RAI-MDS 2.0 Outcome Scales Reference Guide

Types of Care

Canadian Institute for Health Information
Institut canadien d'information sur la santé

Our Vision

Better data. Better decisions.
Healthier Canadians.

Our Mandate

To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

Our Values

Respect, Integrity, Collaboration, Excellence, Innovation

Table of Contents

Introduction

The RAI-MDS 2.0 assessment is used to assess persons in residential care facilities. Upon completing the assessment, clinicians build person-centred care plans using embedded clinical outputs that provide evidence-based information.

Each outcome scale describes the resident in certain standardized clinical areas, such as depression, cognitive performance and activities of daily living (ADLs). In developing the outcome scales, interRAI validated the scales against gold standard measures, where available. Some of the outcome scales, such as the Depression Rating Scale (DRS) and the Cognitive Performance Scale (CPS), are used in the calculation of the Clinical Assessment Protocols (CAPs).

On admission to a residential care facility, a person's baseline scores are generated from the admission assessment. The scores can be compared quarterly to monitor changes over time and to see whether the interventions put into place have been effective. At an aggregate level, the Canadian Institute for Health Information (CIHI) provides users submitting to the Continuing Care Reporting System (CCRS) with access to outcome scales reports in CCRS eReports. This information can be used for quality improvement initiatives, program planning and resource allocation.[i]

This document provides the following information for each outcome scale:

- A description;
- Items used in the calculation; and
- An example describing a person with a specific score.

i. For more information on how to access CCRS eReports, contact us at ccrs@cihi.ca. Learn more about CCRS eReports and how to build reports by visiting the CIHI Learning Centre at www.cihi.ca.

Aggressive Behaviour Scale

The Aggressive Behaviour Scale (ABS) is a summary scale that provides a measure of aggressive behaviour. Scale scores range from 0 to 12, with higher scores indicating greater frequency and intensity of aggressive behaviour.

The following items are used to calculate the ABS:

- Verbally Abusive
- Physically Abusive
- Socially Inappropriate/Disruptive Behaviour
- Resists Care

The behavioural symptoms are coded according to symptom frequency exhibited in the last seven days. The codes are summed to give the ABS score.

Coding

- Code 0 = Behaviour not exhibited in last seven days
- Code 1 = Behaviour of this type occurred on one to three days in last seven days
- Code 2 = Behaviour of this type occurred on four to six days but less than daily
- Code 3 = Behaviour of this type occurred daily

The following descriptors help users interpret the ABS scores.

Descriptor	ABS Score
None	0
Moderate	1–2
Severe	3–5
Very severe	6–12

Example

The vignette below is an example of a person whose ABS score is **5 out of 12**.

Mrs. C screamed at the staff when she was lowered into the tub on two of the last seven days. She struck out at another person at the dining table twice yesterday, and she made disruptive sounds every morning in the past seven days.

RAI-MDS 2.0 Items Used to Calculate the ABS	Coding for Mrs. C	Score
Verbally Abusive (E4b)	1	Count 1
Physically Abusive (E4c)	1	Count 1
Socially Inappropriate/Disruptive Behaviour (E4d)	3	Count 3
Resists Care (E4e)	0	
		5 out of 12

Activities of Daily Living Self-Performance Hierarchy Scale

The ADL Self-Performance Hierarchy Scale reflects the disablement process by grouping ADL performance levels into discrete stages of loss. Early-loss ADLs are assigned lower scores than late-loss ADLs. Scale scores range from 0 to 6, with higher scores indicating greater decline (progressive loss) in ADL performance.

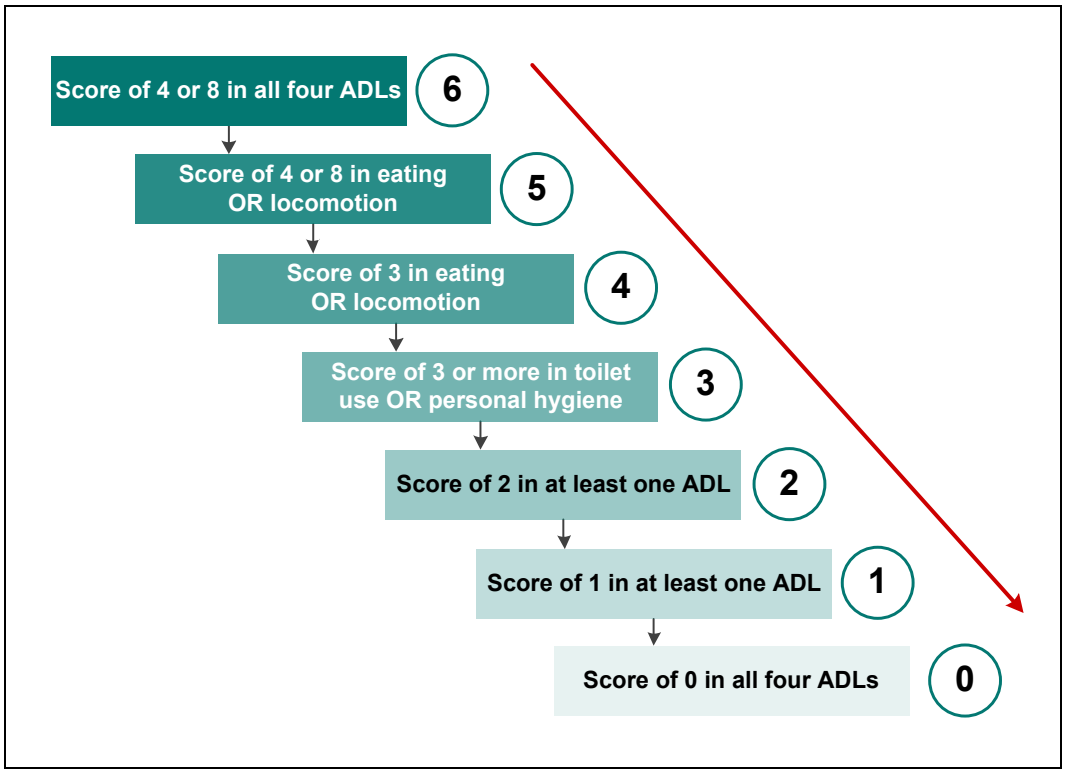
Four ADL items are used to calculate the ADL Self-Performance Hierarchy Scale. These items are coded according to self-performance in the last seven days:

