Self Report and Outcome Measures

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Self Report and Outcome Measures

- ICF model and relationship to G-codes
- Measuring Function in Medicare population
  - Self Report, Performance Measures, Research issues with measures (change score, validity)
- Choose Good Measures
  - Examples
- G code implementation
  - When, how, where...Glitches faced
- Clinical Bottom Line

World Health Organization (WHO)
International Classification of Functioning, Disability and Health (ICF) & the Relationship to G-Codes
ICF

• **Activity** - execution of a task or action
  • Activity limitation - difficulty executing activities
• **Participation** - involvement with life situations
  • Participation restriction - problems in involvement with life situations
• **Environmental Factors** - physical, social and attitudinal environment in which people live and conduct life

• Health Condition
  – Disorder, disease, injury, trauma, aging or congenital abnormality (ICD-9 and 10 codes)
• **Body function** - physiological and neuromuscular function
• **Body Structure** - anatomical parts of body
  • Impairments - problems in body function or structure that are permanent or temporary

• Impairments of:
  – Mental functions
  – Sensory functions
  – Functions of the cardiovascular, and respiratory systems
  – Neuromusculoskeletal and movement related functions
  • Mobility of joint, muscle power, muscle tone, involuntary movements
• Impairments of:
  – Structure of the nervous system
  – Structure of the cardiovascular and respiratory system
  – Skin and related structures
  – Structure related to movement
    • Head and neck, shoulder, UE, pelvis, LE, trunk

Use qualifiers to describe extent of impairment
• No impairment
• Mild impairment
• Moderate impairment
• Severe impairment
• Complete Impairment
• Not specified
• Not applicable

• Impairment in ability to perform a task or function
  – Communication
  – Mobility
  – Self-care

• Examples of activity limitations
  – Ms. G. is able to complete 100 feet during the 6 minute walk test
  – Mr. M requires moderate assistance of 1 to get out of bed
  – Mrs. P. is unable to climb stairs without UE assistance using 2 handrails
- Impairment in ability to participate in individual roles, work or community
  - Social engagement
  - Civic and community life
  - Work
  - Interpersonal relationships

- Products and technology
- Natural environment and human made changes (climate, light, sound, terrain)
- Support and relationships
- Legal and social structures
- Services, systems and policies

- Lifestyle
- Habits
- Social background
- Education
- Life events
- Race/ethnicity
- Sexual orientation

- G-codes - Functional Limitation Reporting
- Activity Limitations in the ICF model
- Which of the following would be considered an activity limitation?
  - Slow walking speed
  - Weak ankle muscles
  - Difficulty with sit-stand transfers
  - Inability to work
Measuring Function in Medicare Population

How should we measure outcomes?

- Performance-based outcomes
  - TUG, SCT, 6MW
- Perception-based questionnaires
  - KOS, WOMAC, Oswestry
- Clinical Metrics
  - Strength, Range of Motion, Symptoms (Stiffness, Pain, Instability)

Types of Outcome Measures

- Self-Report or Perception-Based Measures
  - How does the patient perceive their level of function?
    - More commonly used due to ease of administration
- Performance-Based Measures
  - What is the patient’s actual level of function?

Outcome Measures

- Self-Report vs. Performance-Based Measures
  - Low to moderate agreement between measures
  - Salen showed a moderate correlation (r = .48) between patient’s self-reported difficulty in performing tasks and observer assessment
  - After the patients actually performed the tasks, the correlation increased to r = .78
  - Tends to be a mismatch between how patients believe they function and how they actually function

Therefore, consider supplementing self-report with performance-based measures
Performance does not equal Perception


Performance vs self-report

Stevens-Lapsley et al. 2011

Outcome Measures

- Factors for evaluation
  - Population
  - Reliability
    - Are measures consistent?
  - Validity
    - Does it measure what it’s supposed to measure?
  - Responsiveness/Sensitivity to Change
    - Floor and Ceiling Effects
    - Ability to detect change
  - Minimum Detectable Change
    - Has real change occurred?
  - Minimum Clinically Important Difference
    - Smallest change that is important to patients

Subjective Report Versus Objective Measurement of Activities of Daily Living in Parkinson’s Disease

Lixo M, Sheean, MD,1,2 Ingrid Pierrot-Ahmed, MA,3 Karen E. Anderson, MD,3
Ruthide Svendson, MD,1 Christopher G. Vaughan, MA,3 Ann L. Gibble-Baldini, PhD2
Stephan G. Beck, MD,1 and William J. Weiner, MD2

TABLE 3. Percentage of subjects who overrate, are concordant, or underrate their disability compared with objective ratings and Kappa:

<table>
<thead>
<tr>
<th>Task</th>
<th>Overrating of disability (%)</th>
<th>Concurring rating (%)</th>
<th>Underscoring of disability (%)</th>
<th>Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating</td>
<td>11.5</td>
<td>53.6</td>
<td>34.9</td>
<td>0.315</td>
</tr>
<tr>
<td>Walking</td>
<td>23.5</td>
<td>50.7</td>
<td>26.0</td>
<td>0.230</td>
</tr>
<tr>
<td>Eiting</td>
<td>13.8</td>
<td>40.6</td>
<td>43.4</td>
<td>0.189</td>
</tr>
<tr>
<td>Money</td>
<td>11.8</td>
<td>42.6</td>
<td>38.5</td>
<td>0.125</td>
</tr>
<tr>
<td>Medications</td>
<td>1.4</td>
<td>18.8</td>
<td>70.7</td>
<td>0.084</td>
</tr>
<tr>
<td>Average %</td>
<td>12.8</td>
<td>41.3</td>
<td>44.4</td>
<td></td>
</tr>
</tbody>
</table>
Floor and Ceiling Effects

- Floor Effect
  - Limitation of a measure in which the instrument does not register a further decrease in score for the lowest scoring individual
  - Floor: When the task is too hard and everyone performs at the worst possible level.

- Ceiling Effect
  - Limitation of a measure in which the instrument does not register a further increase in score for the highest scoring individual
  - Ceiling: When the task is too easy, and all patients perform at or near perfect, you have a ceiling effect

Responsiveness

- Does the outcome detect changes over time that matter to the patient?
- Ability of outcome to detect small, but clinically important differences.

Sensitivity to Change and Responsiveness of SPPB

- Secondary analysis of data from an exploratory 12-week, randomized trial comparing Exercise+NMES vs. traditional PT for chronic LBP
- Participants:
  - CLBP (>3 months)
  - Aged 60-85

<table>
<thead>
<tr>
<th></th>
<th>( n=62 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>70.8 (6.7)</td>
</tr>
<tr>
<td>Sex</td>
<td>35 (56.5%)</td>
</tr>
<tr>
<td>BMI</td>
<td>29.2 (5.8)</td>
</tr>
<tr>
<td>Oswestry</td>
<td>35.2 (11.9)</td>
</tr>
</tbody>
</table>

- Short Physical Performance Battery
  - Timed chair stands (5)
    - Score Range: 0-4
  - Timed standing balance
    - Side-by-Side, Semi-tandem, Tandem
    - Score Range: 0-4
  - Timed 6m walk
    - Score Range: 0-4

- Add components for summary score
  - Maximum: 12
  - 0=worst performance; 12=optimal
Ceiling Effect:

**Short Physical Performance Battery**

Score Range: 0-12

Baseline SPPB
- N=66
- Range: 3-12
- Mean: 10.29

12 week SPPB
- N=58
- Range: 3-12
- Mean: 10.59

**Health ABC Physical Performance Battery**

- Timed chair stands (5)
  - Maximum Performance: 1 chair stand/sec
- Timed standing balance
  - Semi-tandem, Tandem, Single leg stance
  - Maximum Performance: 90 sec
- Timed 6m walk
  - Maximum Performance: 2 meters/sec
- Timed, narrow 6m walk
  - Maximum Performance: 2 meters/sec
- Ratio scores from 0-1 calculated for each test
- Ratio scores from each test are added for a 0-4 score

Baseline HABC PPB
- N=36
- Range: 1.27-3.02
- Mean: 2.24

6 week HABC PPB
- N=32
- Range: 1.31-3.20
- Mean: 2.43
Sensitivity to Change

- Ability of an instrument to measure change, regardless of whether the change is meaningful to the clinician or patient

Measured using:

- Effect Size
  - 0.20 reflects a small change
  - 0.50 reflects a moderate change
  - 0.80 reflects a large change

Responsiveness

- Ability of an instrument to measure a meaningful or important change from the perspective of the patient and/or clinician

Measured using:

- Minimum Clinically Important Differences (MCID or MID)
- Do change scores exceed the MCID?

Differences

- Minimal Clinically Important Difference (MCID)
  - The smallest change in scores that patients perceive as important.
  - Similar to the concept of CLINICAL SIGNIFICANCE

- Minimal Detectable Change (MDC)
  - Commonly expressed as MDC90 or MDC95
  - An index of the reliability of an outcome measure
  - Similar to the concept of STATISTICAL SIGNIFICANCE

- MDC90: minimum change at 90% confidence
  - The MDC90 is the amount of change in scores required to be 90% confident that it is beyond measurement error.
**Outcome Measures**

- Oswestry Disability Questionnaire (ODQ)
  - Region specific measure of disability
  - Modified version contains 10 items
  - Each item scored 0 – 5
  - Items are summed and expressed as a percentage
  - Higher numbers indicate greater disability

