

# **Medication Reconciliation on Admission**

## **Draft Measure Documentation**

**Current as of: December 28, 2016**



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## Draft Measure Information Form

**Performance Measure Name:** Medication Reconciliation on Admission

**Description:** The average completeness of three components of the medication reconciliation process Within 48 hours of admission for patients admitted to an inpatient facility.

**Rationale:** Incomplete or inaccurate medication lists may result in medication errors throughout the inpatient stay and upon discharge from the facility. According to a 2015 study by the Agency for Healthcare Research and Quality (AHRQ), more than half of admitted patients' medication lists contain at least one discrepancy and 40% of these identified discrepancies have the potential to cause harm (AHRQ, 2015). Another study of medication reconciliation on admission found discrepancies between physician admission medication orders and the medication history obtained through interview and that 39% of discrepancies had the potential to cause harm (Cornish, Knowles, Marchesano, et. al., 2005).

A systematic review published in 2012 examined 26 controlled studies related to hospital-based medication reconciliation practices (Mueller, Sponsler, Kripalani, Schnipper, 2012). The studies "consistently demonstrated a reduction in medication discrepancies (17/17 studies), potential adverse drug events (5/6 studies), and adverse drug events (2/3 studies)." Although the heterogeneity of the study designs makes it difficult to identify the key elements of successful interventions, accurate pre-admission medication lists are critical to the medication reconciliation process as identified in the studies.

By evaluating not just that a medication reconciliation has been completed but that the medication reconciliation meets several key criteria to reduce medication errors, this measure could potentially reduce preventable adverse drug events, which are estimated by the Institute of Medicine (IOM) in its review of evidence to affect 1.5 million patients per year in in-and outpatient care in the U.S. (Aspden, Wolcott, Bootman, & Cronenwett, 2007).

Additionally, there are currently the following seven existing related NQF-endorsed measures that address medication reconciliation:

- NQF 0097 Medication Reconciliation
- NQF 0293 Medication Information
- NQF 0419 Documentation of Current Medications in the Medical Record
- NQF 0553 Care for Older Adults (COA) – Medication Review
- NQF 0554 Medication Reconciliation Post-Discharge (MRP)
- NQF 0646 Reconciled Medication List Received by Discharged Patients (Discharges from an Inpatient Facility to Home/Self Care or Any Other Site of Care)
- NQF 2456. Medication Reconciliation: Number of Unintentional Medication Discrepancies per Patient

This proposed measure is different from the other related measures in two important aspects. First, the measure focuses on the reconciliation process upon admission to an inpatient facility; whereas existing measures focus on reconciliation at discharge or transfer. Second, this

measure focuses on assessing the quality of the medication reconciliation process versus simply documenting that the process was completed.

Accurate medication reconciliation upon admission involves three key components: 1) comprehensive PTA medication information gathering and documentation (i.e., consideration of multiple sources to ascertain PTA Medication List, PTA medication form in area of medical record dedicated to medication reconciliation, and reconciliation of the PTA medication form with other admission documents that reference PTA medications); 2) completeness of critical PTA medication information (i.e., name, dose, frequency, route, last time taken); and 3) reconciliation action for each PTA medication by a licensed prescriber.

**Type of Measure:** Composite

**Improvement Noted As:** Increase in the average

**Numerator Statement:**

This measure does not have a traditional numerator. The numerator is a facility-level score of the completeness of the medication reconciliation process within 48 hours of admission. This score is calculated by averaging the scores of the three components of the medication reconciliation process. The components include:

- 1) Comprehensive prior to admission (PTA) medication information gathering and documentation
- 2) Completeness of critical PTA medication information
- 3) Reconciliation action for each PTA medication

The data elements for each component are listed below. Facilities will indicate how many of the criteria were met for each medical record in their sample and follow the measure calculation logic described under the section “Medication Reconciliation on Admission Narratives,” to calculate their facility-level score.

