations.</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Functional Decline</strong>: support managing daily responsibilities is needed.</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
MCI Diagnostic Criteria

- Cognitive complaint, preferably corroborated
- Objective impairment in one or more cognitive areas, memory typically involved (referred to as amnestic-MCI)
- Preserved general cognitive ability
- Generally intact functional abilities (instrumental activities of daily living - iADLs)
- No dementia


- No medical or psychiatric conditions that could account for the memory impairment (if trying to pinpoint an etiology due to Alzheimer’s disease)

MCI subtypes

- Amnestic
  - Single domain
    - Alzheimer’s disease
    - Depression
  - Multiple domain
    - Alzheimer’s disease
    - Depression

- Non-amnestic
  - Single domain
    - Lewy-body disease
    - Vascular dementia
  - Multiple domain
    - Lewy-body disease
    - Frontal dementia
Determining MCI status

- Differentiate MCI from normal aging (sensitive tests)

- Differentiate MCI from early dementia (sensitive interview - impact on iADLS)
MCI Checklist

- Self or other - report of cognitive decline with significant inconveniences
- Passes basic cognitive screening
- No marked impairment in instrumental activities of daily living
- Reversible causes ruled out by physician
- Not related to psychiatric, developmental, or acquired brain injury
- Neuropsychological testing indicates MCI (ideal)
# Instrumental Activities of Daily Living (iADLs) Checklist

<table>
<thead>
<tr>
<th>iADL</th>
<th>Assistance?</th>
<th>Change from previous?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing finances</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Getting around town</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Taking medication</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Household chores</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Cooking</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Shopping</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Keeping track of appointments</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
</tbody>
</table>

Adapted from Murphy & Troyer, J Curr. Clin. Care, 2012: 3, pg7

For article go to [http://www.healthplexus.net/article/recognizing-dementia-can-be-tricky](http://www.healthplexus.net/article/recognizing-dementia-can-be-tricky)

For membership go to [http://www.healthplexus.net/physician](http://www.healthplexus.net/physician)
Raising Awareness

www.baycrest.org/livingwithmci
Progression of MCI to dementia

Petersen et al. (2001). Archives of Neurology: 58
## Clinical Practice Guidelines

CMAJ 2008;178(10):1273-85

### MCI (mild cognitive impairment) or CIND (cognitive impairment no dementia)

<table>
<thead>
<tr>
<th>Treatment Approach</th>
<th>Recommended Grade</th>
<th>Evidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Progression Risk</strong>: monitor over time.</td>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td><strong>Behavioural Intervention</strong>: recommend healthy lifestyle to include physical and cognitive activity.</td>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td><strong>Control Vascular Risk</strong>: screen for vascular risk factors and treat optimally.</td>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td><strong>Pharmacological Intervention</strong>: None recommended.</td>
<td>D</td>
<td>1</td>
</tr>
</tbody>
</table>

Adapted from Box 1, CMAJ, 2008: 178, pg 1275
Lifestyle choices impact dementia risk


**Exercise** – Kramer & Erickson, *TRENDS in Cog. Sci.*, 2010:11

**Cognitive Engagement** – Hertzog et al., Psychological Science, 2009:9

Aging, MCI, and Dementia

Cognitive ability

- Normal aging
- Mild cognitive impairment
- Dementia

Time

Normal function

Impaired function
Interventions for Memory Disorders

• Share similar foundations
  ➢ Cognitive and lifestyle intervention

• Research with the target population contributes critically to differences in content and delivery
Why behavioural intervention?

Research shows people with MCI can acquire new information and apply that learning to improve their performance on cognitive tasks.

FOR REVIEWS SEE:
Learning the Ropes for MCI™

Target Population & Format

Group intervention for people with MCI and their close family member

8, 2-hour sessions (6 weekly with follow-up at 1 & 3 mo.)

