

## NEXT STEPs: Common Nursing Home Research Measures

| Domains                             | Tools for In-Person Data Collection                                       | Minimum Data Set (MDS)   | LTC Data Co-op  | Relevant References   |
|-------------------------------------|---|--|---|---|
| <b>ADLs</b>                         |   | MDS ADL self-performance tool (see Sections G and GG)  | Yes, as collected for MDS   | <a href="#">Functional Improvement Among Short-Stay Nursing Home Residents in the MDS 3.0 - PMC</a>   |
|                                     | Katz Index of Independence in Activities of Daily Living                  |  |   | <a href="#">Progress in development of the index of ADL - PubMed</a>  |
|                                     | Barthel Index   |  |   | <a href="#">FUNCTIONAL EVALUATION: THE BARTHEL INDEX - PubMed</a><br><br><a href="#">Nursing home residents' ADL status, institution-dwelling and association with outdoor activity: a cross-sectional study - PubMed</a> |
| <b>Capacity/Dementia/ Cognition</b> |   | BIMS; Cognitive Function Scale (CFS); Cognitive Performance Scale (CPS); MDS-COGS; MDS diagnosis | Yes, as collected for MDS; may include assessments done for other reasons | <a href="#">MDS 3.0: brief interview for mental status - PubMed</a>   |
|                                     | Making and Executing Decisions for Safe and Independent Living (MED-SAIL) |  |   | <a href="#">Validation of the MEDSAIL Tool to Screen for Capacity for Safe and Independent Living Among Nursing Home Residents - PubMed</a>   |
|                                     | Mini-Cog  |  |   | <a href="#">The mini-cog: a cognitive 'vital signs' measure for dementia screening in multi-lingual elderly - PubMed</a>  |
|                                     | Montreal Cognitive Assessment (MoCA)                                      |  |   | <a href="#">The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment - PubMed</a>  |
|                                     | St Louis University Mental Status Exam (SLUMS)                            |  |   | <a href="#">Score Disparity Between the MMSE and the SLUMS - PubMed</a><br><br><a href="#">Systematic Review of the Psychometric Properties of the Saint Louis University Mental Status (SLUMS) Examination - PubMed</a>  |
| <b>Caregiver Distress</b>           | Family member support in NH for PLWD                                      |  |   | <a href="#">Applying Reed's Self-Transcendence Theory to Support Family Members of Nursing Home Residents Living With Dementia: A Critical Appraisal and Adaptation - PubMed</a>  |
|                                     | Family Distress in Advanced Dementia                                      |  |   | <a href="#">Development and psychometric properties of the family distress in advanced dementia scale - PubMed</a>  |

| Domains            | Tools for In-Person Data Collection                        | Minimum Data Set (MDS)   | LTC Data Co-op   | Relevant References  |
|--------------------|--|--|--|--|
| <b>Delirium</b>    |  | CAM  | Yes, as collected for MDS; may include CAM results collected for other reasons | <a href="#">Delirium in nursing homes and long-term care facilities: findings of a scoping review of detection tools - PubMed</a>  |
|                    | Confusion Assessment Method (CAM)                          |  |  | <a href="#">Clarifying confusion: the confusion assessment method. A new method for detection of delirium - PubMed</a>   |
|                    | 4AT  |  |  | <a href="#">Validation of the Delirium Diagnostic Tool- Provisional (DDT-Pro) in a skilled nursing facility and comparison to the 4 'A's test (4AT) - PubMed</a>   |
|                    | Informant Assessment of Geriatric Delirium (I-AGeD)        |  |  | <a href="#">Detecting delirium in nursing home residents using the Informant Assessment of Geriatric Delirium (I-AGeD): a validation pilot study - PubMed</a>  |
| <b>Depression</b>  |  | PHQ9 (Section D); PHQ-9 OV for observation of residents unable to self-report (Section D); social engagement | Yes, as collected for MDS; PHQ-9 results collected for other reasons           | <a href="#">Measurement validity of the Patient-Health Questionnaire-9 in US nursing home residents - PubMed</a>   |
|                    | Geriatric Depression Scale (GDS)                           |  |  | <a href="#">Construction and validation of a patient- and user-friendly nursing home version of the Geriatric Depression Scale - PubMed</a>  |
|                    | Center for Epidemiological Studies Depression Scale (CESD) |  |  | <a href="#">Screening for depression in well older adults: evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale) - PubMed</a>  |
|                    | Cornell Scale for Depression in Dementia (CSDD)            |  |  | <a href="#">Cornell Scale for Depression in Dementia - PubMed</a><br><a href="#">Development and Validation of a Short Version of the Cornell Scale for Depression in Dementia for Screening Residents in Nursing Homes - PubMed</a> |
| <b>End of Life</b> | Patient and carer measures for EOL quality outcomes        |  |  | <a href="#">An umbrella review of patient- and carer-reported measures for assessing adult end-of-life care quality outcomes - PubMed</a>  |
|                    | CAHPS  |  |  | <a href="#">Giving voice to the vulnerable: the development of a CAHPS nursing home survey measuring family members' experiences - PubMed</a>  |
|                    | Quality of Dying in Long-Term Care (QOD-LTC)               |  |  | <a href="#">Measuring the quality of dying in long-term care - PubMed</a><br><a href="#">Selecting the best instruments to measure quality of end-of-life care and quality of dying in long term care - PubMed</a>                   |

