Towards Harmonised Practice: the Why, What and How of Collecting Standardised Outcome Measures

“Value in Rehabilitation through a Common Language for All”

SINGAPORE INSTITUTE OF TECHNOLOGY

One-Rehab

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This document has been created as an accompanying document to the National One-Rehabilitation framework 2019 document (1st edition) and the One-Rehabilitation workshop. It is developed to equip therapists with the knowledge and skills to conduct standardised outcome measures used in the One-Rehabilitation framework.

SECTION 1: WHY are we collecting these outcome measures?

Background

With our ageing population and declining old-age support ratio in the years to come, the prevalence of disability is expected to rise along with the burden and cost of care. In 2018, MOH surveyed more than 1,300 patients/clients, allied health professionals, doctors across the primary, acute and community care settings.

The survey highlighted gaps in 4 areas of the current rehab system:

Lack of information transfer & consistency	Information Asymmetry & Perception	Financial Barriers	Capacity and Capability
• No common rehab triage framework/ referral protocol • Lack of objective and continuous outcomes tracking • Poor information transfer	• Patients and clinicians not aware of therapy services in community • Clinicians are unaware/ perceive that the referral process to community is cumbersome	• Patients' out-of-pocket at public hospitals could be cheaper than in community settings • Some patients may not have incentive to shift from hospitals into the community if their out-of-pocket is cheaper in the hospitals	• Room to enhance rehab manpower, and upskill and align rehab skillsets in community • Space in community may not be designed optimally for MSK Therapy patients

Among the survey returns, notable inputs from the below stakeholders included:

On why a patient prefers to be seen in hospital
Record is in the hospital.
Acute hospitals have medical team and rehab doctors who can more accurately measure my progress in therapy and how to help me improve further.

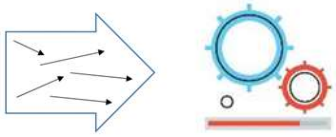
On the current gaps in rehab
Common clinical outcome and track outcome across continuum.

To develop recommendations for a national rehabilitation framework, a One-Rehab Implementation & Coordination Committee (I&CC) was formed from 2018-2020, comprising allied health professionals, nurses, physicians, administrators from the community and social sector, public hospitals, and polyclinics.

Where relevant, desired changes for these models of care would be achieved through:

1. Providing timely and appropriate care to patients, right sited in the community or SOC.

2. Standardising rehab and care pathways and measuring patient outcomes systematically and objectively



3. Refining guidelines and processes to facilitate transition of care across settings

4. Strengthening partnerships between acute & community providers to improve and ensure quality rehab care across patient journeys.

5. Increasing communication and capabilities of community rehab therapists and support care staff.

6. Empowering patients and raise awareness on benefits of rehab.

""The National One-Rehab (framework) aims to bring everyone together, have a common language in tracking patient outcomes, so we are able to learn from one another."

Ms Tan Bee Yee
Director, Allied Health, SingHealth Community Hospitals
Deputy Group Director, Allied Health (Academic and Professional Development), SingHealth

WHY are these outcome measures chosen and harmonised?

Usual outcome measures are assessments conducted to measure change in a patient's performance. They form part of the clinical care received by patients, and are useful for

a) informing patients of their progress,
b) setting goals with patients,
c) selecting treatments that would lead to better outcomes for patients,
d) measuring the efficacy of your treatments,
e) recognising if treatment modification, or referral to other professionals are required,
f) communicating patients' condition/status to colleagues when handing over.

The I&CC recommended a set of harmonised One-Rehab outcome measures to be tracked via an IT Care Plan at admission and discharge from every rehab setting. This created a common language for care, with the added advantages of

g) communicating patients' condition/status to your colleagues in different settings when handing over, reducing the duplication in history-taking,
h) providing your patients/clients and you with data-driven guidance on care decisions and rehab journeys.
i) identifying areas of improvement within your care/service,
j) benchmarking and exchange of knowledge/information between clinicians and institutions, and
k) demonstrating the value and impact of your care/service to your organizations and funding bodies.

The outcome measures used in the One-Rehabilitation framework have been chosen as they meet most of the following criteria.

- Measure outcomes that are important to patients,
- Have been tested for psychometric properties,
- Are freely available,
- Require minimal equipment and skills to conduct, and
- Require no more than 20 mins to conduct.

Despite the benefits of outcome measures, routine outcome measurement might still be difficult to implement. Barriers that have been reported include the

- lack of time,
- lack of knowledge and skills in using outcome measures,
- lack of perceived value of collecting outcome measures,
- lack of organisational support, and
- lack of peer-support.

Suggested interventions to address these barriers include education sessions, audit and feedback. If you wish to receive more information regarding the implementation of routine outcome measurement, please contact the One-Rehabilitation workshop team at SITLEARN@singaporetech.edu.sg.

SECTION 2: WHAT outcome measures are we collecting?

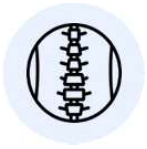
Under the first tranche of the One-Rehabilitation framework, we are collecting standardised outcome measures for six conditions. These conditions are:

Musculoskeletal Conditions (MSK)

Deconditioning

Hip fracture

Amputation (major lower limb)



Spinal Cord Injury (SCI)

Stroke

The standardised One-Rehab outcome measures are also known as **core outcomes** and **condition-specific outcomes**. Core outcomes are outcomes collected for all six of the One-Rehabilitation conditions, and condition-specific outcomes are outcomes collected for specific conditions.

<table>
<tr><th colspan="2">Core outcomes</th></tr>
<tr><td colspan="2">• Modified Barthel Index (MBI), or Functional Independence Measure (FIM)
• Return to work or school or pre-morbid status
• EQ-5D-5L score
• Comorbidities
• Caregiver status
• Complications
• Employment Status
• No. of therapy sessions and type
• Discharge destination</td></tr>
<tr><th colspan="2">Condition-specific outcomes</th></tr>
<tr><td>1. Musculoskeletal
• Pain score
• Patient Specific Functional Scale (PSFS)</td><td>2. Deconditioning
• Gait speed (if able to walk with supervision),
• 5 x Sit to Stand (5 x STS) (if able to stand up with supervision), or
• Bergs Balance Scale (BBS) (if unable to stand up with supervision)</td></tr>
<tr><td>3. Hip fracture
• Pain score
• Gait speed</td><td>4. Amputation
• Pain score
• Gait speed
• K-Level
• Amputee Mobility Predictor (AMP)</td></tr>
<tr><td>5. Stroke
• Gait speed
• Frenchay Activities Index (FAI)
• Functional Oral Intake Scale (FOIS)
• AusTOMs for Speech Pathology</td><td>6. Spinal Cord Injury
• American Spinal Injury Association (ASIA) Impairment Scale*</td></tr>
</table>

*Also known as the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI)

SECTION 3: HOW are we collecting these outcome measures?

In this section, we are going to focus on 13 outcome measures that are part of the One-Rehabilitation framework. These outcome measures involve use of standardised guidelines/ instructions and equipment. To ensure that the outcome measures accurately reflect the performance and progress of the patient, there is a need to conduct the outcome measures in a standardised manner as per recommended guidelines/instructions.

The 13 outcome measures include:

1. Modified Barthel Index (MBI)/Functional Independence Measure (FIM)*
2. EQ-5D-5L
3. Pain score
4. Patient Specific Functional Scale (PSFS)
5. Gait speed
6. 5 x Sit to Stand (5 x STS)
7. Bergs Balance Scale (BBS)
8. K-Level
9. Amputee Mobility Predictor (AMP)
10. Frenchay Activities Index (FAI)
11. Functional Oral Intake Scale (FOIS)
12. AusTOMs for Speech Pathology
13. American Spinal Injury Association Impairment Scale (ASIA)

A one-two page summary of each outcome measure is provided in this section. The summary includes the following information:

- Aim of outcome measure
- One-Rehabilitation condition(s) (for which outcome measure is used for)
- Description of outcome measure
- Guidelines of outcome measure
- Scoring (includes minimum and maximum scores, and/or units of measurement)
- Interpretation of scoring (includes normative values, cut-offs, minimally clinically important difference and minimal detectable change, if available)
- Psychometric properties (includes reliability and validity, if available)
- Time to administer
- Equipment and space needed
- Special considerations
- References

For more information on each outcome measure, please refer to **Section 5: Appendices for actual assessments sheets, videos (if available) and equipment list**.

*If your organisation collects the Functional Independence Measure (FIM), you may choose to use it and do not have to collect the MBI as the FIM scores can be used to reflect the patient's performance. The FIM is not covered in this booklet or workshop as a licence is required to use the FIM instrument. You can read more about the FIM here: https://www.sralab.org/rehabilitation-measures/fimr-instrument-fim-fimr-trademark-uniform-data-system-fro-medical, and obtain the FIM licence here: https://www.udsmr.org/.

1) Modified Barthel Index (MBI)	
Aim: Measures ability to complete activities of daily living (ADLs)	**One-Rehabilitation condition(s):** ALL

Description of outcome measure

- There are three versions of Barthel Index in the literature: a) Original Barthel Index (OBI) by Mahoney and Barthel (1965), b) Barthel Index (BI) by Collin and Wade (1988) and c) Modified Barthel Index (MBI) by Shah (1989). One-Rehabilitation is using MBI.
- Has 10 items including chair/bed transfers, ambulation/wheelchair, stair climbing, toilet transfers, bowel control, bladder control, bathing, dressing, personal hygiene (grooming), feeding.
- Each item is scored based on the amount of assistance required of patient to complete each activity; scoring is on a 5-point scale and ranges from 0 to 5/10/15 for each item.
- Scores are then summed to provide a total score of 100.
- Scores can be self-reported (by patient/proxy) or gained from direct observation and/or notes.

Guidelines of outcome measure*

1. Score as per descriptors in guidelines.
2. Use as a record of what a patient does, NOT as a record of what a patient could do.
3. The main aim is to establish degree of independence from any help (be it physical or verbal, and however minor).
4. The need for supervision renders the patient NOT independent.
5. Unconscious patients should score '0' throughout, even if not yet incontinent.
6. Middle categories imply that patient supplies over 50% of the effort.
7. Use of devices to be independent is allowed.
8. For ambulation item: Score wheelchair ambulation only if person is unable to walk (i.e., rated "0" for ambulation) and person has been trained in wheelchair management.
   : If person is able to walk with a walking device, ensure walking device is to be within reach of patient.
9. For stair climbing item: three steps are sufficient.
10. For feeding and dressing items, set up is not included in the rating; a patient can still score 5 if clothes are laid out or food placed on a tray or table.
11. For dressing item: anti-embolic stockings are not assessed as part of dressing.
12. For bladder control item: an external device refers to condom drainage.
13. If patient refuses to undertake an activity, score 0 and indicate refusal.

Scoring	Interpretation of scoring
0 to 100; A higher score represents more independence of patient (i.e., less assistance needed to complete activity).	• Normative values: None reported in healthy adults • Cut-off: 0-20: Total dependence, 21-60: Severe dependence, 61-90: Moderate dependence, 91-99: Slight dependence, 100: Independence. • MCID: None reported • MDC: None reported

Psychometric properties

- Reliability: Excellent inter-rater reliability in inpatient rehabilitation patients referred to occupational therapy (ICC = 0.98); excellent test-retest reliability in outpatients with chronic stroke (ICC = 0.94).
- Validity: High correlation between MBI and OBI, and MBI and Functional Independence Measure (FIM) scores in inpatient rehabilitation patients referred to occupational therapy (r = 0.89 to 0.96).

Time to administer	Equipment
• 2 to 5 mins (self-report) • 20 mins (direct observation)	• Form • Pencil/Pen

Special considerations

- As per descriptors of the MBI items, set-up is included in the bathing and personal hygiene items, but not in the dressing and feeding items. This means that to achieve the highest score for the bathing and personal hygiene items, the person must be independent (i.e., does not require assistance) with the entire task including set-up. However, for the dressing and feeding items, if the person can dress/feed him/herself independently but requires his/her clothes to be laid out, or food to be brought to him/her, person can still achieve the highest score for the dressing and feeding items.
- There is fair to moderate evidence that all versions of BI are susceptible to ceiling effects in older adults.
- In the One-Rehabilitation framework, MBI is defaulted to the full score for Musculoskeletal conditions as it is expected that most people visiting the therapists are fully independent in their ADLs. However, therapists are still required to verify the accuracy of the full score.

References

Fricke J and Unsworth CA (1996) Inter-rater reliability of the original and modified Barthel Index, and a comparison with the Functional Independence Measure. *Australian Occupational Therapy Journal* 43: 22-29.

Shah S, Vanclay F and Cooper B (1989) Improving the sensitivity of the Barthel Index for stroke rehabilitation. *Journal of Clinical Epidemiology* 42(8): 703-709.

Yang CM, Wang YC, Lee CH, Chen MH and Hsieh CL (2020) A comparison of test-retest reliability and random measurement error of the Barthel Index and modified Barthel Index in patients with chronic stroke. *Disability and Rehabilitation* Sep 9: 1-5.

Wales K, Clemson L, Lannin N and Cameron I (2016) Functional assessments used by occupational therapists with older adults at risk of activity and participation limitations: a systematic review. *PLOS One* 11(2): e0147980.

*Wording of guidelines have been adapted slightly for clarity and standardisation as part of the One-Rehabilitation framework. Original guidelines can be found in Shah et al (1989) and Fricke and Unsworth (1996).

2) EQ-5D-5L

Aim: Measures level of health status/quality of life

One-Rehabilitation condition(s): ALL

Description of outcome measure

- There are three versions of EQ-5D: EQ5D-3L (3 health dimensions; for adults), EQ-5D-5L (5 health dimensions; for adults) and EQ-5D-Y (5 health dimensions; for children). One-Rehabilitation is using EQ-5D-5L.
- Has two components to this instrument: a) EQ-5D descriptive system and b) EQ visual analogue scale (EQ VAS).
- a) EQ-5D descriptive system: Has five dimensions including mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension is scored on five levels: i. no problems, ii. slight problems, iii. moderate problems, iv. severe problems and v. extreme problems.
- b) EQ VAS: Captures the individual's rating of his/her overall current health on a scale numbered from 0 to 100.
- Scores can be self-reported (by patient/proxy) and are usually gained via administration of instrument to patient/proxy, or interview of patient/proxy.

Guidelines of outcome measure

1. Standardised instructions for EQ-5D descriptive system are:
   "Under each heading, please tick the ONE box that you think best describes your/the person's health TODAY."
2. Standardised instructions for EQ VAS are:
   "We would like to know how good or bad you think your/the person's health is TODAY.
   This scale is numbered from 0 to 100. 100 means the best health you can imagine. 0 means the worst health you can imagine. Please mark an X on the scale to indicate how you think your/the person's health is TODAY. Now, write the number you marked on the scale in the box below."

Scoring

- EQ-5D-5L descriptive: 1 to 5 for each dimension; A higher score represents "worse health status" (i.e., more severe problems with dimension).
- EQ VAS: 0 to 100; A higher score represents "better health status" (i.e., overall current health status).
- For EQ-5D-5L descriptive, a 5-digit code of 11111 represents full health, while 55555 represents worst health on the 5 dimensions.
- EQ-5D-5L scores can be summarised using the 5-digit code or a single summary number (index value). Index values are a major feature of the EQ-5D instrument, facilitating the calculation of quality-adjusted life years (QALYs) that are used to inform economic evaluations of healthcare interventions.

Interpretation of scoring

- Normative values: Refer to references
- Cut-off: Not applicable
- MCID: 0.037* to 0.069* based on algorithms from Canada, China, Spain, Japan, England and Uruguay
- MDC: 0.06* for EQ-5D-5L index and 4.5 for VAS scores in axial spondyloarthritis in Singapore.

  * based on EQ-5D-5L index value. Values are anchored at 1 (full health) and 0 (a state as bad as being dead). Values less than 0 represent health states regarded as worse than a state that is as bad as being dead.

Psychometric properties

- Reliability: Excellent test-retest reliability for EQ-5D-5L index (ICC 0.92) and VAS (0.99) in axial spondyloarthritis in Singapore; refer to references.
- Validity: Refer to references.

Time to administer

5 mins or less

Equipment

- Form
- Pencil/ Pen

Special considerations

- Cross-cultural equivalence of measures demonstrated between the English, Chinese and Malay versions of EQ-5D-5L in people with Type 2 Diabetes Mellitus in Singapore, and between English-speaking Chinese and non-Chinese Singaporeans.
- Missing values and floor effects were found to be negligible for EQ-5D-5L and EQ-5D-3L.
- Compared to EQ-5D-3L, EQ-5D-5L provides more precise measurement at individual and group levels, for descriptive system data and utilities.

References

Cheung YB, Yeo KK, Chong KJ, Khoo EY and Wee HL (2017) Reliability and validity of the English-, Chinese- and Malay-Language Versions of the World Health Organization Quality of Life (WHOQOL-BREF) Questionnaire in Singapore. *Annals of the Academy of Medicine, Singapore* 46(12): 461-469.

EuroQol Research Foundation (2020) EQ-5D [Online]. Available at: https://euroqol.org/eq-5d-instruments/ [Accessed 22 May 2020]

EuroQol Research Foundation (2019) EQ-5D-5L User Guide. Available at: https://euroqol.org/publications/user-guides [Accessed 6 May 2021]

Luo N, Wang Y, How CH, Wong KY, Shen L, Tay EG, Thumboo J and Herdman M (2015) Cross-cultural measurement equivalence of the EQ-5D-5L items for English-speaking Asians in Singapore. *Quality of Life Research* 24(6): 1565-1574.

McClure NS, Sayah FA, Xie F, Luo N and Johnson JA (2017) Instrument-Defined estimates of the Minimally Important Difference for EQ-5D-5L index scores. *Value Health* 20(4): 644-650.

Seng JJB, Kwah YH, Fong W, Phang JK, Lui NL, Thumboo J and Leung YY (2020) Validity and reliability of EQ-5D-5L among patients with axial spondyloarthritis in Singapore. *European Journal of Rheumatology* 7(2): 71-78.

Wang Y, Tan N-C, Tay E-G, Thumboo J and Luo N (2015) Cross-cultural measurement equivalence of the 5-level EQ-5D (EQ-5D-5L) in patients with type 2 diabetes mellitus in Singapore. *Health and Quality of Life Outcomes* 13: 103.

3) Pain score	
Aim: Measures intensity of pain	**One-Rehabilitation condition(s):** Musculoskeletal, Hip fracture, Amputation
Description of outcome measure • Also known as: Numeric Pain Rating Scale (NPRS) or Visual Analogue Scale (VAS). • Is an 11-point ordinal system, with level 0 reflecting no pain, levels 1 to 3 reflecting mild pain, levels 4 to 6 reflecting moderate pain and levels 7 to 10 reflecting severe pain. • System is scored based on the subjective intensity of pain perceived by patient in the last 24 hours. • Scores can be self-reported (by patient) and are usually gained via administration of instrument to patient, or interview of patient.	
Guidelines of outcome measure The patient is asked to rate the intensity of their pain in the last 24 hours, with "0" being no pain and "10" being the most intense pain imaginable.	
Scoring 0 to 10; A higher score represents greater intensity of pain perceived (i.e., severe pain).	**Interpretation of scoring** • Normative values: Not applicable • Cut-off: 0 = no pain; 1-3 = mild pain; 4-6 = moderate pain; 7-10 = severe pain • MCID = 1 point or 15% change in chronic musculoskeletal pain; 1.7 points or 27.9% change in chronic pain; 2.17 points in shoulder pain; 35% change in post-operative patients • MDC: 2 points in low back pain
Psychometric properties • Reliability: Excellent inter-rater reliability in healthy populations (100% agreement) and adequate to excellent intra-rater reliability in chronic pain (r = 0.63-0.95). • Validity: Excellent concurrent validity with VAS (r = 0.86), Verbal Descriptor Scale (VDS) (r = 0.88), 21-point NPRS (r = 0.87) and Faces Pain scale (FPS) (r = 0.80) in healthy populations.	
Time to administer 3 mins or less	**Equipment** • Form • Pencil/Pen
Special considerations • None	
References Shirley Ryan Ability Lab (2020) Rehabilitation Measures Database [Online]. Available at: https://www.sralab.org/rehabilitation-measures/numeric-pain-rating-scale [Accessed 22 May 2020]	

4) Patient Specific Functional Scale (PSFS)	
Aim: Measures ability to complete specific activities	**One-Rehabilitation condition(s):** Musculoskeletal

Description of outcome measure

- Is an 11-point ordinal system, with 0 being unable to perform activity and 10 being able to perform activity at the same level as before injury or problem.
- System is scored based on the current ability to perform each activity by patient.
- Scores are self-reported (by patient).

Guidelines of outcome measure

1. Patients identify up to three important activities that they are unable to do or are having difficulty doing because of their current injury or problem.
2. For each activity, they score on a scale of 0 to 10, with 0 being unable to perform activity and 10 being able to perform activity at the same level as before injury or problem.
3. Standardised instructions for initial assessment are:
   "I am going to ask you to identify up to three important activities that you are unable to do or are having difficulty with as a result of your _____ problem. Today, are there any activities that you are unable to do or having difficulty with because of your _____ problem? (Clinician: show scale to patient and have the patient rate each activity)."
4. Standardised instructions for follow-up assessment are:
   "When I assessed you on (state previous assessment date), you told me that you had difficulty with (read all activities from list at a time). Today, do you still have difficulty with: (read and have patient score each item in the list)?"
5. The total score is calculated as follows:
   Total score = sum of the activity scores/number of activities

Scoring	Interpretation of scoring
0 to 10; A higher score represents greater ability to perform activity at the same level as before injury or problem.	• Normative values: Not applicable • Cut-off: Not applicable • MCID: 1.34 points in spinal stenosis; 1.2 points in upper extremity musculoskeletal; 2.2 points in hand osteoarthritis, 2 points in proximal humeral fracture; 3.83 to 5.13 points in total knee arthroplasty • MDC: 2 points in chronic pain; 1.4 points in low back pain; 2.4 points in spinal stenosis; 1.5 points in knee dysfunction; 2 points in neck dysfunction; 1.30 and 1.56 in hand osteoarthritis; 2.8 points in community-dwelling older adults.

Psychometric properties

- Reliability: Excellent inter-rater reliability in low back pain (ICC = 0.92), Upper Extremity musculoskeletal (ICC = 0.71) and intra-rater reliability in chronic pain (ICC = 0.97), neck pain (ICC = 0.92) and knee dysfunction (ICC = 0.84)
- Validity: Excellent concurrent validity with Roland-Morris in chronic pain (r = 0.67), Neck Dysfunction Index (r = 0.73-0.83) and clinical prognosis rating (r = 0.64) in neck pain, and Global Rating of Change (r = 0.69) in spinal stenosis

Time to administer	Equipment
4 mins or less	• Form • Pencil/Pen

Special considerations

- Three activities is the ideal number of activities. However, if patient can only state one activity, the score can also be used as the PSFS assessment sheet provides the minimum detectable change for one single activity score.
- Activities are intended to be self-generated by patients so that they are patient-specific and patient-centred. If patients are finding it difficult to identify activities, therapists are encouraged to suggest activities that patients might have listed as aggravating factors during history taking. Therapists can also consider asking about activities around the house, outside the house, at work and recreational activities (e.g., cycling, gardening, jogging).
- You may also ask further details on activities (e.g., time spent in sitting for a specific chair) so that you can make accurate comparisons of patient progress in the future.
- PSFS was designed to compare between time-points in individual persons, and not between persons.
- Floor effect was observed in patients with knee dysfunction.

Reference

Shirley Ryan Ability Lab (2020) Rehabilitation Measures Database [Online]. Available at: https://www.sralab.org/rehabilitation-measures/patient-specific-functional-scale [Accessed 22 May 2020]

Sterling M (2007) Patient Specific Functional Scale. *Australian Journal of Physiotherapy* 53(1): 65.

Stratford P, Gill C, Westaway M and Binkley J (1995) Assessing disability and change of individual patients: A report of a patient specific measure. *Physiotherapy Canada* 47(4): 258-263.

5) Gait speed

Aim: Measures speed of walking	**One-Rehabilitation condition(s):** Deconditioning, Hip fracture, Amputation, Stroke

Description of outcome measure

- Assesses total time taken to walk a specified short distance on level surface and is expressed in metres/second (m/s).
- Test can be done at comfortable/ usual/ normal speed, or fast/ maximal gait speed. One-Rehabilitation is using comfortable gait speed.
- The test distance can be anywhere from 3-10m, with an additional 2m on each end for acceleration and deceleration. (Note: The recommended test distance for stroke patients is 10m).
- Scores are gained from direct assessment with a stopwatch.

Guidelines of outcome measure

1. Find a clear pathway of at least 7m in a quiet area over solid and level flooring.
2. Mark out the test path. For example, if the test distance is 10m with 2m for acceleration and deceleration, add a mark at 0m, 2m, 12m and 14m of the walkway.
3. Have the patient start at the 0m mark. Prior to starting, instructions are as follows.
4. Standardised instructions for comfortable walking speed are:
   "Walk at your own comfortable walking pace and stop when you reach the far mark."
5. Standardised instructions for fast walking speed are:
   "Walk as fast as you can safely walk and stop when you reach the far mark."
6. For therapists, walk at least a half step behind the patient. Do not walk in front of or directly beside the patient, as this may "pace" the patient and influence the speed and distance they walk. Do not pace or encourage the patient. However, if the patient is distracted or loses focus, cues can be provided to keep the patient on-task (e.g., visual (pointing), verbal ("Keep going. Walk to the mark.")).
7. Therapist starts timing when patient's foot crosses the 2m mark, and stops timing when patient's foot crosses the 12m mark for a 10m walk test.
8. Two trials are usually administered, and an average of the two trials produces the average comfortable gait speed. (If patients cannot complete the two trials, results from a single trial can be used.)
9. **Divide** the test distance by time taken to cover the distance to get the gait speed (metres/ second).

