

**HOME HEALTH AGENCY QUALITY MEASURES:
TECHNICAL DOCUMENTATION OF
PATIENT OUTCOME MEASURES**

Department of Health and Human Services
Centers for Medicare & Medicaid Services

May 20, 2011

Prepared by:
David F. Hittle
Eugene J. Nuccio
Angela A. Richard

Division of Health Care Policy and Research
University of Colorado Anschutz Medical Campus
Aurora, Colorado

CONTENTS

	<u>Page</u>
Introduction	1
Episodes of Care Included in Patient Outcome Quality Reports	1
Creation of Episode of Care Records	1
Outcome Measure Transformation Specifications	3
Home Health Outcome Measures	3
Assumptions and Conventions	4
End Result Outcome Measures Data Transformation Pseudo-Code	5
Improvement/Stabilization in Functional Abilities	5
Improvement in Grooming / Stabilization in Grooming	5
Improvement in Upper Body Dressing	6
Improvement in Lower Body Dressing	6
Improvement in Bathing / Stabilization in Bathing	7
Improvement in Toilet Transferring / Stabilization in Toilet Transferring	8
Improvement in Toileting Hygiene / Stabilization in Toileting Hygiene	9
Improvement in Bed Transferring / Stabilization in Bed Transferring	10
Improvement in Ambulation-Locomotion.....	11
Improvement in Eating	11
Improvement in Light Meal Preparation / Stabilization in Light Meal Preparation	12
Improvement in Phone Use / Stabilization in Phone Use	13
Improvement in Management of Oral Medications / Stabilization in Management of Oral Medications	14
Improvement/Stabilization in Health/Disease Status	15
Improvement in Dyspnea	15
Improvement in Pain Interfering with Activity	16
Improvement in Speech and Language / Stabilization in Speech and Language ..	17
Improvement in Status of Surgical Wounds	18
Improvement in Urinary Tract Infection	19
Improvement in Urinary Incontinence	20
Improvement in Bowel Incontinence	21
Improvement in Confusion Frequency	22
Stabilization in Cognitive Functioning	22
Improvement in Anxiety Level / Stabilization in Anxiety Level	23
Improvement in Behavior Problem Frequency	24
Utilization Outcome Measures Data Transformation Pseudo-Code	25
Emergency Department Use without Hospitalization	25

CONTENTS (continued)

	<u>Page</u>
Emergency Department Use with Hospitalization	26
Discharged to Community	27
Acute Care Hospitalization	28
Exclusions Based on Patient's Level of Consciousness:	29

HOME HEALTH AGENCY PATIENT OUTCOME REPORTS: TECHNICAL DOCUMENTATION OF MEASURES

Introduction

This document provides definitions of measures that appear in Home Health Agency Patient Outcome Reports, including detailed specifications for calculating these measures based on OASIS assessment data. It includes specifications for measures that appear on the "All Patients' Risk Adjusted Outcome Report" that is used for Outcome-Based Quality Improvement, A subset of which measures appear on the C M S Home Health Compare web site.

Episodes of Care Included in Patient Outcome Quality Reports

The unit of analysis for both outcome and process quality reports is an episode of care, defined as starting with an admission to home health care (M0100 Reason for assessment = 01 or 02) or resumption of home health care after an inpatient facility stay (M0100 Reason for assessment = 03), and ending with a discharge from home health care, including discharge due to death, or admission to inpatient facility for 24 hours or more (M0100 Reason for assessment = 06, 07, 08, or 09). The data upon which these reports are based consist of OASIS assessments submitted by home health agencies to the states, which are then transmitted to a national OASIS repository residing on a secure database server maintained by C M S. Analysis records corresponding to episodes of care are constructed by matching up assessments for each individual served by a home health agency, sorting those assessments by effective date, then pairing up assessments that mark the beginning and end of an episode of care. Episodes of care for which either the beginning or end assessment is missing, or for which assessments are out of sequence, are not included in these reports.