Detailed handouts with take home exercises

Hour 1
- MCI Education / Resources
- Lifestyle factors

Hour 2
- Memory Training (MCI)
- Psychosocial Intervention (Family)
# Group Demographics

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Age</td>
<td>76.0 ± 5.6</td>
<td>74.8 ± 7.7</td>
</tr>
<tr>
<td>Education</td>
<td>15.2 ± 3.3</td>
<td>14.3 ± 3.1</td>
</tr>
<tr>
<td>Male:Female</td>
<td>11:13</td>
<td>11:13</td>
</tr>
</tbody>
</table>

Troyer, Murphy, Anderson, Craik & Moscovitch. Neuropsych. Rehab., 2008:18
Improved knowledge & application of memory strategies

Troyer, Murphy, Anderson, Craik & Moscovitch. Neuropsych. Rehab., 2008:18
## Individual outcomes

<table>
<thead>
<tr>
<th></th>
<th>Benefit</th>
<th>No benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Control</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>

**NNT = 2.4**

Predictors of outcome

Age
Education
Sex
Mood

Attendance
Strategy exercises
Family involvement

• Intelligence
• Overall cognition
• Memory
• Attention
• Cognitive flexibility
## Predictors of outcome

<table>
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<th>Age</th>
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<th>Sex</th>
<th>Mood</th>
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- Intelligence
- Overall cognition
- Memory
- Attention
- Cognitive flexibility

- Attendance
- Strategy Exercises
- Family involvement
Current Research Influences on Program Content and Delivery

• Memory Training
  - Targeting impaired and preserved memory processes

• Lifestyle Factors
  - Leisure activities

• Needs of family members
People with aMCI are specifically less able to make associations between items.

Troyer, Murphy, Anderson, Craik, Moscovitch, Maione, & Gao. Neuropsychologia, 2012:50
Past experience influences cognitive performance in MCI more so than in matched controls (implicit memory)

Rowe, Troyer, Murphy, Hasher & Biss (in prep)
Impact on Content & Delivery

Increased emphasis on:

1. Semantic elaboration strategies
   - Identifying connections, meanings, and relationships based on prior knowledge

2. Use of role play to solve practical memory problems
   - Use past experiences to cue appropriate strategy application
# Everyday Impact of Memory Change

<table>
<thead>
<tr>
<th>Themes</th>
<th>Normal Aging</th>
<th>MCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings &amp; Views About Self</td>
<td>• Frustrated</td>
<td>• Frustrated</td>
</tr>
<tr>
<td></td>
<td>• Disappointed</td>
<td>• Disappointed</td>
</tr>
<tr>
<td></td>
<td>• Reduced confidence</td>
<td>• Reduced confidence</td>
</tr>
<tr>
<td></td>
<td>• Self-acceptance</td>
<td>• Self-acceptance</td>
</tr>
<tr>
<td>Social &amp; Interpersonal Relationships</td>
<td>• Memory partners</td>
<td>• Increased reliance on others</td>
</tr>
<tr>
<td></td>
<td>• Increased empathy for peers</td>
<td>• Social withdrawal &amp; exclusion</td>
</tr>
<tr>
<td>Leisure Activities</td>
<td>• Increased</td>
<td>• Stopped or decreased</td>
</tr>
<tr>
<td>Behavioural Compensation</td>
<td>• Increased</td>
<td>• Increased</td>
</tr>
</tbody>
</table>
Impact on Content & Delivery

Increased emphasis on **leisure activities**

- Identifying barriers to participation
- Solutions to barriers
Commonly reported functional memory problems:

- Names of people, places,
- Misplacing things
- Keeping track of schedule of commitments
- Misplacing things
- Forgetting to carry out an intended activity
- Numbers & passwords
- Remembering what was said or decided upon

Also see Ahmed et al., *Alzheimer’s Disease & Ass. Dis.*, 2008:22
Problem: I frequently misplace my cell phone

How would you rate your current **performance** or ability in dealing with this problem?

1  2  3  4  5  6  7  8  9  10

Not able to do it  Can do it extremely well

How **satisfied** are you with the way you currently handle this problem?