Scoring	**Interpretation of scoring**
Metres/ second (m/s); time taken to cover the specified test distance. A higher score represents faster walking speed.	• Normative values: Refer to references • Cut-off: <0.4m/s = household ambulator, 0.4-0.8m/s = limited community ambulator, 0.8-1.2m/s = community ambulator; ≥1.2m/s = able to safely cross streets; <0.7m/s = increased risk of adverse events*; <0.8m/s = slow and ≥0.8m/s = normal in COPD *Adverse events include falls, hospitalization, need for caregiver, fracture, etc. • MCID: 0.1m/s in hip fracture and stroke, 0.08m/s in COPD, 0.05m/s and 0.12m/s in older adults • MDC: 0.08m/s in hip fracture; 0.05m/s in older adults.

Psychometric properties

- Reliability: Excellent inter-rater reliability (ICC = 0.99) and intra-rater reliability (ICC ≥ 0.95) in Chronic Obstructive Pulmonary Disease, excellent inter-rater and intra-rater reliability in community dwellers (ICC = 0.90-0.96; r = 0.89-1.00), excellent inter-rater and intra-rater reliability in older adults (ICC > 0.9), and excellent intra-rater reliability in hip fracture (ICC 0.82),
- Validity: Excellent concurrent validity with Berg Balance Scale (BBS) (r = 0.81) and Timed Up and Go (TUG) (r = 0.75) in community dwellers.

Time to administer

5 mins or less (if test path is marked. Longer if require to do marking)

Equipment

- Stopwatch
- Walkway with solid and level flooring (minimum distance of 7m)
- Measuring tape, or measuring wheel (to measure distance)
- Tape, cone or object (to mark distance)

Special considerations

- Patients may use any assistive device or orthotic device that they are currently using. If used, the type of device must be documented.
- Consider use of the **iWalkAssess app** (http://www.iwalkassess.com/) for easier implementation of gait speed measurement in the clinic.
- Gait speed has been performed in patients who require constant physical assistance to walk (e.g., x1 minimum assistance). However, to standardise our practice as part of the One-Rehabilitation framework, only perform gait speed in patients who do not require constant physical assistance to walk. Therefore, only perform gait speed in patients who require contact guard assistance, supervision or less.

References

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University of Missouri (2021) Geriatric Tool Kit [Online]. Available at: https://geriatrictoolkit.missouri.edu/Gait-Speed.doc [Accessed 15 April 2021]

6) 5 x Sit to Stand (5 x STS)

Aim: Measures ability to complete 5 sit to stands	**One-Rehabilitation condition(s):** Deconditioning

Description of outcome measure

- Assesses total time taken to go from seated to standing and back to sitting 5 times and is expressed in seconds to nearest decimal (s).
- Test should only be performed in patients who do <u>not</u> require constant physical assistance, or use of hands to stand up.
- Scores are gained from direct assessment with a stopwatch.

Guidelines of outcome measure

1. Chair should be free-standing (not against a wall/bed/table) and of standard height (43 to 45cm).
2. <u>Initial starting position:</u> Patients to place their feet comfortably under them, and to sit with arms folded across chest and back against chair.
3. Prior to starting, standardised instructions are:
   "I want you to stand up and sit down five times in a row, as quickly as you can, when I say 'Go'. Be sure to stand up fully and try not to let your back touch the chair back between each repetition. Do not use the back of your legs against the chair."
4. Therapist starts timing once therapist says "Go".
5. Therapist stops timing once the patient's buttock touches the chair after the 5th repetition.
6. Test can be terminated if patients are unable to stand up independently, and/ or requires physical assistance or use of hands to push themselves up into standing. However, another trial is allowed if patient may not have fully understood the instruction.
7. Do not pace or cheer the patient on.
8. Only one trial is required.

Scoring	**Interpretation of scoring**
Seconds (secs); A higher score represents taking a longer time to complete 5 times sit to stand.	• <u>Normative values:</u> Refer to references • <u>Cut-off:</u> ≥12s = falls risk in community-dwelling elderly; >15s = recurrent falls risk in community-dwelling elderly; >16s = falls risk in PD • <u>MCID:</u> 4.2s in nondialysis chronic kidney disease; 5-7s in chronic musculoskeletal pain; 2.3s in vestibular disorders • <u>MDC:</u> 1.71s in knee osteoarthritis, 2.5s in older females

Psychometric properties

- <u>Reliability:</u> Excellent inter-rater reliability in stroke (ICC = 0.99) and Parkinson's Disease (ICC = 0.99), excellent intra-rater reliability in community dwelling elderly (ICC = 0.89 and 0.96), arthritis (ICC 0.96), stroke (ICC = 0.97 and 0.99) and Parkinson's Disease (ICC = 0.76 and 0.91)
- <u>Validity:</u> Excellent concurrent validity with Timed Up and Go (TUG) (r = 0.92) and gait speed (r = 0.94) in community dwelling elderly, adequate concurrent validity with muscle strength of knee flexors and extensors in community dwelling elderly (r = 0.43), excellent concurrent validity with Six Minute Walk Test (6MWT) (r = 0.75) and muscle strength of knee extensors (r = 0.65) in Chronic Obstructive Pulmonary Disease, excellent concurrent validity with muscle strength of bilateral knee flexors in stroke (r = 0.75-0.83), adequate concurrent validity with most outcome measures in Parkinson's Disease (r = 0.38-0.60), adequate concurrent validity with weight-bearing asymmetry (r = 0.44) and muscle strength of lower limbs in arthritis (r = 0.47), adequate concurrent validity with muscle strength of hip abductor (r = 0.56) and knee extensor (r = 0.44) in total knee arthroplasty, adequate concurrent validity with TUG (r = 0.59) and gait speed (r = 0.53) in vestibular disorders.

Time to administer	Equipment
5 mins or less	• Stopwatch • Standard chair (height 43 to 45cm) with back rest

Special considerations

- Patients with stroke/ hemiplegia can have their impaired arm(s) at their side or in a sling.
- Initial starting position: If patients cannot get their feet on the floor with their backs against the backrest, it is permissible to allow patients to move forward in the chair until their feet are flat on the floor. Deviation from protocol, and reason should be documented.
- Stop the test if any of the following scenarios occur
  : if patients require use of arms (including pushing off on thigh) or physical assistance to do the test
  : if patients are unable to complete 5 reps,
  : if patients are unable to stand up fully, and
  : if patients lose balance and require physical assistance.
  The test would be void, and not considered a trial of 5 x Sit to Stand (STS). The therapist may document the number of stands, time, compensatory movements and/or amount of assistance to chart progress of patient's performance, but this is for their own record-keeping (not to be entered into the One-Rehabilitation documentation).
- To prevent use of momentum, patients should be encouraged to avoid touching the backrest with their own backs between each repetition of sit to stand.
- A practice session may be introduced to allow patents to be familiar with the test.
- Foot position should be self-selected by patients.
- If therapists do not have a chair of 43 to 45cm height, they may use a chair of different height but this should be documented and reported as deviation from standardized procedure. In subsequent measurements, the same chair height is recommended. (Note: Chair height recommended for 5 x STS differs from that for Berg Balance Scale which is 45.72 to 50.8cm).
- Floor effect may be present for patients who are unable to perform STS independently or without use of hands.
- You may use a chair with or without armrests, as long as it is the same chair for all subsequent tests, and patients do not use the armrests while standing up.

References

Academy of Neurologic Physical Therapy (2018) Core Set of Outcome Measures for Adults with Neurologic Conditions – 5 Times Sit to Stand [Online]. Available at: http://www.neuropt.org/docs/default-source/cpgs/core-outcome-measures/core-measure-five-times-sit-to-stand-(5tsts)_final.pdf?sfvrsn=dc585243_2 [Accessed 22 May 2020]

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7) Berg Balance Scale (BBS)

Aim: Measures balance during activities	**One-Rehabilitation condition(s):** Deconditioning

Description of outcome measure

- Has 14 items including sitting, sitting to standing, standing to sitting, transfers, standing +/- eyes closed, feet together, reaching forward, turning trunk, turning 360 degrees, retrieving object from floor, toe tapping, tandem standing and standing on one leg.
- Each item is scored based on the ability to perform the item/ activity relative to time, level of independence or supervision required. Scoring ranges from 0 to 4. Scores are then summed to provide a total score of 56.
- Scores are gained from direct assessment.

Guidelines of outcome measure

1. Instructions are given as per written document for each item/ activity.
2. Therapist scores the patient's performance based on the lowest score of the item/activity.
3. Supervision is required in the event of excessive sway or safety concerns.
4. In most items, the patient is asked to maintain a given position for a specific time. Progressively more points are deducted if
   : the time or distance requirements are not met.
   : the subject's performance warrants supervision.
   : the subject touches an external support or receives assistance from the examiner.
5. Subject should understand that they must maintain their balance while attempting the tasks.
6. The choices of which leg to stand on or how far to reach are left to the subject. Poor judgment will adversely influence the performance and the scoring.
7. If the patient cannot complete any elements of the BBS, they will have a score of 0 for that item.
8. Only one trial is required.

Scoring	**Interpretation of scoring**
0 to 56; A higher score represents greater ability to perform item/activity (i.e., better balance, or greater independence in performing item/activity safely +/- in a shorter time).	• Normative values Refer to references • Cut-off: <45 = falls risk in older adults and stroke; : 41-56 = low fall risk; 21-40 = medium fall risk; 0-20 = high fall risk. : 41–56, independent; 21–40, walking with assistance; 0–20, wheelchair bound. • MCID: 2 and 5 points in total knee arthroplasty, 3 points in multiple sclerosis. • MDC: 4 points in elderly people; 3.3 to 6.3 points in older adults; 8 points in institutionalized older adults and 10.5 points in older adults living in nursing homes.

Psychometric properties

- Reliability: Excellent inter-rater reliability in community dwelling older adults (ICC = 0.98), institutionalized older adults (ICC = 0.88), Parkinson's Disease (ICC = 0.84 and 0.95), stroke (ICC = 0.95-0.98), excellent intra-rater reliability in community dwelling older adults (ICC = 0.98), institutionalized older adults (ICC = 0.77 and 0.97), PD (ICC = 0.80), stroke (ICC = 0.72-0.99)
- Validity: Excellent concurrent validity with balance subscale of Fugl-Meyer (FM) (r = 0.90-0.92), Postural Assessment Scale (PAS) (r = 0.92-0.95), Functional Independence Measure (FIM) (r = 0.76), BI (r = 0.67) in stroke, adequate concurrent validity with Timed Up and Go (TUG) (r = 0.48) in stroke.

Time to administer	Equipment
15 to 20 mins	• Stopwatch • Standard chair (height 45.72 to 50.8cm) with arm rests • Standard chair (height 45.72 to 50.8cm) without arm rests • Step or stool (height 19.69 to 22.86cm) • Ruler, or measuring tape • Slipper, or shoe

Special considerations

- May have floor effect in acute-subacute stroke (14- and 38-days post-stroke).
- If a patient requires assistance for an item, the patient should be scored according to the most relevant descriptor or the lowest associated score for that item. The lowest category that applies should be marked.
- If you are unsure of the capabilities of the patient, you may choose to hold on to the gait belt in the first trial but consider completing a second trial with less assistance (if appropriate for the patient) for a true measure of patient performance.
- Assistive devices should not be used by patient during the test. If the patient cannot perform the item without an assistive device, they will be scored a 0.
- Hospital bed can be used as a seating surface. However, attempts should be made to preserve the standard test height.
- For patients with structural limitations, instruct them to place their heels and toes as close together as possible.

References

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8) K-Level

Aim: Measures ability to transfer and ambulate with a prosthesis

One-Rehabilitation condition(s): Amputation

Description of outcome measure

1. Is a 5-point ordinal system, with the following description for each K-Level classification:
   - 0 = Does not have the ability or potential to ambulate or transfer safely with or without assistance and a prosthesis does not enhance their quality of life or mobility.
   - 1 = Has the ability or potential to use a prosthesis for transfers or ambulation on level surfaces at fixed cadence. Typical of the limited and unlimited household ambulator.
   - 2 = Has the ability or potential for ambulation with the ability to traverse low level environmental barriers such as curbs, stairs or uneven surfaces. Typical of the limited community ambulator.
   - 3 = Has the ability or potential for ambulation with variable cadence. Typical of the community ambulator who has the ability to traverse most environmental barriers and may have vocational, therapeutic, or exercise activity that demands prosthetic utilization beyond simple locomotion.
   - 4 = Has the ability or potential for prosthetic ambulation that exceeds basic ambulation skills, exhibiting high impact, stress, or energy levels. Typical of the prosthetic demands of the child, active adult, or athlete.
2. System is scored based on the patient's future ability (potential) to perform transfers and ambulation.
3. Scores are gained from various sources including own and others' assessment, observation and/or prediction.

Guidelines of outcome measure

- See above.

Scoring

0 to 4; A higher score represents greater ability or potential for prosthetic ambulation.

Interpretation of scoring

- Normative values: Not applicable
- Cut-off: Not applicable
- MCID: Not applicable
- MDC: Not applicable

Psychometric properties

- Reliability: None
- Validity: None

Time to administer

5 mins, or less (depends on prior information available re: patient)

Equipment

- Form
- Pencil/Pen

Special considerations

- Other outcome measures (e.g., Amputee Mobility Predictor (AMP), Timed Up and Go (TUG) and 10 Metre Walk Test (10MWT)) are often collected at the same time to establish K levels.

References

Amputee Coalition (2013) Do you know your K-Level? [Online]. Available at: https://www.amputee-coalition.org/resources/your-k-level/ [Accessed 22 May 2020]

AustPAR (2018) Australian Physiotherapists in Amputee Rehabilitation – K Classification [Online]. Available at: http://www.austpar.com/portals/gait/html/KClass.html [Accessed 22 May 2020]

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9) Amputee Mobility Predictor (AMP)

Aim: Measures ability to transfer and ambulate

One-Rehabilitation condition(s): Amputation

Description of outcome measure

- Has three ways of scoring: Amputee Mobility Predictor with prosthesis (AMPPRO), Amputee Mobility Predictor without prosthesis (AMPnoPRO) and Amputee Mobility Predictor – Bilateral (AMP-B).
- AMPPRO is used for unilateral amputations with prosthesis, AMPnoPRO is used for unilateral amputations without prosthesis, and AMP-B is used for bilateral lower limb amputations.
- AMPPRO has 21 items, AMPnoPRO has 20 items, without item 8 and AMP-B has 21 items, with items 4, 5, 6, 13 and 20 modified.
- For AMPnoPRO, item 8 is removed as it requires single-leg standing balance on both the sound and prosthetic leg. Hence, item does not apply if person does not mobilise with a prosthesis.
- For AMP-B, items 4, 5, 6, 13 and 20 require modification as at least one intact knee joint is needed for performing the tasks and achieving the top scores without upper limb assistance. Hence, items require modification if person has bilateral lower limb amputations and does not have at least one intact knee joint.
- Items are arranged according to increasing complexity
  a) Items 1 and 2 test sitting balance,
  b) Items 3 to 7 test the person's ability to transfer, stand up and maintain standing balance,
  c) Items 8 to 13 test higher-level standing balance (e.g., single-leg standing, standing and reaching),
  d) Items 14 to 20 test gait, turning and the ability to negotiate obstacles and stairs, and
  e) Item 21 accounts for the use of walking aids.
- Each item is scored based on the amount of assistance required of patient to complete each activity on a 2-point scale (0= unable to complete task independently, 1= completes task independently), or a 3-point scale (0= unable to perform task, 1= minimal level of achievement or some assistance was required in completing the task, 2 = performed task independently).
- Items 1, 11, 14, 15 and 16 are scored from 0 to 1.
  Items 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 17, 18, 19 and 20 are scored from 0 to 2.
  Item 21 (assistive device selection) are scored from 0 to 5 in increasing order of function.
- Scores are gained from direct assessment.

Guidelines of outcome measure

1. The person starts off seated in a hard chair with arms, and is advised of each item/task or group of items/tasks prior to performance.
2. The items are then tested with or without the use of the prosthesis.
3. If there is uncertainty that the person cannot safely complete the item, the item should not be performed. Safety comes first.
4. Document side and level of limb amputation, i.e.,
   a) side of amputation: right or left, and
   b) level of limb amputation: Partial Foot (PF), Transtibial (TT), Knee Disarticulation (KD), Transfemoral (TF), and Hip Disarticulation (HD).

Scoring

0 to 42 for AMPPRO and AMP-B (highest score becomes 47 if assistive device is included);
0 to 38 for AMPnoPRO (highest score becomes 43 if assistive device is included);
A higher score indicates better mobility

- Normative values: Not applicable
- Cut-off:

	AMPPRO	AMPnoPRO
K0	N/A	0-8
K1	15-26	9-20
K2	27-36	21-28
K3	37-42	29-36
K4	43-47	37-43

AMPPRO, with prosthesis; AMPnoPRO, with no prosthesis

	• MCID: None reported • MDC: 3.4 for people with unilateral amputations
Psychometric properties • Reliability: Excellent inter-rater and intra-rater reliability in amputees who have completed prosthetic training, with or without prosthesis (r = 0.99 , and 0.96-97) • Validity: Excellent concurrent validity with 6minute walk test in patients without (r=0.69) and with (0.82) prosthetics	
Time to administer 10 to 15 mins	**Equipment** • Stopwatch • 2 chairs (with armrest) • Ruler (length 30.48cm or 12 inch) • Pencil • High obstacle (height 10.16cm or 4 inch) • Stairs with 3 steps • Walkway (distance of 13.72m)
Special considerations • Use AMPPRO for unilateral amputations with prosthesis, AMP-B for all bilateral amputations with prosthesis (includes below knee and above knee amputations), and AMPnoPRO for all amputations without prosthesis. • AMP-B scores can be documented under AMPPRO in the One-Rehabilitation IT care form.	
References Batten HR, McPhail SM, Mandrusiak AM, Varghese PN and Kuys SS (2019) Gait speed as an indicator of prosthetic walking potential following lower limb amputation. *Prosthetics and Orthotics International* 43(2): 196-203. Gailey, R. S., Roach, K. E., et al. (2002). The amputee mobility predictor: an instrument to assess determinants of the lower-limb amputee's ability to ambulate. *Archives of Physical Medicine and Rehabilitation*, 83, 613-627. Available at https://www.archives-pmr.org/action/showPdf?pii=S0003-9993%2802%2947460-6 Mission Gait (2020) Outcome Toolkit [Online]. Available at https://www.dropbox.com/s/pp1jpx6mhyp2a2i/AMP%20Downloads.zip?dl=0&file_subpath=%2FAMP+Downloads [Accessed 15 April 2021] Raya MA, Gailey RS, Gaunaurd IA, Ganyard H, Knapp-Wood J, McDonough K and Palmisano T (2013) Amputee Mobility Predictor-Bilateral: A performance-based measure of mobility for people with bilateral lower-limb loss. *Journal of Rehabilitation Research and Development* 50(7): 961-968. Shirley Ryan Ability Lab (2020) Rehabilitation Measures Database [Online]. Available at: https://www.sralab.org/rehabilitation-measures/amputee-mobility-predictor-0 [Accessed 22 May 2020] Sions JM, Beisheim EH and Seth M (2020) Selecting, administering, and interpreting outcome measures among adults with lower-limb loss: an update for clinicians. *Current Physical Medicine and Rehabilitation Reports* 8: 92-109.	

10) Frenchay Activities Index (FAI)	
Aim: Measures frequency of instrumental activities of daily living (IADL) undertaken in the recent past	**One-Rehabilitation condition(s):** Stroke

Description of outcome measure

- Has 15 items assessing 15 activities associated with everyday life. Activities are categorised into 3 domains: domestic chores, leisure/work, and outdoor activities.
- Each activity is scored based on the frequency of the activity, either in the last 3 months or in the last 6 months. For example, frequency of activities in the last 3 months is asked of activities 1 to 10, while frequency of activities in the last 6 months is asked of activities 11 to 15.
- Frequency is mostly scored on a 4-point scale, with larger values denoting greater frequency.
- Scores are self-reported (by patient).

Guidelines of outcome measure

1. The instrument focuses on frequency, rather than ability or quality of participation in the activity.
2. It is important to focus on the actual frequency of the activity undertaken by the patient over the recent past 3 or 6 months, not distant past performance nor potential future performance.
3. Score each activity according to the frequency descriptor provided.
4. Note specific item information (taken from Wade et al (1985)):
   - Item 1. Needs to play a substantial part in the organization, preparation and cooking of main meal. Not just making snacks or reheating prepared food.
   - Item 2. Must do all or share equally, e.g. washing or wiping and putting away. Not just rinsing an occasional item.
   - Item 3. Organization of washing and drying clothes, whether in washing machine, or by hand or at laundromat. Sharing task equally, e.g. loading, unloading, hanging, folding.
   - Item 4. Dusting, polishing, ironing, tidying small objects or bedclothes. Anything heavier is included in item 5.
   - Item 5. All heavier housework including changing beds, cleaning floors, fires and windows, vacuuming, moving chairs, etc.
   - Item 6. Playing a substantial role in organizing and buying groceries, whether small or large amounts. Must go to the shop and not just push a cart. Can include collection of pension or going to the Post Office.
   - Item 7. Going out to clubs, church activities, cinema, theatre, drinking, to dinner with friends, etc. May be transported there, provided patient takes an active part once arrived. Includes social activities at home, initiated by the patient, e.g. visits from family or friends not where main purpose is to provide care.
   - Item 8. Sustained walking for at least 15 minutes (allowed short stops for breath). About one mile. Can include walking to do shopping, provided walks far enough.
   - Item 9. Must require some 'active' participation and thought, e.g. propagating or caring for houseplants, knitting, painting, games, sports (not just watching sport on television). Can be mental activities, e.g. reading specialist magazines, doing the stocks and shares or window shopping for pleasure.
   - Item 10. Must drive a car (not just be a passenger) or get to a bus/coach and travel on it independently.
   - Item 11. Coach or rail trips or car rides to some place for pleasure. Not for a routine 'social outing' (i.e. Shopping, going to local friends). Must involve some organization and decision-making by the patient. Excludes trips organized passively by institutions unless patient exercises choice on whether to go. The common factor is travel for pleasure. Holidays within the six months are divided into days per month e.g. a 7-day holiday equals 1 or 2 days per month.
   - Item 12. Gardening outside:
     a. Light = occasional weeding or sweeping paths
     b. Moderate = regular weeding, raking, pruning, etc.
     c. Heavy = all necessary work including heavy digging.
   - Item 13. Household maintenance:

a. Light = repairing small items, replacing lamp light bulb or plug
b. Moderate = spring cleaning, hanging a picture, routine car maintenance
c. Heavy = painting/decorating, most necessary household/car maintenance.

Item 14. Must be full-length books, not periodicals, magazines or newspapers. Can be talking books.

Item 15. Work for which the patient is paid, not voluntary work. The time worked should be averaged out over six months. For example, one month working for 18 hours/week over the six-month period would be scored as 'up to 10 hours/week'.

Scoring

0 to 45; A higher score indicates that patient is participating in IADLs frequently and actively.

Interpretation of scoring

- Normative values: See references
- Cut-off: 0 = inactive, 45 = very active; 0-15 = inactive, 16-30 = moderately active, 31-45 = very active; cut off ≥18 was used as a predictor of mild disability after stroke.
- MCID: None reported
- MDC: 6.7 (14.9%) (chronic stroke)

Psychometric properties

- Reliability: Excellent test-retest reliability in stroke patients (ICC 0.89-0.991).
- Validity: Excellent concurrent validity with Barthel Index in stroke patients (r = 0.66-0.80; disability scores), Euroqol (r=0.65), Rankin (r=0.80

Time to administer

5 mins

Equipment

- Form
- Pencil/Pen

Special considerations

- Proxies can be used for patients with cognitive impairment.
- Large floor effect (19%) have been observed.
- In the One-Rehabilitation framework, FAI is only to be collected in outpatient settings (e.g., outpatient clinics, or day rehabilitation centres). There is no need to collect FAI in inpatient settings.

References

Hachisuka K, Saeki S, Tsutsui Y, Chisaka H, Ogata H, Iwata N and Negayama S (1999) Gender-related differences in scores of the Barthel Index and Frenchay activities index in randomly sampled elderly persons living at home in Japan. *Journal of Clinical Epidemiology* 52(11): 1089-1094.

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11) Functional Oral Intake Scale (FOIS)	
Aim: Documents the safe, adequate, and functional level of a patient's actual daily diet intake (amount and type) at any time point	**One-Rehabilitation condition(s):** Stroke

Description of outcome measure

- Is a 7-point ordinal system
  a) Levels 1 to 3 relate to varying degrees of non-oral feeding.
  b) Levels 4 to 7 relate to varying degrees of oral feeding without nonoral supplementation. These scale levels consider both diet modifications and patient compensations.
- System is scored based on the type and amount of food and liquid consumed orally on a daily basis.
- Information needed to score this scale can be obtained from patient and/or caregiver reports, medical records, direct observation or assessment.

Guidelines of outcome measure

FOIS is a documentation of safe and adequate functional oral intake.

