***National Imaging Associates, Inc.**	
Clinical guidelines **MEASURABLE PROGRESSIVE IMPROVEMENT**	**Original Date: November 2015**
Physical Medicine – Clinical Decision Making	**Last Revised Date: December ~~October~~2023~~2~~**
Guideline Number: NIA_CG_605	**Implementation Date: July 2024~~3~~**

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GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

~~Policy~~ Statement

Outcome measures and pre-determined treatment goals (specific, measurable, and~~/or~~ functional) must be used with each patient. These measures must be clearly defined in the patient record to ascertain the amount or degree of change over time and the documentation must provide evidence of lasting, sustainable progress with treatment.

Purpose

This ~~policy~~ guideline provides minimal clinical thresholds using specific, measurable, and functional treatment goals and/or outcome measures in the determination of improved, lasting, and sustained outcomes. These thresholds will assist in medical necessity reviews of billed clinical services by network practitioners.

All recommendations in this guideline reflect practices that are evidence-based and/or supported by broadly accepted clinical specialty standards.

~~Acceptable Thresholds of~~ Measurable Improvement

Defined

Meaningful clinical changes ~~(Minimal Clinically Important Change-MCIC; Minimal Clinically Important Differences-MCID; Minimal Detectable Change-MDC; Small Meaningful Change-SMC) has been~~are calculated ~~for most common standardized~~ outcome measures using a standardized assessment tool~~s~~. ~~The application of valid and reliable~~Using standardized ~~outcome~~ assessment tools~~-~~ in the management of neuromusculoskeletal disorders ~~is generally considered as "best practice~~follows Physical Medicines professional standards. These include;

- Minimal Clinically Important Change (MCIC)
- Minimal Clinically Important Differences (MCID)
- Minimal Detectable Change (MDC)
- Minimal Important Change (MIC)
- Smallest Detectable Change (SDC)
- Standard Error of Measurement (SEM)
- Small Meaningful Change (SMC)
- Smallest Real Change (SRC)

Scope

~~To make a valid, reliable~~In determin~~ation of~~ meaningful progress toward goals (MCIC~~)~~ and~~/or~~ Maximum Therapeutic Benefit (MTB~~)), it is essential that~~ the record must include documented ~~a~~ relevant standardized outcome assessment~~s tool~~. The calculated outcome measures can be used to set goals and determine treatment effectiveness. Progress towards goals should be assessed at predetermined time periods and supported by anticipated meaningful clinical change based on the treatment plan goals, e.g.;

- Recovery patterns for neuromusculoskeletal conditions involving the low back, neck, and headache disorders show that > 50% of the overall improvement with care occurs within 4 - 6 weeks
- When patients are categorized via predictive modeling, the percentage of those showing significant improvement within 6 weeks rises considerably [1]~~.~~[1-4]

~~Studies have consistently shown that short-term treatment response is predictive of long-term outcomes. McGorry showed that exacerbations of LBP resolved within a few days (52%); within a week (16%); within two-three weeks (26%); even severe flare-ups usually resolved within nine days.[5] After a review of the scientific evidence, t~~This organization ~~has concluded~~requires all practitioner records must evaluate and document whether treatment is resulting in progressive and sustained improvement including; ~~.~~c
~~The practitioner records must demonstrate c~~lear, specific, and measurable improvement in the patient's pain and function

- Every two weeks or at regular intervals as appropriate for the documented condition
- Measured by one or more of the ~~following~~ below ~~examples of~~ methods for each anatomic region (listed below in ‡Measurable Improvement Acceptable Thresholds) [2]
- If no functional tool is available for the patient's condition~~,~~ it is expected the practitioner will develop specific, measurable, and functional goals~~:~~

‡Measurable Improvement Acceptable Thresholds

5 Times Sit to Stand Test (5XSTS) [3]

- Older Adults: 5 repetitions of this test exceeding the following can be considered to have worse than average performance
  - 11.4 sec (60 to 69 years)
  - 12.6 sec. (70 to 79 years)
  - 14.8 sec. (80 to 89 years)
- MCID
  - Vestibular Disorders = 2.3 seconds
- MDC
  - Vestibular Disorders = 3.6 to 4.2 seconds

6-Minute Walk Test (6MWT) for Older Adults [4, 2, 5][6,7]

- ~~SMC - Older people with limited mobility[8]: 21 m (69 feet)~~
- ~~SMC - Older people with stroke[8]: 22 m (72 feet)~~
- MDC
  - Alzheimer's Disease[8,9]: 33.5 m (110 feet)
  - Hip OA or knee OA that later received a total joint replacement[10]: 61.32~~2~~4m
  - HD – chronic progressive (premanifest) = 39.22 m
    (manifest) = 86.57 m
    (early-state) = 56.6 m
    (middle-state) = 126.14 m
    (late-stage) = 70.65 m
  - MS – chronic progressive: 88 m
  - MS – chronic progressive = 20%
  - Older Adults: 58.21 m
  - PD: 82 m
  - Stroke – chronic: 34 – 37 m or 13% change
  - Stroke – Subacute: 61m

- MIC
  - MS – chronic progressive (mild to severe): 21.56 m (patient anchor)
  - MS – chronic progressive (mild to severe): 9.06 m (clinician anchor)
  - MS – chronic progressive (deterioration): -53.35 m (patient anchor)
  - MS – chronic progressive (deterioration): -55.06 m (clinician anchor)
- SEM
  - MS – chronic progressive: 32 m
  - Stroke – subacute: 22 m
  - Stroke – chronic: 12 – 18 m
- SMC
  - Older adults with limited mobility: 20 m (66 feet)
  - Older adults with stroke: 22 m (72 feet)
  - Stroke – subacute: 21 m (anchor stairs)
  - Stroke – subacute: 54 m (anchor-walk block)
- $SRC_{individual}$
  - MS – chronic progressive (mild to severe): 67.22 m (patient anchor)
  - MS – chronic progressive (mild to severe): 68.32 m (clinician anchor)

NOTE: OA – Osteoarthritis; MS – Multiple Sclerosis; HD – Huntington's Disease; PD – Parkinson's Disease

10 Meter Walk Test (10MWT) [6]

- Normative Values (m/s) - Healthy Adults
  - Men/Women (20s) = 1.358/1.341
  - Men/Women (30s) = 1.433/1.337
  - Men/Women (40s) = 1.434/1.390
  - Men/Women (50s) = 1.433/1.313
  - Men/Women (60s) = 1.339/1.241
  - Men/Women (70s) = 1.262/1.132
  - Men/Women (80/90s) = 0.968/0.943
- MDC [7]
  - HD (pre-manifest HD, comfortable) = 0.23 m/s
  - HD (manifest HD, comfortable) = 0.34 m/s
  - HD (early-stage HD, comfortable) = 0.20 m/s
  - HD (middle-stage HD, comfortable) = 0.46 m/s
  - HD (late-stage, comfortable) = 0.29 m/s
  - MS = 0.26 m/s
  - PD (comfortable) = 0.18 m/s
  - PD (fast) = 0.25 m/s
  - SCI (incomplete < 12 months) = 0.13 m/s
  - Stroke (acute) = 0.11 m/s
  - Stroke (chronic > 6 months, comfortable) = 0.18 m/s
  - Stroke (chronic > 6 months, fast) = 0.13 m/s
- MCID [7]
  - Stroke (subacute) = 0.16 m/s