Early Loss	Middle Loss	Late Loss
Personal Hygiene	Toilet Use	Eating
	Locomotion	

Coding

- Code 0 = Independent
- Code 1 = Supervision
- Code 2 = Limited assistance
- Code 3 = Extensive assistance
- Code 4 = Total dependence
- Code 8 = Activity did not occur in the last seven days

The following decision tree helps users understand the calculation of the ADL Self-Performance Hierarchy Scale.



Source
Adapted from Morris J, Fries B, Morris S. Scaling ADLs with the MDS. *J Gerontol*. 1999;54A(M):546-553.

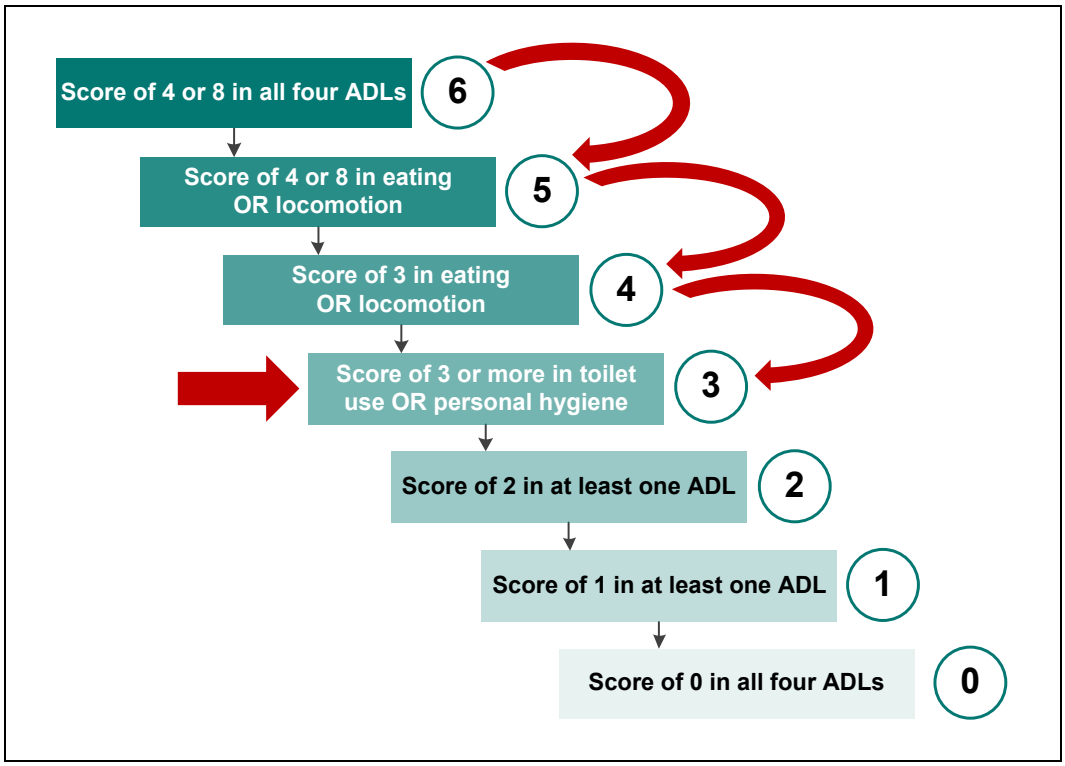
Example

The vignette below is an example of a person whose ADL Self-Performance Hierarchy Scale score is **3 out of 6**.

Mr. D required assistance from staff to comb his hair and brush his teeth each morning over the past week. Mr. D used a wheelchair to get from his room to the dining room. He required cueing each time he returned to his bedroom from the dining room. He managed eating and drinking independently, requesting assistance only with cutting his meat. When awake, Mr. D used the toilet regularly, requesting assistance only with zipping/unzipping his pants. However, the last three nights, due to hip pain, he was unable to get out of bed and was incontinent. The nurse had to provide weight-bearing assistance to help Mr. D change his pyjamas and complete his peri care.