Creation of Episode of Care Records

The process of building episode-level records, including creating a short-term episode of care indicator, is as follows:

1. Sort assessments by home health agency ID¹, patient ID and effective date, latest to earliest.

¹ When working with assessment records from the OASIS National Repository, home health agency ID is actually a combination of the two position state abbreviation and Facility Internal ID, and Patient ID is a combination of the state abbreviation and Resident Internal ID.

2. For each set of assessments having the same combination of home health agency ID and patient ID, step through the assessments, latest to earliest, until an assessment with M0100_ASSMT_REASON = 06, 07, 08, or 09 is found. Set ST-Episode = 1.
3. Continue stepping through earlier assessments, carrying over the value of ST_Episode from the later assessment.
4. If an assessment with M0100_ASSMT_REASON = 06, 07, 08, or 09 is found before an assessment with M0100_ASSMT_REASON = 01 or 03 is found, discard the episode being built and start over with step 2.
5. If an assessment with M0100_ASSMT_REASON = 04 or 05 is found before an assessment with M0100_ASSMT_REASON = 01 or 03 is found, set ST_Episode to 0 and continue stepping through earlier assessments, carrying over the value of ST_Episode from the later assessment.
6. When an assessment with M0100_ASSMT_REASON = 01 or 03 is found, the episode is complete. Create a completed episode record with home health agency ID, patient ID, beginning assessment ID, ending assessment ID, begin and end dates for the episode and the ST_Episode indicator. If there are more assessments for this patient, start building a new episode beginning with step 2.
7. If no assessment with M0100_ASSMT_REASON = 01 or 03 is found before the assessments for this patient are exhausted, discard the pending episode being built.

Outcome Measure Transformation Specifications

This document includes transformation specifications for outcome measures that appear on the All Patients' Risk-Adjusted Outcome Report for Outcome-Based Quality Improvement, a subset of which appear on Home Health Compare.

Home Health Outcome Measures

Outcome Measures are referred to as follows:

<u>Measure Domain & Descriptive Measure Name</u>	<u>Short Measure Name</u>
End Result Outcomes –Functional	
Improvement in Grooming	Imprv_Grooming
Stabilization in Grooming	Stablz_Grooming
Improvement in Upper Body Dressing	Imprv_Upper_Dress
Improvement in Lower Body Dressing	Imprv_Lower_Dress
Improvement in Bathing ^{HHC}	Imprv_Bathing
Stabilization in Bathing	Stablz_Bathing
Improvement in Toilet Transferring	Imprv_Toilet_Transfer
Stabilization in Toilet Transferring	Stablz_Toilet_Transfer
Improvement in Toileting Hygiene	Imprv_Toilet_Hygeine
Stabilization in Toileting Hygiene	Stablz_Toilet_Hygeine
Improvement in Bed Transferring ^{HHC}	Imprv_Bed_Transfer
Stabilization in Bed Transferring	Stablz_Bed_Transfer
Improvement in Ambulation-Locomotion ^{HHC}	Imprv_Ambulation
Improvement in Eating	Imprv_Eating
Improvement in Light Meal Preparation	Imprv_Light_Meal
Stabilization in Light Meal Preparation	Stablz_Light_Meal
Improvement in Phone Use	Imprv_Phone
Stabilization in Phone Use	Stablz_Phone
Improvement in Management of Oral Medications ^{HHC}	Imprv_Oral_Meds
Stabilization in Management of Oral Medications	Stablz_Oral_Meds
End Result Outcomes –Health/Disease Status	
Improvement in Dyspnea ^{HHC}	Imprv_Dyspnea
Improvement in Pain Interfering with Activity ^{HHC}	Imprv_Pain
Improvement in Speech and Language	Imprv_Speech
Stabilization in Speech and Language	Stablz_Speech
Improvement in Status of Surgical Wounds ^{HHC}	Imprv_Status_Wounds
Improvement in Urinary Tract Infection	Imprv_UTI
Improvement in Urinary Incontinence	Imprv_Incont