Activities of Daily Living Scale of the Knee Outcome Survey [8, 9]

- 10 - 30% reduction in the global score (knee)
- MCID
  - = ~~–~~ 7.1%[11]
- MDC
  - = 2.23

Activity-Specific Balance Confidence Scale (ABC) [10, 2, 11, 12]

- ~~SMC – older adults[12] – 7 points~~
- ~~MDC - Parkinson's Disease[13,14] – 11 – 13%~~
- ~~MDC – CVA[15,16] – 14%~~
- MCID
  - Vestibular Disorders = 18.1%[17]
- MDC
  - PD = 11 – 13%
  - PD – Chronic progressive = 13

- CVA = 14%
- SEM
  - PD – Chronic progressive = 11%
  - PD = 4.01
  - Stroke – acute and chronic = 5.05 – 6.81
  - Older adults = 1.2
- SMC
  - Older adults = 7 points

NOTE: CVA – Cerebral Vascular Accident; PD – Parkinson's Disease

Berg Balance Scale (BBS) [2, 13, 14, 15, 16]

- MIC
  - MS: deterioration (clinician anchor) = -0.60
  - MS: deterioration (patient anchor) = -1.41
- MCID
  - Subacute stroke (assisted walking): 5 points
  - Subacute stroke (unassisted walking): 4 points
- MDC
  - = 6.2 – ~~–~~6.5 points[18,19]
  - Alzheimer's Disease and Progressive Dementia = 1.92
  - HD – chronic progressive premanifest = 1
  - HD – chronic progressive manifest = 5
  - HD – chronic progressive early-stage = 4
  - HD – chronic progressive middle-stage = 5
  - HD – chronic progressive late-stage = 5
  - Older adults = 8 – 10.5 points
  - PD = 5 points
  - Stroke (acute) = 6 (90%)
  - Stroke (acute) = 7 (95%)
  - Stroke (chronic) = 2.7 points
  - Stroke (chronic/stable) = 4.66 – 6.7
    - ~~MDC – older adults[20] = 10.5 points~~
- ~~MDC - Parkinson's Disease[14] = 5 points~~SEM
  - Alzheimer's Disease and Progressive Dementia = 0.97
  - Stroke (acute) = 2.49
  - Stroke (chronic/stable) = 1.49 – 2.4
  - TBI = 1.65

- ~~MDC – chronic stroke[21] = 2.7 points~~
- ~~MCID – subacute stroke (assisted walking) – 5 points[22]~~

~~MCID – subacute stroke (unassisted walking) – 4 points[22]~~**NOTE**: HD – Huntington's Disease, MS – Multiple Sclerosis, PD – Parkinson's Disease, TBI – Traumatic Brain Injury

Bournemouth – Back Questionnaire [17]

- Acute: change of 26 points
- Subacute/chronic: change of 18 points

NOTE: It is recommended that the Bournemouth be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress.

Bournemouth – Neck Questionnaire [18]

- A change of 13 points or 36% is considered clinically significant improvement.[24]

NOTE: It is recommended that the Bournemouth be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress.

Bruininks-Oseretsky Test of Motor Proficiency, 2nd Edition (BOT™-2) [19, 20][25]

- MCID
  - Children aged 3-6 years with intellectual disability
    - = 6.5 (BOT™-2-SF Standard Scores)
  - Children aged 4-21 years with intellectual disability
    - = 6.5 (aged 4-12 years) (BOT™-2-SF standard scores)
    - = 7.4 (aged 13-21 years) (BOT™-2-SF standard scores)
- MDC
  - Children aged 3-6 years with intellectual disability
    - = 7.4 (BOT™-2-SF Standard Scores)
  - Children aged 4-21 years with intellectual disability
    - = 4.2 (aged 4-12 years) (standard scores)
    - = 7.4 (aged 13-21 years) (standard scores)
  - Children aged 7-10 with fetal alcohol syndrome
    - = 6.1 (BOT™-2-SF Raw scores)
- SEM
  - Children aged 3-6 years with intellectual disability
    - = 1.6 (BOT™-2-SF standard scores)
  - Children aged 7 – 9 years with fetal alcohol disorders
    - = 2.2 (BOT™-2-SF raw score) / 2.1 (BOT™-2-SF standard score)

Disability of Arm, Shoulder, and Hand (DASH) [21, 22, 23]

- MCID
  - DASH = 11-15 points
  - Elbow Arthroplasty (much worse or much better) = 19 points
  - Elbow Arthroplasty (somewhat better or somewhat worse) = 10 points
  - Elbow Arthroplasty (no change) = -3 points
  - Musculoskeletal Upper Extremity (Adults) = 10.2

- MDC~~QuickDASH MCID = 6.8-15 points~~
  - Humeral Joint Pain and Fractures = 16.1 (DASH)
  - Musculoskeletal Upper Extremity (Adults) = 10.7 – 12.2 (90% CI)
  - Musculoskeletal Upper Extremity (Adults) = 12.75 (95%CI)
  - Shoulder = 10.7% (90%CI)
  - Shoulder = 12.75% (95%CI)
- SEM
  - Humeral Joint Pain and Fractures = 5.82 (DASH)
  - Musculoskeletal Upper Extremity (Adults)= 4.6 – 5.22
  - Osteoarthritis = 2.27 (DASH 0-3*)
  - Osteoarthritis = 3.26 (DASH 0-6*)
  - = 4.49 (DASH 0-12* Osteoarthritis)

NOTE: *Paired differences of the DASH score; DASH 0 is mean score preoperative, DASH 3 is mean score at 3 months, DASH 6 is mean score at 6 months, and DASH 12 is mean score at 12 months.