1. Safe: Patient history demonstrates that oral intake is tolerated without any negative health outcomes (e.g., pneumonia, UTI, any other infections).
2. Adequate: Patient history demonstrates that oral intake is sufficient to avoid negative nutrition/hydration consequences (e.g. weight loss, dehydration, cachexia etc).
3. Functional: Patient history demonstrates that the patient is taking the reported items on a daily basis without significant difficulty.

[Refer to Appendix C for FOIS training slides.]

Scoring	**Interpretation of scoring**
1 to 7; A higher score represents a more functional level of oral intake (i.e., an oral diet with no restrictions - patient can eat and drink anything).	• Normative values: Not applicable • Cut-off: Not applicable • MCID: Not applicable • MCD: Not applicable

Psychometric properties

- Reliability: High inter-rater reliability in stroke patients (r = 0.85)
- Validity: Consensual validity (agreement with predefined scale scores) was high (Kendall concordance 0.90). Criterion validity (with Mann Assessment of Swallowing Ability (MASA)) was moderate at admission (Cramer's V correlation at 0.53) and high at 1 month post stroke (Cramer's V correlation at 0.76).

Time to administer	**Equipment**
1 min	• Pencil/Pen

Special considerations

- Several factors that may influence FOIS include
  a) Patients may self-select or avoid certain foods,
  b) Speech therapists may 'prescribe' diet levels, and
  c) Facilities/individuals may describe diets that that may not be included among FOIS levels.

References

Crary MA, Carnaby Mann GD and Groher ME (2005) Initial psychometric assessment of a functional oral intake scale for dysphagia in stroke patients. *Archives of Physical Medicine and Rehabilitation* 86: 1516-1520.

12) AusTOMs for Speech Pathology

Aim: Describes patient outcomes across four areas: Impairment; Activity Limitation; Participation and Distress/Wellbeing

One-Rehab condition(s): Stroke

Description of outcome measure

- There are six speech pathology scales but only three will be used as part of the One-Rehabilitation framework. One-Rehabilitation is using Speech, Language and Cognitive Communication scales.
- Each of the scales includes four domains: Impairment; Activity Limitation; Participation Restriction; and Distress/Wellbeing. Each of these domains are related but distinct.

  a) Impairment domain describes structural or functional difficulties that a patient may have.

  b) Activity Limitation domain describes a patient's level of ability and difficulty in performing tasks and activities that relate to their impairment.

  c) Participation Restriction domain is used to examine the overall social limitation that the patient may experience in their daily life.

  d) Distress/Wellbeing domain describes the patient's level of concern.
- Each domain of the scales has six levels (0-5) where 0 represents 'complete difficulty' and 5 represents 'no difficulty'.
- Scores are gained from direct assessment.

Guidelines of outcome measure

1. AusTOMs data should be collected on all stroke patients on the One-Rehab pathway who are referred to SLT.
2. For the purpose of One-Rehabilitation, all three selected scales (speech, language and cognitive communication) should be rated; once at the start and once at the end of the patient's stay.
3. Impairment and Activity Limitation domains for each of the three scales must be rated separately.
4. Participation Restriction and Distress/Wellbeing domains are considered to be **global** and so are rated only once per therapist, even if multiple scales are used.
5. Choose scale points that 'best fit' with the scale descriptors, relating this to the therapist's knowledge of the patient. Half points may be used.

[Refer to Appendix C for AusTOMs training slides.]

Scoring

0-5 where 0 represents 'complete difficulty' and 5 represents 'no difficulty'.

Interpretation of scoring

- Normative values: Not applicable
- Cut-off: Not applicable
- MCID: None reported for AusTOMS for Speech Pathology

  MDC: None reported for AusTOMS for Speech Pathology

Psychometric properties

- Reliability: High levels of agreement in the impairment domain, with the exception of the language scale (58.8% when tested on an adult case vignette). The participation restriction and distress/wellbeing domains appeared to be the most difficult domains for clinicians to rate reliably from a case vignette.
- Validity: None reported

Time to administer

5 mins

Equipment

- Scale Card
- Pencil/Pen

Special considerations

- If a patient defaults therapy unexpectedly, make the rating by reflecting on the patient's status at the last time point that he/she was seen.

References

Morris M, Perry A, Unsworth C, Skeat J, Taylor N, Dodd K, Duncombe D, and Duckett S (2005) Reliability of the Australian Therapy Outcome Measures for Quantifying Disability and Health. *International Journal of Therapy and Rehabilitation* 12(8).

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (2nd Edition) Melbourne, Victoria: La Trobe University.

13) American Spinal Injury Association Impairment Scale (ASIA)	
Aim: Measures motor and sensory impairment	**One-Rehabilitation condition(s):** Spinal Cord Injury (SCI)

Description of outcome measure

- Has 5 steps in classification:
  1. Determine sensory levels for right and left sides
  2. Determine motor levels for right and left sides
  3. Determine the neurological level of injury
  4. Determine whether injury is complete or incomplete.
  5. Determine ASIA Impairment (AIS) grade.
- Sensory levels are scored based on the intactness of light touch and pin prick sensation from C2 to S4-5; scoring is based on a 3-point scale and ranges from 0 to 2 for each sensory level.
- Motor levels are scored are scored based on the degree of muscle strength from C5 to T1 and L2 to S1; scoring is based on a 6-point scale and ranges from 0 to 5 for specific muscle groups for each motor level.
- Scores are then summed to provide a total score of 50 for motor scores on each side, a total score of 56 for sensory (light touch) and 56 for sensory (pin prick) scores on each side. (Note: scores can also be presented as motor subscores and sensory subscores, where scores for upper extremity and lower extremity on each side are presented separately.)
- Neurological level of injury is the most caudal segment of the cord with intact sensation and antigravity (3 or more) muscle strength, provided there is normal (intact) sensory (2/2) and motor function (5/5) rostrally respectively.
- Complete injury is determined by no voluntary anal contraction, and no S4-5 sensation (i.e., “0” in both sensory light touch and pin prick scores) and no deep anal pressure. Otherwise, injury is incomplete.
- AIS grade is determined by whether injury is complete or incomplete, and presence or absence of sensory and motor function.
- Scores are gained from direct assessment.

Guidelines of outcome measure

1. Refer to the Key Sensory Points document (produced by the International Standards for Neurological Classification of Spinal Cord Injury) for specific sensory points to test.
2. Refer to the Motor Exam Guide document (produced by the International Standards for Neurological Classification of Spinal Cord Injury) for specific upper limb and lower limb positioning, and instructions to follow.
3. Refer to the ASIA assessment sheet (produced by the International Standards for Neurological Classification of Spinal Cord Injury) for recording of sensory and motor scores, and instructions to determine neurological level of injury, complete or incomplete injury and AIS grade.

Scoring	Interpretation of scoring
Sensory scores: 0 – 112 for light touch and pin prick on one side; A higher score indicates better sensation. Motor scores: 0 – 50 for upper and lower extremity motor strength on one side; A higher score indicates better muscle strength. Neurological Level of Injury: C2 to S5; A more caudal/lower level of injury indicates more preservation of sensory and motor function in the levels above. AIS grade: A-E; A indicates complete SCI, while E indicates normal sensory and motor function. B to	• Normative values: Not applicable • Cut-off: Not applicable • MCID: None reported. • MDC: 4.1 and 12.95 points for light touch, 5.9 and 7.8 points for pin prick, 2.0 points for upper extremity motor scale, 1.0 point for motor scale in acute and chronic SCI

D indicates a range of sensory and/or motor incomplete SCIs.	

Psychometric properties

- Reliability: Excellent intra-rater and inter-rater reliability for motor, pin prick and light touch in acute and chronic SCI (ICC = 0.76-0.99).
- Validity: Excellent construct validity with 10 Metre Walk Test and Walking Index for SCI (WISC II) for indoor mobility for AIS C at 6-12 months and AIS D at 1-3 months.

Time to administer	**Equipment**
10 to 60 mins	• Cotton wool • Safety pin

Special considerations

- May be less responsive to change in chronic or highly mobile patient populations
- Take note of two main changes in the 2019 revision of the ASIA:

  a) a general asterix "*" concept has been introduced where abnormal motor/sensory scores can be tagged with an "*" to indicate a non-SCI condition impacting the examination results, and

  b) Zones of Partial Preservation now applies to both complete and incomplete injuries with missing motor or sensory function in the lowest sacral segments (S4-5).
- In the One-Rehabilitation framework, therapists may obtain information re: complete/incomplete SCI from the physician's notes. If the information is not available, therapists may leave this section blank.

References

ASIA and ISCoS International Standards Committee (2019) The 2019 revision of the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) – What's new? *ISCoS The International Spinal Cord Society* 57: 815-817.

Physiopedia (2020) [Online]. Available at: https://www.physio-pedia.com/American_Spinal_Cord_Injury_Association_(ASIA)_Impairment_Scale [Accessed 22 May 2020]

Shirley Ryan Ability Lab (2020) Rehabilitation Measures Database [Online]. Available at: https://www.sralab.org/rehabilitation-measures/international-standards-neurological-classification-spinal-cord-injury-asia [Accessed 22 May 2020]

The American Spinal Injury Association (2020) E-ISNCSCI [Online]. Available at: https://asia-spinalinjury.org/expedited-isncsci-exam/ [Accessed 22 May 2020]

SECTION 4: Frequently Asked Questions

General

1. **Where are the outcomes to be collected?**
   Outcomes are to be collected in rehabilitation settings only.

2. **When are the outcomes to be collected?**
   At admission and discharge of every rehabilitation setting. These settings can include acute inpatient rehabilitation, community inpatient rehabilitation, senior care centres, day rehabilitation, outpatient rehabilitation, polyclinic, and home therapy. Measurements should be completed as soon as possible on admission.

3. **Who collects the outcomes?**
   Outcomes will mostly be collected by allied health professionals (AHPs), specifically physiotherapists, occupational therapists and speech and language therapists. (Refer to Lecture 3: Overview of Outcomes for the outcome measures being collected by each profession.) In some settings, if there is a shortage of staff, other health care professionals (e.g., nurses, therapy assistants) can assist if they have received training to conduct the outcomes. Training will be provided via the One-Rehabilitation workshop. As per current practice, therapy assistants can conduct the outcome measures under the supervision of a qualified AHP.

4. **What are some examples of Musculoskeletal conditions?**
   Musculoskeletal conditions are broadly categorised as surgical (spinal, peripheral, total knee replacement) and non-surgical conditions (e.g., low back pain, Colle's fracture, patellar fracture). Hip fractures (both operated and non-operated), limb amputation and spinal cord injuries are not considered musculoskeletal conditions. (See Q.9 re: coding)

5. **What are some examples of Deconditioning conditions?**
   Patients aged 65 years old and below who have been through a period of deconditioning due to surgical procedure and/or post-ICU due to sepsis, cellulitis, skin tears.
   Patients aged >65 years old who have fallen at least once in the last 6 months (e.g., due to dizziness), or identified as frail using one of the following criteria:
   a) Clinical Frailty Scale >4,
   b) meets >3 criteria in the FRAIL scale, or
   c) Fried's Frail Phenotype.

6. **What happens if we fail the final graded quiz?**
   You are allowed 3 more trials of the quiz in the next 3 working days (after the workshop). If you continue to fail, your HOD will be notified. It is likely that you will have to attend the workshop again and pay for it out of your own pocket. Failing the quiz indicates that you are not ready to conduct RDG coding, rehabilitation tiering, or outcome measures used in the One-Rehabilitation framework. Your organisation will decide on the capacity of which you will participate in the One-Rehabilitation framework.

7. **If we have further questions regarding the workshop, or One-Rehabilitation framework, who can we contact?**
   For queries regarding content covered in the workshop, you can email SITLEARN@singaporetech.edu.sg. For queries regarding One-Rehabilitation framework, you can email onerehabqueries@aic.sg.

Rehabilitation Diagnostic Group (RDG) coding

8. **Are RDG codings standardised across clusters?**
   Yes, coding is to be standardised across cluster. This is one of the aims of the workshop. It is important to note that RDG only needs to be coded in the first rehabilitation setting. Subsequently, there is no need to code RDG as the patient moves along the pathway to other settings (e.g., inpatient rehabilitation to day rehabilitation). It is the clinical outcome measures that would need to be tracked at every rehabilitation setting.

9. **How would we differentiate MSK surgical (Spinal) from Spinal Cord Injury?**
   MSK spinal conditions refers to neck and back pain (e.g., radiculopathy with nerve root involvement) without true spinal cord involvement and central nervous system signs. If patient has cauda equina signs (e.g., loss of bladder/bowel control, bilateral leg weakness or saddle anaesthesia), the condition would be considered Spinal Cord Injury and coded accordingly.

10. **How should we code patients who are <u>older than 65 years</u>, with deconditioning and functional decline post-surgical procedure or ICU stay, and who do not have a falls history and are not frail?**
    These patients would not be captured under a specific RDG code for now. Therapists may wish to code RDG 17 for "Other rehabilitation condition not listed". This is included in the care plan. There will be a free text entry for therapists to describe.

11. **How should we code a patient with cerebellar stroke who has dysarthria or dysphagia, double vision or dizziness? What about dyspraxia in other strokes?**
    To standardise coding, dysarthria, dysphagia and dyspraxia are considered motor impairments and hence, patient would be coded 1.11 or 1.21 if the motor impairments exist without non-motor impairments (i.e., cognitive/perceptual (including sensory)/communication impairments). Non-motor impairments will include double vision, dizziness, dysphasia (receptive/expressive), or any other cognitive communication deficits. If present without motor impairments, the patient would be coded 1.12 or 1.22.

    If both motor and non-motor impairments are present, the patient would be coded 1.13 or 1.23. If the impairment is not clear to the therapists, we would leave it to the therapists and team to decide on the code which best captures the rehabilitation needs of the patient.

12. **For patients with haemorrhagic conversions, should we code them as haemorrhagic strokes or ischaemic strokes?**
    Code should be based on admission diagnosis, i.e., the ischaemic stroke since it is the condition that led to recombinant tissue plasminogen activator (rtPA) being given. Hence, patients would be coded as 1.21 to 1.23, depending on presence of motor, or non-motor impairments present.

13. **Do patients who improve in their impairments need to be re-coded? For example, a patient with "Stroke with motor and cognitive/ perceptual (including sensory)/ communication impairment" whose motor impairments have resolved.**
    No, these cases do not need to be re-coded. The patient had these symptoms originally, and resolution was due to clinical recovery/improvement.

Rehabilitation Needs Classification/Tiering

14. **Should we consider premorbid cognitive issues (e.g., dementia) during coding and assigning of rehabilitation tiers?**
    RDG coding is meant to capture the primary reason for why patient requires rehabilitation at the specific point in time. Therefore, premorbid cognitive issues should not be considered during coding and assigning of rehabilitation tiers, but captured under comorbidities.

Outcome measures

15. **Do we have to follow the same process for conditions outside of the six One-Rehabilitation conditions (e.g., Parkinson's Disease, Chronic Obstructive Pulmonary Disease, Cancer rehabilitation)?**
    No, One-Rehabilitation is currently only targeting the 6 conditions stated in Section 1.

16. **On p.18 of the 2019 National One-Rehabilitation framework document, it states *"EQ-5D does not apply to a patient/client whose cognitive impairment prevents them from responding effectively*". Does this mean that we should not be using proxies and do not need to do EQ-5D-5L for patients with cognitive impairments?**
    This is addressed in the case study of Mr Siva during the workshop. EQ-5D-5L can be done via proxy, and hence can be obtained in patients with cognitive impairments (e.g., post-stroke). We have attached both the self-administered and proxy versions in Appendix A. Therapists will decide what constitutes "cognitive impairment".

17. **If a patient transits through two different tiers (e.g. T3D to T2D) within the same day, do we need to remeasure his/her outcomes?**
    Not if it is within 72 hours. If so, therapists can copy the last outcomes from T3D to T2D admission forms to ensure all mandatory fields are filled in and do not need to reassess the patients. However, if the patient's condition has changed, please do a re-assessment.

18. **What happens if the Speech and Language Therapist (SLT) is the only therapist seeing the patient in a new rehabilitation setting? Does the SLT need to collect all the outcomes usually collected by Physiotherapists (PTs) and Occupational Therapists (OTs)?**
    The SLT will only need to collect EQ5D-5L, FOIS and AusTOMS. FOIS and AusTOMS if the patient is receiving rehabilitation for stroke. If the patient is unable to answer EQ5D-5L, or if the EQ5D-5L proxy cannot be used, the SLT should select the non-applicable option/function in their respective documentation system.

19. **There may be circumstances where the PT and OT discharges the patient from their service at very different time points. Will this be accepted?**
    The One-Rehab Care Plan will accept the discharge date as the date when Care Plan is submitted. The respective institutions will need to define an internal process or workflow for therapists to coordinate and submit the Care Plan. Outside of the stipulated process/workflow, regular and appropriate communication between treating therapists on a patient's progress and goals should be considered a standard of care.

20. **Do we have to collect MBI/FIM for Musculoskeletal conditions in outpatient settings?**
    Yes, but for ease of scoring, MBI is defaulted to the full score for Musculoskeletal conditions in outpatient settings as it is expected that most people visiting the therapists are fully independent in their ADLs. However, therapists are still required to verify the accuracy of the full score and edit the scores if needed.

21. **Can MBI/FIM be collected via self-report for Stroke in outpatient settings?**
    In most cases, scores on ADLs are collected via self-report (not direct observation) in outpatient settings. Psychometric properties of MBI and FIM have been tested via self-report, and we note that the original guidelines of both MBI and FIM allow for scoring via self-report (by patient/proxy), direct observation and/or notes. Hence, we have allowed organisations to choose between MBI or FIM.

22. **Is it okay for FIM to be collected in 1 setting, and MBI in a subsequent setting?**
    Yes, you can do so for different settings. But therapists must use the same measure within one care setting i.e. not to switch between MBI and FIM in the same setting.

23. **Should I follow the short or long descriptors of items when scoring the MBI? I note that in the original paper by Shah (1989) that middle categories of MBI items were associated with minimal and moderate assistance.**
    Please use the long descriptors to guide your scoring as we note that not all long descriptors describe minimal and moderate assistance exactly. You may refer to Appendix A for the long descriptors.

24. **For patients referred for deconditioning, how do we choose between Gait speed, 5 x Sit to Stand (5 x STS) or Berg Balance Scale (BBS)?**
    Consider patient's highest level of function. Choose gait speed if patient can walk independently, or with supervision. Choose 5 x STS if patient is unable to walk but can stand up independently, or with supervision. Choose BBS if patient is unable to stand up with supervision.

25. **For patients referred for deconditioning, how should we score the patient if we administer the 5 x STS and he/she was unable to complete the test?**
    Select the non-applicable option/function if the patient cannot complete the test, and provide the reason. Use the next most applicable measure, in this case, it would be the BBS. This is to ensure that there is a measure to reflect the possible change in patient's condition with rehabilitation.

26. **For patients referred for deconditioning, if BBS was collected on admission, what outcomes do we collect on discharge if the patient can now walk with supervision - do we collect BBS or gait speed?**
    Collect BBS. It is important to collect the same outcome that was collected on admission. Gait speed will be optional to collect.

27. **What do we enter in the documentation system if the patient cannot complete the test?**
    Select the non-applicable option/function if the patient is not ready to attempt the outcome measures, or if the measurement of the outcome measures need to be ceased as the patient cannot complete the test safely and adequately (e.g., during the measurement of gait speed, patient might require physical assistance throughout the walk).

SECTION 5: Appendices

Appendix A. Assessment sheets and video links of outcome measures

This appendix contains links to the assessment sheets, actual assessment sheets and videos demonstrating conduct of outcome measures (if available).

1) MBI

Domain	Score	Description
Chair/bed transfers	0	Unable to participate in a transfer. Two attendants are required to transfer the care recipient with or without a mechanical device.
	3	Able to participate but maximum assistance of one other person is required in all aspects of the transfer.
	8	The transfer requires the assistance of one other person. Assistance may be required in any aspect of the transfer.
	12	The presence of another person is required either as a confidence measure, or to provide supervision for safety.
	15	The patient can safely approach the bed walking or in a wheelchair, lock brakes, lift footrests, or position walking aid, move safely to bed, lie down, come to a sitting position on the side of the bed, change the position of the wheelchair, transfer back into it safely and/or grasp aid and stand. The patient must be independent in all phases of this activity.
Ambulation	0	Dependent in ambulation.
	3	Constant presence of one or more assistant is required during ambulation.
	8	Assistance is required with reaching aids and/or their manipulation. One person is required to offer assistance.
	12	The patient is independent in ambulation but unable to walk 50 metres without help, or supervision is needed for confidence or safety in hazardous situations.
	15	The patient must be able to wear braces if required, lock and unlock these braces, assume standing position, sit down, and place the necessary aids into position for use. The patient must be able to use crutches, canes, or a walkarette, and walk 50 metres without help or supervision.
Wheelchair (only use this item if patient scores “0” for ambulation and has been trained in wheelchair management)	0	Dependent in wheelchair ambulation.
	1	Patient can propel self short distances on flat surface, but assistance is required for all other steps of wheelchair management.
	3	Presence of one person is necessary and constant assistance is required to manipulate chair to table, bed etc.
	4	The patient can propel self for a reasonable duration over regularly encountered terrain. Minimal assistance may still be required in “tight comers”.
	5	To propel wheelchair independently, the patient must be able to go around comers, turn around, manoeuvre the chair to a table, bed, toilet, etc. The patient must be able to push a chair at least 50 metres/yards.
Stair climbing	0	The patient is unable to climb stairs.
	2	Assistance is required in all aspects of stair climbing, including assistance with walking aids.
	5	The patient is able to ascend/descend but is unable to carry walking aids and needs supervision and assistance.

	8	Generally no assistance is required. At times supervision is required for safety due to morning stiffness, shortness of breath, etc.
	10	The patient is able to go up and down a flight of stairs safely without help or supervision. The patient is able to use hand rails, cane or crutches when needed and is able to carry these devices as he/she ascends or descends.
Toilet transfers	0	Fully dependent in toileting.
	2	Assistance required in all aspects of toileting.
	5	Assistance may be required with management of clothing, transferring, or washing hands.
	8	Supervision may be required for safety with normal toilet. A commode may be used at night but assistance is required for emptying and cleaning.
	10	The patient is able to get on/off the toilet, fasten and unfasten clothes, prevent soiling of clothes and use toilet paper without help. If necessary, the care recipient may use a bed pan or commode or urinal at night, but must be able to empty it and clean it.
Bowel control	0	The patient is bowel incontinent.
	2	The patient needs help to assume appropriate position, and with bowel movement facilitatory techniques.
	5	The patient can assume appropriate position, but cannot use facilitatory techniques or clean self without assistance and has frequent accidents. Assistance is required with incontinence aids such as pads, etc.
	8	The patient may require supervision with the use of suppository or enema and has occasional accidents.
	10	The patient can control bowels and has no accidents, can use suppository, or take an enema when necessary.
Bladder control	0	The patient is dependent in bladder management, is incontinent, or has indwelling catheter.
	2	The patient is incontinent but is able to assist with the application of an internal or external device.
	5	The patient is generally dry by day, but not at night and needs some assistance with the devices.
	8	The patient is generally dry by day and night, but may have an occasional accident or need minimal assistance with internal or external devices.
	10	The patient is able to control bladder day and night, and/or is independent with internal or external devices.
Bathing	0	Total dependence in bathing self.
	1	Assistance is required in all aspects of bathing, but care recipient is able to make some contribution.
	3	Assistance is required with either transfer to shower/bath or with washing or drying; including inability to complete a task because of condition or disease, etc.
	4	Supervision is required for safety in adjusting the water temperature, or in the transfer.
	5	The patient may use a bathtub, a shower, or take a complete sponge bath. The patient must be able to do all steps of whichever method is employed without another person being present.
Dressing	0	The patient is dependent in all aspects of dressing and is unable to participate in the activity.

	2	The patient is able to participate to some degree, but is dependent in all aspects of dressing.
	5	Assistance is needed in putting on, and/or removing any clothing.
	8	Only minimal assistance is required with fastening clothing such as buttons, zips, bra, shoes, etc.
	10	The patient is able to put on, remove, and fasten clothing, tie shoelaces, or put on, fasten, remove corset, braces, as prescribed.
Personal hygiene	0	The patient is unable to attend to personal hygiene and is dependent in all aspects.
	1	Assistance is required in all steps of personal hygiene.
	3	Some assistance is required in one or more steps of personal hygiene.
	4	Patient is able to conduct his/her own personal hygiene but requires minimal assistance before and/or after the task.
	5	The patient can wash his/her hands and face, comb hair, clean teeth and shave. A male care recipient may use any kind of razor but must insert the blade, or plug in the razor without help, as well as retrieve it from the drawer or cabinet. A female care recipient must apply her own make-up, if used, but need not braid or style her hair.
Feeding	0	Dependent in all aspects and needs to be fed.
	2	Can manipulate an eating device, usually a spoon, but someone must provide active assistance during the meal.
	5	Able to feed self with supervision. Assistance is required with associated tasks such as putting milk/sugar into tea, salt, pepper, spreading butter, turning a plate or other “set up” activities.
	8	Independence in feeding with prepared tray, except may be cut meat, open milk carton, jar lid etc. The presence of another person is not required.
	10	The patient can feed self from a tray or table when someone puts the food within reach. The patient must put on an assistive device if needed, cut food, and if desired use salt and pepper, spread butter, etc.

Interpretation	
0-20	Total dependence
21-60	Severe dependence
61-90	Moderate dependence
91-99	Slight dependence
100	Independence

2) EQ-5D-5L

Link to assessment sheet: https://euroqol.org/eq-5d-instruments/

(Note: For EQ-5D-5L descriptive, the first item indicates a score of 1 and the last item indicates a score of 5; A higher score represents "worse health status" (i.e., more severe problems with dimension). Please refer to the descriptors for each numerical score when scoring on iConnect.)