<table>
<thead>
<tr>
<th>ODQ Score</th>
<th>Disability Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20%</td>
<td>Minimal Disability</td>
</tr>
<tr>
<td>21-40%</td>
<td>Moderate Disability</td>
</tr>
<tr>
<td>41-60%</td>
<td>Severe Disability</td>
</tr>
<tr>
<td>61-80%</td>
<td>Crippled</td>
</tr>
<tr>
<td>81-100%</td>
<td>Bed-bound or Exaggerating Symptoms</td>
</tr>
</tbody>
</table>

**Osowestry Questionnaire**

- Self Report of Performance Limitation

- Personal Hygiene
- Lifting
- Walking
- Sitting
- Standing
- Sleeping
- Social Activity
- Traveling
- Sex Life
- Pain Intensity

Scale: 0 - 5  
Score for 10 items = 50  
Multiply Score by 2/100% = Disability

Modified version: Sex life question is replaced by employment/homemaking ability

**Oswestry**

- Reliability
  - Established as good to excellent
- Validity
  - Established
- Responsiveness
  - Good
- Minimum Detectable Change
  - 10.5 points (Davidson, 2002)
- Minimum Clinically Important Difference
  - 6 points (Fritz, 2001)

**Outcome Measures**

- Roland-Morris Disability Questionnaire
  - Region specific measure of disability
  - Scale contains 24 items
    - "Because of my back pain, I lie down to rest more often"
  - Each item scored 0 or 1
  - Items are summed for final score
  - Higher numbers indicate greater disability
  - Score range: 0-24
Roland-Morris

- Reliability
  - Conflicting (ICC=.53-.86)
- Validity
  - Established
- Responsiveness
  - Unable to detect improvement in half the people
- Minimum Detectable Change
  - 9 points (Davidson, 2002)
- Minimum Clinically Important Difference
  - Not available

Which measure should I use?

<table>
<thead>
<tr>
<th></th>
<th>Oswestry</th>
<th>Roland-Morris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Validity</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>MDC</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>MCID</td>
<td>+</td>
<td>?</td>
</tr>
</tbody>
</table>

Calculator Danger

http://www.mediserve.com/resource/analysis/cbor-conversion/

- Functional Reach Test:
  - Parkinson’s Disease: (Dibble & Lange, 2006; n =
    45, mean age = 69.94 (11.28) years, mean Hoehn
    and Yahr score = 2.60 (.66) points)
  - < 31.75 cm indicates fall risk (sensitivity of
    0.86, specificity of 0.52 for risk of falling)
  - Field Mobility Paralysis (Thomas et al, 2005; n =
    26, faller mean age = 79.70 (7) non-faller mean
    age = 84.4 (6.7) years)
  - < 16.5 cm indicates fall risk (75% sensitivity, 67% Specificity)

- Community Dwelling Elderly: (Weiner et al, 1992; n=45, mean age = 68.9 (8.4) years):
  - FRT <7 inches (17.78cm):
    o Unable to leave neighborhood without help
    o Limited in mobility skills
    o Most restricted in ADLs
  - Input the score between 15 and 25
  - Input 20 (half way between scores)
  - Your Modifier Code is: CK (50% impaired)
  - Input 25
  - Your Modifier Code is: CH (0% impaired)

- Parkinson’s MDC: 9-11

Calculator Danger - TUG

http://www.mediserve.com/resource/analysis/cbor-conversion/

- Input the score between 20 and 10
- 12
- Your Modifier Code is: CJ (20% impaired)
- Put in 15
- Your Modifier Code is: CK (50% impaired)

Parkinson’s MDC: 3.5-4.85
Choose Good Measures

Disabilities of the Arm, Shoulder & Hand

- Reliable, Valid, & Responsive (Beaton 2001)
- 30-items
- 10 min to complete
- Scoring: 1=no disability; 5=severe disability
  - \[(\sum 30\text{-items} / \# \text{questions answered}) - 1\] x 25
  - Cannot be scored if >3 items not answered
  - Work and sports/performing arts sub-scale optional
    - \[(\sum 4\text{-items} / 4) - 1\] x 25 for each section
- Range: 0-100% per sub-scale
- MCID 15% (Beaton 2001)
- MDC 12.7% (Beaton 2001)
- See handout

Michigan Hand Questionnaire (MHQ)

- 10 min to complete
- 6 Scales, 37 items
- Lower Score = Less Affected by Injury
- MDC: unknown
- MCID: 13 points for function subscale (Shauver 2009)
- Brief 12-item MHQ version validated (Waljee 2011)
  - MCIDs: unknown
- See handout

Self-Report Measures
Neck Disability Index (NDI)

- Reliable & Valid & Responsive (Vernon et al 1991; Young et al 2009)
- Higher scores = greater neck-related disability
- 10 items scored: 0-5
- Range 0-100% (0-50 points)
- MDC: 10-11% (Cleland et al 2006; Pool et al 2007; Young et al 2009)
- MCID: 14%
- See handout