Disability of Arm, Shoulder, and Hand (QuickDASH) [24]

- MCID
  - Upper Extremity (whole) = 8 points
- MDC
  - = 11 – 17.2 points (90%CI)
  - = 20.4 points (95%CI)
- SEM
  - = 6.43 (very much improved)
  - = 3.26 (much improved)
  - = 3.37 (minimally improved)
  - = 10.22 (no change)

Dizziness Handicap Inventory (DHI) [25, 26]

- MCID
  - BPPV = decrease from 18.05 at the first day to 9.54 at 30 days
  - Vestibular Disorders = change of 18 points (95% CI, pretreatment and posttreatment scores difference)
- MDC
  - MS = 22.50
  - Vestibular Disorders = 17.18 points ~~29~~
- SEM
  - Vestibular Disorders = 6.2

NOTE: BPPV – Benign Paroxysmal Positional Vertigo; MS – Multiple Sclerosis

Dynamic Gait Index (DGI) [27, 28, 29, 30, 31]

- MDC
  - MS = 4.19 – 5.54
  - Stroke = 4 points
  - Stroke (change) = 16.6%
  - Stroke (chronic) = 2.6 points
  - PD = 13.3%
  - ~~= 2.9 points[18]~~PD and Older Adults = 2.9 points
  - Vestibular Disorders = 3.2 points
- SEM
  - Older Adults = 1.04 points
  - MS (inter-rater reliability) = 1.51 points
  - MS (intra-rater reliability = 2.00 points)
  - Stroke (chronic) = 0.71
  - Stroke (inter-rater reliability) = 0.94
  - Stroke (test-retest condition) = 0.97
  - Vestibular Disorders = 2.8 points

NOTE: MS – Multiple Sclerosis; PD – Parkinson's Disease

Falls Self Efficacy Scale/Falls Efficacy Scale-International (FES-I) [32, 33]~~30-32~~

- MDC
  - MS = 0.52 points
  - Older Adult (Hip fracture) = 17.7 points
  - Vestibular Disorders = 8.2 points
- SEM
  - Oder Adult (Hip Fracture) = 6.4 points
  - MS = 0.19 points
  - Vestibular Disorders = 3.0 points

NOTE: MS – Multiple Sclerosis

Foot and Ankle Ability Measures (FAAM) [34, 35]~~33,34~~

- MCID
  - ADL (subscale) = 8% points
  - Sport (subscale) = 9% points
- MDC
  - ADL (subscale 95% CI) = 5.7
  - Sports (subscale 95% CI) = 12.3
- SEM
  - ADL (subscale) = 2.1
  - Sports (subscale) = 4.5

NOTE: ADL – Activities of Daily Living

Fear Avoidance Belief Questionnaire (FAB-Q) [36, 37, 38] [35]

- MCIC
  - Arthroscopic subacromial decompression (following)[36] = -5.0
- MCID
  - Lower Back Pain = 13 points
  - Physical Activity (Pelvic Girdle pain) = 25%
- MDC
  - Low back pain = -5.4
  - Physical Activity (Pelvic Girdle pain) = 6.1
  - Physical Activity (Subscale) = 12 points
  - Physical Activity (Worker UE injury) = 8 points (change scores equivalent to 30-33% of scale)
  - Work (Subscale) = 9 points
- SEM
  - Physical Activity (Pelvic Girdle pain) = 2.20

Functional Gait Assessment (FGA) [2, 11, 39, 40]

- MCID
  - Older Adults = 4 points (from interim to end of care)~~= 4 points~~[37]
  -
  - Vestibular Disorders = 4 points[17]
  - Vestibular Disorders = 18.1%
- MDC
  - PD = 4 points
  - Stroke (acute and chronic) = 4.2
  - Stroke (acute and chronic) = 14.1%
  - Vestibular Disorders (acute) = 6 points (95% CI)
- SEM
  - Stroke = 1.52

NOTE: PD – Parkinson's Disease

Functional Rating Index (FRI) [41]

- MCIC
  - Spinal musculoskeletal system ~~A =~~ 10% absolute change
- MCID
  - Spinal musculoskeletal system = 8.4%
- MDC
  - Spinal musculoskeletal system = 15%

NOTES:

- Acute and subacute conditions: recommended the FRI be used at baseline and every 1 week or 3 visits thereafter

- Chronic conditions: recommended the FRI be used at baseline and every 2 weeks or 6 visits thereafter.
- If the score does not improve by at least 10% (absolute change) in any two successive two-week periods, you should pursue a change in management.

Functional Status (FS) measure or FOTO [42, 43][39,40]:

- The MCII (Minimally Clinically Important Improvement) and MDC (Minimal Detectable Change) are stated on the assessment report.
    - For significant, minimal improvement, the patient status should increase by the MDC value

NOTE: FOTO summary report is available upon request.

Gait Speed for Adults [44, 45, 46]

- Small meaningful change[8] = .5m/sec
- Substantial meaningful change[8] = .10m/sec
- Meaningful change for those with stroke undergoing rehab = .175 m/sec[41]
- MDC – heart failure[42] = 0.05 m/s
- MCID – heart failure[42] = 0.05 – 0.12 m/s
- MDC – joint pain and fractures[43] = 0.08 m/s
- MCID
    - – heart failure[42] = 0.05 – 0.12 m/s
    - JMCID – joint pain and fractures[43] = 0.1 m/sec
    - Older Adults = 0.05 – 0.12 m/sec
    - Older Adults with Heart failure = 0.05 – 0.12 m/sec
    - Pulmonary Diseases (COPD) = 0.11 m/sec (anchored against ISW)
    - Pulmonary Diseases (COPD) = 0.08 m/sec (anchored against self-reported improvement)
    - Stroke = 0.1 m/sec
    - MCID – Vestibular Disorders = 0.09 m/sec[17]
- MDC
    - Heart failure = 0.05 m/sec
    - Joint pain and fractures = 0.08 m/sec
    - Older Adults = 0.05 m/sec
    - Pulmonary Diseases (COPD) = 0.11 m/sec (95% CI)
- Meaningful change for those with stroke undergoing rehab = .175 m/sec
- SEM
    - Pulmonary Diseases (COPD) = 1.14% (Interobserver)
    - Pulmonary Diseases (COPD) = 1.5% (Test-retest reliability)
- SMC = .5m/sec
- Substantial meaningful change = .10m/sec

NOTE: COPD – Chronic Obstructive Pulmonary Disease

Global Rating of Change (GRoC)[44-46] [47, 48]
([‡]See Note below)

- ~~MDC 0.45 points on 11-point scale~~
- MCIC
  - 2 points on 11-point scale
- MDC
  - -0.45 points on 11-point scale
- MIC
  - Low Back Pain = 2.5 points on 11-point scale

[‡]NOTE: Questionable Outcome tool: Global Rating of Change (GRoC)
Further work is needed to determine the true value of the GRoC as an outcome measure and in turn as an anchor measure. Several key points have been identified:

- There is fluctuant temporal stability of the GRoC from week to week
- There is poor correlation between the GRoC and functional measures
- The GRoC is only correlated to functional measures up to 3 weeks

Goal Attainment Scale (GAS) [49]

- MDC
  - Cerebral Palsy (Pediatric) = 2.040 (Low Response Group)
  - Cerebral Palsy (Pediatric) = 1.275 (High Response Group)
- SEM
  - Cerebral Palsy (Pediatric) = 0.736 (Low Response Group)
  - Cerebral Palsy (Pediatric) = 0.460 (High Response Group)

Gross Motor Function Measure-66 (GMFM-66) [50, 51, 52] [47]

- Clinically meaningful improvement
  - -= 1.58
- MCID
  - Cerebral Palsy
    - GMFCS Level I: 1.7 -2.7
    - GMFCS Level II: 1.0-1.5
    - GMFCS Level III: 0.7 – 1.2
    - GMFCS Level Overall: 0.8 – 1.3

NOTE: Gross Motor Function Classification System (GMFCS)

Headache Disability Inventory (HDI) [53]