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY

- I have no problems in walking about ☐
- I have slight problems in walking about ☐
- I have moderate problems in walking about ☐
- I have severe problems in walking about ☐
- I am unable to walk about ☐

SELF-CARE

- I have no problems washing or dressing myself ☐
- I have slight problems washing or dressing myself ☐
- I have moderate problems washing or dressing myself ☐
- I have severe problems washing or dressing myself ☐
- I am unable to wash or dress myself ☐

USUAL ACTIVITIES (*e.g. work, study, housework, family or leisure activities*)

- I have no problems doing my usual activities ☐
- I have slight problems doing my usual activities ☐
- I have moderate problems doing my usual activities ☐
- I have severe problems doing my usual activities ☐
- I am unable to do my usual activities ☐

PAIN / DISCOMFORT

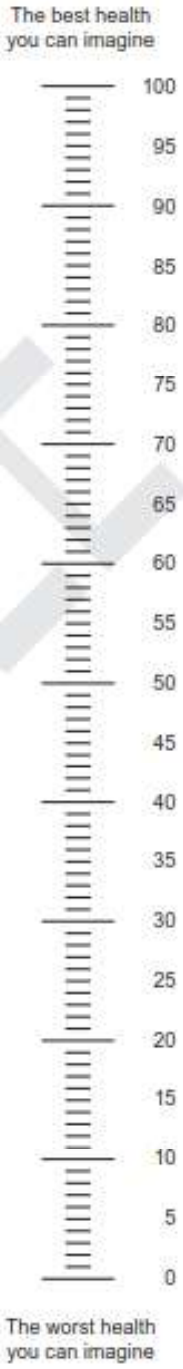
- I have no pain or discomfort ☐
- I have slight pain or discomfort ☐
- I have moderate pain or discomfort ☐
- I have severe pain or discomfort ☐
- I have extreme pain or discomfort ☐

ANXIETY / DEPRESSION

- I am not anxious or depressed ☐
- I am slightly anxious or depressed ☐
- I am moderately anxious or depressed ☐
- I am severely anxious or depressed ☐
- I am extremely anxious or depressed ☐

- We would like to know how good or bad your health is TODAY.
- This scale is numbered from 0 to 100.
- 100 means the best health you can imagine.
  0 means the worst health you can imagine.
- Mark an X on the scale to indicate how your health is TODAY.
- Now, please write the number you marked on the scale in the box below.

YOUR HEALTH TODAY = ☐



Proxy version of EQ5D-5L

Under each heading, please tick the ONE box that you think best describes the person's health TODAY.

MOBILITY

- No problems in walking about ❑
- Slight problems in walking about ❑
- Moderate problems in walking about ❑
- Severe problems in walking about ❑
- Unable to walk about ❑

SELF-CARE

- No problems washing or dressing him/herself ❑
- Slight problems washing or dressing him/herself ❑
- Moderate problems washing or dressing him/herself ❑
- Severe problems washing or dressing him/herself ❑
- Unable to wash or dress him/herself ❑

USUAL ACTIVITIES *(e.g. work, study, housework, family or leisure activities)*

- No problems doing his/her usual activities ❑
- Slight problems doing his/her usual activities ❑
- Moderate problems doing his/her usual activities ❑
- Severe problems doing his/her usual activities ❑
- Unable to do his/her usual activities ❑

PAIN / DISCOMFORT

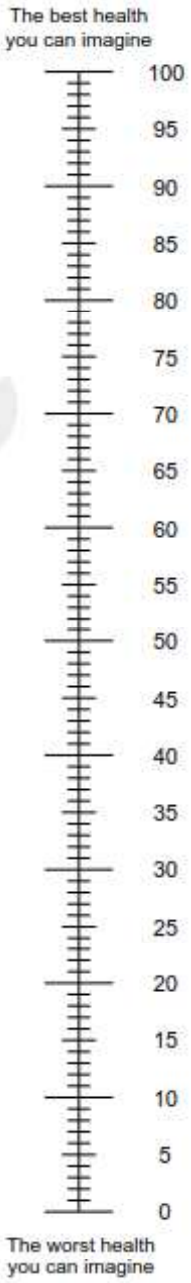
- No pain or discomfort ❑
- Slight pain or discomfort ❑
- Moderate pain or discomfort ❑
- Severe pain or discomfort ❑
- Extreme pain or discomfort ❑

ANXIETY / DEPRESSION

- Not anxious or depressed ❑
- Slightly anxious or depressed ❑
- Moderately anxious or depressed ❑
- Severely anxious or depressed ❑
- Extremely anxious or depressed ❑

- We would like to know how good or bad you think the person's health is TODAY.
- This scale is numbered from 0 to 100.
- 100 means the best health you can imagine.
  0 means the worst health you can imagine.
- Please mark an X on the scale to indicate how you think the person's health is TODAY.
- Now, write the number you marked on the scale in the box below.

THE PERSON'S HEALTH TODAY = ☐



4) Patient Specific Functional Scale (PSFS)

Link to assessment sheet: https://www.sralab.org/sites/default/files/2017-06/Patient-specific.pdf

The Patient-Specific Functional Scale

This useful questionnaire can be used to quantify activity limitation and measure functional outcome for patients with any orthopaedic condition.

Clinician to read and fill in below: Complete at the end of the history and prior to physical examination.

Initial Assessment:

I am going to ask you to identify up to three important activities that you are unable to do or are having difficulty with as a result of your _____ problem. Today, are there any activities that you are unable to do or having difficulty with because of your _____ problem? (Clinician: show scale to patient and have the patient rate each activity).

Follow-up Assessments:

When I assessed you on (state previous assessment date), you told me that you had difficulty with (read all activities from list at a time). Today, do you still have difficulty with: (read and have patient score each item in the list)?

Patient-specific activity scoring scheme (Point to one number):

0 1 2 3 4 5 6 7 8 9 10

Unable to perform activity

Able to perform activity at the same level as before injury or problem

(Date and Score)

Activity	Initial					
1.						
2.						
3.						
4.						
5.						
Additional						
Additional						

Total score = sum of the activity scores/number of activities
Minimum detectable change (90%CI) for average score = 2 points
Minimum detectable change (90%CI) for single activity score = 3 points

PSFS developed by: Stratford, P., Gill, C., Westaway, M., & Binkley, J. (1995). Assessing disability and change on individual patients: a report of a patient specific measure. Physiotherapy Canada, 47, 258-263.

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5) Gait speed

Link to assessment sheet: https://geriatrictoolkit.missouri.edu/Gait-Speed.doc

Link to video: iWalk: 10-Metre Walk Test Post-Stroke by Knowledge to Action Lab [Accessed 22 April 2021] https://www.youtube.com/watch?v=KJsZ9MU88u0

6) 5 x Sit to Stand (5 x STS)

Link to assessment sheet: https://www.sralab.org/sites/default/files/2019-12/5xsts_protocol_final.pdf

Link to video: 5 Times Sit to Stand Test by PaulPotterPT [Accessed 22 April 2021] https://www.youtube.com/watch?v=4N4PhZlyYGM

7) Bergs Balance Scale (BBS)

Link to assessment sheet: https://neuropt.org/docs/default-source/cpgs/core-outcome-measures/core-measure-berg-balance-scale-(bbs)_final-2019.pdf?sfvrsn=6e845043_0

Link to video: Berg Balance Scale by Fall Prevention Center of Excellence (StopFalls.org) [Accessed 22 May 2020] https://www.youtube.com/watch?v=HBKXu9fHnuo&t=204s

1. SITTING TO STANDING

INSTRUCTIONS: Please stand up. Try not to use your hand for support.

( ) 4 able to stand without using hands and stabilize independently
( ) 3 able to stand independently using hands
( ) 2 able to stand using hands after several tries
( ) 1 needs minimal aid to stand or stabilize
( ) 0 needs moderate or maximal assist to stand

2. STANDING UNSUPPORTED

INSTRUCTIONS: Please stand for two minutes without holding on.

( ) 4 able to stand safely for 2 minutes
( ) 3 able to stand 2 minutes with supervision
( ) 2 able to stand 30 seconds unsupported
( ) 1 needs several tries to stand 30 seconds unsupported
( ) 0 unable to stand 30 seconds unsupported

If a subject is able to stand 2 minutes unsupported, score full points for sitting unsupported. Proceed to item #4.

3. SITTING WITH BACK UNSUPPORTED BUT FEET SUPPORTED ON FLOOR OR ON A STOOL

INSTRUCTIONS: Please sit with arms folded for 2 minutes.

( ) 4 able to sit safely and securely for 2 minutes
( ) 3 able to sit 2 minutes under supervision
( ) 2 able to able to sit 30 seconds
( ) 1 able to sit 10 seconds
( ) 0 unable to sit without support 10 seconds

4. STANDING TO SITTING

INSTRUCTIONS: Please sit down.

( ) 4 sits safely with minimal use of hands
( ) 3 controls descent by using hands
( ) 2 uses back of legs against chair to control descent
( ) 1 sits independently but has uncontrolled descent
( ) 0 needs assist to sit

5. TRANSFERS

INSTRUCTIONS: Arrange chair(s) for pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use two chairs (one with and one without armrests) or a bed and a chair.

( ) 4 able to transfer safely with minor use of hands
( ) 3 able to transfer safely definite need of hands
( ) 2 able to transfer with verbal cuing and/or supervision
( ) 1 needs one person to assist
( ) 0 needs two people to assist or supervise to be safe

6. STANDING UNSUPPORTED WITH EYES CLOSED

INSTRUCTIONS: Please close your eyes and stand still for 10 seconds.

( ) 4 able to stand 10 seconds safely
( ) 3 able to stand 10 seconds with supervision
( ) 2 able to stand 3 seconds
( ) 1 unable to keep eyes closed 3 seconds but stays safely
( ) 0 needs help to keep from falling

7. STANDING UNSUPPORTED WITH FEET TOGETHER

INSTRUCTIONS: Place your feet together and stand without holding on.

( ) 4 able to place feet together independently and stand 1 minute safely
( ) 3 able to place feet together independently and stand 1 minute with supervision
( ) 2 able to place feet together independently but unable to hold for 30 seconds
( ) 1 needs help to attain position but able to stand 15 seconds feet together
( ) 0 needs help to attain position and unable to hold for 15 seconds

8. REACHING FORWARD WITH OUTSTRETCHED ARM WHILE STANDING

INSTRUCTIONS: Lift arm to 90 degrees. Stretch out your fingers and reach forward as far as you can. (Examiner places a ruler at the end of fingertips when arm is at 90 degrees. Fingers should not touch the ruler while reaching forward. The recorded measure is the distance forward that the fingers reach while the subject is in the most forward lean position. When possible, ask subject to use both arms when reaching to avoid rotation of the trunk.)

( ) 4 can reach forward confidently 25 cm (10 inches)
( ) 3 can reach forward 12 cm (5 inches)
( ) 2 can reach forward 5 cm (2 inches)
( ) 1 reaches forward but needs supervision
( ) 0 loses balance while trying/requires external support

9. PICK UP OBJECT FROM THE FLOOR FROM A STANDING POSITION

INSTRUCTIONS: Pick up the shoe/slipper, which is place in front of your feet.

( ) 4 able to pick up slipper safely and easily
( ) 3 able to pick up slipper but needs supervision
( ) 2 unable to pick up but reaches 2-5 cm(1-2 inches) from slipper and keeps balance independently
( ) 1 unable to pick up and needs supervision while trying
( ) 0 unable to try/needs assist to keep from losing balance or falling

10. TURNING TO LOOK BEHIND OVER LEFT AND RIGHT SHOULDERS WHILE STANDING

INSTRUCTIONS: Turn to look directly behind you over toward the left shoulder. Repeat to the right. Examiner may pick an object to look at directly behind the subject to encourage a better twist turn.

( ) 4 looks behind from both sides and weight shifts well
( ) 3 looks behind one side only other side shows less weight shift
( ) 2 turns sideways only but maintains balance
( ) 1 needs supervision when turning
( ) 0 needs assist to keep from losing balance or falling

11. TURN 360 DEGREES

INSTRUCTIONS: Turn completely around in a full circle. Pause. Then turn a full circle in the other direction.

( ) 4 able to turn 360 degrees safely in 4 seconds or less
( ) 3 able to turn 360 degrees safely one side only 4 seconds or less
( ) 2 able to turn 360 degrees safely but slowly
( ) 1 needs close supervision or verbal cuing
( ) 0 needs assistance while turning

12. PLACE ALTERNATE FOOT ON STEP OR STOOL WHILE STANDING UNSUPPORTED

INSTRUCTIONS: Place each foot alternately on the step/stool. Continue until each foot has touch the step/stool four times.

( ) 4 able to stand independently and safely and complete 8 steps in 20 seconds
( ) 3 able to stand independently and complete 8 steps in > 20 seconds
( ) 2 able to complete 4 steps without aid with supervision
( ) 1 able to complete > 2 steps needs minimal assist
( ) 0 needs assistance to keep from falling/unable to try

13. STANDING UNSUPPORTED ONE FOOT IN FRONT

INSTRUCTIONS: (DEMONSTRATE TO SUBJECT) Place one foot directly in front of the other. If you feel that you cannot place your foot directly in front, try to step far enough ahead that the heel of your forward foot is ahead of the toes of the other foot. (To score 3 points, the length of the step should exceed the length of the other foot and the width of the stance should approximate the subject's normal stride width.)

( ) 4 able to place foot tandem independently and hold 30 seconds
( ) 3 able to place foot ahead independently and hold 30 seconds
( ) 2 able to take small step independently and hold 30 seconds
( ) 1 needs help to step but can hold 15 seconds
( ) 0 loses balance while stepping or standing

14. STANDING ON ONE LEG

INSTRUCTIONS: Stand on one leg as long as you can without holding on.

( ) 4 able to lift leg independently and hold > 10 seconds
( ) 3 able to lift leg independently and hold 5-10 seconds
( ) 2 able to lift leg independently and hold ≥ 3 seconds
( ) 1 tries to lift leg unable to hold 3 seconds but remains standing independently.
( ) 0 unable to try of needs assist to prevent fall

( ) TOTAL SCORE (Maximum = 56)

8) K-Level

Link to assessment sheet: http://www.austpar.com/portals/gait/html/KClass.html; https://www.ottobockus.com/therapy/resources-for-prosthetics/what-are-k-levels.html

K-Levels	Description of K-Levels
0	Does not have the ability or potential to ambulate or transfer safely with or without assistance and a prosthesis does not enhance their quality of life or mobility.
1	Has the ability or potential to use a prosthesis for transfers or ambulation on level surfaces at fixed cadence. Typical of the limited and unlimited household ambulator.
2	Has the ability or potential for ambulation with the ability to traverse low level environmental barriers such as curbs, stairs or uneven surfaces. Typical of the limited community ambulator.
3	Has the ability or potential for ambulation with variable cadence. Typical of the community ambulator who has the ability to traverse most environmental barriers and may have vocational, therapeutic, or exercise activity that demands prosthetic utilization beyond simple locomotion.
4	Has the ability or potential for prosthetic ambulation that exceeds basic ambulation skills, exhibiting high impact, stress, or energy levels. Typical of the prosthetic demands of the child, active adult, or athlete.

9) Amputee Mobility Predictor (AMP)

Link to assessment sheet of AMPPRO and AMPnoPRO: https://www.archives-pmr.org/action/showPdf?pii=S0003-9993%2802%2947460-6

Link to assessment sheet of AMP-B:
https://www.rehab.research.va.gov/jour/2013/507/pdf/page961.pdf
https://www.rehab.research.va.gov/jour/2013/507/pdf/jrrd-2012-05-0097appn.pdf

Link to video: Amputee Mobility Predictor – Setup and Instruction by Mission Gait [Accessed 22 April 2021] https://www.youtube.com/watch?v=goN4j6WRRWE

Licenses will be purchased and shared with organisations for use.

10) Frenchay Activities Index (FAI)

Link to assessment sheet: https://www.sralab.org/sites/default/files/2017-06/Frenchay%20Activities%20Index.pdf

In the last 3 months how often have you undertaken:	
1. Preparing main meals 2. Washing up after meals	0 = Never 1 = Less than once a week 2 = 1-2 times per week 3 = Most days
3. Washing clothes 4. Light housework 5. Heavy housework 6. Local Shopping 7. Social occasions 8. Walking outside for > 15 minutes 9. Actively pursuing hobby 10. Driving car/going on bus	0 = Never 1 = 1-2 times in 3 months 2 = 3-12 times in 6 months 3 = At least weekly

In the last 6 months how often have you undertaken:	
11. Travel outing/car ride	0 = Never 1 = 1-2 times in 6 months 2 = 3-12 times in 6 months 3 = At least weekly
12. Gardening	0 = Never
13. Household maintenance	1 = Light 2 = Moderate 3 = Heavy/All necessary
14. Reading books	0 = None 1 = 1 in 6 months 2 = Less than 1 in 2 weeks 3 = More than 1 every 2 weeks
15. Gainful work	0 = None 1 = Up to 10 hours/week 2 = 10-30 hours/week 3 = Over 30 hours/week

11) Functional Oral Intake Scale (FOIS)

Link to assessment sheet: https://www.archives-pmr.org/article/S0003-9993(05)00196-6/fulltext (Refer to Appendix C for FOIS training slides.)

FOIS items	Description of FOIS items
1	Nothing by mouth.
2	Tube dependent with minimal attempts of food or liquid.
3	Tube dependent with consistent oral intake of food or liquid.
4	Total oral diet of a single consistency.
5	Total oral diet with multiple consistencies, but requiring special preparation or compensations.
6	Total oral diet with multiple consistencies without special preparation, but with specific food limitations.
7	Total oral diet with no restrictions.

12) AusTOMs for Speech Pathology

Scale Card for Speech, Language and Cognitive Communication Domains

(Refer to Appendix C for AusTOMs training slides.)

Speech

The Speech scale incorporates all disorders of the structure and/or function of speech production, for both adults and children. Examples include articulation delay/disorder; phonological delay/ disorder; motor speech disorders (e.g. dysarthria) and speech disorders arising from aetiologies such as hearing loss or cleft palate. If an augmentative or alternative communication (AAC) device is used, the use of this should be rated under the Activity Limitation domain.

IMPAIRMENT of either Structure or Function (as appropriate to age): *Impairments are problems in body structure (anatomical) or function (physiological) as a deviation or loss.*

0 Profound speech impairment: No speech, or undifferentiated vocalisations. No voluntary articulatory movements.

1 Severe speech impairment: Extremely restricted range of phonemes (e.g. only one sound class such as vowels). Limited or repetitive syllables only. Extremely limited strength, range and/or rate of oral movement or control due to weakness or co-ordination problems (e.g. cannot imitate mouth shapes).

2 Moderate/severe speech impairment: Restricted range of consonant sounds in repertoire. Distorted vowel sounds. Difficulties with sound sequencing evident. Can attempt target sounds but cannot combine them into words. Strength, range and/or rate of oral movement are markedly reduced.

3 Moderate speech impairment: Restricted range of phonemes in speech but used correctly. Multiple errors in speech sound system. Can combine target sounds correctly into syllables and words when cued, but is not yet spontaneous. Strength, range and/or rate of oral movement are moderately reduced: can control oral movement to imitate shapes and most sounds (inconsistently).

4 Mild speech impairment: 1–2 sound errors of place or manner (eg /k/→ /t/) which are common, but not appropriate for age, able to produce these with cues and sometimes spontaneously (but inconsistent). Mild imprecision in speech (e.g. slurring some words), may be affected by situation (e.g. talking quickly). Strength, range and/or rate of oral movement are mildly reduced: can control oral movement to imitate shapes and all sounds (inconsistently).

5 No speech impairment: Speech is appropriate for age/ culture/ developmental level (e.g. developmentally appropriate sound errors only). Full range of age-appropriate sounds able to be targeted. No demonstrable restrictions in strength, range and/or rate of oral movement.

ACTIVITY LIMITATION (as appropriate to age): *Activity limitation results from difficulty in the performance of an activity. Activity is the execution of a task by the individual. Communication may involve the use of AAC devices.*

0 Profound limitation: Unable to communicate message. Communication is never effective.

1 Severe limitation: Communication is occasionally effective in one type of situation only (eg with main communication partner).

2 Moderate/severe limitation: Communication is usually effective in more than one type of situation, with a familiar person. Person can usually convey basic needs and wants to main communication partners.

3 Moderate limitation: Communication is effective in many types of situations with familiar people, and may be effective with unfamiliar people. Person can effectively convey needs and wants to main communication partners, but not always with others.

4 Mild limitation: Communication is effective with familiar people and usually with non familiar people. Communication may be compromised by environment eg noisy background.

5 No limitation: Able to communicate message successfully to a wide range of people in a range of situations.

Language

The Language scale incorporates receptive, expressive, reading and writing disorders/delays, for both adults and children. Examples include acquired and developmental language disorders, and disorders of language arising from aetiologies such as hearing loss. If an augmentative or alternative communication device is used (external), rate the use of this under the Activity Limitation domain. You may rate expressive and receptive language separately for the Impairment and Activity Limitation domains (i.e. make two ratings of these domains- one relating to expressive language, and one to receptive language).

IMPAIRMENT of either Structure or Function (as appropriate to age): *Impairments are problems in body structure (anatomical) or function (physiological) as a deviation or loss.*

0 Profound language impairment: Total absence of meaningful: Auditory or gestural comprehension/ verbal output/ processing of written language/ written output.

1 Severe language impairment: Exhibits infrequently or inconsistently: Key word comprehension (auditory, written or gestural)/ Ability to form elements of written, verbal or gestural output (e.g. meaningful vocalising).

2 Moderate/severe language impairment: Exhibits frequently and consistently: Key word comprehension (auditory, written or gestural), may be increased with assistance or cues/ Ability to form elements of written, verbal or gestural output (e.g. meaningful words).

3 Moderate language impairment: Exhibits inconsistent: Comprehension of simple spoken, gestural or written language- shows difficulties with understanding complex or abstract sentences/ Able to form meaningful written language with assistance/ Expressive language output is appropriate to context, but reduced in length and complexity of sentences.

4 Mild language impairment: Exhibits consistent: Comprehension of simple spoken or signed conversation/ Able to form and understand written language with assistance (e.g. cues to attend)/ Mild expressive language difficulties (e.g. problems with grammatical structure).

5 No language impairment: Consistently understands spoken or signed and written language (including complex, as appropriate to age or developmental level), consistent verbal and written language output.

ACTIVITY LIMITATION (as appropriate to age): *Activity limitation results from difficulty in the performance of an activity. Activity is the execution of a task by the individual. Communication may involve the use of AAC devices.*

0 Profound limitation: Unable to initiate or respond to verbal and/or non verbal communication.

1 Severe limitation: Communication severely compromised- may attempt to communicate but is rarely able to make needs or wants known. Cannot follow simple directions unless structured with maximum cues.

2 Moderate/severe limitation: Communication moderately compromised- is able to make basic needs and wants known consistently with familiar communication partners. Can follow simple directions with some cues.

3 Moderate limitation: Communication is mostly effective, can communicate and understand concrete ideas, and can infrequently communicate and understand abstract ideas. Can follow simple and some complex directions (may require repetition).

4 Mild limitation: Communication is effective most of the time, occasionally demonstrates difficulty in expressing or understanding ideas. Can usually follow complex directions, able to use strategies spontaneously to overcome difficulties.

5 No limitation: Communicates effectively in all situations with a range of communication partners (as appropriate to age, gender, culture).

Cognitive-Communication

The Cognitive-Communication scale incorporates all aspects of cognition that impact on communication, for both adults and children. Examples include patients with acquired brain injury, acquired neurological disorders (resulting in cognitive deficits, e.g. dementia), and developmental disorders of cognition. If an augmentative or alternative communication device is used, rate the use of this under the Activity Limitation domain.

IMPAIRMENT of either Structure or Function (as appropriate to age): *Impairments are problems in body structure (anatomical) or function (physiological) as a deviation or loss.*

0 Profound cognitive impairment: Not responsive to any stimuli (e.g. comatose/vegetative).

1 Severe cognitive impairment: Responds infrequently to stimuli (e.g. may recognise familiar faces); responses are severely delayed/unable to attend. No insight, not orientated, no short term memory or learning.

2 Moderate/severe cognitive impairment: Responds to stimuli, responses are inconsistent and may be delayed. Can attend briefly but extremely distractible and cannot focus on task. Insight is minimal/fluctuates. Oriented to self. Some ability to recall basic personal information. May demonstrate learning of routine tasks in context. Requires assistance to plan basic tasks.

3 Moderate cognitive impairment: Consistently responds to stimuli, responses may be delayed. Demonstrates concrete thinking. Able to attend to a task for a short length of time, but distractible. Shows some insight in response to feedback. Oriented to self, place and time. Retaining personal information, some understanding of future events. Able to learn routine tasks. Able to plan basic tasks but needs maximal assistance to plan complex tasks.

4 Mild cognitive impairment: Consistent responses to a range of stimuli, may show delays. Mild problems evident with attention that may be affected by environment. Demonstrates insight most of the time. Fully oriented. Able to recall and integrate past and recent events. Some ability to abstract. Complex processing difficulties evident. Able to plan within familiar contexts but needs cues to plan for novel events.

5 No cognitive impairment: No evidence of difficulty with responses, memory, insight, attention, orientation or planning, as appropriate to age.