Oswestry Disability Questionnaire (OSW)

- Reliable & Valid & Responsive
- Higher scores = greater LBP-related disability
- 10 Items scored: 0-5
- Range: 0-100%
- MDC: 10.5 points (Davidson et al 2002)
- MCID: 6 points (Fritz et al 2001)
- Modified Version: “Sex Life” question replaced by “Employment/Homemaking”

Lower Extremity Functional Scale (LEFS)

- 20 item scale of self-report conceived to assess LE functional status
- Includes activities like walking but also difficulty with work and hobbies
- Equivalent responsiveness to WOMAC phys func (Stratford 04)
- Less influenced by pain than the WOMAC (Stratford 04)
Hip Outcome Score (HOS)

- Self reported evaluative outcome instrument
- 19-item ADL & 9-item sports
- Mean age 41yo (range, 13-80) males and females
- Reliable and responsive when describing outcomes of hip arthroscopy for labral pathology, FAI, chondral lesions, or capsular laxity in respect to ADL’s and Sport.
  - Martin et al., Arthroscopy 2008

HOS grading

- Rated 4-0 (4: no difficult, 0: Unable to do)
- ADLs: (Total Score/68)x100 (subtract 4 from 68 for every unanswered question)
  - Do not grade the item related to sitting and putting on socks and shoes
- Sport: (Total Score/36)x100 (subtract 4 from 36 for every unanswered question)
- MDC: +/-3%
- MCID: ADLs: 9%, Sport 6%

Knee Outcome Survey (KOS)-Activities of Daily Living Scale (ADL’s)

- 14-item questionnaire
- 6-point Likert Scale
  - 0 → Symptom prevents all daily activity/Unable to do the activity
  - 5 → I do not have the symptom/Activity is not difficult
- Highest possible Score 75
  - 75/75 = 1.0 = no disability

*Knee Outcome Survey-Activities of Daily Living Scale (KOS-ADLS)(Irrgang, 98)

- 14 items, score at 0-100%, higher is better
- Measures impact of impairment on ADL and difficulty of ADL task
- Quick and easy to use, excellent reliability and consistency
  - Irrgang et al., JBJS, 1998

Knee Outcome Survey (KOS)-Activities of Daily Living Scale (ADL’s)

- Assesses effects of knee conditions on ADL’s such as:
  - Ambulation
  - Stair climbing
  - Sitting and squatting
  - Kneeling
  - Irrgang et al. JBJS, 1998
### Foot and Ankle Ability Measure (FAAM)
- 21 item ADL
- 8 item sports subscale
- Validated in PT setting
- Graded 5 (no difficulty) to 0; total/84
- MCID
  - ADL = 8 points
  - Sports subscale = 9 points

Martin et al 2005

### Dizziness Handicap Inventory (DHI)
- Reliable & Valid & Responsive (vestibular population)
- Higher scores indicate > handicap secondary to dizziness
  - > 10, examination by vestibular specialist is warranted
- Includes function, emotional, & physical component questions
- Items scored: 0 (never), 2 (sometimes), 4 (always)
- 25 items
- Range: 0-100
- Interpretation:
  - 16-34 points: mild handicap
  - 36-52 points: moderate handicap
  - 54+ points: severe handicap
- SEM: 6.2 points; MDC: 17.18 points; MCID: 18 points
- See handout

### Patient-Specific Functional Scale (PSFS)
- Activities rated 0-10 (inability–level prior to injury)
- Reliable & Valid (Westaway et al 1998)
- Excellent responsiveness (Cleland et al 2006)
- MDC: 2.1 points (Cleland et al 2006)
- MCID: 2 points (Cleland et al 2006)
- Average of 3 scores = score
- See handout
Global Rating of Change (GROC) (Jaeschke et al 1989)

- 15 point global rating scale
- -7 (a very great deal worse)
- +7 (a very great deal better)
- +4 to +5 = 'moderate' change in pt status
- +6 to +7 = 'large' change in pt status

See handout

Physical Performance Measures

BESS Test

- Clinical evaluation of balance
- Reliability: good to moderate
- Valid
  - Concussion, functional ankle instability, external ankle bracing, fatigue, and age >50
  - Scores improve after neuromuscular training

BESS Test

- 3 Stances
  - Double leg: hands on hips and feet together
  - Single leg: standing on non-dominant leg with hands on hips
  - Tandem: non-dominant foot behind dominant

† Double leg stance
† Single leg stance
† Tandem stance

Scores and Errors:
- Moving the hands off of the iliac crests
- Opening the eyes
- Step stumble or fall
- Abduction or flexion of the hip beyond 30°
- Lifting the forefoot or heel off of the testing surface
- Remaining out of the proper testing position for greater than 5 seconds
- The maximum total number of errors for any single condition is 10; Total: 60
6 Minute Walk Test (6MWT)