- ~~Authors of the index have determined that a~~D ~~d~~ecrease of 29 points (95% CI) or more is considered clinically significant.~~[48]~~

Keele STarT Back Screening Tool [54, 55]

- High-risk categories: > 4 ~~(~~psychosocial ~~established for~~ subscale~~s~~ ~~and overall~~ score~~s~~)
- Medium-risk categories: > 3 (overall tool score) and < 4 (psychosocial subscale scores)
- Low-risk categories: < 3 (overall tool score)

NOTE: No MDC or MCID established

Knee Injury and Osteoarthritis Outcome Score (KOOS) [56, 57, 58, 59, 60] ~~[49,50]~~

- MDC~~s~~
  - Athletes (mean age 25.6 ± 3.4 years)
    - Pain = 6.1
    - Symptoms = 8.5
    - ADL = 8.0
    - Sports/Rec = 5.8
    - QoL = 7.2
  - Joint Pain and Fractures = 8 – 10 point change may represent minimal perceptible clinical improvement
  - Knee Ligament Injury
    - ACL (KOOS subscales)
      - Symptoms = 8.5
      - Pain = 6.1
      - ADL = 8.0
      - Sports/recreation = 5.8
      - QoL = 7.2
    - Articular Cartilage Lesion (KOOS subscales)
      - Symptoms = 11.8
      - Pain = 11.2
      - ADL = 11.1
      - Sports/recreation = 12.1
      - QoL = 8.7
    - Focal Cartilage Repair (KOOS subscales)
      - Symptoms = 5
      - Pain = 6
      - ADL = 7
      - Sports/recreation = 12
      - QoL = 7
    - OA and No Indication for Joint Replacement (KOOS subscales)
      - Symptoms = 15.5

- Pain = 13.4
- ADL = 15.4
- Sports/recreation = 19.6
- QoL = 21.1

- Meniscal Injury (with and without surgery) (KOOS subscales)
  - Symptoms = 19.4
  - Pain = 25.7
  - ADL = 20.2
  - Sports/recreation = 35.0
  - QoL = 26.2

- Older individuals (KOOS subscales) = ≥ 20 points
- Osteoarthritis and Joint Replacement = 8 – 10 point change may represent minimal perceptible clinical improvement
- Younger individuals (KOOS subscales) = 14.3 – 19.6 points

- MCID
  - Knee
    - Arthroplasty (total knee, post)
      - Function = 15.
      - Pain = 13.5 2
      - QOL = 8.0
    - Autologous Chondrocyte Implantation (ACI) (KOOS subscale)
      - Symptoms = could not be calculated
      - Pain = 11 – 18.8
      - ADL = 2 – 17.3
      - Sports/recreation = 5 – 18.6
      - QoL = 8 – 19.6
    - Meniscal repair (P~~– p~~ost arthroscopic)~~c meniscal repair~~
      - Symptoms = 12.3
      - Pain = 11.8
      - ADL = 11.4
      - Sports/recreation = 16.7
      - QoL = 16.9
    - Osteochondral Allograft Transplantation (OCA) (KOOS subscales)
      - Symptoms = could not be calculated
      - Pain = 7
      - ADL = could not be calculated
      - Sports/recreation = 25
      - QoL = could not be calculated
    - Platelet-rich plasma Injection Treatment (6 months after) (KOOS subscales)
      - Symptoms = 8.6

- Pain = 9.3
- ADL = 9
- Sports/recreation = 12.5
- QoL = 10.3

- Platelet-rich plasma Injection Treatment (12 months after) (KOOS subscales)
  - Symptoms = 8.5
  - Pain = 9.1
  - ADL = 9.2
  - Sports/recreation = 11.6
  - QoL = 10.3

~~= 12.3 for symptoms, 11.8 for pain, 11.4 for activities of daily living (ADL) and 16.9 for quality of life (QOL)~~[51]

- ~~MCID - post total knee arthroplasty = 13.5 for pain, 15.2 for function and 8.0 for quality of life (QOL)~~SEM[52]
  - Athletes (mean age 25.6 ± 3.4 years)
    - Pain = 2.2
    - Symptoms = 3.1
    - ADL = 2.9
    - Sports/Rec = 2.1
    - QoL = 2.6
  - Knee Ligament Injury
    - Anterior Cruciate Ligament (ACL) Reconstruction in Athlete (KOOS subscales)
      - Symptoms = 3.1
      - Pain = 2.2
      - ADL = 2.9
      - Sports/recreation = 2.1
      - QoL = 2.6
    - Anterior Cruciate Ligament (ACL) Tear Within 1 Year or ACL repair within 1 year (KOOS subscales)
      - Symptoms = 9.1
      - Pain = 6.6
      - ADL = 7.8
      - Sports/recreation = 12.7
      - QoL = 7.6
    - Articular Cartilage Lesion: Autograft Implantation System (KOOS subscales)
      - Symptoms = 11.1
      - Pain = 9.50
      - ADL = 10.7

- Sports/recreation = 10.8
- QoL = 7.4

- Meniscal Injury (with/without Meniscal Surgery) (KOOS subscales)
  - Symptoms = 7.0
  - Pain = 9.3
  - ADL = 7.3
  - Sports/recreation = 12.6
  - QoL = 9.5

- Knee OA (KOOS subscales)
  - Mild OA with ACL Reconstruction
    - Symptoms = 9.0
    - Pain = 7.2
    - ADL = 5.2
    - Sports/recreation = 9.0
    - QoL = 7.4
  - Moderate OA with High Tibial Osteotomy (HTO) and Valgus Correction (KOOS subscales)
    - Symptoms = 8.0
    - Pain = 9.0
    - ADL = 5.8
    - Sports/recreation = 11.6
    - QoL = 7.4
  - OA with TKA Revision (KOOS subscales)
    - Symptoms = 7.2
    - Pain = 10.1
    - ADL = 11.7
    - Sports/recreation = 24.6
    - QoL = 10.8

NOTE: ACL – Anterior Cruciate Ligament; ADL – Activities of Daily Living; OA – Osteoarthritis; QoL – Quality of Life

Knee Outcome Survey (KOS) [61]

- ~~MDC = 9 points~~
- MCID
  - ADL -= 7.1 percentage points change
- MDC [62]
  - ~~1.~~= 11.4 ~~ints~~
  -

NOTE: ADL – Activities of Daily Living

Lower Extremity Functional Scale (LEFS) [63, 64, 65, 66]