<u>Measure Domain & Descriptive Measure Name</u>	<u>Short Measure Name</u>
End Result Outcomes –Health/Disease Status (cont'd)	
Improvement in Bowel Incontinence.....	Imprv_Bowel_Incont
Improvement in Confusion Frequency	Imprv_Confusion
Stabilization in Cognitive Functioning	Stablz_Cognitive
Improvement in Anxiety Level	Imprv_Anxiety
Stabilization in Anxiety Level.....	Stablz_Anxiety
Improvement in Behavior Problem Frequency	Imprv_Behavior
Utilization Outcomes	
Emergency Department Use without Hospitalization	Util_ED_Use_No_Hosp
Emergency Department Use with Hospitalization.....	Util_ED_Use_W_Hosp
Acute Care Hospitalization ^{HHC}	Util_Hosp
Discharged to community	Util_DC_Comm

^{HHC} Measure appears on Home Health Compare

Assumptions and Conventions

The following transformations result in measures with numeric values. For process and outcome measures, “1” indicates that the outcome event occurred or the process was followed, while “0” indicates the outcome event did not occur or the process was not followed. When the instructions indicate that a measure is to be set to "MISSING", the case is excluded from analysis for that particular measure, either because the measure is not applicable or because a data item on which that measure is based has been indicated as “unknown”.

OASIS data items are referred to in this documentation using field names specified in OASIS Data Submission Specifications published by C M S. “[1]” is appended to the field name if the value is taken from the beginning of episode assessment (Start or Resumption of Care), and “[2]” is appended if the value is to be taken from the assessment conducted at the end of the episode (Discharge, Transfer, or Death).

End Result Outcome Measures Data Transformation Pseudo-Code

Improvement/Stabilization in Functional Abilities

Improvement in Grooming / Stabilization in Grooming

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1800_CUR_GROOMING[1] > 00
  THEN
    IF M1800_CUR_GROOMING[2] < (M1800_CUR_GROOMING[1]
    THEN
      Imprv_GROOMING = 1
    ELSE
      Imprv_GROOMING = 0
    END IF
  ELSE
    Imprv_GROOMING = MISSING
  END IF
  IF M1800_CUR_GROOMING[1] < 03
  THEN
    IF M1800_CUR_GROOMING[2] <= M1800_CUR_GROOMING[1]
    THEN
      Stblz_GROOMING = 1
    ELSE
      Stblz_GROOMING = 0
    END IF
  ELSE
    Stblz_GROOMING = MISSING
  END IF
ELSE
  Imprv_GROOMING = MISSING
  Stblz_GROOMING = MISSING
END IF
```

Improvement in Upper Body Dressing

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1810_CUR_DRESS_UPPER[1] > 00
  THEN
    IF M1810_CUR_DRESS_UPPER[2] < M1810_CUR_DRESS_UPPER[1]
    THEN
      Imprv_Upper_Dress = 1
    ELSE
      Imprv_Upper_Dress = 0
    END IF
  ELSE
    Imprv_Upper_Dress = MISSING
  END IF
ELSE
  Imprv_Upper_Dress = MISSING
END IF
```

Improvement in Lower Body Dressing

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1820_CUR_DRESS_LOWER[1] > 00
  THEN
    IF M1820_CUR_DRESS_LOWER[2] < M1820_CUR_DRESS_LOWER[1]
    THEN
      Imprv_Lower_Dress = 1
    ELSE
      Imprv_Lower_Dress = 0
    END IF
  ELSE
    Imprv_Lower_Dress = MISSING
  END IF
ELSE
  Imprv_Lower_Dress = MISSING
END IF
```

Improvement in Bathing / Stabilization in Bathing

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1830_CRNT_BATHG[1] > 00
  THEN
    IF M1830_CRNT_BATHG[2] < M1830_CRNT_BATHG[1]
    THEN
      Imprv_Bathing = 1
    ELSE
      Imprv_Bathing = 0
    END IF
  ELSE
    Imprv_Bathing = MISSING
  END IF
  IF M1830_CRNT_BATHG[1] < 06
  THEN
    IF M1830_CRNT_BATHG[2] <= M1830_CRNT_BATHG[1]
    THEN
      Stablz_Bathing = 1
    ELSE
      Stablz_Bathing = 0
    END IF
  ELSE
    Stablz_Bathing = MISSING
  END IF
ELSE
  Imprv_Bathing = MISSING
  Stablz_Bathing = MISSING
END IF
```