**Component 1 (C-1): Comprehensive prior to admission (PTA) medication information gathering and documentation:**

- a) *Designated Medication Reconciliation Form/Area:* The medical record contains a designated Medication Reconciliation Form/Area that contains a PTA Medication List.
- b) *Patient source:* At least one patient source was referenced to generate the PTA Medication List or the patient was clinically unable to provide medication information and a patient proxy was not available.
  - This criterion is met if the medical record contains documentation that the list of medications was supplied by at least one of the following patient sources:
    - Interview of the patient or patient proxy
    - Medication container brought in by patient or patient proxy
    - Medication list brought by patient or patient proxy

- Patient clinically unable to provide medication information and a patient proxy was not available
- Patient support network including a group home
- c) *Health System Source*: At least one health system source was referenced to generate the PTA Medication List.
  - This criterion is met if the medical record contains documentation that the list of medications was supplied by at least one of the following health system sources:
    - Electronic prescribing network system (e.g., Allscripts®, Surescripts®) or aggregate pharmacy billing (e.g., claims data using state/federal healthcare programs)
    - Nursing home
    - Outpatient provider
    - Outpatient/retail pharmacy or attempt made to contact within 48 hours of admission
    - Prescription Drug Monitoring Program (PDMP)
    - Prescription in medical record from a prior encounter
- d) *Contains All H&P Medications*: All medications in the History & Physical (H&P) or equivalent document are listed in the PTA Medication List.
- e) *Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 hours of Admission*: When there are no medications on the PTA Medication List, the Medication Reconciliation Form/Area should be reviewed by a licensed prescriber within 48 hours of admission. When there are medications on the PTA Medication List, continue to Components 2 and 3.

**Component 2 (C-2): Completeness of critical PTA medication information:**

- a) *Medication Name*: This criterion is met when there is a documented medication name.
- b) *Medication Dose*: This criterion is met when there is a valid documented medication dose.
- c) *Medication Route*: This criterion is met when there is a valid documented medication route.
- d) *Medication Frequency*: This criterion is met when there is a valid documented medication frequency.
- e) *Last Time Medication Taken*: This criterion is met when there is a valid documented time when the PTA medication was last taken by the patient.

**Component 3 (C-3): Reconciliation action for each PTA medication:**

- a) *Reconciled Action*: Documentation of reconciliation action to continue, discontinue, or modify the medication
- b) *Reconciled Action Date and Time*: Reconciliation action documented within 48 hours of admission

**Date Elements:**

- Admission Date
- Admission Time
- Contains All H&P Medications
- Designated Medication Reconciliation Form/Area
- Discharge Date
- Discharge Time
- Health System Source
- Last Time Medication Taken
- Length of Stay
- Medication Dose
- Medication Frequency
- Medication Name
- Medication Reconciled Action Within 48 Hours of Admission
- Medication Reconciliation Form/Area Reconciled Date and Time
- Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 Hours of Admission
- Medication Route
- Medications on PTA Medication List
- Patient Source
- Reconciled Action
- Reconciled Action Date and Time
- Transfer From an Acute Care Setting

**Denominator Statement:** The same denominator applies to each component: Admissions to an inpatient facility from home or a non-acute setting with a length of stay greater than or equal to 48 hours.

**Included Populations:** Admissions to an inpatient facility from home or a non-acute setting with a length of stay greater than or equal to 48 hours.

**Excluded Populations:** None

**Date Elements:**

- Admission Date
- Admission Time
- Discharge Date
- Discharge Time
- Length of Stay
- Transfer From an Acute Care Setting

**Risk Adjustment:** No

**Data Collection Approach:** Retrospective data sources for required data elements include medical record documents. Some hospitals may prefer to gather data concurrently. This approach provides opportunities for improvement at the point of care/service.

**Data Accuracy:** Data accuracy is enhanced when all definitions are used without modification. The data dictionary should be referenced for definitions and abstraction notes when questions arise during data collection.

**Sampling:** The sampling approach will align with the sampling methodology outlined in the IPFQR Program and is subject to change.

**Data Reported As:** An average completeness score will be calculated at the component level and aggregated into an overall facility-level score (refer to measure algorithm). The facility-level score will average the applicable components. Each component will have equal weight.