- ~~MDC = 9 points~~
- MCID
  - ~~= 8 – 9.4 points.~~[53,54]Ankle sprains = 4 points
  - Joint Pain and Fractures
    - ACL reconstruction = 9 points
    - Arthroplasty
      - Total knee = 9 points
      - Total hip = 9 points
    - Hip Impairment = 6 points or 11.3%
    - Lower Extremity Injury = 9 points
  - Knee
    - OA = 6.3 points (0-2 months)
    - OA = 7.5 points (0-6 months)
    - OA = 12.5 points (0-12 months)
  - Lower extremity musculoskeletal dysfunction = 9 points
- MDC
  - ~~= 9 points~~Ankle sprains = 4 points
  - Joint Pain and Fractures
    - ACL reconstruction = 8.7 points
    - Arthroplasty
      - Total knee = 9 points
      - Total hip = 9 points
    - Hip Impairment = 7 points or 11.3%
    - Lower Extremity Injury = 9 points
  - Knee
    - Anterior knee pain = 8 points
    - OA = 19.2 points (at 2 months)
    - OA = 17.6 points (at 6 months)
    - OA = 22.6 points (at 12 months)
    - Total knee arthroplasty = 9 points
  - Lower extremity musculoskeletal dysfunction = 9 points
  - OA
    - Hip = 9.9 – 10 points
    - Lower extremity = 9 points
- SEM
  - Ankle sprains = 4 points
  - Chronic Pain (Orthopaedic Rehab) = 4 points
  - Joint Pain and Fractures
    - ACL reconstruction = 3.7 points
    - Arthroplasty
      - Total knee = 3.7 points

        - Total hip = 3.7 points
    - Lower Extremity Injury = 3.9 points
    - Orthopaedic Rehab = 4 points
- Knee
    - Anterior knee pain = 0.10 points
    - OA = 3.4 points
    - OA = 6.9 points (at 2 months)
    - OA = 6.4 points (at 6 months)
    - OA = 8.2 points (at 12 months)
    - Total knee arthroplasty = 3.7 points
- OA
    - Hip = 3.6 – 5.3 points
    - Orthopaedic Rehab = 4 points

NOTE: It is recommended that the LEFS be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress.

NOTE: ACL – Anterior Cruciate Ligament; OA – Osteoarthritis

Lysholm Knee Rating System [67]

- MDC
    - Knee Injuries (ACL, meniscal, chondral, patellar dislocation) = 8.9 – 10.1 ~~points~~
- SEM
    - Knee Injuries (ACL, meniscal, chondral, patellar dislocation) = 3.2 – 3.6

NOTE: ACL – Anterior Cruciate Ligament

Neck Disability Index (NDI) [68, 69, 70]

- MCID
    - Cervical radiculopathy = 7.0 – 8.5 points
    - Cervical spine fusion = 7.5 points
    - Mechanical neck disorders = 5 – 7.5 points
    - Mechanical neck disorders = 19%
    - Mechanical neck pain = 7.5 points
    - Neck Pain (non-specific) = 3.5 points
- MDC
    - = 10 – 20%.[55,56]
    - Cervical radiculopathy = 10.2 – 13.4 points
    - Mechanical neck disorders = 10.2 points
    - Mechanical neck disorders = 19.6%
    - Mechanical pain = 10.2 points

- Neck pain = 5 points (90% CI)
- Neck Pain (non-specific) = 8.4 – 10.5

- SEM
  - Cervical Radiculopathy = 4.4 – 5.7
  - Mechanical Neck Disorder = 4.3 – 8.4
  - Neck Pain (non-specific) = 3.0

NOTE: It is recommended that the Neck Disability Index be used at baseline and for every 2 weeks thereafter within the treatment program to measure progress.

NOTE: A score of 0% - 20% represents a minimal disability; usually, no treatment is indicated except for advice on posture, physical fitness, and diet. Patients often do not score the Neck Disability items as zero, once they are in treatment. The practitioner should consider the patient's prior level of function when goal writing (e.g., the patient's prior level of function would place them in the minimal disability category, their goal should not be to obtain a zero score).

Numeric Pain Rating Scale (NPRS) [71, 72]

- MCID
  - Emergency Room (acute pain) = 1.3 points
  - Low Back Pain (1 week of physical therapy) = 1.5 points
  - Low Back Pain (4 weeks of physical therapy) = 2.2 points
  - Musculoskeletal Pain (Chronic) = 1 point or 15% change
  - Pain (other; low back pain, OE, diabetic neuropathy, post-herpetic neuralgia, fibromyalgia) = 1.7 points or reduction of 27.9%
    - ~~= 2 points[57]~~
  - Post-operative
    - Abdominal surgery = 56%
    - Orthopedic surgery = 28.6%
    - Other types of surgery = 15.4%
  - Shoulder Pain = 2.17 points (surgical and nonsurgical subjects after 3-4 week of rehabilitation)
  - ~~MCID – s~~Spinal cord injuries (Chronic) = 1.6 – 1.80 points or 36% ~~= 1.6 points[58]~~
- MDC
  - Low Back Pain = 2.0 points (95% CI)
- SEM
  - Low Back Pain = 1.02

Oswestry Disability Index (ODI) [73, 74, 75]

- MCIC
  - Lower back = 10 points or a 20% improvement.[59]

- MCID
  - Low back pain (anchor based, ROC) = 7.5% - 16.7%
  - Lumbar Spine Surgery (anchor based (HTI)) = 9.5 – 15.4 points
  - Lumbar Spine Surgery (anchor based (ROC)) = 11.8 – 17.9 points
  - SI Joint Fusion Surgery (anchor based (HTI)) = 19.5% average change
  - SI Joint Fusion Surgery (ROC) = 12.2% - 15.0%
  - Spinal Deformity Surgery = 15.0%
- MDC
  - Back pain = 5.9 – 6.4 points (90% CI)
  - Low back pain (subacute and chronic) = 11.1 – 15.35 (95% CI)
  - Lumbar fusion = 11.7% - 15.5 % (90-95% CI)
- SEM
  - Back pain (mean duration 6 years) = 4.2 – 4.6 points
  - Low/upper back pain (< 1 year) = 2.6% - 2.8%
  - Spinal stenosis = 6.1%

NOTE: It is recommended that the Oswestry Disability Index be used at baseline and for every 2 weeks thereafter within the treatment program to measure progress.

NOTE: A score of 0% -20% represents a minimal disability; usually no treatment is indicated~~,~~ apart from advice on lifting, sitting posture, physical fitness, and diet. Patients often do not score the Oswestry items as zero once they are in treatment. The practitioner should consider the patient's prior level of function when goal writing (e.g., if the patient's prior level of function would place them in the minimal disability category, their goal should not be to obtain a zero score).