RAI-MDS 2.0 Items Used to Calculate the ADL Self-Performance Hierarchy Scale	Coding for Mr. D
Personal Hygiene (G1jA)	2
Toilet Use (G1iA)	3
Locomotion (G1eA)	1
Eating (G1hA)	0

Start at the top of the decision tree; the steps represent each score of the scale. Based on the coding of the four assessment items for Mr. D, he did not meet the criteria for scores 6, 5 or 4. Score 3 requires Mr. D to meet one of two criteria: a code of 3 or more for either toilet use or personal hygiene. Toilet use was coded 3 for Mr. D. Therefore, his ADL Self-Performance Hierarchy Scale score is 3.



Source
Adapted from Morris J, Fries B, Morris S. Scaling ADLs with the MDS. *J Gerontol*. 1999;54A(M):546-553.

Activities of Daily Living Long Form Scale

The ADL Long Form Scale is a summative scale that provides a measure of a person's ability to perform ADLs. Higher scores indicate more impairment of self-sufficiency in ADL performance. The ADL Long Form Scale is more sensitive to clinical changes than the other ADL scales.

Seven ADL items are used to calculate the ADL Long Form Scale:

- Bed Mobility
- Transfer
- Locomotion on Unit
- Dressing
- Eating
- Toilet Use
- Personal Hygiene

The items are coded according to self-performance in the last seven days. They are then summed to give an ADL Long Form Scale score of 0 to 28.

Coding

- Code 0 = Independent
- Code 1 = Supervision
- Code 2 = Limited assistance
- Code 3 = Extensive assistance
- Code 4 = Total dependence
- Code 8 = Activity did not occur in the last seven days

Example

The vignette below is an example of a person whose ADL Long Form Scale score is **9 out of 28**.

Mr. D required assistance from staff to comb his hair and brush his teeth each morning over the past week. Mr. D used a wheelchair to get from his room to the dining room. He required cueing each time he returned to his bedroom from the dining room. He managed eating and drinking independently, requesting assistance only with cutting his meat. When awake, Mr. D used the toilet regularly, requesting assistance only with zipping/unzipping his pants. However, the last three nights, due to hip pain, he was unable to get out of bed and was incontinent. The nurse had to provide weight-bearing assistance to help Mr. D change his pyjamas and complete his peri care.

Mr. D moved independently in his bed during all shifts. He transferred from his wheelchair to his bed and vice versa each day last week without any assistance; however, this morning he asked the personal care worker to help him move from his bed to his wheelchair because he felt unsteady due to the pain in his hip. Although very independent, Mr. D received assistance with dressing and undressing every day last week: he required weight-bearing assistance for donning and removing his right leg prosthesis.

RAI-MDS 2.0 Items Used to Calculate the ADL Long Form Scale	Coding for Mr. D	Score
Bed Mobility (G1aA)	0	
Transfer (G1bA)	0	
Locomotion on Unit (G1eA)	1	Count 1
Dressing (G1gA)	3	Count 3
Eating (G1hA)	0	
Toilet Use (G1iA)	3	Count 3
Personal Hygiene (G1jA)	2	Count 2
		9 out of 28

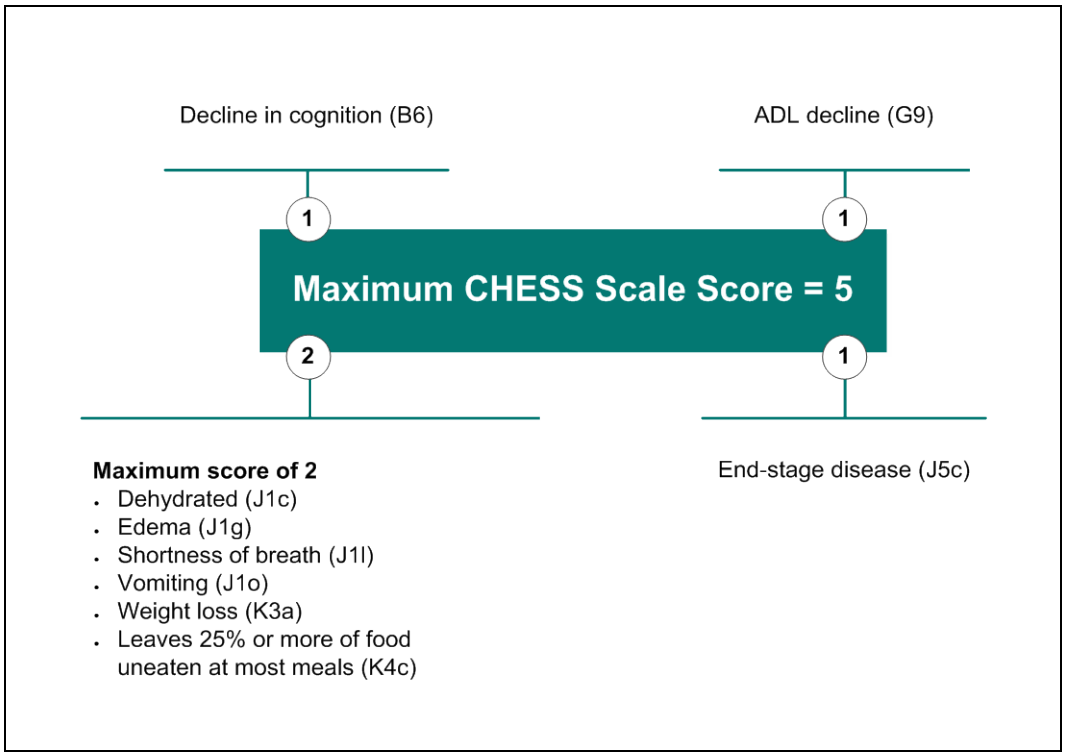
Changes in Health, End-Stage Disease, Signs and Symptoms Scale

The Changes in Health, End-Stage Disease, Signs and Symptoms (CHESS) Scale detects frailty and health instability and was designed to identify residents at risk of serious decline. Higher scores indicate higher levels of medical instability and are associated with adverse outcomes such as mortality, hospitalization, pain, caregiver stress and poor self-rated health. The CHESS Scale scores range from 0 to 5.