**Selected References:**

- Agency for Healthcare Research and Quality. (2015). Medication reconciliation. Rockville, MD: U.S. Department of Health and Human Services. Retrieved from: <http://psnet.ahrq.gov/primer.aspx?primerID=1>.
- Aspden, P., Wolcott, J., Bootman, J. L., & Cronenwett, L. R. (2007). Preventing medication errors: Quality chasm series. Washington, DC: The National Academies Press.
- Cornish, P. L., Knowles, S. R., Marchesano, R., Tam, V., Shadowitz, S., Juurlink, D. N., & Etchells, E. E. (2005). Unintended medication discrepancies at the time of hospital admission. *Archives of Internal Medicine*, 165(4), 424-429. doi:10.1001/archinte.165.4.424
- Mueller, S. K., Sponsler, K. C., Kripalani, S., & Schnipper, J. L. (2012). Hospital-based medication reconciliation practices: A systematic review. *Archives of Internal Medicine*, 172(14), 1057-1069. doi: 10.1001/archinternmed.2012.2246



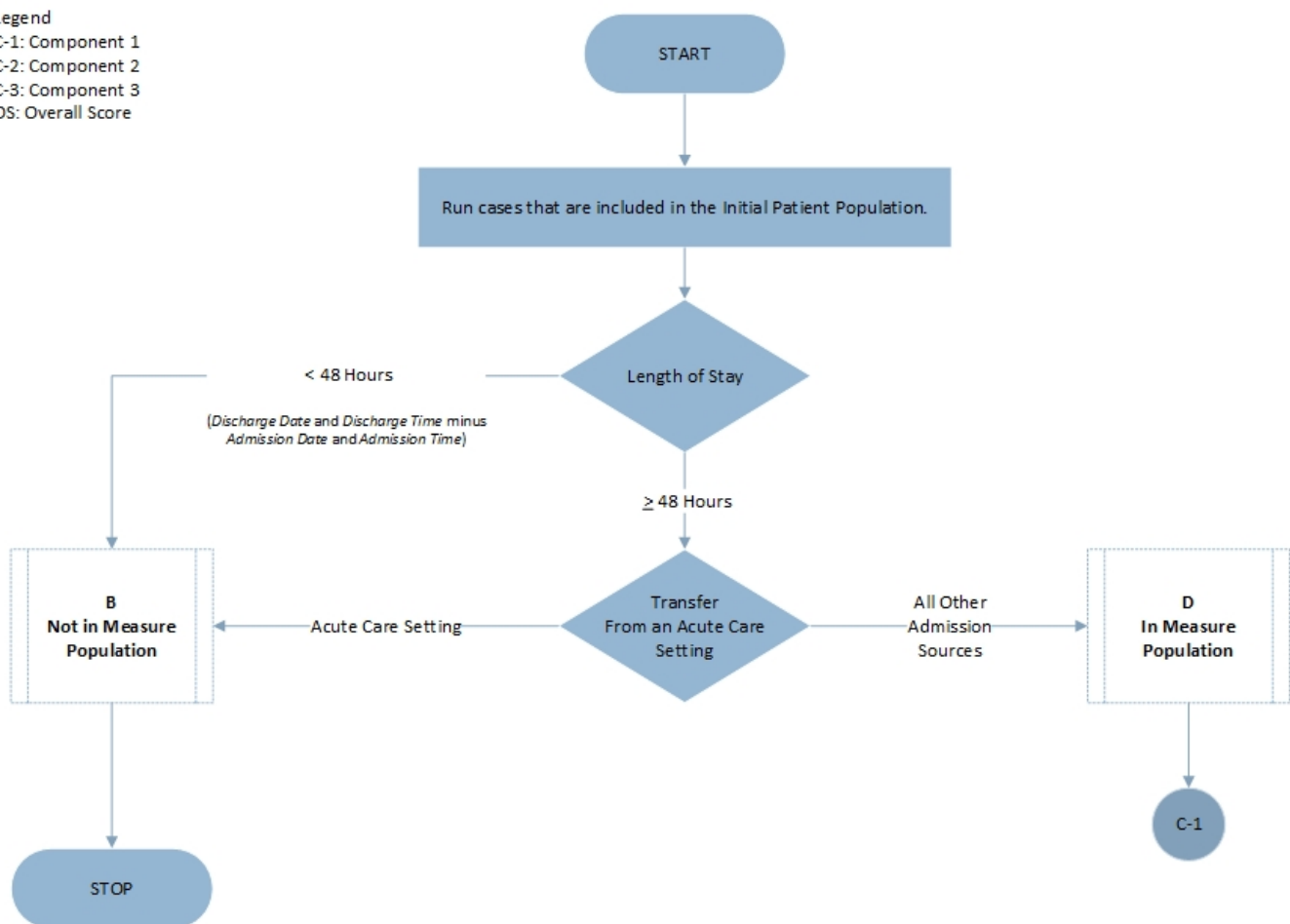
**Measure Name:** Medication Reconciliation on Admission