Pain Disability Index [76]

- MCIC
  - Low Back Pain (chronic) = ~~A~~ decrease of 8.5 - 9.5 points ~~is considered clinically important in individuals with chronic back pain[60]~~

Patient Specific Functional Scale (PSFS) [77, 78, 79]~~[61-64]~~

~~**MDC** (90% CI) for average score = 2 points~~

~~**MDC for older adults = 2.865**~~

~~**MDC (90% CI) for single activity score = 3 points.64 It is recommended that the PSFS be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress.**~~

- MCID
  - Humeral fracture (proximal) = 2 or more points
  - Knee arthroplasty (total) = 3.83 – 5.13
  - Osteoarthritis (hand) = 2.2 point change

    - Spinal Stenosis = 1.34 points
    - Upper Extremity Musculoskeletal = 1.2 points
- ~~in individuals with knee dysfunction, cervical radiculopathy, or chronic low back pain = 2.0 – 3.0 points[62,63]~~MDC
    - Chronic pain = 2 points
    - Knee dysfunction = 1.5
    - Low Back pain = 1.4 points
    - Lower Limb Amputees = 11.2 (90% CI)
    - Neck Dysfunction and Whiplash = 2 points
    - Older adults = 2.8
    - Osteoarthritis (hand) = 1.30 (90% CI) 1.56 (95% CI)
    - Single activity score = 3 points (90% CI)
    - Spinal Stenosis = 2.4 points
- SEM
    - Chronic pain = 0.41
    - Knee dysfunction = 0.62 – 1.0
    - Knee arthroplasty (total, 3 months post-surgery) = 1.38 – 1.85
    - Lower Limp Amputees = 4.8
    - Neck dysfunction or pain = 0.43
    - Older Adults = 1.0
    - Osteoarthritis (hand) = 0.56
    - Spinal Stenosis = 1.03

NOTE: It is recommended that the PSFS be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress

Peabody Developmental Motor Scales-2nd Edition (PDMS-2) [80, 81, 82]~~[66]~~

- MCID
    - Intellectual disabilities (includes preschoolers) = 8.39
- MDC
    - Intellectual disabilities (includes preschoolers) ~~[67]~~ = 7.76
- SEM
    - Cerebral Palsy
        - Fine Motor Quotient = 2.5
        - Gross Motor Quotient = 1.1
        - Total Motor Quotient = 1.6
    - Developmental Quotients
        - Fine Motor Quotient = 2.5
        - Gross Motor Quotient = 1.1
        - Total Motor Quotient = 1.6
    - Intellectual Disability = 1.80

Pediatric Balance Scale [83]~~[68]~~

- MDC:
  - Cerebral Palsy ~~total~~
    - Dynamic = 0.96 points
    - Static = 0.79 points
    - Total = -1.59 points
- ~~Static 0.79~~
~~Dynamic 0.96~~
- ~~DIC~~MDIC
  - Cerebral Palsy
    - Dynamic 2.92
    - ~~total 5.83~~
    - Static 2.92
    - ~~Dynamic 2.92~~Total 5.83

Pediatric Evaluation of Disability Inventory (PEDI) [84]

- MCID
  - Caregiver Assistance
    - = 11.6 (Lickert Scale with range 8.7-14.9)
  - Functional Skills
    - = 10.9 (Lickert Scale with range 8.7-14.9)
  - Visual Analog Scale (VAS)
    - = 11.5 (mean)
    - = 11.2 (Caregiver Assistance with range 6.0-15.6)
    - = 11.6 (Functional Skills with range 6.0-15.6)
  - Traumatic Brain Injury, Spinal Cord Injury, Lower Extremity Trauma, Non-traumatic Brain Injury, Developmental Disorders
    - = 11.6 points (mean; all 6 scales)
    - = 11.3 (mean; for Likert Scale categories)

Roland-Morris Disability Questionnaire (RMDQ) [85, 86]

- MCID~~DC~~
  - Low Back Pain ~~= 7.6 points[69] or a 30% improvement from baseline.[59]~~
    - Acute, subacute, or chronic = 3.5 points
    - Detect change = 3 points or 30% of baseline score
    - Score > 7 then = 3 points
    - Score < 7 then = 30% change in score
    - Treatment of 3-6 weeks = 5 point change
- MDC

- = 7.6 points or a 30% improvement from baseline
- SEM
  - Low Back Pain = 1.79
  - Lumbar Disc Surgery (post) = 2.0 scale points (95% CI)

NOTE: It is recommended that the RMDQ be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress.

Roll Evaluation of Activities of Life (REAL) [87]

- MDC
  - Children without Disabilities (Ages 2-18)
    - MDC
      - ADL = 15.91
      - IADL = 11.08
- SEM
  - Children without Disabilities (Ages 2-18)
    - ADL
      - Average = 5.74
      - Preschool = 1.41
      - Elementary = 3.00
      - Preadolescent = 2.45
      - Teenage = 4.00
    - IADL
      - Average = 4.00
      - Preschool = 1.73
      - Elementary = 2.00
      - Preadolescent = 1.41
      - Teenage = 2.65
    - Mean Standard Scores
      - Children with Disabilities
        - Attention Deficit Disorders: 85.08
        - Autism Spectrum Disorder: 54.53
        - Cerebral Palsy: -6.17
        - Children with Disabilities: 67.14
        - Developmental Delay: 60.34
        - Down Syndrome: 55.17
        - Learning Disabled: 76.32
        - Sensory Integration Disorders: 88.86
        - Speech Delay: 99.53

Shoulder Pain and Disability Index (SPADI) [88, 89, 90]

- MCID

    - Musculoskeletal Upper Extremity Problems = 13.2
    - Pain Upper Extremity = 8 – 10 points
    - Rotator Cuff Disease = 15.4
- MDC
    - Adhesive Capsulitis = 18
    - Arthroplasty (shoulder) = 18
    - Musculoskeletal Upper Extremity Problems = 18.1
    - Pain and Disability (shoulder) = 21.5
- ~~The smallest detectable change is 19.7 points, and the~~ MIC~~minimal important change~~
    - Shoulder pain ~~is~~ = 20 points (43% of baseline).~~[70]~~
- SEM
    - Arthroplasty (shoulder) = 2
    - Non-specific population = 4.75 – 11.65
- SDC
    - Shoulder pain = 19.7 points

NOTE: It is recommended that the SPADI be used at baseline and for every 2 - 4 weeks or 6 - 12 visits thereafter within the treatment program to measure progress~~.~~

Simple Shoulder Test (SST) [91, 92]

- MCID
    - ~~anatomic total shoulder a~~Arthroplasty (anatomic total shoulder) (aTSA) = 1.6~~[71]~~
    - ~~ream-and-run a~~Arthroplasty (Ream-and-run) (R&R) = 2.6~~[71]~~
    - ~~reverse total shoulder a~~Arthroplasty (Reverse total shoulder) (rTSA) = 3.7~~[71]~~
    - Arthroplasty (shoulder) = 2.4 – 3.0
    - Rotator cuff disease = 8.5 – 9.7
- MDC
    - Musculoskeletal (shoulder) = 32.3 (95% CI)
- SEM
    - Musculoskeletal (shoulder) = 4.75 -11.65

Timed Up and Go (TUG) [93, 94, 95, 96, 97]~~[72]~~

- Cut-off score indicating risk of falls
    - Adults = > 13.5 sec
    - Lower extremity amputees = > 19 sec
    - Older adults (fall clinic) = > 15 sec
    - Older adults (frail) = > 32.6 sec
    - Osteoarthritis (hip) = > 10 sec
    - PD = > 7.95 – 11.5 sec
    - Stroke (older adults) = > 14 sec
    - Vestibular disorders = > 11.1 sec
- MCID

- Lumbar degenerative disc disease (post-surgery) = 2.1 sec (or TUG z score change of 1.5)