Nine items are used to calculate the CHESS Scale:

- Change in Cognitive Status
- Change in ADL Function
- End-stage disease
- Edema
- Shortness of breath
- Vomiting
- Dehydrated
- Weight loss
- Leaves 25% or more of food uneaten at most meals

The following diagram illustrates the calculation of the CHESS Scale. As depicted, the CHESS Scale is calculated by adding sign and symptom variables up to a maximum score of 2, and then adding three other variables (change in decision-making, change in ADL status and end-stage disease).



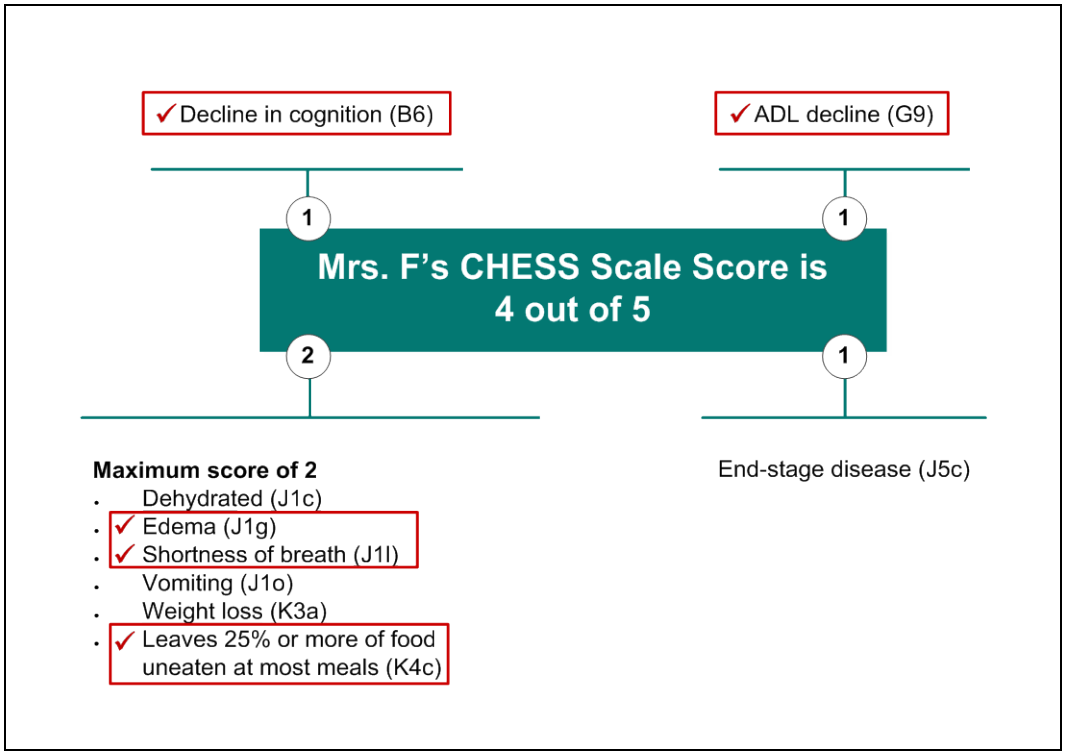
Example

The vignette below is an example of a person whose CHESS Scale score is **4 out of 5**.

Compared with three months ago, Mrs. F's ability to complete her ADLs has deteriorated. Staff noticed that her short-term memory is not as good and that she is having more difficulty making decisions about her daily routine. In the past week, staff noticed that she was short of breath when walking even short distances. Last night, her daughter reported there was swelling in both of her lower legs when helping her to undress. The nursing staff noticed that Mrs. F left about a third of her breakfast and lunch meals uneaten in the past seven days.

RAI-MDS 2.0 Items Used to Calculate the CHESS Scale	Coding for Mrs. F	Score
Change in Cognitive Status (B6)	2 (Deteriorated)	Count 1
Change in ADL Function (G9)	2 (Deteriorated)	Count 1
End-stage disease (J5c)	Unchecked	
Edema (J1g)	Checked	Count 2
Shortness of breath (J1l)	Checked	
Vomiting (J1o)	Unchecked	
Dehydrated (J1c)	Unchecked	
Weight loss (K3a)	Unchecked	
Leaves 25% or more of food uneaten at most meals (K4c)	Checked	
		4 out of 5

Using the decision tree, note that the score is 4 out of 5 for Mrs. F. B6 and G9 are assigned 1 point each, as Mrs. F's cognition and ADL functions declined. J1g, J1l and K4c are assigned 2 points, because she showed symptoms of edema, shortness of breath and leaving food uneaten.



Cognitive Performance Scale

The Cognitive Performance Scale (CPS) is a hierarchical index used to rate a person's cognitive status. The scale scores range from 0 to 6, with higher scores indicating more severe impairment.