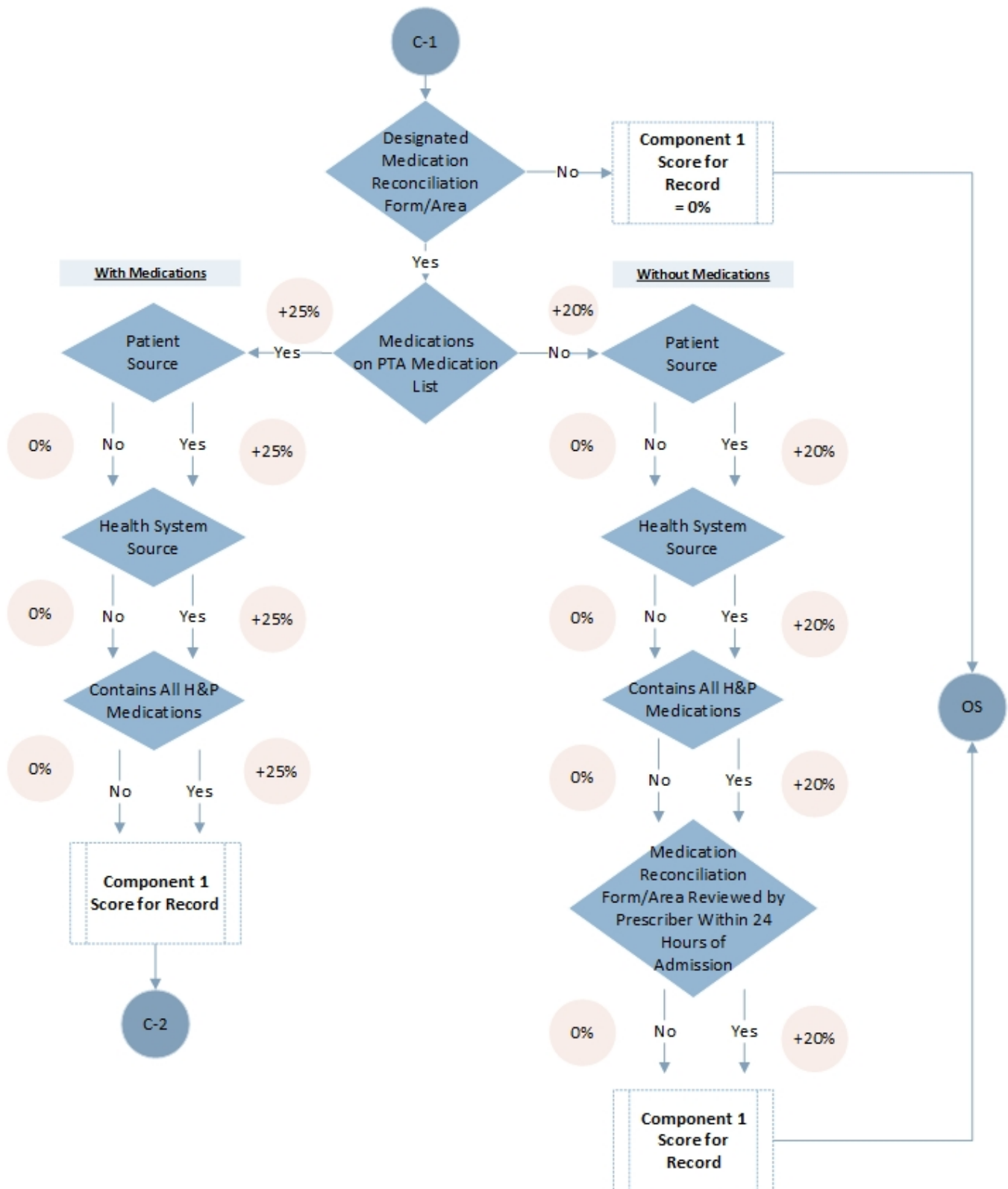
**Numerator Statement:** The numerator is a facility-level score of the completeness of the medication reconciliation process within 48 hours of admission. This score is calculated by averaging the scores of the three components of the medication reconciliation process.