ACTIVITY LIMITATION (as appropriate to age): *Activity limitation results from difficulty in the performance of an activity. Activity is the execution of a task by the individual. Communication may involve the use of AAC devices.*

0 Profound limitation: No response to stimuli. No communicative intent.

1 Severe limitation: No initiation of communication. Needs maximal cueing to respond. Unable to learn new information or problem solve.

2 Moderate/severe limitation: May initiate communication spontaneously but may not do so effectively. Requires cueing to respond/ responses are random or non-purposeful. Able to complete simple personal problem solving and routine concrete tasks with supervision and cues.

3 Moderate limitation: Initiates communication and is able to make basic needs known. May respond spontaneously but inconsistently or inappropriately to environment. Able to learn communication strategies in context, and is beginning to use these independently. Able to solve concrete problems independently.

4 Mild limitation: Communicates effectively in more than one type of setting. Responds appropriately to context, may have difficulty with complex questions/ conversation. Able to learn and problem solve complex tasks, however may require minimal prompts to begin, complete, or carry over within context of environment.

5 No limitation: Cognitive-communication skills are functional in all contexts.

Only 1 rating is required for Participation Restriction and Distress/Wellbeing Sections

PARTICIPATION RESTRICTION (as appropriate to age): Participation restrictions are difficulties the individual may have in the manner or extent of involvement in their life situation. Clinicians should ask themselves: "given their problem, is this individual experiencing disadvantage?"

0 Unable to fulfil social, work, educational or family roles. No social integration. No involvement in decision-making. No control over environment. Unable to reach potential in any situation.

1 Severe difficulties in fulfilling social, work, educational or family roles. Very limited social integration. Very limited involvement in decision-making. Very little control over environment. Can only rarely reach potential with maximum assistance.

2 Moderately severe difficulty in fulfilling social, work, educational or family roles. Limited social integration. Limited involvement in decision-making. Control over environment in one setting only. Usually reaches potential with maximum assistance.

3 Moderate difficulties in fulfilling social, work, educational or family roles. Relies on moderate assistance for social integration. Limited involvement in decision-making. Control over environment in more than one setting. Always reaches potential with maximum assistance and sometimes reaches potential without assistance.

4 Mild difficulties in fulfilling social, work, educational or family roles. Needs little assistance for social integration and decision-making. Control over environment in more than one setting. Reaches potential with little assistance.

5 No difficulties in fulfilling social, work, educational or family roles. No assistance required for social integration or decision-making. Control over environment in all settings. Reaches potential with no assistance.

DISTRESS/WELLBEING (as appropriate to age): The level of concern experienced by the individual. Concern may be evidenced by anger, frustration, apathy, depression etc.

0 High and consistent levels of distress or concern.

1 Severe concern, becomes distressed or concerned easily. Requires constant reassurance. Loses emotional control easily.

2 Moderately severe concern. Frequent emotional encouragement and reassurance required.

3 Moderate concern. May be able to manage emotions at times, although may require some encouragement.

4 Mild concern. Able to manage emotions in most situations. Occasional emotional support or encouragement needed.

5 Able to cope with most situations. Accepts and understands own limitations.

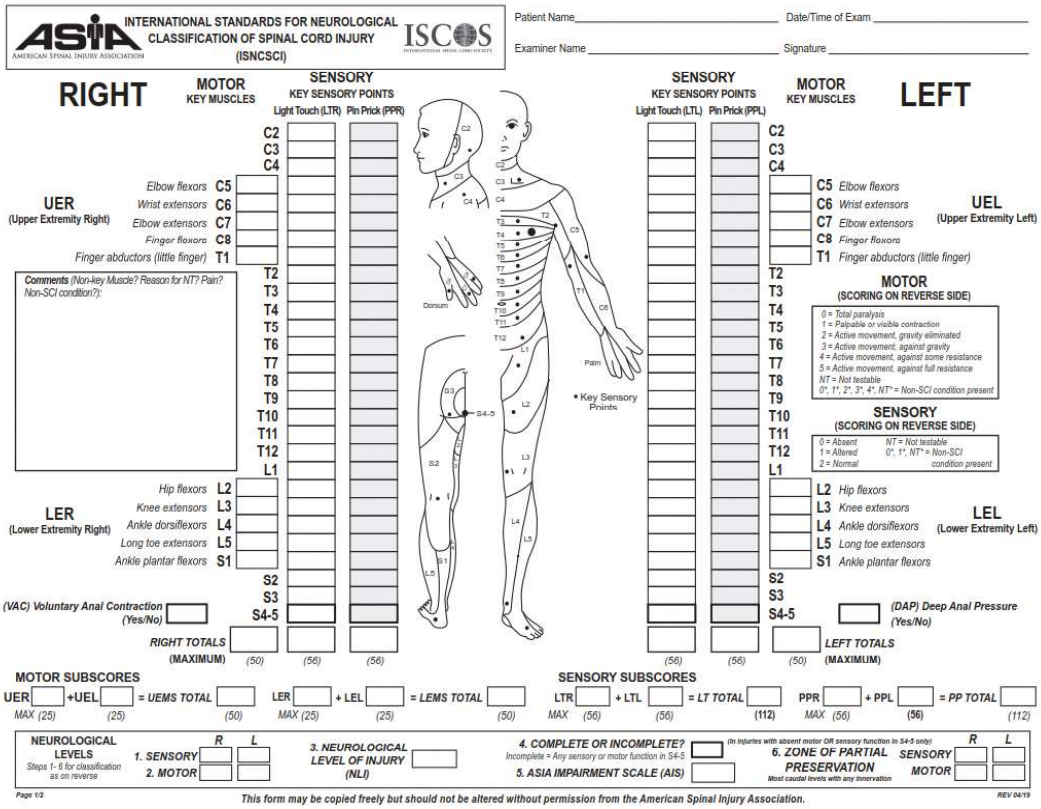
12) American Spinal Injury Association (ASIA) Impairment Scale

Link to assessment sheet: https://asia-spinalinjury.org/international-standards-neurological-classification-sci-isncsci-worksheet/

Link to video: Physiotherapists – Learn about SCI physiotherapy by elearnSCI.org [Accessed 22 April 2021] http://www.elearnsci.org/intro.aspx?id=4&category=Physiotherapists.

(Go to the following module(s): "Physiotherapists" > "The health essentials" > "Activity: ASIA basic introduction".)

Link to video: Common errors made during the ISNCSCI Examination (ASIA Exam) by Spinal Cord Injury Research Evidence (SCIRE) [Accessed 22 April 2021] https://www.youtube.com/watch?v=PpgGzIhCpuI



Muscle Function Grading

0 = Total paralysis

1 = Palpable or visible contraction

2 = Active movement, full range of motion (ROM) with gravity eliminated

3 = Active movement, full ROM against gravity

4 = Active movement, full ROM against gravity and moderate resistance in a muscle specific position

5 = (Normal) active movement, full ROM against gravity and full resistance in a functional muscle position expected from an otherwise unimpaired person

NT = Not testable (i.e. due to immobilization, severe pain such that the patient cannot be graded, amputation of limb, or contracture of > 50% of the normal ROM)

0*, 1*, 2*, 3*, 4*, NT* = Non-SCI condition present [a]

Sensory Grading

0 = Absent **1** = Altered, either decreased/impaired sensation or hypersensitivity

2 = Normal **NT** = Not testable

0*, 1*, NT* = Non-SCI condition present [a]

[a]Note: Abnormal motor and sensory scores should be tagged with a '*' to indicate an impairment due to a non-SCI condition. The non-SCI condition should be explained in the comments box together with information about how the score is rated for classification purposes (at least normal / not normal for classification).

When to Test Non-Key Muscles:

In a patient with an apparent AIS B classification, non-key muscle functions more than 3 levels below the motor level on each side should be tested to most accurately classify the injury (differentiate between AIS B and C).

Movement	Root level
Shoulder: Flexion, extension, adbuction, adduction, internal and external rotation **Elbow:** Supination	C5
Elbow: Pronation **Wrist:** Flexion	C6
Finger: Flexion at proximal joint, extension **Thumb:** Flexion, extension and abduction in plane of thumb	C7
Finger: Flexion at MCP joint **Thumb:** Opposition, adduction and abduction perpendicular to palm	C8
Finger: Abduction of the index finger	T1
Hip: Adduction	L2
Hip: External rotation	L3
Hip: Extension, abduction, internal rotation **Knee:** Flexion **Ankle:** Inversion and eversion **Toe:** MP and IP extension	L4
Hallux and Toe: DIP and PIP flexion and abduction	L5
Hallux: Adduction	S1

ASIA Impairment Scale (AIS)

A = Complete. No sensory or motor function is preserved in the sacral segments S4-5.

B = Sensory Incomplete. Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-5 (light touch or pin prick at S4-5 or deep anal pressure) AND no motor function is preserved more than three levels below the motor level on either side of the body.

C = Motor Incomplete. Motor function is preserved at the most caudal sacral segments for voluntary anal contraction (VAC) OR the patient meets the criteria for sensory incomplete status (sensory function preserved at the most caudal sacral segments S4-5 by LT, PP or DAP), and has some sparing of motor function more than three levels below the ipsilateral motor level on either side of the body. (This includes key or non-key muscle functions to determine motor incomplete status.) For AIS C – less than half of key muscle functions below the single NLI have a muscle grade ≥ 3.

D = Motor Incomplete. Motor incomplete status as defined above, with at least half (half or more) of key muscle functions below the single NLI having a muscle grade ≥ 3.

E = Normal. If sensation and motor function as tested with the ISNCSCI are graded as normal in all segments, and the patient had prior deficits, then the AIS grade is E. Someone without an initial SCI does not receive an AIS grade.

Using ND: To document the sensory, motor and NLI levels, the ASIA Impairment Scale grade, and/or the zone of partial preservation (ZPP) when they are unable to be determined based on the examination results.

AMERICAN SPINAL INJURY ASSOCIATION

INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY

INTERNATIONAL SPINAL CORD SOCIETY

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Steps in Classification

The following order is recommended for determining the classification of individuals with SCI.

1. Determine sensory levels for right and left sides.
The sensory level is the most caudal, intact dermatome for both pin prick and light touch sensation.

2. Determine motor levels for right and left sides.
Defined by the lowest key muscle function that has a grade of at least 3 (on supine testing), providing the key muscle functions represented by segments above that level are judged to be intact (graded as a 5).
Note: in regions where there is no myotome to test, the motor level is presumed to be the same as the sensory level, if testable motor function above that level is also normal.

3. Determine the neurological level of injury (NLI).
This refers to the most caudal segment of the cord with intact sensation and antigravity (3 or more) muscle function strength, provided that there is normal (intact) sensory and motor function rostrally respectively.
The NLI is the most cephalad of the sensory and motor levels determined in steps 1 and 2.

4. Determine whether the injury is Complete or Incomplete.
(i.e. absence or presence of sacral sparing)
*If voluntary anal contraction = **No** AND all S4-5 sensory scores = **0** AND deep anal pressure = **No**, then injury is **Complete**.*
*Otherwise, injury is **Incomplete**.*

5. Determine ASIA Impairment Scale (AIS) Grade.

Is injury Complete? If YES, AIS=A

NO ↓

Is injury Motor Complete? If YES, AIS=B

NO ↓ (No=voluntary anal contraction OR motor function more than three levels below the motor level on a given side, if the patient has sensory incomplete classification)

Are at least half (half or more) of the key muscles below the neurological level of injury graded 3 or better?

NO ↓ AIS=C

YES ↓ AIS=D

If sensation and motor function is normal in all segments, AIS=E

Note: AIS E is used in follow-up testing when an individual with a documented SCI has recovered normal function. If at initial testing no deficits are found, the individual is neurologically intact and the ASIA Impairment Scale does not apply.

6. Determine the zone of partial preservation (ZPP).
The ZPP is used only in injuries with absent motor (no VAC) OR sensory function (no DAP, no LT and no PP sensation) in the lowest sacral segments S4-5, and refers to those dermatomes and myotomes caudal to the sensory and motor levels that remain partially innervated. With sacral sparing of sensory function, the sensory ZPP is not applicable and therefore "NA" is recorded in the block of the worksheet. Accordingly, if VAC is present, the motor ZPP is not applicable and is noted as "NA".

American Spinal Injury Association: International Standards for Neurological Classification of Spinal Cord Injury, revised 2019; Richmond, VA.

Appendix B. Equipment list for outcome measures

Outcome Measures	Equipment Needed
1) Modified Barthel Index (MBI)	• Form • Pencil/Pen
2) EQ-5D	• Form • Pencil/Pen
3) Pain score	• Form • Pencil/Pen
4) Patient Specific Functional Scale (PSFS)	• Form • Pencil/Pen
5) Gait speed	• Stopwatch • Walkway (distance of 3 to 10m) • Measuring tape, or trundle wheel (to measure distance) • Tape, cone or object (to mark distance)
6) 5 x Sit to Stand (5 x STS)	• Stopwatch • Standard chair (height 43 to 45cm) with back rest
7) Bergs Balance Scale (BBS)	• Stopwatch • Standard chair (height 45.72 to 50.8cm) with arm rests • Standard chair (height 45.72 to 50.8cm) without arm rests • Step or stool (height 19.69 to 22.86cm) • Ruler, or measuring tape • Slipper, or shoe
8) K-Level	• Form • Pencil/Pen
9) Amputee Mobility Predictor (AMP)	• Stopwatch • 2 chairs (with armrest) • Ruler (length 30.48cm) • Pencil • High obstacle (height 10.16cm) • Stairs with 3 steps • Walkway (distance of 13.72m)
10) Frenchay Activities Index (FAI)	• Form • Pencil/Pen
11) Functional Oral Intake Scale (FOIS)	• Form • Pencil/Pen
12) AusTOMs for Speech Pathology	• Scale Card • Pencil/Pen
13) American Spinal Injury Association Impairment Scale (ASIA)	• Cotton wool • Safety pin

Appendix C. Reading resources for FOIS and AusTOMs (For SLT only)

FOIS Training Slides

Learning Outcomes

At the end of this training, you will be able to:

1. Understand the rationales and the background for the use of FOIS
2. Use FOIS to assess the dietary outcomes of patients
3. Use FOIS to monitor changes in dietary outcomes over time

What is FOIS

- Functional Oral Intake Scale (Crary, M., Carnaby Mann, G., & Groher, M., 2004).
- 7-point ordinal scale (developed based on stroke patients)
- Tool was psychometrically tested and found to have adequate reliability, validity, and sensitivity to change in functional oral intake.

Objectives of the FOIS scale

- To describe and communicate the safe, adequate and functional level of a patient's actual daily diet intake (amount and type)

- To facilitate the documentation of oral intake over time or following intervention

FOIS: 7-point Scale

Descriptors	
1	No Oral Intake
2	Tube Dependent with minimal/inconsistent oral intake
3	Tube Supplements with consistent oral intake
4	Total oral intake of a single consistency
5	Total oral intake of multiple consistencies requiring special preparation
6	Total oral intake with no special preparation, but must avoid specific foods or liquid items
7	Total oral intake with no restrictions

Descriptors of the FOIS Scale

- **Levels 1 - 3**: relate to varying degrees of non-oral feeding.
- **Levels 4 – 7**: relate to varying degrees of oral feeding without tube supplementation.
  - Based only upon FOOD rating (with the exception of FOIS 4 – full feeds)
  - Consider both diet modifications and patient compensations (e.g., cutting food into smaller pieces, adding sauce, taking >30mins to finish a meal, head postures, breath-hold manoeuvres, supervised feeding).
- All levels focus on what the patient consumes by mouth on a daily basis.

General Guiding Questions

- What is the main source of nutrition for the patient?
  - Tube feeding – Consider FOIS Levels 1 – 3
  - Oral feeding – Consider FOIS Levels 4 – 7
  - Both types of feeding – which is the primary source?
- If it is FOIS Levels 1 – 3:
  - Is there any other oral intake? No, Likely Level 1
  - Is the oral intake minimal or inconsistent? Likely Level 2
  - Is the oral intake consistent? Likely Level 3
- If it is FOIS Levels 4 – 7:
  - Is the patient taking single consistency (Likely Level 4) or multiple consistencies (Likely Level 5 – 7)?
  - Is there any special preparation required (Likely Level 5)?
  - If no special preparation required, does the patient avoid any food (Likely Level 6)?

Other Guiding Questions

To decide whether to include a certain type of food in the scoring, consider the following:

- Is the patient tolerating the food items safely without developing any negative health consequences (e.g., aspiration pneumonia, loss of weight)?
  - If patient is not tolerating, rate based on SLT's safest recommendation
  - If patient is tolerating, rate based on patient's functional status
- Is the patient taking the food items for adequate hydration or nutrition? Are there any negative nutritional consequences?
  - If the patient is not taking adequately, does the patient need NGT supplements?
- Is the patient taking the food items everyday/consistently and without difficulty?

How to obtain FOIS score

- Interview the patient or family
- Review the medical chart or dietary journals
- Probe to obtain further information about the patient's diet
  - e.g. are they really eating and swallowing a particular food type? Or just chewing and spitting out, and tasting rather than swallowing?
  - Verify any patient reports with a spouse or family members
- Keep a 3-day dietary journal (where possible)
  - Especially for home-based patients
- Remember that the FOIS score is determined independently
  - Not based on swallowing assessment

FOIS: Pros vs Cons

Pros

- Less than 5 mins to complete
- Minimal training required
- High inter-rater reliability and consensual validity
- No VFS required for scoring
  - FOIS scores were determined independently of swallowing evaluations
- Ratings are found to be associated with dysphagia severity
  - but not aspiration severity

Cons

- Reliability and validity tested in stroke population
- May be overly simplified.
  - Provides information about what the person actually eats/drinks not what they are assessed as safe with

Factors that may influence FOIS ratings

- Patient preference
  - Patient may self-select or avoid certain food types
- Medical recommendations
  - Allows for special medical diets (e.g., low residue diet, full feeds post-op)
- Clinician prescriptions
  - Clinicians may prescribe “diet levels” for safety
- Institution / individual diet preferences
  - Not described clearly as part of FOIS levels

Take Home Message:

- Rate what the patient is actually taking safely, adequately, functionally/most consistently.
- FOIS does not always reflect a clinician's recommendation
  - Examples of these might be when patients are non-compliant with recommendations or have certain texture preferences.

Calibration Exercise

Instructions

- In the next few slides, you will be presented with several case scenarios
- Read the case scenarios and see if you can determine the FOIS scores for each one
- Check your responses against the answer slides and read the reasons why they were rated accordingly

Case study 1 - Mr C; 59 Years old

Diagnosis and relevant PMHX
- Left MCA infarct with stroke progression
- Old left frontal lobe stroke

Diet
- Regular diet (full share as tolerated)
- 3 meals daily

Fluids
- Thin-nectar fluids via cup sips

Able to self-feed?
- Yes

Case history does not influence FOIS Scores

Oral or Tube?
Safe? Adequate? Taken daily without difficulty?
Single or Multiple consistency?
Any restrictions/ special preparations?

Liquid/Fluid intake is not considered in FOIS scoring

Any special preparation/restrictions?

Case Study 1 - Mr C; 59 Years old

Diagnosis and relevant PMHX

- Left MCA infa
- Old left fronta

Total oral intake

Diet

- Regular diet (full share as tolerated)
- 3 meals daily

Liquid/Fluid intake is not considered in FOIS 5-7 scoring

Fluids

- Thin-nectar fluids via cup sips

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 ke of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 2 - Mrs H; 92 years old

Diagnosis and relevant PMHX

- Left watershed infarct
- AF ppt sepsis

Diet

- full feeds supplements daily, pour remaining into NGT

Fluids

- Nectar-thick fluids via straw / cup sips

Able to self-feed?

- No

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 2 - Mrs H; 92 years old

Diagnosis and relevant PMHX

- Left watershed infarct
- AF ppt sepsis

Oral intake not 100% Consistent? Adequate? Safe?

Diet

- full feeds supplements dailly, pour remaining into NGT

Fluids

- Nectar-thick fluids via straw / cup sips

Able to self-feed?

- No

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 3 - Mr SBS; 68 years old

Diagnosis and relevant PMHX

- Right hemipontine and EC infarct
- Newly diagnosed rectal adeno CA
- Right ataxic hemiparesis (2009)

Diet

- Soft rice / porridge and soft minced sides, pureed fruits via half tablespoon

Fluids

- Nectar-thick fluids cup sips

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 3 - Mr SBS; 68 years old

Diagnosis and relevant PMHX

- Right hemipontine and EC infarct
- Newly diagnosed rectal adeno CA
- Right ataxic hemipare

Oral intake. Single vs Multiple consistency? Any restriction or special preparation?

Diet

- Soft rice / porridge and soft minced sides, pureed fruits via half tablespoon

Fluids

- Nectar-thick fluids cup sips

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 4 - Pt YHC; 70 Years Old

Diagnosis and relevant PMHX

- New acute lacunar and multiple territorial infarct
- Unwitnessed fall cx acute R caudate head ICH with IVH cx obstructive hydrocephalus

Diet

- Rice, vegetables, meat, no noodle soup.

Fluids

- Nectar thick fluids via tablespoons

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 4 - Pt YHC; 70 Years Old

Diagnosis and relevant PMHX

- New acute lacunar and multiple territorial infarct
- Unwitnessed fall cx acute R caudate head ICH with IVH cx obstructive hydr

Oral intake. Single vs Multiple consistency? Any restriction or special preparation?

Diet

- Rice, and vegetables and meat,

no noodle soup

Fluids

- Nectar thick fluids via tablespoons

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
Tube Dependent with minimal/inconsistent oral intake
Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 5 - Mr AMT; 56 years old

Diagnosis and relevant PMHX

- Right Lateral Medullary Syndrome
- PmHx: DM

Diet

- Pureed diet via tablespoons, cough-swallow every 5 spoons

Fluids

- Honey-thickened fluids via tablespoons, cough-swallow every 5 spoons

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Case study 5 - Mr AMT; 56 years old

Diagnosis and relevant PMHX

- Right Lateral Medullary Syndrome
- PmHx: DM

Oral intake. Single vs Multiple consistency?

Diet

- Pureed diet via tablespoons, cough-swallow every 5 spoons

Fluids

- Honey-thickened fluids via tablespoons, cough-swallow every 5 spoons

Able to self-feed?

- Yes

FOIS
1 No Oral Intake
2 Tube Dependent with minimal/inconsistent oral intake
3 Tube Supplements with consistent oral intake
4 Total oral intake of a single consistency
5 Total oral intake of multiple consistencies requiring special preparation
6 Total oral intake with no special preparation, but must avoid specific foods or liquid items
7 Total oral intake with no restrictions

Reference

- Crary MA, Carnaby Mann GD, Groher ME. (2004). Initial psychometric assessment of a functional oral intake scale for dysphagia in stroke patients.

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Overview of AusTOMs

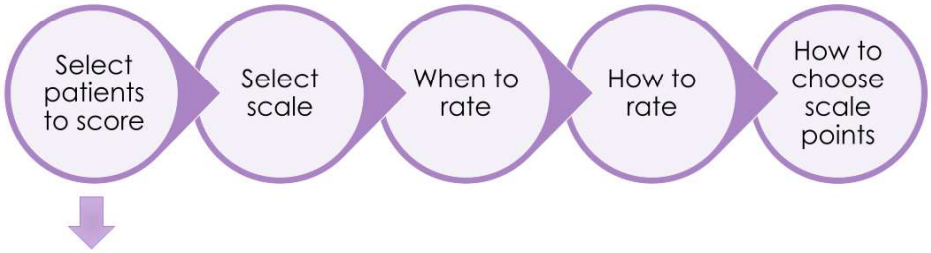
A.Perry & J.Skeat (2013). Cover.

Domains of AusTOMs

Domains	Description	Example
Impairment	• Structural/functional difficulties. • Use of assessment tools are common	• (Structural) Cleft palate • (Functional) Apraxia of speech
Activity Limitation	• Client's ability and difficulty in performing tasks and activities related to their impairment.	• Dysphagic client may have difficulty with the activity of eating/drinking. • Dysarthric patient may have difficulty with communication.
Participation Restriction	• Social limitation in daily life e.g. roles in employment, education, social and familial context	• A dysphonic teacher may not be able to work for a few weeks.
Distress/Well-being	• Client's /carer's level of concern	• Evidenced by anger, frustration, apathy or depression

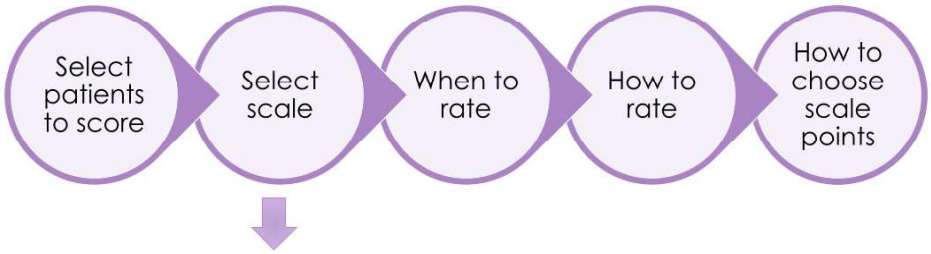
Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 5–6)

How to use AusTOMs for One Rehab



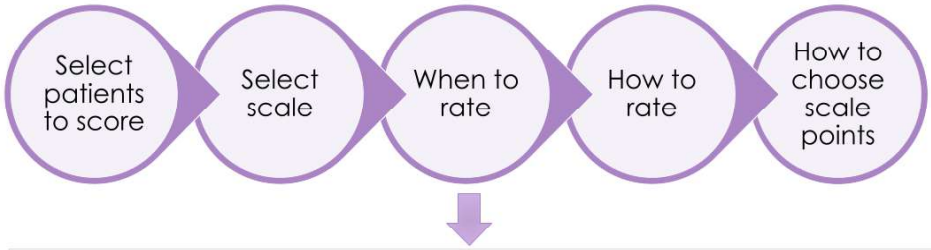
- Cases with stroke RDG and were seen by a Speech Therapist should be selected for AusTOMs scoring. This is for MOH data tracking purposes.
- Do note that this patient selection criteria is different from the AusTOMs manual.