Five items are used to calculate the CPS:

- Coma
- Cognitive Skills for Daily Decision-Making
- Short-term memory
- Making Self Understood
- Eating

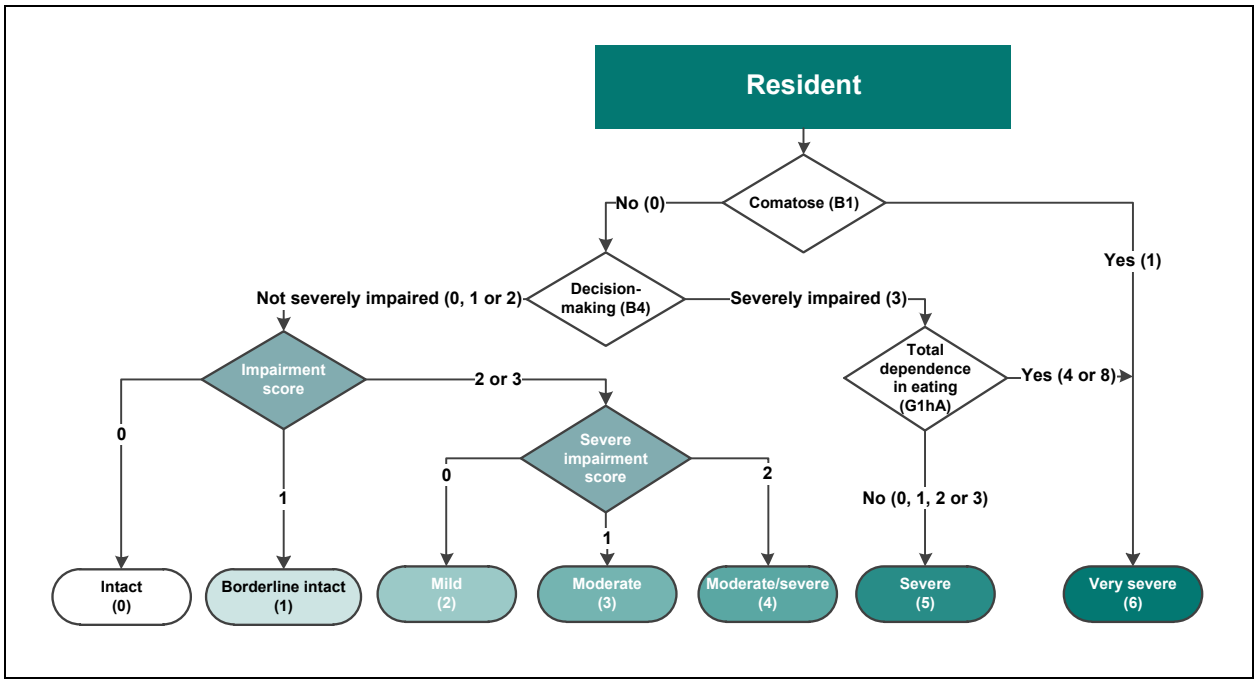
To calculate the CPS score, an *impairment* score of 0 to 3 is calculated first:

- 1 point is assigned if cognitive skills for daily decision-making = 1 or 2
- 1 point is assigned if making self understood = 1, 2 or 3
- 1 point is assigned if short-term memory = 1

Next, a *severe impairment* score is calculated:

- 1 point is assigned if cognitive skills for daily decision-making = 2
- 1 point is assigned if making self understood = 2 or 3

The following decision tree illustrates how the CPS score is determined:



Source
Morris JN, Fries BE, Mehr DR, Hawes C, Philips C, Mor V, Lipsitz L. MDS Cognitive Performance Scale. *J Gerontol: Med Sci*. 1994;49(4):M174-M182.

Example

The vignette below is an example of a person whose CPS score is **1 out of 6**.

Mr. G was alert and appeared to recall information from recent conversations. Daily over the past seven days, he selected his clothes, made his menu choices appropriately and decided on his own to attend bingo and exercise class. Staff reported that Mr. G has difficulty finding words when interacting with others.

RAI-MDS 2.0 Items Used to Calculate the CPS	Coding for Mr. G
Comatose (B1)	0 (No)
Short-term memory (B2a)	0 (Memory OK)
Cognitive Skills for Daily Decision-Making (B4)	0 (Independent)
Making Self Understood (C4)	1 (Usually understood)
Eating (G1hA)	0 (Independent)

To calculate the CPS score, an *impairment* score of 0 to 3 is calculated first:

- 0 points are assigned, as Mr. G's cognitive skills for daily decision-making = 0.
- 1 point is assigned, as Mr. G's making self understood = 1.
- 0 points are assigned, as Mr. G's short-term memory = 0.