| Domains                       | Tools for In-Person Data Collection             | Minimum Data Set (MDS)   | LTC Data Co-op   | Relevant References  |
|-------------------------------|---|--|--|--|
| <b>Falls</b>                  |   | Balance during transitions and walking (G0300); Mobility devices (G0600); Fall/fracture history on admission (J1700); number of falls and injuries (J1900) | Yes, as collected for MDS; other fall reports are included but may be inconsistent across facilities | <a href="#">Validation of the Minimum Data Set items on falls and injury in two long-stay facilities</a>   |
|                               | Performance-Oriented Mobility Assessment (POMA) |  |  | <a href="#">Performance-oriented assessment of mobility problems in elderly patients - PubMed</a><br><a href="#">Clinical and biomechanical measures of balance as fall predictors in ambulatory nursing home residents - PubMed</a>   |
|                               | Morse Falls Scale                               |  |  | <a href="#">A prospective study to identify the fall-prone patient - PubMed</a>  |
|                               | Timed Up and Go (TUG)                           |  |  | <a href="#">The timed "Up &amp; Go": a test of basic functional mobility for frail elderly persons - PubMed</a><br><a href="#">Assessing gait and balance impairment in elderly residents of nursing homes - PubMed</a>  |
| <b>Frailty</b>                | FRAIL-NH  |  |  | <a href="#">The FRAIL-NH Scale: Systematic Review of the Use, Validity and Adaptations for Frailty Screening in Nursing Homes - PubMed</a><br><a href="#">Predicting Adverse Health Outcomes in Nursing Homes: A 9-Year Longitudinal Study and Development of the FRAIL-Minimum Data Set (MDS) Quick Screening Tool - PubMed</a> |
|                               | Fracture Risk Scale (FRS)                       |  |  | <a href="#">Validation of a one year fracture prediction tool for absolute hip fracture risk in long term care residents - PubMed</a>  |
| <b>Lack of Social Support</b> | Perceived Support Scale                         |  |  | <a href="#">Measuring social support among older adults - PubMed</a>   |
| <b>Mobility</b>               |   | Bed mobility (MDS G1A); Transfers (G1B); walking /locomotion (G1C-F); Use of mobility devices (G0600)  | Yes, as collected for MDS  | <a href="#">Functional Improvement Among Short-Stay Nursing Home Residents in the MDS 3.0 - ScienceDirect</a>  |
|                               | Performance-Oriented Mobility Assessment (POMA) |  |  | <a href="#">Performance-oriented assessment of mobility problems in elderly patients - PubMed</a>  |
|                               | Timed Up and Go (TUG)                           |  |  | <a href="#">The timed "Up &amp; Go": a test of basic functional mobility for frail elderly persons - PubMed</a><br><a href="#">Assessing gait and balance impairment in elderly residents of nursing homes - PubMed</a>  |