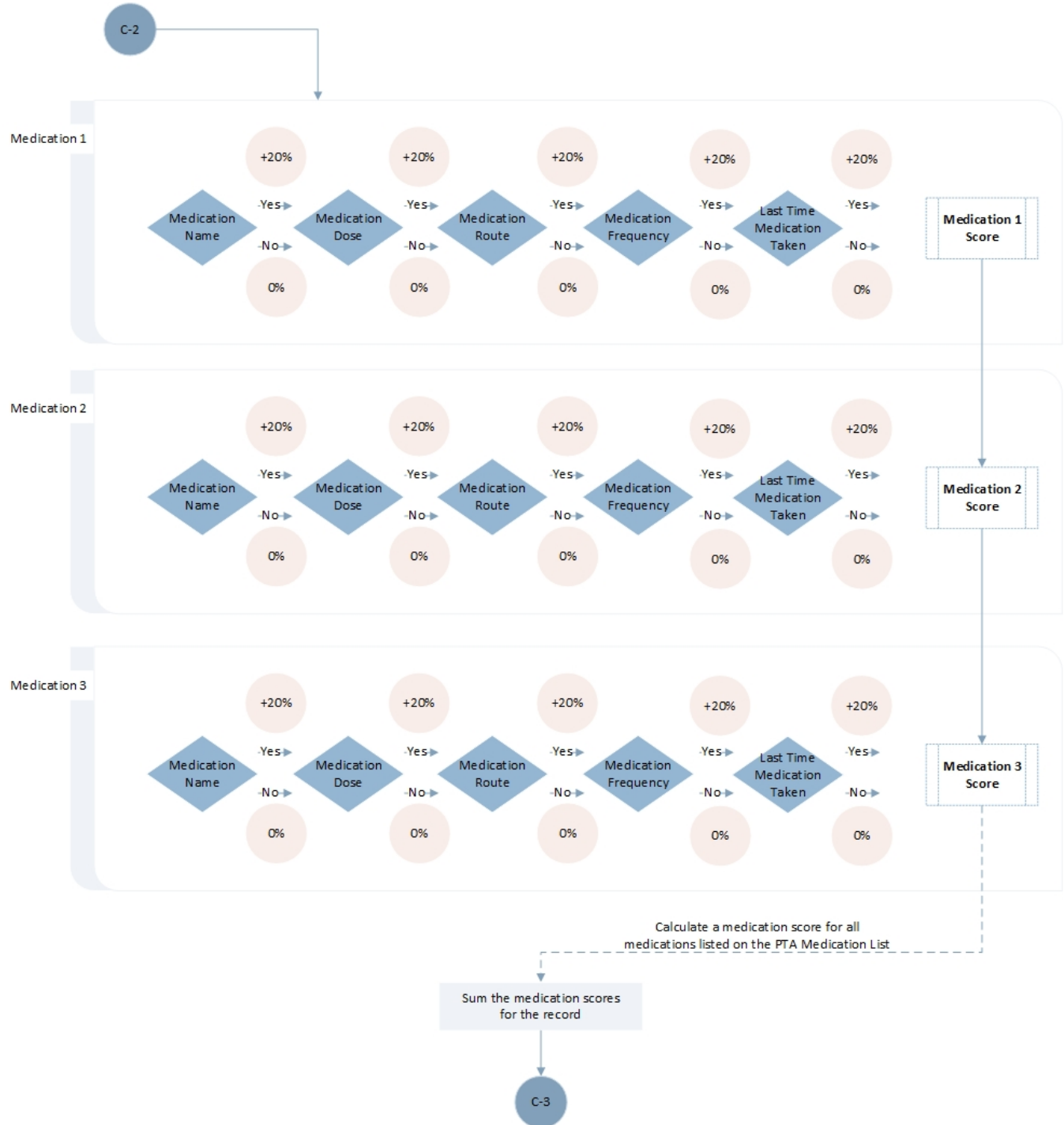
**Denominator Statement:** The same denominator applies to each component: Admissions to an inpatient facility from home or a non-acute setting with a length of stay greater than or equal to 48 hours.