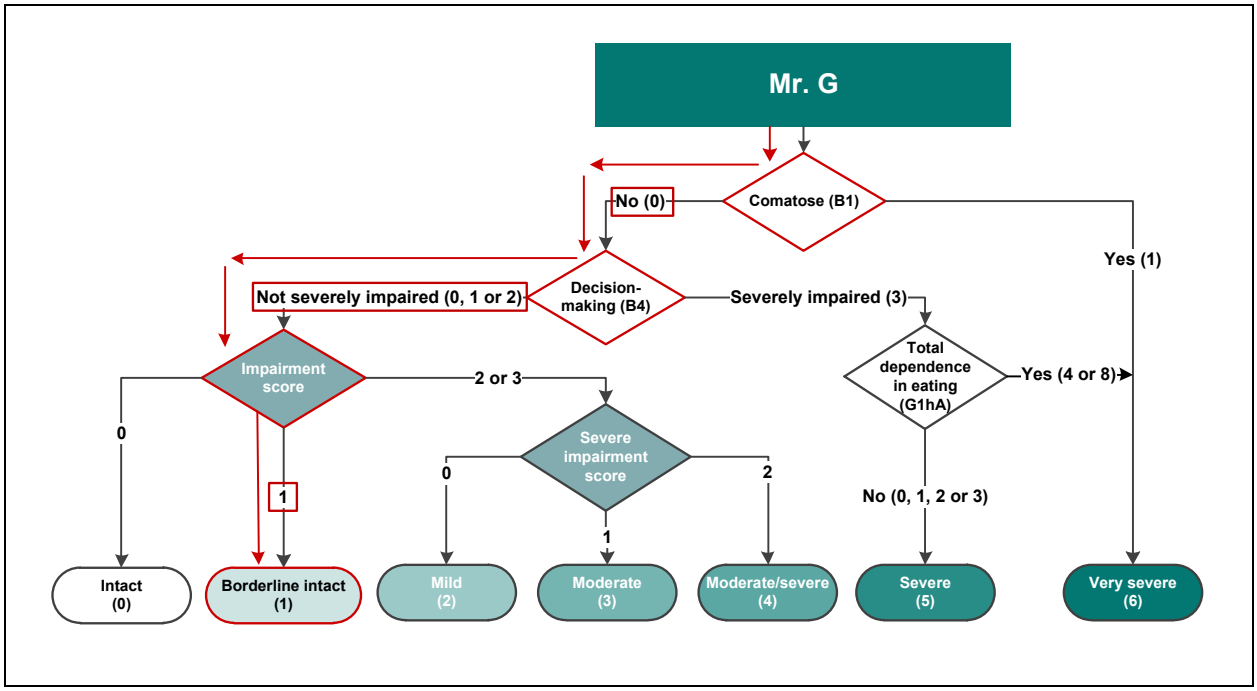
Impairment score for Mr. G = 1

Next, a *severe impairment* score is calculated:

- 0 points are assigned, as Mr. G's cognitive skills for daily decision-making = 0.
- 0 points are assigned, as Mr. G's making self understood = 1.

Severe impairment score for Mr. G = 0

Using the decision tree below, note how Mr. G's CPS score is calculated as **1 out of 6**.



Source
Morris JN, Fries BE, Mehr DR, Hawes C, Philips C, Mor V, Lipsitz L. MDS Cognitive Performance Scale. *J Gerontol: Med Sci*. 1994;49(4):M174-M182.

Depression Rating Scale

The Depression Rating Scale (DRS) is a summative scale that can be used as a clinical screen for depression. A score of 3 or more may indicate a potential or actual problem with depression.

Seven items (indicators of depression, anxiety and sad mood) are coded according to symptom frequency in the last 30 days:

- Resident made negative statements
- Persistent anger with self/others
- Expressions of unrealistic fears
- Repetitive health complaints
- Repetitive anxious complaints
- Sad, pained, worried facial expressions
- Crying, tearfulness

The codes are summed to give a DRS score of 0 to 14.

Coding

- Code 0 = Behaviour not exhibited in last 30 days
- Code 1 = Behaviour of this type exhibited up to 5 days a week
- Code 2 = Behaviour of this type exhibited daily or almost daily (6 or 7 days)

Example

The vignette below is an example of a person whose DRS score is **5 out of 14**.

Every morning, Mrs. H expresses concern about her bowels and anticipates she will experience some nausea after eating her breakfast. She cried and stated that she was ready to “leave this world” at least two to three times in the last week. Staff noticed a difference in her mood on the weekend when she had visitors; even her face looked less sad.

RAI-MDS 2.0 Items Used to Calculate the DRS	Coding for Mrs. H	Score
Resident made negative statements (E1a)	1	Count 1
Persistent anger with self/others (E1d)	0	
Expressions of unrealistic fears (E1f)	0	
Repetitive health complaints (E1h)	2	Count 2
Repetitive anxious complaints (E1i)	0	
Sad, pained, worried facial expressions (E1l)	1	Count 1
Crying, tearfulness (E1m)	1	Count 1
		5 out of 14

interRAI Pressure Ulcer Risk Scale

The interRAI Pressure Ulcer Risk Scale (interRAI PURS) identifies residents at various levels of risk for developing a pressure ulcer with the objective of targeting risk factors for prevention. The interRAI PURS scores range from 0 to 8, with higher values reflecting a higher relative risk of developing a new pressure ulcer.

The following interRAI PURS descriptors help users interpret the scoring values.

Descriptor	interRAI PURS Score
Very low	0
Low	1–2
Moderate	3
High	4–5
Very high	6–8

Seven items are used to calculate the interRAI PURS:

- Bowel Continence
- Bed Mobility Self-Performance
- Walk in Room Self-Performance
- Weight loss
- History of Resolved/Cured Ulcers
- Pain Symptoms Frequency
- Shortness of breath

Example

The vignette below is an example of a person whose interRAI PURS score is **5 out of 8**.