- Sub-maximal test of aerobic capacity/endurance & walking function
- Reliable, Valid, & Responsive (Rikli and Jones 1998; King et al 1999; Harada et al 1999; Bellet et al 2012)
- Populations tested: Geriatrics, Stroke, Parkinson's Disease, MS, SCI, Pulmonary Disease, Heart Failure, & Fibromyalgia
- See handout

6 Minute Walk Test (6MWT)

- “This test screens your walking capacity. Cover as much ground as possible in 6 minutes. While I want you to walk as fast possible, I want you to do so safely. You may rest at any point and sit if absolutely necessary, but the clock will not stop so please start walking again as soon as you are able. To avoid limiting your speed, we will refrain from conversation. I will walk with you and give you time updates. Ready? Begin.”
- 1 trial
- Assistive device allowed

6MWT Procedures

<table>
<thead>
<tr>
<th>Do</th>
<th>Do NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk behind the patient</td>
<td>Face the patient (i.e. walk on their side)</td>
</tr>
<tr>
<td>Provide standardized encouragement every 30 seconds (i.e. “you’re doing great” or “you’re doing fine” or “keep going”) and notify patient of time remaining every minute (i.e. “9 min remaining”)</td>
<td>Converse with the patient other than to give standard encouragement, give time checkpoints, and to check symptom status.</td>
</tr>
<tr>
<td>Utilize a standard tone of voice</td>
<td>Use an excited tone as to “cheer” the patient on</td>
</tr>
<tr>
<td>Roll measurement wheel along the patient’s path and stop where he/she stops.</td>
<td>Roll the measurement wheel too close to the patient in case they stop suddenly</td>
</tr>
</tbody>
</table>

STOP the test if...
- C/o angina sx (chest pain/lightness)
- Certain Sx:
  - Light-headedness/Confusion
  - Ataxia, staggering unsteadiness
  - Pallor
  - Cyanosis
  - Nausea
  - Marked dyspnea
  - Unusual fatigue
  - Signs of peripheral circulatory insufficiency
  - Claudication or other significant pain
  - Facial expressions signifying distress
- Abnormal cardiac responses
  - Systolic BP drops > 10 mmHg
  - Systolic BP rises to >250 mmHg
  - Diastolic BP rises to > 120 mmHg
  - HR drops >15 bpm
- If the pt was walking the last minutes of the test vs. resting.
6MWT: Normative Data

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>60-64 yo</th>
<th>65-74 yo</th>
<th>75-79 yo</th>
<th>80-84 yo</th>
<th>85-89 yo</th>
<th>90-94 yo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1557-2061</td>
<td>1401-1907</td>
<td>1250-1809</td>
<td>1015-1655</td>
<td>891-1505</td>
<td>763-1365</td>
</tr>
<tr>
<td>Male</td>
<td>1696-2296</td>
<td>1364-2202</td>
<td>1330-1942</td>
<td>1187-1869</td>
<td>1035-1797</td>
<td>891-1553</td>
</tr>
</tbody>
</table>

Timed Up and Go (TUG)

- Assesses mobility, balance, walking ability, & fall risk
- Reliable & Valid & Responsive
- Populations Tested: Geriatrics, Stroke, SCI, LE Amputations, MS, Parkinson’s Disease
- Assistive device allowed
- See handout

Timed Up and Go (TUG) Test Instructions:

- "My commands for this test are going to be ‘ready, set, go’. When I say go, I want you to stand up from the chair. You may use the arms of the chair to stand up or sit down. Once you are up, I want you to walk to the line on the floor, turn around, walk back to the chair, and sit down. I will stop the clock when you are seated. You will complete one practice run and three that are counted."
- 1 practice
- Average of 3 trials (Shumway-Cook et al 2000)
- Assistive device allowed

TUG: Normative Data

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Mean (in seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-69</td>
<td>7.9 +/- 0.9</td>
</tr>
<tr>
<td>70-79</td>
<td>7.7 +/- 2.3</td>
</tr>
<tr>
<td>80-89</td>
<td>No device: 11.0 +/- 2.2</td>
</tr>
<tr>
<td></td>
<td>With device: 19.9 +/- 6.4</td>
</tr>
<tr>
<td>90-101</td>
<td>No device: 14.7 +/- 7.9</td>
</tr>
<tr>
<td></td>
<td>With device: 19.9 +/- 2.5</td>
</tr>
</tbody>
</table>
Timed Up and Go (TUG): Interpretation

- Categories
  - ≤ 10 sec = normal
  - ≤ 20 sec = good mobility, can go out alone, mobile without gait aid
  - ≤ 30 sec = problems, cannot go outside alone, requires gait aid