1  2  3  4  5  6  7  8  9  10

Not able to do it  Can do it extremely well

Self-report of improved functional memory skills in people with MCI

Intervention Pilot (n=55)

- Performance
- Satisfaction

Intervention (n=15)

Control (n=9)
Problems identified by family can have negative consequences

Mood
Physical Health

Garand et al., *Int.J. Geriatric Psychiatry*, 2005:20
Impact on Content and Delivery

Research examining needs of family:

• Education (MCI, future possibilities, & resources)
• Strategies for dealing with problems (adaptive coping and mastery)
• Support (shared experiences)

Blieszner & Roberto, The Gerontologist, 2010:50
Garand et al., Int.J. Geriatric Psychiatry, 2005:20
Shaughnessy, Moore, Troyer, & Murphy, in prep.
Commonly Reported Problems
associated with living with a relative who has MCI

• **Frustration / Resentment**
  – being asked the same question,
  – having to assist with something he/she should know how to do (e.g., looking up movie times on internet).

• **Worry**
  – over likelihood of learning a new responsibility
  – over what will happen if their loved one gets dementia
  – how much help to provide

• **Sense of Loss**
  – For the way things used to be
Problem: I feel frustrated when my spouse repeats questions I already answered.

How would you rate your current **performance** or ability in dealing with this problem?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<td>Can do it extremely well</td>
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How **satisfied** are you with the way you currently handle this problem?

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</tbody>
</table>

Improved ability managing challenges related to living with a person with MCI

Intervention Pilot (n=25)

Performance

Satisfaction

+2 (clinically significant)

+1

≤0

Treatment (n=3)

Control (n=5)
Positive Lifestyle Change
Post-Program Participation

% of respondents

MCI

Family

Yes

No
Types of Reported Lifestyle Changes

**MCI**
- Stress Management: 16%
- Exercise: 28%
- Diet: 19%
- Engagement: 37%

**Family**
- Stress Management: 38%
- Exercise: 19%
- Diet: 14%
- Engagement: 29%
Participant Feedback

MCI

- increased confidence
- better functional memory
- 95% recommend program ($n = 107$)

Family

- decreased worry
- improved skill at managing change
- 97% recommend program ($n = 82$)
Overview of intervention effectiveness – Learning the Ropes for MCI

• Increased knowledge (memory strategy)
• Increased daily strategy application
• Improved functional memory
• Positive lifestyle changes
• Improved ability to manage change
• High participant satisfaction
Current Directions

Research Focus: RCT evaluating program influence in
a) effecting positive change in healthy lifestyle behaviours,
b) improving *functional* memory in MCI participants, and
c) fostering adaptive coping skills in close family

Dissemination: Making program materials available to other health professionals / centres.

www.baycrest.org/care-programs-57.php

OR

www.learningtheropesformci.com
Learning the Ropes for Mild Cognitive Impairment™

(formerly the Memory Intervention Program)

Learning the Ropes for Mild Cognitive Impairment™ is a program focused on optimizing cognitive health through lifestyle choices, memory training, and psychosocial support.

Learning the Ropes is aimed at older adults and their close family members/friends, who are living in the community, and are experiencing Mild Cognitive Impairment (MCI). MCI refers to cognitive decline, commonly involving memory that is greater than expected for age, but does not markedly compromise independence in carrying out daily responsibilities.

Program content includes:

- **Education about MCI and lifestyle factors** for promoting cognitive health and reducing risk of dementia.
- **Memory training** involving practical strategies aimed at improving everyday remembering, such as memory for names, appointments, location of items, and things to do.
- **Family support** focused on discovering approaches for effectively living with a relative experiencing MCI.

**Eligibility:** Physician referral required. [Referral form](#)

**Fee:** OHIP covered

[Learning the Ropes™ program brochure](#)

**New book** Living with Mild Cognitive Impairment

Contact information: 416-785-2500 ext. 2445

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