Since being diagnosed with bone cancer six months ago, Mr. M has lost 8.2 kg (10% of his weight). Even with regular administration of analgesics, he reported having back pain every morning when he woke up. Staff noticed that he was more short of breath in the past week when he walked on the unit. Mr. M no longer has a pressure ulcer; it healed two months ago.

RAI-MDS 2.0 Items Used to Calculate the interRAI PURS	Coding for Mr. M	Conditions	Score
Bowel Continence (H1a)	0	If coded 2, 3 or 4, count 1	
Bed Mobility Self-Performance (G1aA)	0	If coded 3, 4 or 8, count 1	
Walk in Room Self-Performance (G1cA)	0	If coded 3, 4 or 8, count 1	
Weight loss (K3a)	1	If coded 1, count 1	Count 1
History of Resolved/Cured Ulcers (M3) or Pressure ulcer (M2a)*	1	If coded 1, count 2	Count 2
Pain Symptoms Frequency (J2a)	2	If coded 2, count 1	Count 1
Shortness of breath (J1l)	Checked	If checked, count 1	Count 1
			5 out of 8

Note
* Quarterly assessment.

Index of Social Engagement

The Index of Social Engagement (ISE) is a summative scale that describes a resident's sense of initiative and social involvement within the facility. Higher scores indicate a higher level of social engagement.

Six items in Section F1 (Sense of Initiative/Involvement) are checked according to presence in the last seven days. They are then summed to give a possible ISE score of 0 to 6:

- At ease interacting with others
- At ease doing planned or structured activities
- At ease doing self-initiated activities
- Establishes own goals
- Pursues involvement in the life of facility
- Accepts invitations into most group activities

Example

The vignette below is an example of a person whose ISE score is **4 out of 6**.

Mrs. T was observed enjoying being with and around staff and residents. Her husband visited three times last week and took her to bingo and to watch a movie, both of which she enjoyed. Each Sunday morning, the staff encouraged Mrs. T to attend the church service in the chapel with a volunteer. She also eagerly participated in other recreation activities throughout the week.

RAI-MDS 2.0 Items Used to Calculate the ISE	Coding for Mrs. T	Score
At ease interacting with others (F1a)	Checked	1
At ease doing planned or structured activities (F1b)	Checked	1
At ease doing self-initiated activities (F1c)	Unchecked	
Establishes own goals (F1d)	Unchecked	
Pursues involvement in the life of facility (F1e)	Checked	1
Accepts invitations into most group activities (F1f)	Checked	1
		4 out of 6

Pain Scale

The Pain Scale summarizes the presence and intensity of pain. Higher scores indicate more severe pain.

Frequency and intensity of pain are coded according to the highest level of pain over the last seven days. Pain Scale scores range from 0 to 3.

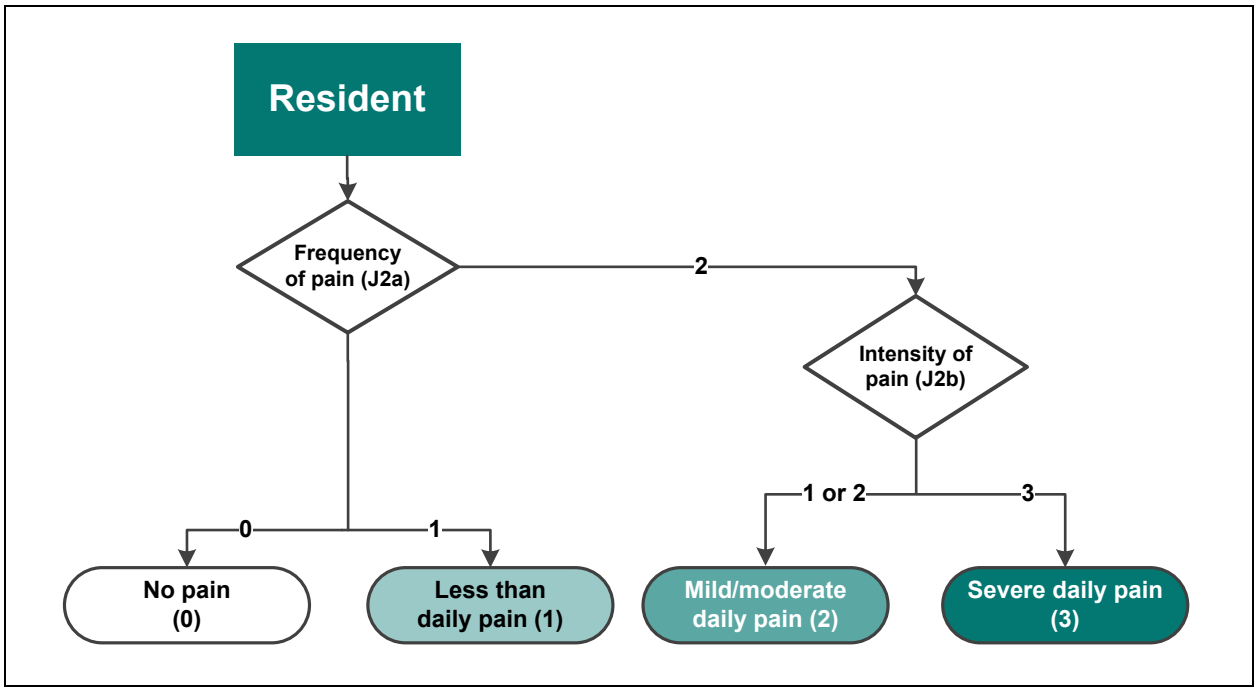
Coding frequency of pain

- Code 0 = No pain
- Code 1 = Pain less than daily
- Code 2 = Pain daily

Coding intensity of pain

- Code 1 = Mild pain
- Code 2 = Moderate pain
- Code 3 = Times when pain is horrible or excruciating

The following decision tree illustrates how the Pain Scale score is determined. Note that if a person is coded 0 or 1 for pain frequency, pain intensity is not used to calculate the Pain Scale.