| Domains                 | Tools for In-Person Data Collection           | Minimum Data Set (MDS)   | LTC Data Co-op   | Relevant References  |
|-------------------------|---|--|--|--|
| <b>Multi-morbidity</b>  |   | Diagnoses  | Yes, diagnoses as collected for MDS; also includes diagnoses as part of "Condition" domain |  |
|                         | Nursing Home Multimorbidity Matrix            |  |  | <a href="#">Analysis of multimorbidity in individual elderly nursing home residents. Development of a multimorbidity matrix - PubMed</a>   |
|                         | Geriatric Index of Comorbidity                |  |  | <a href="#">Geriatric Index of Comorbidity: validation and comparison with other measures of comorbidity - PubMed</a>  |
|                         | Mortality Risk Score (MRS3)                   |  |  | <a href="#">Development and Validation of the Nursing Home Minimum Data Set 3.0 Mortality Risk Score (MRS3) - PubMed</a>   |
| <b>Neuropsychiatric</b> |   | Agitated and Reactive Behavior Scale (ARBS)<br>Consider Section E: behavioral symptoms that can cause distress | Yes, as collected for MDS  | <a href="#">The Minimum Data Set Agitated and Reactive Behavior Scale: Measuring Behaviors in Nursing Home Residents With Dementia - PubMed</a>  |
|                         | Neuropsychiatric Inventory (NPI)              |  |  | <a href="#">The Neuropsychiatric Inventory: comprehensive assessment of psychopathology in dementia - PubMed</a>   |
|                         | Cohen-Mansfield Agitation Inventory (CMAI)    |  |  | <a href="#">Factor analysis of the Cohen-Mansfield Agitation Inventory in three large samples of nursing home patients with dementia and behavioral disturbance - PubMed</a>                   |
| <b>Pain</b>             |   | Yes (and severity) in Section J  | Yes, as collected for MDS; also included as a vital sign                                   | <a href="#">Pain Assessments in MDS 3.0: Agreement with Vital Sign Pain Records of Nursing Home Residents - PubMed</a>   |
|                         | McGill Pain Questionnaire (MPQ)               |  |  | <a href="#">The McGill Pain Questionnaire: major properties and scoring methods - PubMed</a><br><br><a href="#">The relation of pain to depression among institutionalized aged - PubMed</a>   |
|                         | Pain Assessment in Advanced Dementia (PAINAD) |  |  | <a href="#">The use of a self-reported pain measure, a nurse-reported pain measure and the PAINAD in nursing home residents with moderate and severe dementia: a validation study - PubMed</a> |

| Domains                | Tools for In-Person Data Collection    | Minimum Data Set (MDS)   | LTC Data Co-op            | Relevant References  |
|------------------------|--|--|---------------------------|--|
| <b>Sarcopenia</b>      |  |  |                           | <a href="#">Comparison of four sarcopenia screening tools in nursing home residents - PubMed</a>   |
|                        | Mini Sarcopenia Risk Assessment (MSRA) |  |                           | <a href="#">The Mini Sarcopenia Risk Assessment (MSRA) Questionnaire - PubMed</a>  |
|                        | SARC-F                                 |  |                           | <a href="#">Reliability and Concurrent Validity of the SARC-F and Its Modified Versions: A Systematic Review and Meta-Analysis - PubMed</a>  |
| <b>Sensory</b>         |  | Yes (hearing/vision) in Section B  | Yes, as collected for MDS | <a href="#">Hearing Screening for Residents in Long-Term Care Homes Who Live with Dementia: A Scoping Review - PubMed</a><br><a href="#">Screening for Vision Impairments in Individuals with Dementia Living in Long-Term Care: A Scoping Review - PubMed</a>             |
|                        | Hearing: Whispered Voice Test          |  |                           | <a href="#">A simple screening test for hearing impairment in elderly patients - PubMed</a>  |
| <b>Sleep Disorders</b> |  | 1 sleep item on PHQ-9 (Section D); 1 sleep item on pain assessment (Section J); may include ICD codes for other "active diagnoses" | Yes, as collected for MDS | <a href="#">Sleep and Long-Term Care - PMC</a>   |
|                        | STOP-BANG for Obstructive Sleep Apnea  |  |                           | <a href="#">STOP-Bang Questionnaire: A Practical Approach to Screen for Obstructive Sleep Apnea - PubMed</a>   |
|                        | Pittsburgh Sleep Quality Index (PSQI)  |  |                           | <a href="#">The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research - PubMed</a><br><a href="#">Improving Sleep Using Mentored Behavioral and Environmental Restructuring (SLUMBER) - PubMed</a>  |
|                        | Epworth Sleepiness Scale (ESS)         |  |                           | <a href="#">A new method for measuring daytime sleepiness: the Epworth sleepiness scale - PubMed</a><br><a href="#">Association of health related quality of life domains with daytime sleepiness among elderly recipients of long-term services and supports - PubMed</a> |