- MDC
  - ~~–~~Alzheimer disease[72] = 4.09 sec
  - Arthroplasty (Total hip-) = 1.62 sec (95% CI)
  - ~~MDC – chronic stroke[72,74] = 2.9 sec~~
  - ~~MDC –~~ PD ~~arkinson's disease[14,72,75,76]~~ = 3.5 – 11 sec
  - Spinal cord injury = 10.8 sec (30% difference)
  - Stroke (chronic) = 2.9 sec
- ~~MDC – Total hip arthroplasty = >1.62 seconds[77]~~SEM
  - Arthroplasty (Total hip) = 0.59 sec
  - Alzheimer's disease
    - All = 2.48 sec
    - Mild to Moderate = 1.52 sec
    - Moderately severe to Severe = 3.03 sec
  - Cerebral Palsy [98]
    - Evening trail = 0.4 sec
    - Morning trial = 0.6 sec
    - Spastic diplegia mean TUG score = 10.1 sec
    - Spastic hemiplegia mean TUG score = 8.4 sec
    - Spastic quadriplegia mean TUG score = 28 sec
    - Trials administer 5 minutes apart = 0.19 sec
    - Trials administered 1 week apart = 0.32 sec
  - PD = 1.75 sec
  - Spinal cord injury = 3.9 sec
  - Stroke (chronic) = 1.14 sec

~~MCID – Post lumbar degenerative disc disease surgery = 2.1 seconds (or TUG z score change of 1.5)~~[78]**NOTE**: The Timed Up and Go test has limited ability to predict falls in community dwelling elderly and should not be used in isolation to identify individuals at high risk of falls in this setting

NOTE: PD – Parkinson's Disease

Tinetti Performance Oriented Mobility Assessment (POMA) [99]

- Cut-Off Scores
  - Older adults = 19
  - Older adults (frail) = 11
  - PD = < 20
  - Stroke (chronic) = < 20
- MDC

- ~~= 5 Points~~[79] Older adults
  - Individual assessment = 4.0 – 4.2 points
  - Group assessment = 0.7 – 0.8 points
- Stroke = 6 points

NOTE: PD – Parkinson's Disease

Upper Extremity Functional Index/Scale (UEFI/UEFS) [100]

- MCID
  - UEFI-20 = 8 (95% CI)
  - UEFI-15 = 6.7 (95% CI)
- MDC_{90}
  - UEFI-20 = 9.4 (95% CI)
  - UEFI-15 = 8.8 (95% CI)
  - UEFS = 9.8 (95% CI)

NOTE: UEFI-20 is a 20-item Upper Extremity Functional Index (0-80, higher scores indicate better function). UEFI-15 is a 15-item Upper Extremity Functional Index (0-100, higher scores indicate better function). UEFS is an Upper Extremity Functional Scale (8-80, lower scores indicate better function.

Visual Analog Scale (VAS) scores [101, 102]

- ~~Minimum of a 2-point change on a 0-10 pain scale~~
- MCID
  - Hand surgery (post-operative) = 1.6 – 1.9[80]
- MDC
  - Vestibular Disorders (Head Movement) = 4.57
- Minimum of a 2-point change on a 0-10 pain scale
- SEM
  - Vestibular Disorders (Head Movement) = 1.65

Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) [103, 104, 105][~~81~~]

- MCID
  - Arthroplasty (total knee, post)
    - Function ~~After TKA- MCID~~= ~~9~~10
    - Pain = 11
    - Stiffness = 8
    - Total score = 10
  - Osteoarthritis
    - Hip or knee = 12% change from baseline
    - Hip (total replacement)

            - Pain = 29.26
            - Stiffness = 25.91
        - Knee
            - 2 months = 4 – 8.8
            - 6 months = 6.6 – 6.8
            - 12 months = 1.6 – 12.0
        - Knee (total replacement)
            - 6 months = 11.5
            - 12 months = 11.5
        - Lower extremity = 17 - 22% change from baseline
- MDC
    - Knee (total replacement)
        - 6 months = 10.9 (95% CI)
        - 12 months = 15.3 (95% CI)
    - Hip (total replacement)
        - Function = 11.93
        - Pain = 21.38
        - Stiffness = 27.98
    - Osteoarthritis
        - Hip = 9.1 points (95% CI)
        - Hip and Knee pain = 3.94 (90% CI)
        - Knee
            - 2 months = 14.1 (95% CI)
            - 6 months = 15.0 (95% CI)
            - 12 months = 18.5 (95% CI)
- ~~, MIC (minimal important change) = 17~~

~~MCID for LE OA= changes of 17-22% of baseline scores~~

- MIC
    - Arthroplasty (total knee, post)
        - Function = 16
        - Pain = 21
        - Stiffness = 13
        - Total score = 17
- SEM
    - Hip (total replacement)
        - Pain subscale (6 months post) = 7.71
        - Physical function (6 months post) = 4.30
        - Stiffness subscale (6 months post) = 10.10
    - Knee (total replacement)
        - 6 months = 3.9
        - 12 months = 5.5

        - Pain subscale (6 months post) = 8.08
        - Physical function (6 months post) = 4.73
        - Stiffness subscale (6 months post) = 10.50
    - Osteoarthritis
        - Hip = 3.3
        - Knee
            - 2 months = 5.1
            - 6 months = 5.4
            - 12 months = 6.7
    - Osteoarthritis (Older individuals with hip or knee)
        - Pain = 0.58
        - Physical function = 1.65
        - Stiffness = 0.62

~~The records must compare baseline measures to updated measures and document progress toward measurable goals as defined in Clinical Guideline, Plan of Care.~~

~~‡NOTE: Questionable Outcome tool: Global Rating of Change (GRoC)~~
~~Further work is needed to determine the true value of the GRoC as an outcome measure and in turn as an anchor measure. Several key points have been identified:~~

- ~~There is fluctuant temporal stability of the GRoC from week to week.~~
- ~~There is poor correlation between the GRoC and functional measures.~~
- ~~The GRoC is only correlated to functional measures up to 3 weeks.~~

BACKGROUND

The records must compare baseline measures to updated measures and document progress toward measurable goals as defined in Clinical Guideline and Plan of Care.

It is the responsibility of the treating practitioner to maintain a patient record that includes periodic measures of treatment response by employing valid, reliable, and relevant outcome assessment tools~~. Further, it is the responsibility of the treating practitioner to~~and include sufficient clinical documentation, so that a peer reviewer can render a reasonable determination on baseline functional status and/or treatment response.

Most individuals can expect to notice measurable improvement in pain and/or disability within 2 to 6 weeks after beginning treatment. If improvement has not occurred with 6 weeks of treatment, it is highly unlikely that continuing treatment will be helpful. When initial improvement did occur, ~~many~~ studies showed no additional lasting improvement beyond 6 to 12 weeks of treatment. Most flare-ups resolve quickly, w~~— w~~ithin a few days to 3 weeks.

When progress towards goals is such that outcome measures approximate normative data for asymptomatic populations or are indicative of mild deficits, which can typically be managed through home exercise or other self-care, then a determination of maximum therapeutic benefit (MTB) is appropriate.