Improvement in Toilet Transferring / Stabilization in Toilet Transferring

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1840_CUR_TOILTG[1] > 00
  THEN
    IF M1840_CUR_TOILTG[2] < M1840_CUR_TOILTG[1]
    THEN
      Imprv_Toilet_Transfer = 1
    ELSE
      Imprv_Toilet_Transfer = 0
    END IF
  ELSE
    Imprv_Toilet_Transfer = MISSING
  END IF
  IF M1840_CUR_TOILTG[1] < 04
  THEN
    IF M1840_CUR_TOILTG[2] <= M1840_CUR_TOILTG[1]
    THEN
      Stablz_Toilet_Transfer = 1
    ELSE
      Stablz_Toilet_Transfer = 0
    END IF
  ELSE
    Stablz_Toilet_Transfer = MISSING
  END IF
ELSE
  Imprv_Toilet_Transfer = MISSING
  Stablz_Toilet_Transfer = MISSING
END IF
```

Improvement in Toileting Hygiene / Stabilization in Toileting Hygiene

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1845_CUR_TOILTG_HYGN[1] > 00
  THEN
    IF M1845_CUR_TOILTG_HYGN[2] < M1845_CUR_TOILTG_HYGN[1]
    THEN
      Imprv_Toilet_Hygeine = 1
    ELSE
      Imprv_Toilet_Hygeine = 0
    END IF
  ELSE
    Imprv_Toilet_Hygeine = MISSING
  END IF
  IF M1845_CUR_TOILTG_HYGN[1] < 03
  THEN
    IF M1845_CUR_TOILTG_HYGN[2] <= M1845_CUR_TOILTG_HYGN[1]
    THEN
      Stablz_Toilet_Hygeine = 1
    ELSE
      Stablz_Toilet_Hygeine = 0
    END IF
  ELSE
    Stablz_Toilet_Hygeine = MISSING
  END IF
ELSE
  Imprv_Toilet_Hygeine = MISSING
  Stablz_Toilet_Hygeine = MISSING
END IF
```

Improvement in Bed Transferring / Stabilization in Bed Transferring

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1850_CUR_TRNSFRNG[1] > 00
  THEN
    IF M1850_CUR_TRNSFRNG[2] < M1850_CUR_TRNSFRNG[1]
    THEN
      Imprv_Bed_Transfer = 1
    ELSE
      Imprv_Bed_Transfer = 0
    END IF
  ELSE
    Imprv_Bed_Transfer = MISSING
  END IF
  IF M1850_CUR_TRNSFRNG[1] < 05
  THEN
    IF M1850_CUR_TRNSFRNG[2] <= M1850_CUR_TRNSFRNG[1]
    THEN
      Stablz_Bed_Transfer = 1
    ELSE
      Stablz_Bed_Transfer = 0
    END IF
  ELSE
    Stablz_Bed_Transfer = MISSING
  END IF
ELSE
  Imprv_Bed_Transfer = MISSING
  Stablz_Bed_Transfer = MISSING
END IF
```

Improvement in Ambulation-Locomotion

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1860_CRNT_AMBLTN[1] > 00
  THEN
    IF M1860_CRNT_AMBLTN[2] < M1860_CRNT_AMBLTN[1]
    THEN
      Imprv_Ambulation = 1
    ELSE
      Imprv_Ambulation = 0
    END IF
  ELSE
    Imprv_Ambulation = MISSING
  END IF
ELSE
  Imprv_Ambulation = MISSING
END IF
```