- At risk for falls:
  - Community-dwelling older adults: > 13.5 sec (Shumway-Cook et al 2000)
  - Older adult with Stroke: > 14 sec (Andersson et al 2006)
  - LE Amputations: > 19 sec (Ovia et al 2007)
  - Parkinson's Disease: > 7.95 sec (Dibble et al 2006)

- MDC: 2.9-11 seconds
- MCID: unknown

Four Square Step Test (FSST)

- Assesses dynamic standing balance & LE motor control
- Reliable & Valid (Ovia et al, 2002; Whitney et al 2007; Blennerhassett & Jayath, 2008)
- Populations tested: geriatrics, stroke, vestibular d/o, & transtibial amputations
- See handout

Normative Data (Ovia & Temple, 2002)
- Geriatrics
  - Multiple-Fallers: 32.6±10.1 sec
  - Non-Multiple Fallers: 17.6±6.3 sec

- Interpretation: at risk for falls/multiple falls
- Geriatrics: >15 sec
- Acute Stroke: >15 sec or failed
- Vestibular d/o: >12 sec
- Transtibial Amputation: >24 sec

- MDC/MCID: unknown
10 Meter Walk Test

- Assesses walking speed
- Reliable, Valid, & Responsive
- Populations Tested: Geriatrics, Stroke, SCI, TBI
- See handout

10 Meter Walk Test

- Self-selected speed
  - “I will say ready, set, go. When I say go, walk at your normal comfortable speed until I say stop.”
- Fast-walking speed
  - “I will say ready, set, go. When I say go, walk as fast as you safely can until I say stop.”
- 3 trials/speed; get average speed
- Divide 6 meters by average speed for ______ m/s
- Assistive device allowed

10 Meter Walk Test: Normative Data
(Bohannon et al 1997)

<table>
<thead>
<tr>
<th>Gait Speed (m/sec)</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decade-of-Life</td>
<td>self-selected</td>
<td>fast</td>
</tr>
<tr>
<td>20s</td>
<td>1.39</td>
<td>2.53</td>
</tr>
<tr>
<td>30s</td>
<td>1.46</td>
<td>2.45</td>
</tr>
<tr>
<td>40s</td>
<td>1.46</td>
<td>2.46</td>
</tr>
<tr>
<td>50s</td>
<td>1.39</td>
<td>2.07</td>
</tr>
<tr>
<td>60s</td>
<td>1.36</td>
<td>1.93</td>
</tr>
<tr>
<td>70s</td>
<td>1.33</td>
<td>2.08</td>
</tr>
</tbody>
</table>

10 Meter Walk Test: Interpretation

- Interpretation: Stroke (Bowden et al 2008)
  - <0.4 m/s: more likely to be household ambulators
  - 0.4-0.8 m/s: limited community ambulators
  - >0.8 m/s: community ambulators
- MDC
  - Self-selected speed: .10-.18 m/sec
  - Fast speed: .25 m/sec
- MCID (Perera et al 2006; Tilson et al 2010)
  - .10-1.4 m/sec
5 Times Sit-to-Stand Test (5xSST)

- Assesses functional LE muscle strength, transitional movements, balance, & fall risk
- Reliable, Valid, & Responsive
- Populations tested: Geriatrics, Orthopedic Conditions (LBP, Knee OA, TKA), Stroke, Peripheral Arterial Disease, MS, Parkinson's Disease, Vestibular Disorders
- See handout

5xSST: Interpretation

- Geriatrics
  - Further Assessment of Fall Risk: ≥ 12 sec (Tiedemann et al 2008)
  - Recurrent Falls: > 15 sec (Buatois et al 2010)
- Vestibular Disorders (Buatois et al 2008)
  - Fall Risk: > 15 sec
- Parkinson’s Disease (Duncan et al 2011)
  - Fall Risk: > 16 sec
- Normative Data (Bohannon et al 2008)
  - MDC: 3.6-4.2 sec
  - MCID: 2.3 sec

Age Bracket | Time (sec)
---|---
60-69 y/o | 11.4
70-79 y/o | 12.6
80-89 y/o | 14.8

Short Physical Performance Battery

- Gait Speed (3-4 meters)*
- 5 Times Sit-to-Stand*
- Balance Tests
  - Side-by-side
  - Semi-tandem
  - Tandem
- See handout
Berg Balance Test

- Designed to test static and dynamic balance
- Community-dwelling older adults:
  - History of falls and BBT ≤51 or no history and BBT ≤42 = fall risk; ≤40 = approximately 100% fall risk (Shumway-Cook 1997)
- 14 items, scored 0 (unable); 4 (able to do independently)
- MCID: unknown
- 15-20 minutes to complete
- See form & handout (details & normative data)

Nine Hole Peg Test

- Assesses hand dexterity
- Reliable, Valid (acute and chronic CVA), & Responsive (Keh-chung 2010, Beebe 2010)
- ≤5 minutes to complete
- Pt takes pegs from container, places them into holes, removes pegs, put back into container as quickly as possible
  - Container or dish holding pegs towards testing hand
  - Allowed to stabilize board with non-test hand
  - Time (sec) = score
- Acute & Chronic Stroke MDC: 32.8 sec (Chen 2009)
- Floor effects early stroke? (Sunderland 1989)
- See handout
Web Surf to PTNow

PTNow Homepage

Special Populations: Multiple Sclerosis

Special Populations: Parkinson Disease
Special Populations: Vestibular

And Many More!