Source
Fries BE, Simon SE, Morris JN, Flodstrom C, Bookstein FL. Pain in U.S. nursing homes: validating a Pain Scale for the Minimum Data Set. *Gerontologist.* 2001;41(2):173-179.

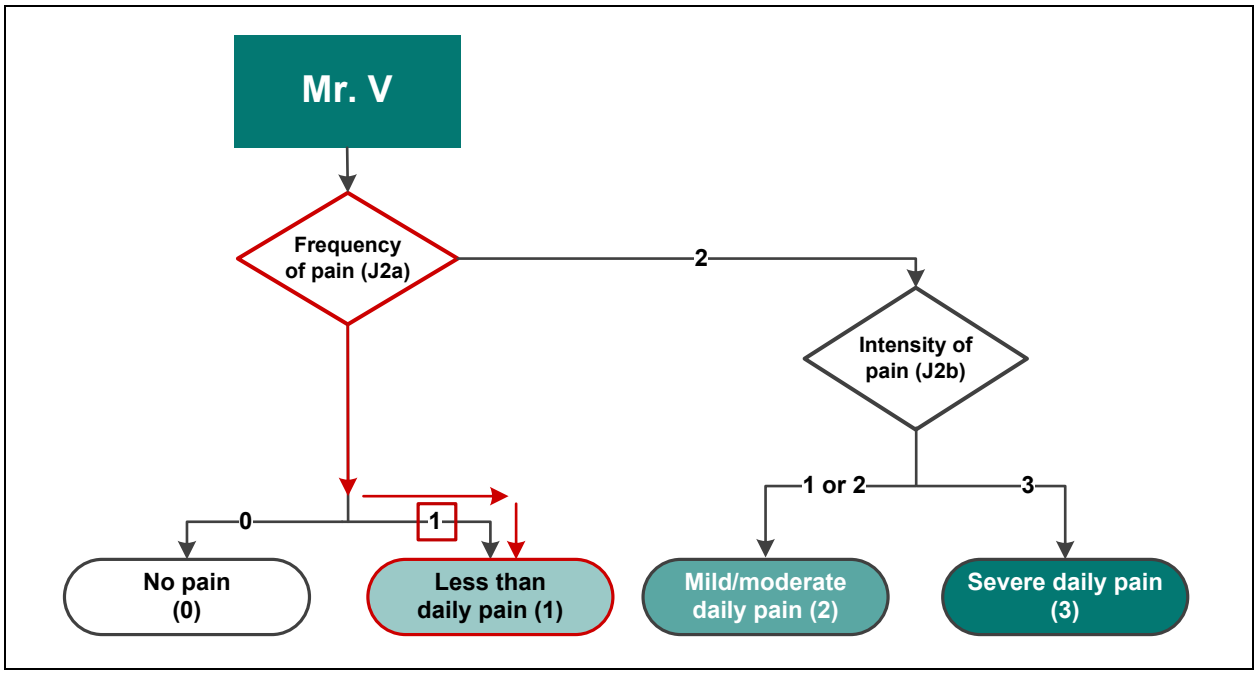
Example

The vignette below is an example of a person whose Pain Scale score is **2 out of 3**.

Mr. V complained of chest pain three times last week. When asked to describe his pain, he said it was not horrible like the week before, so he would describe it as moderate pain.

RAI-MDS 2.0 Items Used to Calculate the Pain Scale	Coding for Mr. V
Frequency of pain (J2a)	1
Intensity of pain (J2b)	2

Using the decision tree below, note how Mr. V's Pain Scale score is calculated as **1 out of 3**.



Source
Fries BE, Simon SE, Morris JN, Flodstrom C, Bookstein FL. Pain in U.S. nursing homes: validating a Pain Scale for the Minimum Data Set. *Gerontologist.* 2001;41(2):173-179.

How Outcome Scales Can Be Used

Outcome scales data is available in CCRS eReports both to trend your organization's information over time and to compare with peers and the province/territory. When used at an aggregate level, outcome scales provide information for quality improvement initiatives, program planning and resource allocation.

The outcome scales can be used to measure the functional status of groups of persons. For example, a manager may look at how many persons on a specific unit have a CPS score of 3 or higher to better understand the population. He or she may use this information to plan staff allocation. Reviewing outcome scales scores over time allows managers to see improvements and deteriorations in conditions, and helps them determine the effectiveness of care plans, thus providing evidence-based information for program planning. For example, a manager who observes an increase in the number of persons with interRAI PURS scores of 3 or higher over a period of time might use this information to determine quality initiatives for the following fiscal year.

Used in conjunction with other RAI-MDS 2.0 clinical outputs, like interRAI CAPs, quality indicators and Resource Utilization Groups, outcome scales offer clinicians, managers, policy-makers and researchers rich information about persons in residential care in Canada, with the goal of improving quality of life and quality of care.

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