Improvement in Eating

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1870_CUR_FEEDING[1] > 00
  THEN
    IF M1870_CUR_FEEDING[2] < M1870_CUR_FEEDING[1]
    THEN
      Imprv_Eating = 1
    ELSE
      Imprv_Eating = 0
    END IF
  ELSE
    Imprv_Eating = MISSING
  END IF
ELSE
  Imprv_Eating = MISSING
END IF
```

Improvement in Light Meal Preparation / Stabilization in Light Meal Preparation

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1880_CUR_PREP_LT_MEALS[1] > 00
  THEN
    IF M1880_CUR_PREP_LT_MEALS[2] < M1880_CUR_PREP_LT_MEALS[1]
    THEN
      Imprv_Light_Meal = 1
    ELSE
      Imprv_Light_Meal = 0
    END IF
  ELSE
    Imprv_Light_Meal = MISSING
  END IF
  IF M1880_CUR_PREP_LT_MEALS[1] < 02
  THEN
    IF M1880_CUR_PREP_LT_MEALS[2] <= M1880_CUR_PREP_LT_MEALS[1]
    THEN
      Stablz_Light_Meal = 1
    ELSE
      Stablz_Light_Meal = 0
    END IF
  ELSE
    Stablz_Light_Meal = MISSING
  END IF
ELSE
  Imprv_Light_Meal = MISSING
  Stablz_Light_Meal = MISSING
END IF
```

Improvement in Phone Use / Stabilization in Phone Use

```
IF M0100_ASSMT_REASON[2] = 09 AND M1890_CUR_PHONE_USE[1] <> NA AND
  M1890_CUR_PHONE_USE[2] <> NA
THEN
  IF M1890_CUR_PHONE_USE[1] > 00
  THEN
    IF M1890_CUR_PHONE_USE[2] < M1890_CUR_PHONE_USE[1]
    THEN
      Imprv_Phone = 1
    ELSE
      Imprv_Phone = 0
    END IF
  ELSE
    Imprv_Phone = MISSING
  END IF
  IF M1890_CUR_PHONE_USE[1] < 05
  THEN
    IF M1890_CUR_PHONE_USE[2] <= M1890_CUR_PHONE_USE[1]
    THEN
      Stablz_Phone = 1
    ELSE
      Stablz_Phone = 0
    END IF
  ELSE
    Stablz_Phone = MISSING
  END IF
ELSE
  Imprv_Phone = MISSING
  Stablz_Phone = MISSING
END IF
```

Improvement in Management of Oral Medications / Stabilization in Management of Oral Medications

```
IF M0100_ASSMT_REASON[2] = 09 AND
    M2020_CRNT_MGMT_ORAL_MDCTN[1] IS NOT BLANK AND
    M2020_CRNT_MGMT_ORAL_MDCTN[1] <> NA AND
    M2020_CRNT_MGMT_ORAL_MDCTN[2] <> NA
THEN
    IF M2020_CRNT_MGMT_ORAL_MDCTN[1] > 00
    THEN
        IF M2020_CRNT_MGMT_ORAL_MDCTN[2] <
            M2020_CRNT_MGMT_ORAL_MDCTN[1]
        THEN
            Imprv_Oral_Meds = 1
        ELSE
            Imprv_Oral_Meds = 0
        END IF
    ELSE
        Imprv_Oral_Meds = MISSING
    END IF
    IF M2020_CRNT_MGMT_ORAL_MDCTN[1] < 03
    THEN
        IF M2020_CRNT_MGMT_ORAL_MDCTN[2] <=
            M2020_CRNT_MGMT_ORAL_MDCTN[1]
        THEN
            Stablz_Oral_Meds = 1
        ELSE
            Stablz_Oral_Meds = 0
        END IF
    ELSE
        Stablz_Oral_Meds = MISSING
    END IF
ELSE
    Imprv_Oral_Meds = MISSING
    Stablz_Oral_Meds = MISSING
END IF
```