- Acute Care
- Cardiovascular and Pulmonary
- Hand
- Women’s Health
- Spinal Cord Injury
- Stroke
- Traumatic Brain Injury

G Code Implementation

What goes on the Bill

- G-code
  - (2 status events - current and projected or projected and discharge)
- Functional severity modifier,
- Therapy modifier indicating the related discipline/POC
  - GP for Physical Therapy
  - GO for Occupational Therapy
  - GN for Speech Language Pathology
    - No required order for the modifiers
    - No KS modifier
- Date of the related therapy service
- Nominal charge, e.g., a penny, for institutional claims submitted to the fiscal intermediaries (FIs) and A/Medicare Administrative Contractors (MACs). For professional claims, a zero charge is acceptable for the service line. If provider billing software requires an amount for professional claims, a nominal charge, e.g., a penny, may be included.
### Acknowledge Submission

- Medicare will return a Claim Adjustment Reason Code 246 (This non-payable code is for required reporting only) and a Group Code of CO (Contractual Obligation) assigning financial liability to the provider.
- In addition, beneficiaries will be informed via Medicare Summary Notice 16.7 that they are not responsible for any charge amount associated with one of these G-codes.

### Submission Error Codes

- New remittance advice codes 4/1-6/30/13
- N565: missing severity modifier (CH-CN)
- N566: missing G-code at eval or re-eval (92506, 92597, 92607, 92608, 92610, 92611, 92612, 92614, 92616, 96105, 96125, 97001, 97002, 97003, 97004)

### Therapist's Choice

- Therapist chooses the primary limitation; if there is more than one limitation:
  - Most clinically relevant to a successful outcome for the beneficiary;
  - The one that would yield the quickest and/or greatest functional progress; OR
  - The one that is the greatest priority for the beneficiary

---

<table>
<thead>
<tr>
<th>G-Code</th>
<th>Current Status</th>
<th>Projected Goal</th>
<th>Discharge Status - End Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility Walking and moving Around</td>
<td>G8978</td>
<td>G8979</td>
<td>G8980</td>
</tr>
<tr>
<td>Changing and Managing Body Position</td>
<td>G8981</td>
<td>G8982</td>
<td>G8983</td>
</tr>
<tr>
<td>Carrying, Moving &amp; Handling Objects</td>
<td>G8984</td>
<td>G8985</td>
<td>G8986</td>
</tr>
<tr>
<td>Self Care</td>
<td>G8987</td>
<td>G8988</td>
<td>G8989</td>
</tr>
<tr>
<td>Other PT/OT Primary Functional Limitations</td>
<td>G8990</td>
<td>G8991</td>
<td>G8992</td>
</tr>
<tr>
<td>Other PT/OT Subsequent Functional Limitations</td>
<td>G8993</td>
<td>G8994</td>
<td>G8995</td>
</tr>
</tbody>
</table>
Evaluate Patient and Determine Primary Functional Limitation (G-code)
- Mobility: Walking, Moving Around
- Changing and Maintaining Body Position
- Carrying, moving and Handling Objects
- Self Care
- Other

Use PT Judgment to Determine Current and Goal Severity Modifier for Specific Functional Limitation
- Report 2 G-codes with severity modifiers
  - Current Functional Limitation G89XX plus severity level (CH-CN)
  - Projected Goal G89XX plus severity expected at discharge of this goal (CH-CN)
- Add Physical Therapy Modifier GP

What to Report each time:

<table>
<thead>
<tr>
<th>CODE</th>
<th>Information Represented</th>
<th>Reporting Time</th>
</tr>
</thead>
</table>
| G89XX | Current Functional Status | • Initial Evaluation  
  • Every 10th visit  
  • On Re-evaluation (within the episode of care for this code) |
| G89XX | Projected Goal Status     | • At reporting of a primary G-code and at G-code discharge  
  • Every 10th visit (reporting intervals) |
| G89XX | Discharge Status          | • End of Reporting for this goal OR  
  • Discharge from Therapy |

* No discharge goal if the patient self discharges

* If visit is one time only: Report Current, Goal and Discharge codes on initial visit

Choosing “Other”
- Defined by one of the four specific categories
  - Therapy services are not intended to treat a functional limitation
  - When an overall, composite or other score from a functional assessment tool (such as FOTO, etc.) is used and it does not clearly represent a functional limitation defined by one of the four code sets.
- “Other PT/OT Subsequent Functional Limitation” category is only selected after the “Other PT/OT Primary Functional Limitation” category has been reported on the beneficiary during the same episode of care.