Definitions

~~**Treatment Goals**~~

~~**Determined with the patient and clinician at the initial encounter for each episode of care. Unique for each patient's clinical presentation based on the evaluation/examination findings, outcome assessment tool results, and personal preferences.**~~

Episode of Care
Consultation or treatment ~~preceded~~preceded and followed by at least 3 months without treatment for the same complaint.

~~**Specific, Measurable, and Functional Goals**~~

~~**Clearly defined goals of treatment that allow measurement of the amount and/or degree of meaningful change over time. These goals are often determined by the use of functional outcome assessment tools, as defined in Clinical Guideline, Record Keeping and Documentation Standards.**~~

~~**Outcome Measures**~~

~~**Objective, measurable assessments by the clinician to determine patient progress with treatment. The use of standardized tests and measures at the onset of care establishes the baseline status of the patient, providing a means to quantify change in the patient's functioning. Outcome measures, along with other standardized tests and measures used throughout the episode of care, as part of periodic reexamination, provide information about whether predicted outcomes are being realized. Outcomes measurement refers to the systematic collection and analysis of information that is used to evaluate the efficacy of an intervention. Systematic collection means that data are gathered at multiple time points using the same methods or instruments. Analysis refers to the process of condensing and examining the data to identify meaningful trends or changes. The World Health Organization**~~

~~defines an outcome measure as a "change in the health status of an individual, group or population which is attributable to a planned intervention or series of interventions…."[82]~~

Lasting, Sustainable Progress

~~Documentation must provide evidence to support that p~~Progress made by the patient has been maintained at a reasonable level over a reasonable period of time.

Maximum Therapeutic Benefit (MTB)

MTB i~~Maximum Therapeutic Benefit (MTB) i~~s determined following a sufficient course of care~~,~~ where demonstrable improvement would be expected in a patient's health status and one or more of the following are present:

- The patient has returned to pre-clinical/pre-onset health status
- Meaningful improvement has occurred; however, there is no basis for further meaningful improvement
- Meaningful improvement has occurred and there is no basis for further in-office treatment
- The patient no longer demonstrates meaningful clinical improvement, as measured by standardized outcome assessment tools
- Meaningful improvement, as measured by standardized outcome assessment tools, has not been achieved
- There is insufficient information documented in the submitted patient record to reliably validate the response to treatment

Minimally Clinically Important Change (MCIC)

The smallest change in the outcome assessment score that the patient perceives as beneficial, i.e., clinically meaningful improvement.

Minimal Clinically Important Difference (MCID)

MCID is the smallest change in an outcome that a patient would identify as important.

Minimal Detectable Change (MDC)

The minimal detectable change is the smallest change in score than can be detected beyond random error and is dependent upon sample distribution.

Minimal Important Change (MIC)

A threshold for a minimal within-person change over time, above which patients perceive themselves as importantly changed

Outcome Measures

- Objective, measurable assessments by the clinician to determine patient progress with treatment.
- Standardized tests and measures at the onset of care establishes the baseline status of the patient, providing a means to quantify change in the patient's functioning.
- Used with other standardized tests and measures throughout the episode of care as part of periodic reexamination to provide information about whether predicted outcomes are being realized.
- Refers to the systematic collection (data gathered at multiple time points using same methods) and analysis of information that is used to evaluate the efficacy of an intervention.

Patient Acceptable Symptom State (PASS)

PASS is defined as the point at which the patient considers themselves well, recovered, and satisfied with treatment.

Smallest Detectable Change (SDC)

A value for the minimum change that needs to be observed to know that the observed change is real and not potentially a product of measurement error.

~~Minimal Clinically Important Difference (MCID)~~

~~MCID is the smallest change in an outcome that a patient would identify as important.~~

~~Maximum Therapeutic Benefit (MTB)~~

~~Maximum Therapeutic Benefit (MTB) is determined following a sufficient course of care, where demonstrable improvement would be expected in a patient's health status and one or more of the following are present:~~

~~The patient has returned to pre-clinical/pre-onset health status~~

~~Meaningful improvement has occurred; however, there is no basis for further meaningful improvement~~

~~Meaningful improvement has occurred and there is no basis for further in-office treatment~~

~~The patient no longer demonstrates meaningful clinical improvement, as measured by standardized outcome assessment tools~~

~~**Meaningful improvement, as measured by standardized outcome assessment tools, has not been achieved**~~

~~**There is insufficient information documented in the submitted patient record to reliably validate the response to treatment**~~

Smallest Real Change (SRC)

~~It is the responsibility of the treating practitioner to maintain a patient record that includes periodic measures of treatment response by employing valid, reliable, and relevant outcome assessment tools. Further, it is the responsibility of the treating practitioner to include sufficient clinical documentation, so that a peer reviewer can render a reasonable determination on baseline functional status and/or treatment response. Also, m~~Meaningful improvement can occur only when there is a potential for MCIC. ~~When progress towards goals is such that outcome measures approximate normative data for asymptomatic populations or are indicative of mild deficits, which can typically be managed through home exercise or other self-care, then a determination of MTB is appropriate. Most individuals can expect to notice measurable improvement in pain and/or disability within 2 to 6 weeks after beginning treatment. If improvement has not occurred with 6 weeks of treatment, it is highly unlikely that continuing treatment will be helpful. When initial improvement did occur, many studies showed no additional lasting improvement beyond 6 to 12 weeks of treatment. Most flare-ups resolve quickly – within a few days to 3 weeks.~~ The timelines for improvement may not be applicable to some types of post-surgical care.~~[83-91]~~

Specific, Measurable, and Functional Goals
Clearly defined goals of treatment that allow measurement of the amount and/or degree of meaningful change over time. These goals are often determined by the use of functional outcome assessment tools, as defined in Clinical Guideline, Record Keeping and Documentation Standards.

Standard Error of Measurement (SEM)
Estimates the standard error in a set of repeated scores.

Treatment Goals
Determined at the initial encounter for each episode of care between the patient and clinician. Unique for each patient's clinical presentation based on the evaluation/examination findings, outcome assessment tool results, and personal preferences.

POLICY HISTORY

Date	Summary
December 2023	• Measurable improvement thresholds added • Editorial changes • References updated
October 2022	• ABC - added MCID for vestibular disorders • BBS – Added MCID for subacute stroke • Functional Gait Assessment – added MCID for vestibular disorders • Gait Speed for Adults – Added MCID for vestibular disorders • Removed "older" from "Gait Speed for Older Adults" • KOOS Score – Added MCID scores • NPRS – added MCID for spinal cord injuries • Pain Disability Index – added "in individuals with chronic back pain" • PSFS – Added MDC for older adults • Added Simple Should Test (SST) and MCID scores • TUG Added MDC for THA, and MCID for post DDD surgery • VAS added MCID score for hand surgery • PDI added "in individuals with chronic back pain"

~~**Patient Acceptable Symptom State (PASS)**~~

~~PASS is defined as the point at which the patient considers themselves well, recovered, and satisfied with treatment.~~

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