Improvement/Stabilization in Health/Disease Status

Improvement in Dyspnea

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1400_WHEN_DYSPNEIC[1] > 00
  THEN
    IF M1400_WHEN_DYSPNEIC[2] < M1400_WHEN_DYSPNEIC[1]
    THEN
      Imprv_Dyspnea = 1
    ELSE
      Imprv_Dyspnea = 0
    END IF
  ELSE
    Imprv_Dyspnea = MISSING
  END IF
ELSE
  Imprv_Dyspnea = MISSING
END IF
```

Improvement in Pain Interfering with Activity

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1242_PAIN_FREQ_ACTVTY_MVMT[1] > 00
  THEN
    IF M1242_PAIN_FREQ_ACTVTY_MVMT[2] <
      M1242_PAIN_FREQ_ACTVTY_MVMT[1]
    THEN
      Imprv_Pain = 1
    ELSE
      Imprv_Pain = 0
    END IF
  ELSE
    Imprv_Pain = MISSING
  END IF
ELSE
  Imprv_Pain = MISSING
END IF
```

Improvement in Speech and Language / Stabilization in Speech and Language

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1230_SPEECH[1] > 00
  THEN
    IF M1230_SPEECH[2] < M1230_SPEECH[1]
    THEN
      Imprv_Speech = 1
    ELSE
      Imprv_Speech = 0
    END IF
  ELSE
    Imprv_Speech = MISSING
  END IF
  IF M1230_SPEECH[1] < 05
  THEN
    IF M1230_SPEECH[2] <= M1230_SPEECH[1]
    THEN
      Stablz_Speech = 1
    ELSE
      Stablz_Speech = 0
    END IF
  ELSE
    Stablz_Speech = MISSING
  END IF
ELSE
  Imprv_Speech = MISSING
  Stablz_Speech = MISSING
END IF
```

Improvement in Status of Surgical Wounds

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1340_SRGCL_WND_PRSNT[1] = 01
    AND M1342_STUS_PRBLM_SRGCL_WND[1] > 00
    AND M1340_SRGCL_WND_PRSNT[2] <> 02
  THEN
    IF M1340_SRGCL_WND_PRSNT[2] = 00
      OR M1342_STUS_PRBLM_SRGCL_WND[2] <
        M1342_STUS_PRBLM_SRGCL_WND[1]
    THEN
      Imprv_Status_Wounds = 1
    ELSE
      Imprv_Status_Wounds = 0
    END IF
  ELSE
    Imprv_Status_Wounds = MISSING
  END IF
ELSE
  Imprv_Status_Wounds = MISSING
END IF
```

Improvement in Urinary Tract Infection

```
IF M0100_ASSMT_REASON[2] = 09 AND M1600_UTI[1] <> UK AND
  M1600_UTI[1] <> NA AND M1600_UTI[2] <> NA
THEN
  IF M1600_UTI[1] > 00
  THEN
    IF M1600_UTI[2] < M1600_UTI[1]
    THEN
      Imprv_UTI = 1
    ELSE
      Imprv_UTI = 0
    END IF
  ELSE
    Imprv_UTI = MISSING
  END IF
ELSE
  Imprv_UTI = MISSING
END IF
```

Improvement in Urinary Incontinence

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1610_UR_INCONT[1] > 00
  THEN
    IF M1610_UR_INCONT[2] < M1610_UR_INCONT[1]
      OR (M1610_UR_INCONT[2] = 01
      AND M1615_INCNTNT_TIMING[2] < M1615_INCNTNT_TIMING[1])
    THEN
      Imprv_Incont = 1
    ELSE
      Imprv_Incont = 0
    END IF
  ELSE
    Imprv_Incont = MISSING
  END IF
ELSE
  Imprv_Incont = MISSING
END IF
```

Improvement in Bowel Incontinence