How to use AusTOMs for One Rehab



- Select **ALL** domains to rate (Speech, Language, Cognitive-Communication) regardless of patient's impairment and interventions.
- Do note that this selection criteria is different from the AusTOMs manual. The data is collected for MOH tracking purposes.

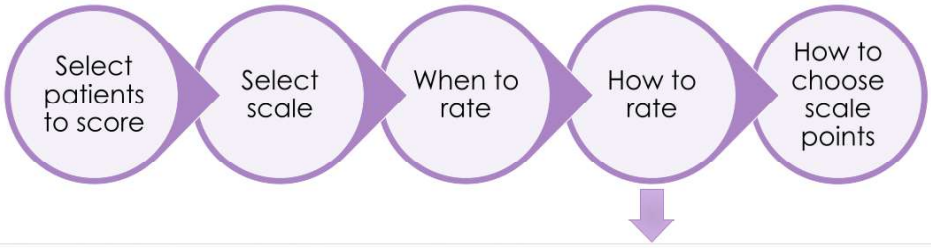
How to use AusTOMs



- Initial rating: done within the first 3 sessions. It can be based on formal and/or informal assessment findings, case history/other client information..
- Final rating: when client is to be discharged from ST services and/or before transfer to a new care setting.
- *Interim rating: Optional, it is up to the discretion of the organization to decide.*
- *Initial and final ratings will be used by MOH for tracking purposes. Please do not leave any domains blank.*

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 7)

How to use AusTOMs



- Impairment and Activity Limitation domains must be rated as they are disorder/domain-specific.
- Participation Restriction and Wellbeing/Distress domains are non-domain specific as it will be difficult to differentiate them for different communication disorder. Therefore, they are rated holistically based on how all communication disorders have affected the client.
- Rate Wellbeing/Distress domain of client only. This is for MOH tracking purposes.
- Each domain is rated independently of the others.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 7)

How to use AusTOms

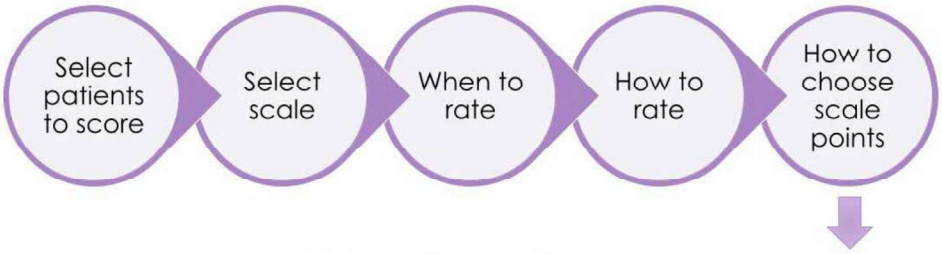
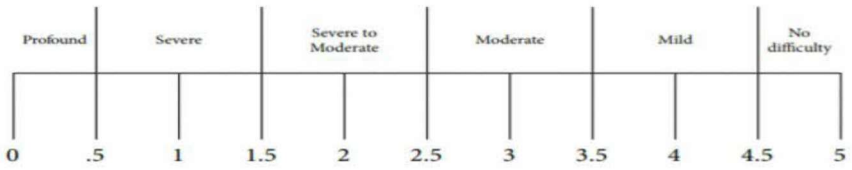


Figure 1: Continuum of scale points for the AusTOMs scales



Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp.8)

AusTOMs Speech Domain (Scale)

Severity	Impairment	Activity Limitation
0 profound	No speech, or undifferentiated vocalizations. No voluntary articulatory movements.	Unable to communicate message. Communication is never effective.
1 severe	Extremely restricted range of phonemes. Limited or repetitive syllables only. Extremely limited strength, range and/or rate of oral movement or control due to weakness or co-ordination problems.	Communication is occasionally effective in 1 type of situation only (e.g. with main communication partner) .
2 moderate/severe	Restricted range of consonant sounds in repertoire. Distorted vowel sounds. Difficulties with sound sequencing. Can attempt target sounds but cannot combine them into words. Strength, range and/or rate of oral movement are markedly reduced.	Communication is usually effective in more than 1 type of situation, with a familiar person. Client can usually convey basic needs/wants to main communication partners, but not always with others.
3 moderate	Restricted range of phonemes in speech but used correctly. Multiple errors in speech sound system. Can combine target sounds correctly into syllables and words when cued, but is not yet spontaneous. Strength, range and/or rate of oral movement are moderately reduced: can control oral movement to imitate shapes and most sounds (inconsistently).	Communication is effective in many types of situations with familiar people, and may be effective with unfamiliar people.Client can effectively convey needs and wants to main communication partners, but not always with others.
4 mild	1-2 sound errors of place/manner which are common but not age appropriate. Able to produce these with cues and sometimes spontaneously (but inconsistent). Mild imprecision in speech, may be affected by situation. Strength, range and/or rate of oral movements are mildly reduced; can control oral movement to imitate shapes and all sounds (inconsistently).	Communication is effective with familiar people and usually with non-familiar people. Communication may be compromised by environment.
5 no impairment	Speech is appropriate for age/culture/developmental. Full range of age appropriate sounds able to be targeted. No demonstrable restrictions in strength, range and/or oral movement.	Able to communicate message successfully to a wide range of people in a range of situation.

Perry, A. & Skeat, J. (2014). AusTOMs for Speech Pathology, Scale cards, (pp. 1)

AusTOMs Language Domain (Scale)

Severity	Impairment	Activity Limitation
0 profound	Total absence of meaningful: auditory or gestural comprehension/verbal output/processing of written language/ written output.	Unable to initiate or respond to verbal and/or non-verbal communication.
1 severe	Exhibits infrequently or inconsistently: Key word comprehension (auditory/ written or gestural)/ Ability to form elements of written, verbal or gestural output (meaningful vocalization). .	Communication is severely compromised - may attempt to communicate but is rarely able to make needs/wants known. Cannot follow simple directions unless structured with maximal cues .
2 moderate/severe	Exhibits frequently and consistently:Key word comprehension (auditory/ written or gestural), may be increased with assistance or cues/ Ability to form elements of written, verbal or gestural output (meaningful words).	Communication is moderately compromised - able to make basic needs and wants known consistently with familiar communication partners. Can follow simple directions with some cues.
3 moderate	Exhibits inconsistent: Comprehension of simple spoke, gestural or written language - shows difficulties with understanding complex or abstract sentences/ Able to form meaningful written language with assistance/ Expressive language output is appropriate to context, but reduced in length and complexity of sentences.	Communication is mostly effective, can communicate and understand concrete ideas, and can frequently communicate and understand abstract ideas. Can follow simple and some complex directions (may require repetition).
4 mild	Exhibits consistent: comprehension of simple spoken or signed conversation/ Able to form and understand written language with assistance (e.g. cues to attend)./ Mild expressive language difficulties (e.g. problems with grammatical structure).	Communication is effective most of the time, occasionally demonstrates difficulty in expressing or understanding ideas. Can usually follow complex directions, able to use strategies spontaneously to overcome difficulties.
5 no impairment	Consistently understands spoken or signed and written language (including complex, as appropriate to age/developmental level), consistent verbal and written language output.	Communicates effectively in all situations with a range of communication partners (as appropriate to age, gender, culture).

Perry, A. & Skeat, J. (2014). AusTOMs for Speech Pathology, Scale card (pp. 3)

AusTOMs Cognitive-Communication Domain (Scale)

Severity	Impairment	Activity Limitation
0 profound	Not responsive to any stimuli (e.g. comatose/vegetative).	No response to stimuli. No communicative intent.
1 severe	Responds infrequently to stimuli (e.g. may recognise familiar faces); responses are severely delayed/ unable to attend. No insight, not orientated, no short term memory or learning.	No initiation of communication. Needs maximal cueing to respond. Unable to learn new information or problem solve.
2 moderate/severe	Responds to stimuli, responses are inconsistent and may be delayed. Can attend briefly but extremely distractible and cannot focus on task. Insight is minimal/fluctuates. Oriented to self. Some ability to recall basic personal information. May demonstrate learning of routine tasks in context. Requires assistance to plan basic tasks.	May initiate communication spontaneously but may not do so effectively. Requires cueing to respond/ responses are random or non-purposeful. Able to complete simple personal problem solving and routine concrete tasks with supervision and cues.
3 moderate	Consistently responds to stimuli, responses may be delayed. Demonstrates concrete thinking. Able to attend to a task for a short length of time, but distractible. Shows some insight in response to feedback. Oriented to self, place and time. Retaining personal information, some understanding of future events. Able to learn routine tasks. Able to plan basic tasks but needs maximal assistance to plan complex tasks.	Initiates communication and is able to make basic needs known. May respond spontaneously but inconsistently or inappropriately to environment. Able to learn communication strategies in context, and is beginning to use these independently. Able to solve concrete problems independently.
4 mild	Consistent response to a range of stimuli, may show delays. Mild problem evident with attention that may be affected by environment. Demonstrates insight most of the time. Fully oriented. Able to recall and integrate past and recent events. Some ability to abstract. Complex processing difficulties evident. Able to plan within familiar contexts but needs cues to plan for novel events.	Communicates effectively in > 1 type of setting. Responds appropriately to context, may have difficulty with complex questions/conversation. Able to learn and problem solve complex tasks, however may require minimal prompts to begin, complete, or carry over within context of environment.
5 no impairment	No evidence of difficulty with responses, memory, insight, attention, orientation or planning, as appropriate to age.	Cognitive communication skills are functional in all contexts.

Perry, A. & Skeat, J. (2014). AusTOMs for Speech Pathology, Scale card (pp. 11)

AusTOMs Participation Restriction

Severity Scale	Difficulties the individual may have in the manner or extent of involvement in their life situation. Clinicians should ask themselves: "given their problem, is this individual experiencing disadvantage?"
0 (profound)	Unable to fulfil social, work, educational or family roles. No social integration. No involvement in decision-making. No control over environment. Unable to reach potential in any situation.
1 (severe)	Severe difficulties in fulfilling social, work, educational or family roles. Very limited social integration. Very limited involvement in decision-making. Very little control over environment. Can only rarely reach potential with maximum assistance.
2 (moderate/severe)	Moderately severe difficulty in fulfilling social, work, educational or family roles. Limited social integration. Limited involvement in decision-making. Control over environment in one setting only. Usually reaches potential with maximum assistance.
3 (moderate)	Moderate difficulties in fulfilling social, work, educational or family roles. Relies on moderate assistance for social integration. Limited involvement in decision-making. Control over environment in more than one setting. Always reaches potential with maximum assistance and sometimes reaches potential without assistance.
4 (mild)	Mild difficulties in fulfilling social, work, educational or family roles. Needs little assistance for social integration and decision-making. Control over environment in more than one setting. Reaches potential with little assistance.
5 (no impairment)	No difficulties in fulfilling social, work, educational or family roles. No assistance required for social integration or decision-making. Control over environment in all settings. Reaches potential with no assistance.

Perry, A. & Skeat, J. (2014). AusTOMs for Speech Pathology, Scale card (pp. 2)

AusTOMs Distress/Well-being

Severity Scale	The level of concern experienced by the individual. Concern may be evidenced by anger, frustration, apathy, depression etc
0 (profound)	High and consistent levels of distress or concern.
1 (severe)	Becomes distressed or concerned easily. Requires constant reassurance. Loses emotional control easily.
2 (moderate/severe)	Moderately severe concern. Frequent emotional encouragement and reassurance required.
3 (moderate)	May be able to manage emotions at times, although may require some encouragement.
4 (mild)	Able to manage emotions in most situations. Occasional emotional support or encouragement needed.
5 (no impairment)	Able to cope with most situations. Accepts and understands own limitations

Perry, A. & Skeat, J. (2014). AusTOMs for Speech Pathology, Scale card (pp. 2)

FAQ on Domains/Ratings

1. **How do I rate stroke patients with tracheostomy using the AusTOMs?**
   - If client is enrolled in the One Rehab Stroke pathway, Speech, Language and Cognitive communication scales have to be rated.
   - Select the rating in each domain that fits your client's communication.
   - If your intervention goals are related to the client's voice disorder, you can rate the Voice domain in addition to the 3 required domains. However, the voice AusTOMs rating is not a requirement for One Rehab.
   - With intervention, rating under Activity limitation may improve with the use of speaking valve or finger occlusion over tracheostomy tube.
   - May anticipate changes to Participation Restriction and Distress/Wellbeing.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp.11)

FAQ on Domains/Ratings

2. **How do I rate expressive and receptive language using the AusTOMs?**
   - If the client has both expressive and receptive language function at differing levels of severity, it is suggested to score the lower rating. This is because iConnect can only reflect 1 score in its system.
   - Rate Participation Restriction and Distress/Well-being domains once at each point (initial, final or interim) regardless of the number of impairments the client has.

3. **What if a client uses augmentative or alternative communication (AAC)?**
   - If the client needs an AAC because of severe dysarthria, rate the client's speech under the impairment domain of the speech scale and the client's functional ability with the AAC under the activity limitation domain.

4. **What if I only see the patient only once during admission?**
   - AusTOMs ratings are still required – once at the beginning and once at the end of your service.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 11 - 12)

FAQ on Domains/Ratings

5. **What happens if a client was discharged or leaves therapy before a final rating is made?**
   - Make a rating that reflects the client's status at the last point seen. You may want to make a note in your report.

6. **How to make a rating if the client refused all communication assessments?**
   - You can obtain information of the client's communication function through other sources e.g client's interaction with family members and medical/healthcare workers.
   - Make a rating that best reflects the client's status and function based on all available sources.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 12 13)

Case Study 1 Lee

- **Relevant History**: Lee, aged 68, had a brainstem stroke and was referred to an inpatient Speech Therapist during his stay in an inpatient rehabilitation ward. The speech therapist assessed him in relation to his cognitive-communication skills.
- **Impairment:** Lee's psychosocial and cognitive skills are affected. He is always orientated to his surroundings and, although he responds consistently, his responses are slow. It is difficult for Lee to stay on task for more than a short period of time, as he is easily distracted, and he displays very poor insight into his problems.
- **Activity Limitation**: Lee spontaneously attempts to make his needs and wants known; he can request simple items like food or drink by name. His responses are slow, and sometimes a bit off topic. If the language used when instructing him is simple, he completes concrete, routine tasks independently.
- **Participation Restriction:** Lee is dependent on his wife and immediate family for a social life within the hospital environment. Due to his cognition, his family has been making decisions for Lee in terms of his discharge planning and care needs. Lee makes limited choices within this safe environment and with family assistance.
- **Distress/Wellbeing**: Lee is an easy-going man who is content and happy within his own environment. He does, however, get upset occasionally, when reminded of his previous activities and at these times, he requires support and reassurance from his family

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 23)

Case Study 1 Lee

Scale: Cognitive-Communication			
Impairment	**Activity**	**Participation**	**Distress**
2.5	3	1.5	4

- **Impairment:** The main points of information about Lee's impairment are that he is oriented to his surroundings (consistently); he is responsive (consistent but delayed); he is easily distracted but can stay on task for short periods; and he has very poor insight. Most of this description is consistent with a rating of 3 (moderate impairment), with the exception of his poor insight, which does not fit. A rating of 2.5 reflects that Lee's impairment is not as severe as a rating of 2, but is more severe in some areas than a rating of 3.
- **Activity Limitation:** The main points given about Lee's activity limitation are that he is able to make needs and wants known (spontaneously); his responses can off topic/ inappropriate; and he completes concrete, routine tasks independently if instructed using simple language. Lee's activity limitation description fits with a rating of 3.
- **Participation Restriction:** Lee is described as participating in a limited environment (family only), and able to make simple choices (with assistance) in this environment. A rating of 1.5 fits this description; some of the features match a rating of 1, and some match a rating of 2.
- **Distress/Wellbeing:** The description of Lee's distress shows that he is only occasionally upset and that he requires support at these times (from family). This description matches a rating of mild concern (4)

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 35)

Case Study 2 Voula

- **Relevant History:** Voula is a 55 year old widow. She lives at home with her 28 year old daughter, while her son lives interstate with his family. Voula recently had a left hemispheric stroke and was admitted to hospital for 12 days, before being discharged home. She receives speech therapy, occupational therapy and physiotherapy rehabilitation services in a day care rehab.
- **Impairment and Activity:** Since her stroke, communication with Voula is difficult. Successful communication requires listener support through provision of visual cues and keeping her on track, and slowing and simplifying questions. Voula finds it very hard to process even simple information and requires a lot of extra time to do so. She sometimes understands everyday questions in context, particularly with extra cues, and sometimes understands simple sentences. She finds it almost impossible to understand questions or conversations that do not relate to concrete, present, things. She is able to verbalise simple, concrete sentences, although her son reports that he sometimes does not understand what she is talking about because she 'mixes up words' (e.g., asking for a cup when she means a spoon).
- **Participation:** Voula has found it difficult to get out of the house. She can no longer drive or walk long distances, and she is unable to do everyday activities such as the shopping because of her difficulty processing information and communicating her needs. She has some friends who visit her, but she cannot go out to socialise any more. She mostly stays at home with her daughter.
- **Distress:** Voula is extremely upset about her loss of independence, particularly as she feels she is no longer in charge of planning her day-to-day life. Voula reports that she becomes distressed very easily, finding it difficult to control her emotions, particularly when she is frustrated by not being able to do things that she used to.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 24)

Case Study 2 Voula

Scale: Language				
	Impairment	**Activity**	**Participation**	**Distress**
Expressive	3	2	1	1
Receptive	3	1		

- **Impairment:** Voula scores 3 for expressive language impairment, as she is able to form simple sentences; and 3 for receptive language impairment because she understands concrete questions and directions, although she requires extra time and/or cues to do so.
- **Activity Limitation:** In relation to expressive language, Voula scores 2, because she can make her needs and wants known through simple sentences. In relation to receptive language she is rated as 1, because she requires extra time, visual cues, and simplification of sentences to allow her to understand simple, concrete questions or directions.
- **Participation Restriction:** Voula's participation is extremely limited; she is unable to participate in tasks such as shopping without help, she cannot visit friends independently, and she has little control over her daily life—this shows a severe restriction (rating of 1).
- **Distress/Wellbeing:** Voula is very upset, becomes distressed easily, and finds it hard to control her emotions—a rating of 1 for Distress/Wellbeing.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 35 36)

Case Study 3 Ian

- **Relevant History:** Ian is 42 years old. He is a managing director of an international electronics company and has a diagnosis of right cerebellum infarct, made three months ago. He has been discharged from inpatient rehabilitation and is currently on follow up with a community speech therapist.
- **Impairment and Activity:** Since the diagnosis, Ian has limited his work-related speech activities. He no longer chairs meetings, and reports that he joins in with his ideas or opinions far less than previously, particularly when there is noise and interruptions, because he does not like feeling that others may be straining to understand him. In general, he feels that he requires more time to get a sentence out because of motor sequencing difficulties. He is able to communicate effectively in 1-1 situations, but has reduced intelligibility over the phone and doesn't like using it anymore. Ian is using his secretary to make telephone calls to colleagues whom he does not regularly deal with. His wife commented that the only time she realizes his difficulties with speech are when starts to 'sound drunk' when speaking at length, and this becomes worse when he is tired.
- **Participation and Distress:** Although outwardly stoical, Ian reports being frustrated with his speech, especially when people ask for repetition of a word or phrase. He also reports regularly feeling distressed, particularly when he considers that his speech problems are likely to get worse, and will continue to impact on his job role. Ian's wife feels that he is overplaying his current problems. She feels that other people do not notice and tries to reassure him that it is normal for people to sometimes ask for repetitions. Ian still attends social functions, and enjoys visiting friends and travelling interstate to conferences.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 25)

Case Study 3 Ian

Scale: Speech			
Impairment	**Activity**	**Participation**	**Distress**
4	3.5	4.5	4

- **Impairment**: Information rating to Ian's speech impairment indicates that he has difficulty sequencing motor movement, and that he may slur his words ('sounds drunk') when speaking for a period of time or when he is tired. As the problem is not noticeable to most others, Ian's difficulty sits at the mild end, and a rating of 4 captures this.
- **Activity Limitation:** Ian is limited in communicating with unfamiliar people, and there are specific situations where communication is more difficult for him (for example, in meetings where there is noise or interruptions). The fact that his communicative attempts are usually successful, with the exception of certain environments, puts this description at a rating of 3.5.
- **Participation Restriction:** Ian has been restricted in some aspects of his work role, but is able to join in social events, such as functions and visiting friends. The description is slightly better than a rating of 4; Ian does not require assistance for social activities and shows control over his environment (e.g., he is able to request assistance with phone calls).
- **Distress/Wellbeing:** The points of interest when rating Distress/Wellbeing are that Ian gets frustrated occasionally when others do not understand him, and sometimes feels frustrated by his slowed speech. Ian has made moves to counteract his difficulties, such as using his secretary, showing that he understands his limitations. This represents a mild problem— a rating of 4.

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (pp. 26)

Reference

Perry, A. & Skeat, J. (2013). AusTOMs for Speech Pathology (2nd Edition) Melbourne, Victoria: La Trobe University

Appendix D. One-Rehab IT Care Plan (version dated 15 July 2021)

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

ONE REHAB IT CARE FORM

INSTRUCTIONS:

The form has been structured into four sections based on when the forms should be filled.

- **Section 1: Patient's Details**— to be filled at the very first touch point.
- **Section 2: Setting Entrance Form***— to be filled at the first rehab visit of each setting.
- **Section 3: Goals and Progress***— to be filled at the first and last rehab visit of each setting; outcomes can also be tracked for interim rehab visits within the setting.
- **Section 4: Discharge Form***—to be filled at the last rehab visit of each setting.