Modifier | Impairment Limitation Restriction          |
---------|-------------------------------------------|
CH       | 0% impaired, limited or restricted         |
CI       | 1%< 20% impaired, limited or restricted    |
CJ       | 20%-40% impaired, limited or restricted    |
CK       | 40%-60% impaired, limited or restricted    |
CL       | 60%-80% impaired, limited or restricted    |
CM       | 80%-100% impaired, limited or restricted   |
CN       | 100 percent impaired, limited or restricted|
Disability Score | Level of Disability | Description
--- | --- | ---
0-20% | Minimal Disability | • Copes with ADL’s
  • Tx self-care advice on lifting, sitting, posture, physical fitness and diet
21-40% | Moderate Disability | • Experiences more pain with sitting, lifting, standing
  • Travel and social are difficult
  • May be out of work
41-60% | Severe Disability | • Pain is the main problem but travel, personal care, social life and sleep are affected
61-80% | Crippled | • Pain impinges on all aspects of life at home and work
81-100% | Bedbound | • Patients are either bed bound or exaggerating symptoms

The severity modifier reflects the beneficiary’s percentage of functional impairment as determined by the clinician furnishing the therapy services for each functional status: current, goal, or discharge. In selecting the severity modifier, the clinician:
- Uses the severity modifier that reflects the score from a functional assessment tool or other performance measurement instrument, as appropriate.
- Uses his/her clinical judgment to combine the results of multiple measurement tools used during the evaluative process to inform clinical decision making to determine a functional limitation percentage.
- Uses his/her clinical judgment in the assignment of the appropriate modifier.
- Uses the CH modifier to reflect a zero percent impairment when the therapy services being furnished are not intended to treat (or address) a functional limitation

- Therapists will use a valid and reliable assessment tool(s) and/or objective measure(s) in determination of the severity of the functional limitation
- Multiple tools may be used
- Therapist judgment may be used in the severity modifier determination in combination with data gathered
- Documentation of the G-codes and the rationale for selection of severity must be included in the medical record
Therapist Documentation

- Therapists must document in the medical record *HOW* they made the modifier selection so that the same process can be followed at succeeding assessment intervals.
- Additionally, therapists must report the G-code and modifiers on the date of service that they are reported with the severity determination documentation.

Role of PTA in G-code determination

- Can a physical therapist assistant (PTA) participate in the reporting or collection of the functional limitation data?
- Medicare addresses the involvement of the PTA in the evaluation and re-evaluation of patients in the Medicare benefit policy manual:
  - “A clinician may include, as part of the evaluation or re-evaluation, objective measurements or observations made by a PTA or OTA within their scope of practice, but the clinician must actively and personally participate in the evaluation or re-evaluation. The clinician may not merely summarize the objective findings of others or make judgments drawn from the measurements and/or observations of others.”

Why do I choose a measure in my clinical practice?

- To help me, as a clinician, see the effect of my treatment
  - Am I getting the results I should? Clinical Milestones
  - Am I clinically effective?
    - How do I compare with what’s been published? National norms?
  - I want to monitor and review progress in an objective manner. Describe my patient beyond pain and ROM.
  - I want to use a measure to help motivate my patient.
  - Yellow Flag information when performance and self-perception are disassociated
• THANK YOU!

• QUESTIONS?

Case example: Simple
75-year-old women with a stiff knee 3 weeks following total knee arthroplasty
Case: Patient is a 70-year-old right-handed male who slipped after missing a step, injured his right cuff, and was referred for therapy.

**Physical Assessment**: The patient presented with pain in the right shoulder and arm, with limited range of motion. The NDI score was 38%.

**Clinical Evaluation Data**: Patient reported pain on abduction and external rotation.

**Factors Influencing Condition, Severity, and Progression**:
- **Neck Pain Intensity**: NDI score decreased by 15%
- **Pain with Movement**: Improved by 15%
- **Pain with Activity**: Improved by 8%

**Functional Assessment Tools**:
- **Self-Report Measures**:
  - Neck Disability Index (NDI): 38% reduction from baseline.
  - Pain catastrophizing: Reduced to minimal level.
- **Objective Measures**:
  - Pain on palpation: Reduced by 15%
  - Range of motion: Improved by 10%

**Therapist’s Notes**:
- The patient was discharged with a cuff limiter and instructions to continue physiotherapy at home.
- The patient’s goal was to return to previous activities and improve daily function.

**Outcome**:
- The patient was discharged with a cuff limiter and instructions to continue physiotherapy at home.
- The patient’s goal was to return to previous activities and improve daily function.