```
IF M0100_ASSMT_REASON[2] = 09 AND M1620_BWL_INCONT[1] <> UK AND
  M1620_BWL_INCONT[1] <> NA AND M1620_BWL_INCONT[2] <> NA
THEN
  IF M1620_BWL_INCONT[1] > 00
  THEN
    IF M1620_BWL_INCONT[2] < M1620_BWL_INCONT[1]
    THEN
      Imprv_Bowel_Incont = 1
    ELSE
      Imprv_Bowel_Incont = 0
    END IF
  ELSE
    Imprv_Bowel_Incont = MISSING
  END IF
ELSE
  Imprv_Bowel_Incont = MISSING
END IF
```

Improvement in Confusion Frequency

```
IF M0100_ASSMT_REASON[2] = 09 AND M1710_WHEN_CONFUSED[2] <> NA
THEN
  IF M1710_WHEN_CONFUSED[1] > 00
  THEN
    IF M1710_WHEN_CONFUSED[2] < M1710_WHEN_CONFUSED[1]
    THEN
      Imprv_Confusion = 1
    ELSE
      Imprv_Confusion = 0
    END IF
  ELSE
    Imprv_Confusion = MISSING
  END IF
ELSE
  Imprv_Confusion = MISSING
END IF
```

Stabilization in Cognitive Functioning

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1700_COG_FUNCTION[1] < 04
  THEN
    IF M1700_COG_FUNCTION[2] <= M1700_COG_FUNCTION[1]
    THEN
      Stablz_Cognitive = 1
    ELSE
      Stablz_Cognitive = 0
    END IF
  ELSE
    Stablz_Cognitive = MISSING
  END IF
ELSE
  Stablz_Cognitive = MISSING
END IF
```

Improvement in Anxiety Level / Stabilization in Anxiety Level

```
IF M0100_ASSMT_REASON[2] = 09 AND M1720_WHEN_ANXIOUS[2] <> NA
THEN
  IF M1720_WHEN_ANXIOUS[1] > 00
  THEN
    IF M1720_WHEN_ANXIOUS[2] < M1720_WHEN_ANXIOUS[1]
    THEN
      Imprv_Anxiety = 1
    ELSE
      Imprv_Anxiety = 0
    END IF
  ELSE
    Imprv_Anxiety = MISSING
  END IF
  IF M1720_WHEN_ANXIOUS[1] < 03
  THEN
    IF M1720_WHEN_ANXIOUS[2] <= M1720_WHEN_ANXIOUS[1]
    THEN
      Stablz_Anxiety = 1
    ELSE
      Stablz_Anxiety = 0
    END IF
  ELSE
    Stablz_Anxiety = MISSING
  END IF
ELSE
  Imprv_Anxiety = MISSING
  Stablz_Anxiety = MISSING
END IF
```

Improvement in Behavior Problem Frequency

```
IF M0100_ASSMT_REASON[2] = 09
THEN
  IF M1745_BEH_PROB_FREQ[1] > 00
  THEN
    IF M1745_BEH_PROB_FREQ[2] < M1745_BEH_PROB_FREQ[1]
    THEN
      Imprv_Behavior = 1
    ELSE
      Imprv_Behavior = 0
    END IF
  ELSE
    Imprv_Behavior = MISSING
  END IF
ELSE
  Imprv_Behavior = MISSING
END IF
```

Utilization Outcome Measures Data Transformation Pseudo-Code

Emergency Department Use without Hospitalization

```
IF M0100_ASSMT_REASON[2] <> 08
THEN
  IF M2300_EMER_USE_AFTR_LAST_ASMT[2] = 01
  THEN
    Util_ED_Use_No_Hosp = 1
  ELSEIF M2300_EMER_USE_AFTR_LAST_ASMT[2] = 00
    OR M2300_EMER_USE_AFTR_LAST_ASMT[2] = 02
  THEN
    Util_ED_Use_No_Hosp = 0
  ELSEIF M2300_EMER_USE_AFTR_LAST_ASMT[2] = UK
  THEN
    Util_ED_Use_No_Hosp = MISSING
  END IF
ELSE
  Util_ED_Use_No_Hosp = MISSING
END IF
```