**If a patient visits multiple settings, e.g. Acute Hospital, Community Hospital or Senior Care Centre along the rehab journey, each of these settings would be required to complete Sections 2-4 based on their assessment at the respective settings. The envisaged system should be able to capture multiple versions of the form entries from the different settings and consolidate the information at the patient level to facilitate shared care planning and tracking of patient's progress.*

Legend
[items in square brackets are instructions for the programmer that is creating this form electronically]

Fields required for administrative purposes. May not be necessary for patient's clinical management
Fields to be filled in at admission
Fields to be filled in at discharge
Blank
Information that can be auto-populated or pulled from administrative datasets

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

All fields are mandatory, unless marked as non-mandatory [NM]
[red text] to be displayed at IT front-end

SECTION 1: PATIENT'S DETAILS
Note: To be filled in at the first touch point, i.e. the first setting where patient enters the rehab journey

PATIENT INFORMATION

1.1	**NRIC/FIN**	
1.2	**Date of Birth**	*DD / MM / YYYY* • *tick if estimate*
1.3	**Full Name**	
1.4	**Gender** *[drop down menu]*	Male Female
1.5	**Identification Type** *[drop down menu]*	Singapore Pink Singapore Blue Foreigner Not Available
1.6	**Race** *[drop down menu]*	Chinese Malay Indian Others
1.7	**Employment status prior to this episode** *[drop down menu]*	Employed Unemployed Self-employed Homemaker Retiree Others
1.8 **[NM]**	**Presence of environmental barriers at patient's residence/accommodation prior to this episode?** [only if applicable] Lift landing Lift landing, if No Presence of Steps Presence of Steps if Yes, Location of Steps Number of Steps Kerb / threshold	 Yes No 1 flight 2 flights 3 flights Others (Comment) Yes No Outside main entry Outside toilet Others (Comments) Number of steps - outside main entry Numbers of steps - outside toilet Numbers of steps - other locations Yes No
1.26 **[NM]**	**Name of Referring Institution**	*[Auto-complete / Free text]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

1.27	**Referral Source Setting** *[Drop down]*	Acute Hospital - Inpatient Acute Hospital - Emergency Department Acute Hospital - Specialist Outpatient Clinic Community Hospital - Inpatient Day Rehab Centre/Senior Care Centre/Active Ageing Hub Polyclinic GP Nursing Home Senior Activity Centre Walk-in/Self-referral Other. Please Specify:_____
1.9a [NM]	**Premorbid BADL Status** *[Select all that apply]* [only if applicable]	Independent in BADLs Needs assistance in BADLs Dependent in BADLs Other.
1.9b [NM]	**Premorbid IADL Status** *[Select all that apply]* [only if applicable]	Independent in IADLs Needs assistance in IADLs Other.
1.10a	**Premorbid mobility status in community** *[Drop down]* *PMA refers to wheelchair, motorized wheelchair or motorized scooter	Walk independently; does not use PMA Walk independently; independent with PMA Walk assisted; does not use PMA Walk assisted; independent with PMA Walk assisted; needs assistance with PMA Not able to walk; independent with PMA Not able to walk; assisted with PMA Homebound
1.11a [NM]	*[If user select "Homebound" in 1.10a, do not show this question] lol i nde* **Premorbid use of mobility aids in the community** *[Select all that apply]* [only if applicable]	None **Walking aids** Umbrella Walking Stick Narrow base Quad Stick Broad base Quad Stick Crutches Walking Frame Rollator frame **PMA** Wheelchair Motorised wheelchair Motorised scooter Others
1.10b [NM]	**Premorbid mobility status at home** *[Drop down]* [only if applicable]	Walk independently Walk assisted Not able to walk; independent with PMA Not able to walk; assisted with PMA Bedbound Others
1.11b [NM]	*[If user select "Bedbound" in 1.10b, do not show this question]* **Premorbid use of mobility aids at home** *[Select all that apply]* [only if applicable]	None **Walking aids** Furniture walk Umbrella Walking Stick Narrow base Quad Stick Broad base Quad Stick Crutches Walking Frame Rollator frame **PMA** Wheelchair Motorised wheelchair Motorised scooter Others
Residential Address		
1.12	**Postal Code (6 digits)**	*[auto-populate based on NRIC address information via link-up with NEHR OR manual entry by user]*
1.13	**Address**	*[auto-populate based on NRIC address information via link-up with NEHR OR auto-populate based on Postal Code info entered in 1.12]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

MAIN CLINICAL DIAGNOSIS

1.20	**Rehab Diagnostic Group Code**	*[Keyword search and Allow only one RDG to be selected. See Appendix A for list of RDG codes.]*
1.21	*[Ask only for RDG 17]* **Other Rehabilitation Diagnosis**	*[Free text entry]*
1.22	*[Ask only for RDG 6.3]* **What method was used to diagnose frailty?**	*[Drop down: Clinical Frailty Scale, Frailty Index, Fried Frailty criteria, Other]*

SECONDARY CLINICAL DIAGNOSIS <OPTIONAL>

1.23	**Rehab Diagnostic Group Code**	*[Allow multiple RDG to be selected. See Appendix A for list of RDG codes.]*
1.24	*[Ask only for RDG 17]* **Other Rehabilitation Diagnosis**	*[Free text entry]*
1.25	*[Ask only for RDG 6.3]* **What method was used to diagnose frailty?**	*[Drop down: Clinical Frailty Scale, Frailty Index, Fried Frailty criteria, Other]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

SECTION 2: SETTING ENTRANCE FORM *[To be filled in at the first visit for every setting]*

2.1	**Date of Admission** [aligned with NGEMR: - For inpatient – date of admission into rehab setting; - For outpatient – date of first PT, OT, ST session]	
2.5	**Setting Name**	
2.6	**Setting - classification** *[drop down menu]*	Acute Hospital – Inpatient Acute Hospital – AHP Outpatient Community Hospital - Inpatient Day Rehab Centre Senior Care Centre Active Ageing Hub Polyclinic Home Healthcare Services - Home Therapy Nursing Home
2.10	Relevant medical history *[MOH will not need this medical history as discrete data]*	*Clinicians should be able to view patient medical history within their own EMRs. For referrals to other settings after discharge, this medical history should be pulled into iConnect for view only.* *Scenarios:* *- AH/CH referral to Community providers: this information should be pulled into iConnect for view only;* *- Self-referral to Community providers: this should be a field for attachment of Doctor referral memo/medical report, assuming there is no updated medical history available in NEHR*
2.11	**Caregiver status on admission** *[drop down menu]*	Does not need caregiver Needs caregiver, live-in caregiver(s) available Needs caregiver, ad-hoc caregiver(s) available Needs caregiver, no available caregiver Not applicable
2.12	*[ask if caregiver status = live-in OR ad-hoc caregiver available]* **Relationship of primary caregiver** *[drop down menu]*	Self No caregiver Spouse Children Children-in-law Parent Sibling Grandchildren Domestic helper Others

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

SECTION 3: REHAB INDICATORS & PROGRESS
Note: To be filled in at first and last session within that setting, and can also be filled in at interim visits
[Date assessed] and [Assessed by] are necessary for outcome measures that have been filled.

CORE REHAB OUTCOMES
[Therapists should use either the FIM section or the MBI section, but don't need both]
[must be filled in at the first and last session in that setting (i.e. last session before discharge or referral out)]
[ensure that the form can be navigated using "tab", should go down the column]

Functional Independence Measure (FIM) Scores
[For RDG 5.11, 5.13, 5.21, default this to full points but allow edit]
[provide a mouse-over for each component showing what the drop down options represent]

Please select if not applicable, and specify reasons:
☐ Not Applicable.: Please specify reason(s) <free text>

	Admission Assessment	Discharge Assessment
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
Eating	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Grooming	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Bathing	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Dressing upper body	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Dressing lower body	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Toileting	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Bladder management	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Bowel management	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Transfer bed/chair/wheelchair	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Transfer toilet	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Transfer bath/shower	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Locomotion	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
	[Drop-down: Walk/ Wheelchair / Both]	*[Drop-down: Walk/ Wheelchair / Both]*
Stairs	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Motor Sub-score	*[Auto-Sum]*	*[Auto-Sum]*
Comprehension	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
	[Drop-down: Verbal/ Non-verbal/ Both]	*[Drop-down: Verbal/ Non-verbal/ Both]*
Expression	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
	Drop-down: Verbal/ Non-verbal/ Both]	*Drop-down: Verbal/ Non-verbal/ Both]*
Social interaction	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Problem solving	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Memory	*[Drop-down: 1-7]*	*[Drop-down: 1-7]*
Cognitive Sub-score	*[Auto-Sum]*	*[Auto-Sum]*
Total Score	*[Auto-Sum]*	*[Auto-Sum]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

Modified Barthel Index(MBI)
[For RDG 5.11, 5.13, 5.21, default this to full points but allow edit]
[provide a mouse-over for each component showing what the drop down options represent]

Please select if not applicable, and specify reasons:
☐ Not Applicable.: Please specify reason(s) <free text>

	Admission Assessment	Discharge Assessment
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
Chair/Bed Transfers	*[Drop-down: 0, 3, 8, 12, 15]*	*[Drop-down: 0, 3, 8, 12, 15]*
Ambulation	*[Drop-down: 0, 3, 8, 12, 15]*	*[Drop-down: 0, 3, 8, 12, 15]*
[Ask only if Ambulation=0] **Wheelchair**	*[Drop-down: 0, 1, 3, 4, 5]*	*[Drop-down: 0, 1, 3, 4, 5]*
Stair Climbing	*[Drop-down: 0, 2, 5, 8, 10]*	*[Drop-down: 0, 2, 5, 8, 10]*
Toilet Transfers	*[Drop-down: 0, 2, 5, 8, 10]*	*[Drop-down: 0, 2, 5, 8, 10]*
Bowel Control	*[Drop-down: 0, 2, 5, 8, 10]*	*[Drop-down: 0, 2, 5, 8, 10]*
Bladder Control	*[Drop-down: 0, 2, 5, 8, 10]*	*[Drop-down: 0, 2, 5, 8, 10]*
Bathing	*[Drop-down: 0, 1, 3, 4, 5]*	*[Drop-down: 0, 1, 3, 4, 5]*
Dressing	*[Drop-down: 0, 2, 5, 8, 10]*	*[Drop-down: 0, 2, 5, 8, 10]*
Personal Hygiene (Grooming)	*[Drop-down: 0, 1, 3, 4, 5]*	*[Drop-down: 0, 1, 3, 4, 5]*
Feeding	*[Drop-down: 0, 2, 5, 8, 10]*	*[Drop-down: 0, 2, 5, 8, 10]*
Total Score	*[Auto-Sum]*	*[Auto-Sum]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

Quality of Life (EQ5D-5L)
[provide a mouse-over for each component showing what the drop down options represent]

Please select if not applicable, and specify reasons:
☐ Not Applicable.: Please specify reason(s) <free text>

	Admission Assessment	Discharge Assessment
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
Mobility	*[Drop-down: 1-5, 9]*	*[Drop-down: 1-5, 9]*
Self-Care	*[Drop-down: 1-5, 9]*	*[Drop-down: 1-5, 9]*
Usual Activities (e.g. work, study, housework, family, or leisure activities)	*[Drop-down: 1-5, 9]*	*[Drop-down: 1-5, 9]*
Pain/ Discomfort	*[Drop-down: 1-5, 9]*	*[Drop-down: 1-5, 9]*
Anxiety/Depression	*[Drop-down: 1-5, 9]*	*[Drop-down: 1-5, 9]*
On a scale of 0-100, how would you rate your health TODAY? (0=worst health, 100=best health)	*[Drop-down: 0-100, 999]*	*[Drop-down: 0-100, 999]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

CONDITION-SPECIFIC REHAB OUTCOMES
[must be filled in at the first and last session in that setting (i.e. last session before discharge or referral out)]
[ensure that the form can be navigated using "tab", should go down the column]

[ONLY show for RDG 1 (1.11-1.23)]
STROKE

	Admission Assessment	Discharge Assessment
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
Frenchay Activities Index Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text> *[provide mouse over to show what 0-3 represent]* **How often has the patient performed:**		
Prepare main meals	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Wash up after meals	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Wash clothes	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Light housework	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Heavy housework	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Local shopping	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Social occasions	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Walking outside for >15 minutes	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Actively pursuing hobby	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Driving car / travel by bus	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Travel outing / car ride	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Gardening	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Household maintenance	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Reading books	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Gainful work	*[Drop-down: 0-3]*	*[Drop-down: 0-3]*
Frenchay Activities Index Total Score	*[Auto-Sum]*	*[Auto-Sum]*
Functional Oral Intake Scale (FOIS)[1] Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text> *[drop down menu]*	*[Drop down: 1-7]*	*[Drop down: 1-7]*
Gait Speed in m/s (~~enter 999 if not applicable.~~	*[numeric entry 0.00-999]*	*[numeric entry 0.00-999]*

[1] FOIS scale: 1- No oral intake, 2- Tube dependent with minimal/inconsistent oral intake, 3- Tube supplements with consistent oral intake, 4- Total oral intake of a single consistency, 5- Total oral intake of multiple consistencies requiring special preparation, 6- Total oral intake with no special preparation, but must avoid specific foods or liquid items, 7- Total oral intake with no restrictions

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>		
Australian Therapy Outcome Measures (AusTOMs) Core Areas Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text> Areas pop-up 1-by-1 by selection, hence only need to have one overall N.A.	*[Therapist may select multiple areas that applicable, at least select one area]* • Speech • Language • Cognitive-Communication	*[Therapist may select multiple areas that applicable, at least select one area]* • Speech • Language • Cognitive-Communication
Impairment, Activity Limitation, Participation Restriction and Distress/Wellbeing will be assessed for area(s) selected by therapist.		
Impairment	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*
Activity Limitation	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*
Participation Restriction	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*
Distress/Wellbeing	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*	*[Drop down: 0-5]* *0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4 , 4.5, 5*

[ONLY show for RDG 2 (2.11-2.31)]
SPINAL CORD INJURY

	Admission Assessment	**Discharge Assessment**
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
ASIA Impairment Scale Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>		
Sensory		
Sensory (Right)	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*
Sensory (Left)	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12*	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12*

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	L1,2,3,4,5 *S1,2,3,4-5]*	*L1,2,3,4,5* *S1,2,3,4-5]*
Motor		
Motor (Right)	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*
Motor (Left)	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*	*[Drop-down:* *C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*
Neurological level of injury	*[Drop-down: C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*	*[Drop-down: C2,3,4,5,6,7,8* *T1,2,3,4,5,6,7,8,9,10,11,12* *L1,2,3,4,5* *S1,2,3,4-5]*
Complete or incomplete?	*[Drop-down: Complete, Incomplete, unable to assess]*	*[Drop-down: Complete, Incomplete, unable to assess]*
AIS grade	*[Drop-down A-E, unable to assess]*	*[Drop-down A-E, unable to assess]*

[ONLY show for RDG 3 (3.11-3.13)]
HIP FRACTURES

	Admission Assessment	**Discharge Assessment**
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
Gait Speed in m/s (~~enter 999 if not applicable.~~ Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry 0.00-999]*	*[numeric entry 0.00-999]*
Pain Score (0 to 10) Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[Drop-down: 0-10]*	*[Drop-down: 0-10]*

[ONLY show for RDG 4 (4.11-4.34)]
AMPUTATION

	Admission Assessment	**Discharge Assessment**
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*

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K-level *[provide mouse-over with description of each K-level]* Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[Drop-down:* *Predicted K0* *Predicted K1* *Predicted K2* *Predicted K3* *Predicted K4* *Current K0* *Current K1* *Current K2* *Current K3* *Current K4]*	*[Drop-down:* *Predicted K0* *Predicted K1* *Predicted K2* *Predicted K3* *Predicted K4* *Current K0* *Current K1* *Current K2* *Current K3* *Current K4]*
Gait Speed in m/s (~~enter 999 if not applicable,~~ Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry 0.00-999]*	*[numeric entry 0.00-999]*
Without prosthesis: Amputee Mobility Predictor (AMP) score (~~enter 999 if not applicable,~~ Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry 0-43 and 999]*	*[numeric entry 0-43 and 999]*
With prosthesis: Amputee Mobility Predictor (AMP) score (~~enter 999 if not applicable,~~ Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry 0-47 and 999]*	*[numeric entry 0-47 and 999]*
Pain Score (0 to 10) Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[Drop-down: 0-10]*	*[Drop-down: 0-10]*

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

[ONLY show for RDG 5 (5.11-5.13)]
MUSCULOSKELETAL CONDITIONS

	Admission Assessment	Discharge Assessment
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
Pain Score (0 to 10) Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[Drop-down score 0-10]*	*[Drop-down score 0-10]*
Patient Specific Functional Scale [Only need to fill in at least 1 Activity] Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>		
[Free Text entry of patient Activity 1]	*[numeric entry from 0-10]*	*[numeric entry from 0-10]*
[Free Text entry of patient Activity 2]	*[numeric entry from 0-10]*	*[numeric entry from 0-10]*
[Free Text entry of patient Activity 3]	*[numeric entry from 0-10]*	*[numeric entry from 0-10]*
Average Score	*[Auto-Average]*	*[Auto-Average]*

[ONLY show for RDG 6 (6.1-6.3)]
DECONDITIONING

	Admission Assessment	Discharge Assessment
Date assessed:	*[autopopulate date]*	*[autopopulate date]*
Assessed by:	*[autopopulate name of healthcare professional entering the information based on user log-in]*	*[autopopulate name of healthcare professional entering the information based on user log-in]*
[ONLY show for RDG 6.2] **Falls history in the previous 6 months** Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry from 0-99, 999]*	*[numeric entry from 0-99, 999]*
Gait Speed in m/s (~~enter 999 if not applicable.~~ Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry 0.00-999]*	*[numeric entry 0.00-999]*
Berg Balance Scale (~~enter 999 if not applicable.~~	*[numeric entry from 0-56, 999]*	*[numeric entry from 0-56, 999]*

Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>		
Timed 5 Sit-To-Stand in seconds (~~enter 999 if not applicable,~~ Please select if not applicable, and specify reasons: ☐ Not Applicable.: Please specify reason(s) <free text>	*[numeric entry from 0-999]*	*[numeric entry from 0-999]*

FOR REFERENCE ONLY.
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SECTION 4: DISCHARGE INFORMATION AND PLAN
Note: To be filled in when patient is discharged from the setting

4.2	**Date of discharge** [To align with NGEMR: - For inpatient – date of discharge from rehab setting; - For outpatient – date of last PT, OT, ST session]	/ /
4.3	**Rehab setting referred to** *[select all that apply]*	Acute Hospital - AHP Outpatient Community Hospital - Inpatient Centre Based Services – Day Rehabilitation Polyclinic Home Health Care Services – Home Therapy No further rehabilitation needed Others: Please specify
4.4	**Does this follow the RDG dominant pathway?**	Yes No
4.5	[Do not show if 4.4 is "Yes"] **If not, reason(s):**	*<free text>*
4.6	**Discharge Criteria Met** *[select all that apply]* *(Logic: If option 7 and 8 selected, below are not mandatory:* *- Section 3 discharge outcomes* *- Section 4, questions 4.10 onwards)*	*[show 1-3 for patients discharged from AH/CH/NH]* 1. INPATIENT: **Achieved rehab goal**, medically fit for discharge and no further transitional care issues that require inpatient care 2. INPATIENT: **No further improvement (functional plateau)**, medically fit for discharge, and no further transitional care issues that require inpatient care 3. INPATIENT: **Reached maximum RDG-specific rehab LOS,** and medically fit for discharge *[show 4-6 for patients discharged from outpatient setting]* 4. OUTPATIENT: Achieved rehab goal 5. OUTPATIENT: No further improvement (functional plateau) 6. OUTPATIENT: Reached RDG-specific maximum sessions or duration 7. OUTPATIENT: Developed new RDG/need, to restart care plan *[Conclude care plan if selected, field 4.8 and onwards are no longer required]* *[Administrative field, auto-filled if q4.7 is not filled X months after date of last form edit. X =RDG-specific max duration + 6 months]* 8. Stopped / did not show up for rehab *[Conclude care plan if selected, field 4.8 and onwards are no longer require*
4.7	**Rehab LOS (RLOS)**	*[Auto-populated & locked so that therapist cannot edit: Date of Admission to setting - Date of Discharge from setting]*
4.10	[show only if actual RLOS > recommended RDG-specific RLOS] **As the RLOS exceeds the recommended RDG-specific RLOS, please indicate reason(s) for delay** [select all that apply]	Patient related issues (medical) Equipment issues Service issues Social/community support issues Patient behavioural/mental health issues Transportation issues Financial issues

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		Housing issues Other issues. Please specify:
4.11 [NM]	**Does the patient require home modifications?** [only if applicable]	Yes, done. Yes, pending No
4.12 [NM]	[Do not show if 4.11 is "No"] **What home modifications were/are being done?** [only if applicable]	*[Free text entry]*
4.13	**Caregiver status** *[drop down menu]*	Does not need caregiver Needs caregiver, live-in caregiver available Needs caregiver, ad-hoc caregiver available Needs caregiver, no available caregiver Needs caregiver, pending arrangements Not applicable
4.14	*[ask if caregiver status = live-in OR ad-hoc carer available]* **Relationship of primary caregiver** *[drop down menu]*	Spouse/Partner Parent/Guardian Child Sibling Foreign domestic worker Others. Please specify:_____
4.15	*[Ask only if Employment status prior to this episode was "Employed"]* **Employment status, or anticipated employment status, after discharge** [drop down menu] **(follow above, use epic option)**	Employed Unemployed Self-employed Homemaker Retiree Others
4.18	**Mobility status in community at Discharge** *[Drop down]* *PMA refers to wheelchair, motorized wheelchair or motorized scooter	Walk independently; does not use PMA Walk independently; independent with PMA Walk assisted; does not use PMA Walk assisted; independent with PMA Walk assisted; needs assistance with PMA Not able to walk; independent with PMA Not able to walk; assisted with PMA Homebound
4.16 [NM]	***What social service(s) is/are the patient referred to?*** *[optional, select all that apply]*	Day Care Dementia Day Care Home Medical Service Home Nursing Service Meal-on-Wheels Medical Escort & Transport Home Personal Care

FOR REFERENCE ONLY.
Therapists are to refer to their respective organisation's IT system and training.

APPENDIX A: Rehab Diagnostic Group Code

Rehab Diagnostic Group Code _ _ . _ _ _ _

Use the RDG Codes to code the impairment which is identified at the beginning of the episode as the major focus of rehabilitation and the primary subject of the rehabilitation plan.

Six conditions identified as priority for One Rehab

STROKE

Haemorrhagic

1.11 Stroke with motor impairment
1.12 Stroke with cognitive/perceptual (incl. sensory)/ communication impairment
1.13 Stroke with motor and cognitive/perceptual (incl. sensory)/ communication impairment

Ischaemic

1.21 Stroke with motor impairment
1.22 Stroke with cognitive/perceptual (incl. sensory)/communication impairment
1.23 Stroke with motor and cognitive/perceptual (incl. sensory)/ communication impairment

SPINAL CORD INJURY

Non-traumatic

2.11 Non traumatic spinal cord dysfunction - Paraplegia
2.12 Non traumatic spinal cord dysfunction - Tetraplegia

Traumatic

1.21 Traumatic spinal cord dysfunction - Paraplegia
1.22 Traumatic spinal cord dysfunction - Tetraplegia

Other

1.31 Other spinal cord dysfunction (Traumatic or non-traumatic)

HIP FRACTURE

3.11 Fracture of hip (#NOF), Operated
3.12 Fracture of hip (#IT), Operated
3.13 Fracture of hip, Non-operated

AMPUTATION OF LIMB

Potential prosthetic user in the home (K1)

4.11 Unilateral BKA
4.12 Bilateral BKA / Unilateral AKA
4.13 Bilateral amputees with at least one AKA on one side
4.14 Poly amputee or Hip disarticulation & above

Potential prosthetic user in the community (K2-3)

4.21 Unilateral BKA
4.22 Bilateral BKA / Unilateral AKA
4.23 Bilateral amputees with at least one AKA on one side
4.24 Poly amputee or Hip disarticulation and above

MUSCULOSKELETAL CONDITIONS

Surgical

5.11 MSK Surgical (peripheral)
5.12 MSK Surgical (spinal)
5.13 Total Knee Replacement

Non-surgical

5.21 MSK Non-surgical

DECONDITIONING

6.1 (65 years and below) Deconditioning & functional decline post-surgical procedure and/or post ICU care due to e.g. sepsis, cellulitis.
6.2 (Above 65 years old) Falls at least once in the last 6 months with underlying symptoms (e.g. unsteadiness, dizziness) and requiring individualized rehabilitation care plan.
6.3 (Above 65 years old) Frail based on any of the following criteria:
(1) Clinical Frailty Scale >4; or Meets >3 criteria in the (2) FRAIL scale or (3) Fried's Frail Phenotype.

Other conditions not identified as priority

AMPUTATION OF LIMB

Non potential prosthetic user

4.31 Single upper above elbow
4.32 Single upper below elbow
4.33 Partial foot (single or double)
4.34 Other amputation

BRAIN DYSFUNCTION

Non-traumatic

7.11 Sub-arachnoid haemorrhage
7.12 Anoxic brain damage
7.13 Other non-traumatic brain dysfunction

Traumatic

7.21 Open injury
7.22 Closed injury

NEUROLOGICAL CONDITIONS

8.1 Multiple Sclerosis
8.2 Parkinsonism
8.3 Polyneuropathy
8.4 Guillian-Barre
8.5 Cerebral palsy
8.8 Neuromuscular disorders
8.9 Other neurological conditions

CARDIAC

9.1 Following recent onset of new cardiac impairment
9.2 Chronic cardiac insufficiency
9.3 Heart and heart/lung transplant

PULMONARY

10.1 Chronic obstructive pulmonary disease
10.2 Lung transplant
10.9 Other pulmonary conditions

BURNS

11 Burns

CONGENITAL DEFORMITIES

12.1 Spina bifida
12.9 Other congenital deformity

OTHER DISABLING IMPAIRMENTS

13.1 Lymphoedema
13.9 Other disabling impairments that cannot be classified into a specific group

DEVELOPMENTAL DISABILITIES

14.1 Developmental disabilities (excludes cerebral palsy)

PAIN SYNDROMES

15.1 Headache (includes migraine)
15.2 Other pain (includes abdomen/chest wall)

CANCER

16 Cancer rehabilitation

OTHER REHAB CONDITION

17 Other rehabilitation condition not listed

SECTION 6: Case studies

The One-Rehabilitation workshop is built on case studies. Case studies 1 to 4 are for OTs/PTs, and case studies 1, 2, 5 to 11 are for SLTs. Please review the case studies prior to the workshop.

- For the OTs/PTs, you will need to refer to case studies 1 to 4 when completing the individual Readiness Assurance Test (iRAT) and when attempting problem-solving activities during the workshop.
- For the SLTs, you will need to refer to case studies 1, 2, 5 and 6 when completing the individual Readiness Assurance Test (iRAT), and case studies 7 to 11 when attempting the problem-solving activities during the workshop.

Case Study 1: Mdm Tan (For OT/PT/SLT)

Mdm Tan is a 78 year old Chinese female, staying with her daughter who works full-time. She attends day care 5 days a week and is independent in her activities of daily living. She is able to walk between her home to the centre (~100m) with a rollator frame independently, but does not need a walking aid when moving around the house. She is cognitively intact and participates well in the activities.

Last weekend, she slipped while in the toilet and sustained a left elbow fracture. She reported feeling dizzy as she got up too quickly from the toilet. As a result, she was hospitalized in Dover acute hospital for 5 days. Her elbow fracture is on conservative management (non-weight bear for 6 weeks) and is placed in an arm sling. Due to a period of deconditioning and fear of falling, she now requires rehabilitation.

Her past medical history includes Hypertension, Hyperlipidemia, Osteoporosis, Chronic low back pain with kyphosis. She does not have a history of falls and does not report feeling tired in the past 4 weeks. At last review (this morning), Mdm Tan requires x1 minimum assist for bed mobility, standing up, transferring and standing. She also needed assistance with showering and dressing, and was observed to fatigue during meals, with one coughing episode during eating. At present, she does not require specialist physician review and complex nursing care, but requires input from PT, OT and SLT. She is due for transfer to Dover community hospital today.

Case Study 2: Mr Siva (For OT/PT/SLT)

Mr Siva is 60 years old and works in a management firm that helps to set up companies. He is a confident and eloquent speaker who regularly gives speeches to his employees on the podium without reference to notes. He lives with his wife who is not working. His two children are currently living overseas. Mr Siva is independent with all of his activities of daily living (ADLs) and mobility, indoors and outdoors**.** Mr Siva's past medical history includes Hypertension, Hyperlipidemia, Diabetes Mellitus and Ischaemic Heart Disease.

One night, Mr Siva was attempting to get out of bed when he fell to the floor due to right sided weakness. He was brought by ambulance to the hospital and diagnosed with left anterior circulation stroke due to left internal carotid artery occlusion. He received endovascular thrombectomy, which was complicated by cerebral oedema and minor haemorrhagic conversion.