Emergency Department Use with Hospitalization

```
IF M0100_ASSMT_REASON[2] <> 08
THEN
  IF M2300_EMER_USE_AFTR_LAST_ASMT[2] = 02
  THEN
    Util_ED_Use_W_Hosp = 1
  ELSEIF M2300_EMER_USE_AFTR_LAST_ASMT[2] = 00
    OR M2300_EMER_USE_AFTR_LAST_ASMT[2] = 01
  THEN
    Util_ED_Use_W_Hosp = 0
  ELSEIF M2300_EMER_USE_AFTR_LAST_ASMT[2] = UK
  THEN
    Util_ED_Use_W_Hosp = MISSING
  END IF
ELSE
  Util_ED_Use_W_Hosp = MISSING
END IF
```

Discharged to Community

```
IF M0100_ASSMT_REASON[2] <> 08
THEN
  IF M0100_ASSMT_REASON[2] = 09 AND (M2420_DSCHRG_DISP[2] = 01
    OR M2420_DSCHRG_DISP[2] = 02)
  THEN
    Util_DC_Comm = 1
  ELSE IF (M0100_ASSMT_REASON[2] = 09 AND M2420_DSCHRG_DISP[2] = 03)
    OR M0100_ASSMT_REASON[2] = 06 OR M0100_ASSMT_REASON[2] = 07
  THEN
    Util_DC_Comm = 0
  ELSE IF M0100_ASSMT_REASON[2] = 09
    AND (M2420_DSCHRG_DISP[2] = UK OR M2420_DSCHRG_DISP[2] = UK)
  THEN
    Util_DC_Comm = MISSING
  END IF
ELSE
  Util_DC_Comm = MISSING
END IF
```

Acute Care Hospitalization

IF M0100_ASSMT_REASON[2] <> 08

THEN

IF (M0100_ASSMT_REASON[2] = 06 **OR** M0100_ASSMT_REASON[2] = 07)

AND M2410_INPAT_FACILITY [2]= 01

AND M2430_HOSP_SCHLD_TRTMT[2] <> 1

THEN

 Util_Hosp = 1

ELSEIF M0100_ASSMT_REASON[2] = 09

OR ((M0100_ASSMT_REASON[2] = 06 **OR** M0100_ASSMT_REASON[2] = 07)

AND M2410_INPAT_FACILITY [2] <> 01

OR (M2410_INPAT_FACILITY [2]= 01

AND M2430_HOSP_SCHLD_TRTMT[2] = 1))

THEN

 Util_Hosp = 0

END IF

ELSE

 Util_Hosp = MISSING

END IF

Exclusions Based on Patient's Level of Consciousness:

For the following outcome measures, if the patient is observed to be nonresponsive at start/resumption of care, the outcome measure will be set to missing.

**IF M1710_WHEN_CONFUSED[1] = NA OR M1720_WHEN_ANXIOUS[1] = NA
THEN**

Imprv_Grooming = MISSING
Stablz_Grooming = MISSING
Imprv_Upper_Dress = MISSING
Imprv_Lower_Dress = MISSING
Imprv_Bathing = MISSING
Stablz_Bathing = MISSING
Imprv_Toilet_Transfer = MISSING
Stablz_Toilet_Transfer = MISSING
Imprv_Toilet_Hygiene = MISSING
Stablz_Toilet_Hygiene = MISSING
Imprv_Bed_Transfer = MISSING
Stablz_Bed_Transfer = MISSING
Imprv_Ambulation = MISSING
Imprv_Eating = MISSING
Imprv_Light_Meal = MISSING
Stablz_Light_Meal = MISSING
Imprv_Phone = MISSING
Stablz_Phone = MISSING
Imprv_Oral_Meds = MISSING
Stablz_Oral_Meds = MISSING
Imprv_Pain = MISSING
Imprv_Speech = MISSING
Stablz_Speech = MISSING
Imprv_Incont = MISSING
Imprv_Bowel_Incont = MISSING
Imprv_Confusion = MISSING
Stablz_Cognitive = MISSING
Imprv_Anxiety = MISSING
Stablz_Anxiety = MISSING
Imprv_Behavior = MISSING

END IF