During Mr Siva's stay in the acute stroke unit, he showed potential for further improvement in his function. He required daily rehabilitation physician review, as well as daily rehabilitation from the PT, OT and SLT. He was also reviewed by the dietician and psychologist. He was subsequently transferred to the acute hospital inpatient rehabilitation unit.

First rehabilitation setting: Dover acute hospital (inpatient rehabilitation) [At 2 weeks post-stroke]

On admission, Mr Siva presents with reduced sensation, and weakness of his right arm and leg (grade 0-1 muscle strength). He also has mild neglect and issues sustaining attention during therapy. He has difficulty swallowing thin fluids (Level 0) and was diagnosed by the SLT to have moderate oropharyngeal dysphagia. The SLT has initiated the process of weaning off NGT and started him on moderately thick fluids (Level 3), while the psychologist has provided supportive counselling for Mr Siva and his wife.

After 4 weeks of inpatient rehabilitation, Mr Siva requires x1 moderate assist for bed mobility and sitting, x2 moderate assist for standing up, transferring and standing. He stays in inpatient rehabilitation for the next 6 weeks. At discharge (from inpatient rehabilitation), he is able to walk with x1 contact guard assist and a broad-based quad stick. He also requires minimum assistance from his wife for his ADLs. A soft and bite sized diet (Level 6) with mildly thick fluids (Level 2) has been recommended for him. He is able to sustain his attention for the duration of all his therapy sessions and daily activities unless he is specifically tired that day.

Mr Siva still presents with mild dysarthria that is characterised by

- Mildly slurred speech
- Mildly asthenic voice
- Aphasic errors that affects his verbal output more than his dysarthria

Mr Siva is also diagnosed to have moderate receptive aphasia and severe expressive aphasia. He is able to:

- Understand simple conversation, 1 step verbal and written commands consistently.
- Verbalise single content words with spontaneous phonetic or perseverative errors which make his verbal yes and no responses less reliable.

The communication partner has to use visual cues and forced choices to help him clarify his preferences, or to help him answer questions (e.g., 'what do you want to drink? Coffee or tea?'). The wife reports that he gets frustrated easily when he can't express himself and tends to keep to himself.

The care team, including the rehabilitation physician and therapists noted that Mr Siva does not require further daily rehabilitation, but will benefit from follow-up therapy with PT, OT and SLT.

Second rehabilitation setting: Dover acute hospital (outpatient rehabilitation) [At 2 months post-stroke]

Mr Siva has been discharged home. He was recommended to continue with weekly follow-up visits at the outpatient rehabilitation clinic with the PT, OT and SLT for the next 6 months, and to attend regular rehabilitation physician reviews.

At the point of discharge (from outpatient rehabilitation), he is able to walk independently indoors with no aid. He is also independent in his basic ADLs and requires moderate assistance in his instrumental ADLs due to his aphasia. Mr Siva is now able to manage a regular diet (Level 7) and thin fluids (level 0).

He still has moderate receptive and moderate expressive dysphasia, although he is now able to:

- Follow conversations and respond to yes and no questions to 90% accuracy.
- Verbalise his preferences and contribute to simple discussions about daily living.
- Produce spontaneous short phrases with familiar listeners and communication partners who are able to facilitate the conversation when he gets stuck or encounters frequent aphasic errors.

The care team noted that Mr Siva has met his rehabilitation goals in this setting. He still has potential to improve his function but does not require regular rehabilitation physician review. He continued his OT, PT and SLT rehabilitation at the Dover Day Rehabilitation Centre.

Third rehabilitation setting: Dover day rehabilitation centre [At 8 months post-stroke]

At the day rehabilitation centre, Mr Siva participated in 3 more months of rehabilitation, focusing on community reintegration and participating in instrumental ADLs such as shopping, money management and taking public transport**.** Under his wife's supervision, he can mobilise outdoors with a walking stick, and participate in some premorbid hobbies and cognitive engagement activities.

Although Mr Siva's communication skills have improved, he still has very mild receptive aphasia and moderate expressive aphasia. The following behaviours were noted:

- He comprehends 3 step commands, read newspapers and follow verbal conversations.
- His wife has also noted that he has appropriate understanding and response to nonverbal cues.
- His attention and memory is functional now.

- His participation in daily activities is limited only by his expressive aphasia and fatigue. For example, he would point to the item he wants at the wet market and his wife would complete the transactions for him.
- During conversations with friends, he mainly produces simple automatic social greetings and some spontaneous short phrases.
- He relies on his facial expressions and gestures to convey his requests and thoughts with the family.
- He makes phonetic and perseverative errors occasionally, and even more so when he is tired so familiar conversational partners will need to ask him yes/no questions and/or forced choice questions about 80% of the time.
- His wife reported that even though Mr Siva has settled into a new routine, he is occasionally frustrated at not being able to convey what he wants, especially when compared to how well he used to speak.

Mr Siva is unable to return to work due to his communication deficits, and has resigned from his job. Despite improvement in Mr Siva's physical function, his wife is not confident in helping him with his language needs, instrumental ADLs and his emotional coping. Together with Mr and Mrs Siva, the care team agreed that more rehabilitation time can be accorded to help Mrs Siva gain confidence in helping Mr Siva.

Case Study 3: Mdm Lim (For OT/PT only)

Mdm Lim is a 69 year old Chinese female. She is married and has 1 son and 2 daughters. She lives with her husband and son. Prior to hospital admission, Mdm Lim was independent in all activities of daily living (ADLs) and community ambulation with no aid. She is a housewife**.** She enjoys going out to meet her friends at the residents' corner (below her HDB flat) and cooking.

While Mdm Lim was trying to keep the table after a cards game at the resident's corner, she slipped and fell. Mdm Lim could not stand up post-fall and was brought by ambulance to the hospital. Her primary diagnosis is right Inter-trochanteric Fracture s/p Proximal Femoral Nail Antirotation (PFNA). Her past medical history includes Hypertension, Hyperlipidemia, Osteoporosis and bilateral Osteoarthritis knees s/p right Total Knee Replacement in Feb 2013. At the end of the acute hospital stay (for current condition), Mdm Lim required daily physiotherapy and occupational therapy to improve her function. Mdm Lim also required nursing care for wound care over the operation site.

First rehabilitation setting: Dover community hospital (inpatient rehabilitation) [At 2 weeks post-surgery]

She was referred to a community hospital for daily rehabilitation for 4 weeks. Over the 4 weeks, Mdm Lim improved from requiring x1 minimum assist to being independent in all basic ADLs. Her ambulation also improved from requiring x1 minimum assist with a 2-wheel rollator frame to x1 contact guard to supervision with a broad-based quad stick. Mdm Lim showed potential for further rehabilitation improvement. She wanted to return to her pre-morbid level of function but at present, lacked the confidence for community ambulation and instrumental ADLs. She would like to return to walking independently to the market to buy food in preparation for her cooking, and also return to the resident's corner to socialize with her friends. Her wound over the operation site was healing well, with no signs of infection.

Second rehabilitation setting: Dover day rehabilitation centre [At 6 weeks post-surgery]

Mdm Lim was referred to a day rehabilitation centre (DRC). The DRC sessions were targeted at improving her strength and balance, and for her to be able to return to community ambulation and her pre-morbid level of function. At the end of her day rehabilitation, Mdm Lim was able to perform marketing and cook simple 1-step dishes. She was also able to ambulate 500m independently with a walking stick without rest and manage slopes and kerbs outdoors. She was also independent with her home exercise plan.

Case Study 4: Mr Koh (For OT/PT only)

Mr Koh is a 71 year old retired school teacher who lives with his 70 year old wife. Both Mr and Mrs Koh are independent in their activities of daily living (ADLs), and live on their own. They have no children. Mr Koh presents today to Dover outpatient clinic with insidious onset of low back pain. He reports that the pain is around his right (R) lower back pain, is intermittent and sometimes radiates down to his (R) buttock. The pain is less severe in the morning and increases during the day.

Three years ago, he had experienced an acute episode of left (L) low back pain radiating down his (L) leg and is concerned that this pain would return now, but this time to his (R) leg. (Previously, Mr Koh's (L) sciatica had improved with NSAID medications.) At present, due to the low back pain (persisting for 3 weeks now), Mr Koh has stopped his running routine. He usually runs for 60 mins, 3 times a week, but now only walks for 20 mins, 3 times a week. He reports that his low back pain is worse when walking (> 20 mins) and running (> 5 mins). His current medical history and investigations include:

- Type 2 Diabetes Mellitus (diagnosed 2 years ago)
- MRI of lumbosacral area: marked spinal stenosis L3/4, reduced space in recesses and nerve root canals L4/5 and narrow nerve root canals bilaterally L5/S1
- Normal blood tests

While Mr Koh does experience symptoms on walking, he is still trying to walk about one km each day as he knows it is essential to keep active to manage his diabetes. He finds it easier walking back up the hill home on his walk each day than on the way down the hill to the bus stop. His symptoms also seem to improve more rapidly when he squats or lies down rather than standing or sitting still. He remains independent in his ADLs but is walking a lot slower and taking more breaks during community ambulation.

Case Study 5: Vicki (For SLT only)

Vicky is a 42 year old IT consultant who suffered a basal ganglia stroke. She was wearing dentures premorbidly but her dentures hurt her during prolonged chewing. She usually takes normal textures but avoids stringy vegetables and chewy beef due to the pain. As a result of her stroke, she has difficulty swallowing pills and coughs when taking thin fluids (Level 0) especially if taken quickly. She has been assessed by the SLT to have mild oropharyngeal dysphagia secondary to her delayed swallow triggers. Oral medications need to be pounded for her to swallow. She has been recommended to take a easy to chew (Level 7) diet for now (e.g., porridge with soft fish and vegetables, soft hor fun), with no mixed consistencies (e.g., watermelon, kuay teow soup), and allowed mildly thick fluids (Level 2) via controlled sips.

Case Study 6: Mdm Fatimah (For SLT only)

Mdm Fatimah is a 63 year old lady. She stays alone. She has a history of left basal ganglia stroke in 2017 with good functional recovery. She used to work as a sales assistant before leaving her job after the first stroke.

At baseline, she is ADL independent. She is ambulating independently albeit slower. Her speech volume has been generally soft but 100% intelligible. She has mild oropharyngeal dysphagia but has been managing a regular diet (Level 7) and thin fluids (Level 0) via controlled sips.

Mdm Fatimah was admitted to hospital after her niece found her on the floor of her flat in her own pool of urine. The niece reported that she was drooling on the left, had a left weakness and was drowsy. MRI revealed a moderate right pontine infarct with mild mass effect. After 3 days of intermediate care, Mdm Fatimah present with left upper and lower limb weakness with nil sensation deficit. She is able to stand with 1 person maximum assistance and walk 5 metres with 2 person assistance. She is orientated to her surroundings and condition, is able to follow verbal commands and can follow social conversations. Her speech is moderately dysarthric, and her speech intelligibility is approximately 50%. Her oropharyngeal dysphagia is now moderate to severe and she has been placed on NGT feeding. Mdm Fatimah frequently chokes on her saliva and is worried about not being able to live independently.

Mdm Fatimah still requires daily rehabilitation from the PT, OT and SLT, but shows potential for further improvement in her deficits. She was subsequently transferred to the community hospital inpatient rehabilitation unit.

First rehabilitation setting: Dover Community Hospital (Inpatient unit)

Mdm Fatimah's moderate-severe oropharyngeal dysphagia is characterised by reduced oral manipulation and preparation, delayed and effortful triggers and weak swallows. After her videofluoroscopy (VFS), she is allowed to commence small trials of moderately thick fluids (Level 3). Her main nutritional intake is given via the NGT. Since Mdm Fatimah showed increasing signs of low mood, the SLT has allowed minimal trials of pureed fruits (Level 4) occasionally with close supervision. She is mostly distressed by the frequent coughing on saliva daily and the fact that she is unable to walk and eat.

Mdm Fatimah is still moderately dysarthric. The following behaviours are noted:

- Her speech is moderately slurred and moderately soft in volume.
- She is 80% intelligible in very short phrases.
- She can communicate simple routine needs and preferences with the nurses and family members who are familiar to her.
- However, many other communication partners find her unintelligible as she appears to mumble in connected speech. For eg. her social worker finds it challenging communicating to her during counselling sessions.
- Listeners frequently resort to using forced choice questions or asking her to write her responses.
- Although Mdm Fatimah might appear mildly upset about her speech, she can be easily comforted.

At the time of discharge from Dover Community Hospital 4 weeks later, Mdm Fatimah is taking full oral intake. Her NGT has been weaned off. Mdm Fatimah also recovered her mobility well enough to be able to ambulate with a roller frame around the home and can return home with home support service and meals on wheels. While the team believes that Mdm Fatimah does not require intensive rehabilitation, they agreed that she can continue to make functional gains with further rehabilitation.

Second rehabilitation setting: Rainbow Rehabilitation Centre (Day rehab setting)

Mdm Fatimah participates in 3 more months of rehabilitation, focusing on community ambulation, increasing walking tolerance, UL strengthening, speech and swallowing rehabilitation.

At the time of discharge, she has been eating a full share of minced and moist diet (Level 5) with thin fluids (Level 0) via teaspoon. She reports that she also takes cut up noodles with gravy and bread dipped in milk without difficulty. She avoids mixed consistencies as she still coughs occasionally on thin fluids.

She chokes when taking big sips of thin fluids (Level 0)which she does at home against the ST's advice. Even though she takes 40 mins to finish a meal, she is able to maintain her oral intake sufficiently. This has made her happy.

Her speech behaviours are as follows:

- She is now 80% intelligible in conversations when she uses increased effort to talk.
- Her speech is mild - moderately reduced in volume and mildly slurred when using connected speech.
- She is able to make her needs, preferences known and make short conversation as long as the environment is quiet.
- Sometimes she still requires someone to prompt her to go louder or ask her to repeat.
- She has minimal difficulties ordering food on the phone and conversing with her neighbours at the void deck.

Case Study 7: Mr De Souza (For SLT only – AusTOMs Problem-Solving)

Mr De Souza was just discharged from Tanjong Katong Rehabilitation Hospital

While he was at the facility, he was diagnosed to have moderate receptive aphasia and severe expressive aphasia. The following behaviours were noted:

- He was able to understand simple conversation, 1 step verbal and written commands consistently.
- He was able to verbalise single content words, however, he still made spontaneous phonetic or perseverative errors which made his verbal yes and no responses less reliable.
- The communication partner had to use visual cues and forced choices to help him clarify his preferences, or to help him answer questions (e.g. 'what do you want to drink? Coffee or tea?').
- The wife reported that he got frustrated easily when he couldn't express himself and tended to keep to himself.

Mr De Souza is now at the Tanjong Katong outpatient rehabilitation centre, attending the first SLT review.

You decide to provide Mr De Souza with a communication board with pictures and functional phrases to help him express common requests (e.g. places, foods he likes to eat, people he wants to talk to/about). Mr De Souza is able to identify the items correctly on the board during the session. Caregiver training was also conducted and both Mr De Souza and his wife agreed to try to bring out the communication board whenever Mr De Souza is trying to say something and gets stuck. Despite this, Mr De Souza refuses to use the communication board on his own. He prefers to verbalise what he wants and pushes the board away. He will only allow his wife to use it when there is a communication breakdown and frustration. This was helpful most of the time in resolving confusion at home.

Case Study 8: Moe Yan (For SLT only – AusTOMs Problem-Solving)

Moe Yan was admitted to the rehabilitation ward after a large basal ganglia infarct. Since his stroke, Moe Yan would refuse to engage with anyone. He turns away from you when you try to establish eye contact. He does not follow any of your instructions and does not complete tasks on request. Although Moe Yan is noted to be able to push things away if he does not like them, he does not participate in any communication attempts. When he is in pain, he would grimace and withdraw. As far as the team knows, Moe Yan has no visitors or living family members. He was subsequently diagnosed with depression.

It has been a few days and you have not been able to conduct any formal assessment due to Moe Yan's poor participation.

Case Study 9: Roger (For SLT only – AusTOMs Problem-Solving)

Roger is a 50 years old Chinese male. He is married and lives with his wife. He works in the financial industry as an investment consultant where he manages investments and does market research. He has nil significant past medical history.

He was admitted for a right hemispheric syndrome secondary to Right MCA infarct. He received rTPA and EVT. His stroke was complicated by a small haemorrhagic conversion post-EVT. He is transferred to a tier 3D rehabilitation facility.

Dover Acute Hospital (inpatient rehabilitation) (2 weeks post stroke)

On assessment:

Roger is orientated to place, person, reason for admission, month and date. His speech and voice are clear and intelligible, but he talks fairly fast and mumbles. He is able to obey 3-step commands.

A MOCA test was administered. Roger scored 21/30 on the MOCA. This is a summary of his performance and behaviours displayed during the test:

- He appeared to have significant difficulty with all the executive function and attention tasks.
- He also demonstrated poor short term memory recall and very short attention span.
- Roger was noted to be very impulsive during the assessment and tried to go through all subtests as quickly as he could.
- He displayed no self-monitoring of his errors or problem-solving skills despite prompts to do so.
- The only tasks he completed with full marks was the orientation task, naming task and verbal fluency task (11 items).

During the social conversation, Roger appears to understand your questions however he is slower to respond. At times, he will repeatedly ask questions that were previously answered in a short span of time and persistently talk about the topic of going home. When engaged in open ended questions (e.g. “what do you like to do during your free time?”), Roger frequently forgets what he wants to say next and uses incomplete sentences. This makes him difficult to understand.

When asked about his symptoms, Roger is oblivious to these issues. He thinks he has no problems but just needs some time to sleep it off. Roger’s wife tells you that Roger was not previously impulsive and does not ask questions repeatedly. She has been distressed about his behaviours and the fact that she has to guide in all his basic ADLs right now. Roger would occasionally get upset when the wife helps him.

How would you rate Roger’s speech, language and cognitive communication domains?

Case Study 10: Mr Lim (For SLT only – FOIS Problem-Solving)

81 year old male

Diagnosis and relevant PMHX

Left MCA Territory CVA

Cognitive impairment

Severe oropharyngeal dysphagia

Diet

Family rejected NGT. Taking 3/4 share of pureed diet (Level 4) via teaspoon daily.

Fluids

For comfort feeding of moderately thick fluids (Level 3) via teaspoon

Tolerance

Afebrile, Chest clear. Weight stable.

Case Study 11: Mdm Khatijah (For SLT only – FOIS Problem-Solving)

91 year old Female

Diagnosis and relevant PMHX

Right BG Bleed. Developed HCAP - Cx by hypoactive delirium, p/w fever, drowsiness

Initial Assessment:

NGT as safest as deemed by SLT, but family refused NGT. Nil diet recommended.

Review before Discharge

5 Days later…Patient was supposed to discharge to nursing home.

Review Session:

Patient still does not have NGT.

Patient is AOR, has been taking honey-thick fluids full feeds via syringe for the last 5 days

Tolerance Scenario 1:

Afebrile, Starting to become chesty.

Tolerance Scenario 2:

Afebrile, Coping with full feeds

SECTION 7: Glossary

Ceiling effect	Occurs when data cannot take on a value higher than the highest score on the test. Thus, for a subsample of patients who are improving, their clinical improvement may not register as a change in score (i.e., they cannot score higher on test), even if there is improvement of function.
Floor effect	Occurs when data cannot take on a value lower than the lowest score on the test. Thus, for a subsample of patients who are deteriorating, their clinical decline may not register as a change in score (i.e., they cannot score lower on test), even if there is worsening of function.
Minimal Clinically Important Difference (MCID)	The smallest change in score on an outcome measure that would be considered beneficial by patients. Can also be termed as Smallest Worthwhile Effect, Minimum Important Difference, Minimal Important Changes and used to reflect clinically important, or clinically meaningful effects of intervention. To determine MCID, decision-making often involves weighing the benefits of an intervention against risks, cost and any other inconveniences, and must be made in consultation with patients who are receiving the intervention.
Minimal Detectable Change (MDC)	Estimate of smallest detectable difference that might be considered to be true change rather than measurement error.
Normative values	Values on an outcome measure that reflect healthy and able-bodied individuals. (Only applicable for outcome measures that are used in the healthy and able-bodied population; this includes healthy older adults.)
Reliability	Extent to which a test is stable, or consistent, and produces similar results when administered repeatedly. Can also be termed as Intra-rater reliability: extent to which test produces similar results when administered by same rater, and Inter-rater reliability: extent to which test produces similar results when administered by different rater(s).
Validity	Extent to which a test measures what it says it measures, Can also be termed as Construct validity: extent to which test produces similar results to another test that measures similar outcome.

SECTION 8: Acknowledgements

The One-Rehab curriculum (including this document and materials used in workshop) were developed by

Name	Title and Organisation
A/Prof Kwah Li Khim	Deputy Cluster Director (Health and Social Sciences Cluster), Singapore Institute of Technology
A/Prof Ong Peck Hoon	Programme Leader - Physiotherapy (Health and Social Sciences Cluster), Singapore Institute of Technology
A/Prof Valerie Lim	Programme Leader – Speech and Language Therapy (Health and Social Sciences Cluster), Singapore Institute of Technology
Melissa Chua Hui Ling	Head (Speech Therapy) & Senior Principal Speech Therapist, Sengkang General Hospital; Part-time Professional (Chief Allied Health Officer's Office)
Gan Hui Hui	Principal Speech Therapist, Singapore General Hospital
Ang Zi Qin	Senior Speech Therapist, Singhealth Community Hospital
Susan Niam	Chief Allied Health Officer, Ministry of Health
Dr Ng Yee Sien	Senior Consultant (Rehabilitation Medicine), Singapore General Hospital; Part-time Professional (Hospital Services Division)
Andrea Mun	Senior Manager, Chief Allied Health Officer's Office, Ministry of Health (Singapore)
Suzanne Goh	Senior Manager, Chief Allied Health Officer's Office, Ministry of Health (Singapore)
Kwek Boon Liang	Senior Assistant Director, Chief Allied Health Officer's Office, Ministry of Health (Singapore)
Chen Zhen Zhen	Senior Occupational Therapist, National University Hospital; Part-time Professional (Chief Allied Health Officer's Office)
Clara Wong Xiu Qing	Principal Physiotherapist, Tan Tock Seng Hospital; Part-time Professional (Chief Allied Health Officer's Office)
Ng Lip Chin	Principal Occupational Therapist, Ren Ci Hospital Part-time Professional (Chief Allied Health Officer's Office)
Dr Edwina Rigby	Senior Lecturer (Health and Social Sciences Cluster), Singapore Institute of Technology; Part-time Professional (Chief Allied Health Officer's Office)

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Name	Title and Organisation
Dr Shamala Thilarajah	Principal Physiotherapist, Singapore General Hospital; Part-time Professional (Chief Allied Health Officer's Office)
A/Prof Lim Hua Beng	Programme Leader – Occupational Therapy (Health and Social Sciences Cluster), Singapore Institute of Technology
Dr Philip Cheong	Principal Physiotherapist, Singapore General Hospital
Chan Hock Kiong Adon	Principal Physiotherapist, Yishun Community Hospital
Shirlene Toh Ee Mui	Principal Occupational Therapist, Tan Tock Seng Hospital
Lee Zhao Qin	Senior Physiotherapist, Ng Teng Fong General Hospital

See Chee Qing	Senior Occupational Therapist, Ng Teng Fong Hospital
Leila Ilmami Binte Nasron	Senior Principal Occupational Therapist, Singapore General Hospital
Fahria Binte Abdul Rahman	Principal Physiotherapist, St Luke's Hospital
Ms Tham Pei Xin	Senior Occupational Therapist, St Luke's Hospital
Geetha D/O Kunasaigaran	Principal Physiotherapist, Ang Mo Kio-Thye Hua Kwan Hospital
Maebh Gorby	Senior Occupational Therapist, Ang Mo Kio-Thye Hua Kwan Hospital
Khin Swe Swe Htun (Ms)	Senior Physiotherapist, St. Andrew's Community Hospital , Inpatient Therapy Service (ITS)
Ms Loh Wei Chin	Centre Manager, St Andrew’s Community Hospital, Day Rehabilitation Centre
Irene Toh	Principal Physiotherapist, Head of Department, NTUC Health Co-Operative Ltd
Muhammad Razi bin Kasmin	Senior Occupational Therapist, NTUC Health Co-Operative Ltd
Kelly Hee	Principal Physiotherapist, St Luke's ElderCare
Ms Catherine Tan	Senior rehabilitation manager, Vanguard Healthcare
Renee Ng	Senior Rehab Manager, Vanguard Healthcare Pte Ltd
Ip Wai Yin	Speech Therapist, AWWA Ltd – Rehab and Day Care Centre
Lee Yan Qing	Principal Speech Therapist, Changi General Hospital
Teoh Wei Lin	Speech Therapist, Khoo Teck Puat Hospital
Ms Mok Jin Yu	Principal Speech Therapist (Inpatient Therapy Services)
Mr Lim Ghim Leong, Jason	Senior Speech Therapist, Ang Mo Kio – Thye Hua Kwan Hospital
Ms Florence Tang	Senior Speech Therapist, Speech Therapy Department, Tan Tock Seng Hospital
Ms Eunice Chua	Senior Speech Therapist, SPD
Ms Celeste Chew	Senior Speech Therapist, Ng Teng Fong General Hospital
Ms Rachel Chia	Senior Speech Therapist, Singapore General Hospital
Ms Voon Siew Wei	Senior Speech Therapist, St Luke’s Hospital