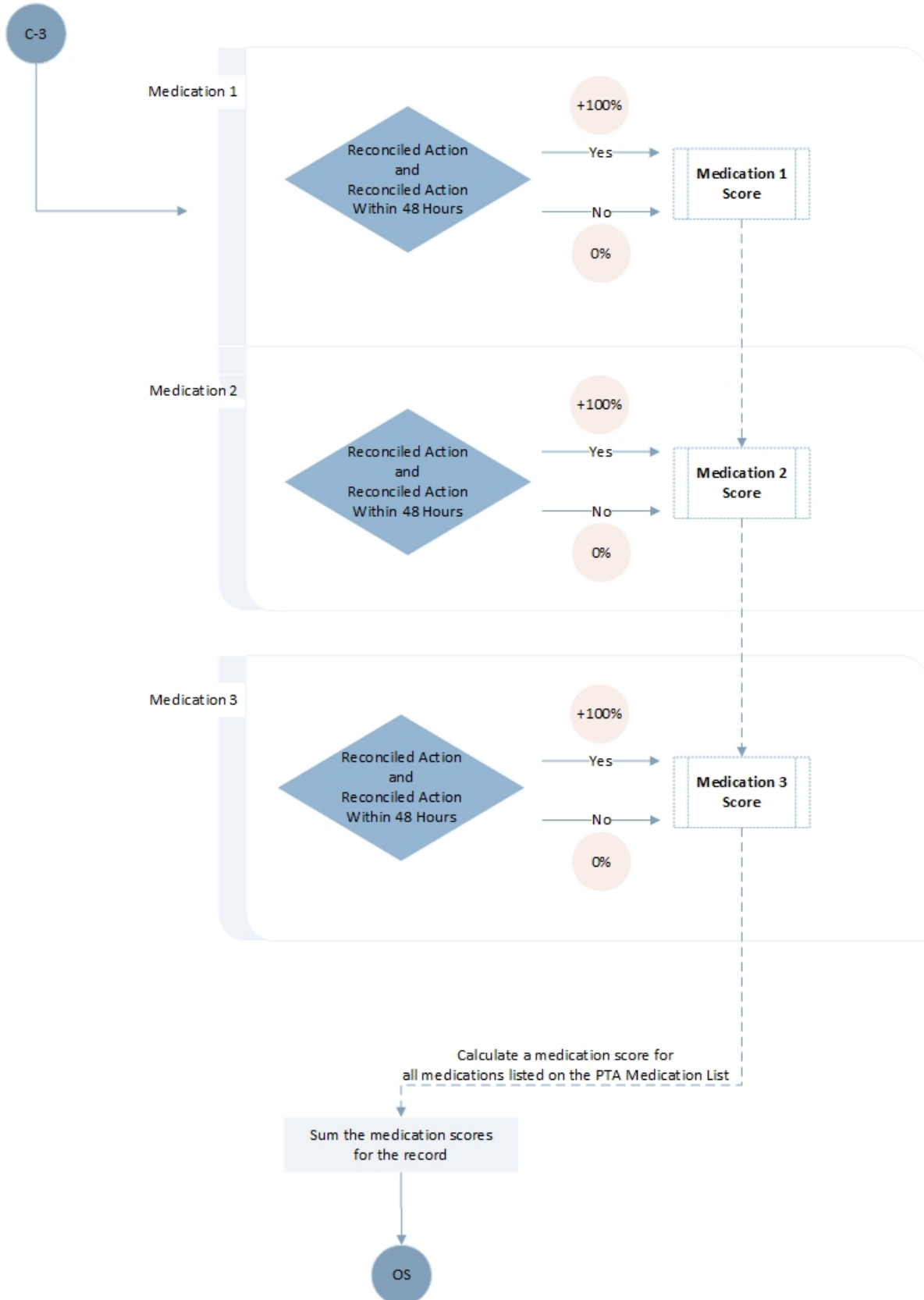
Legend

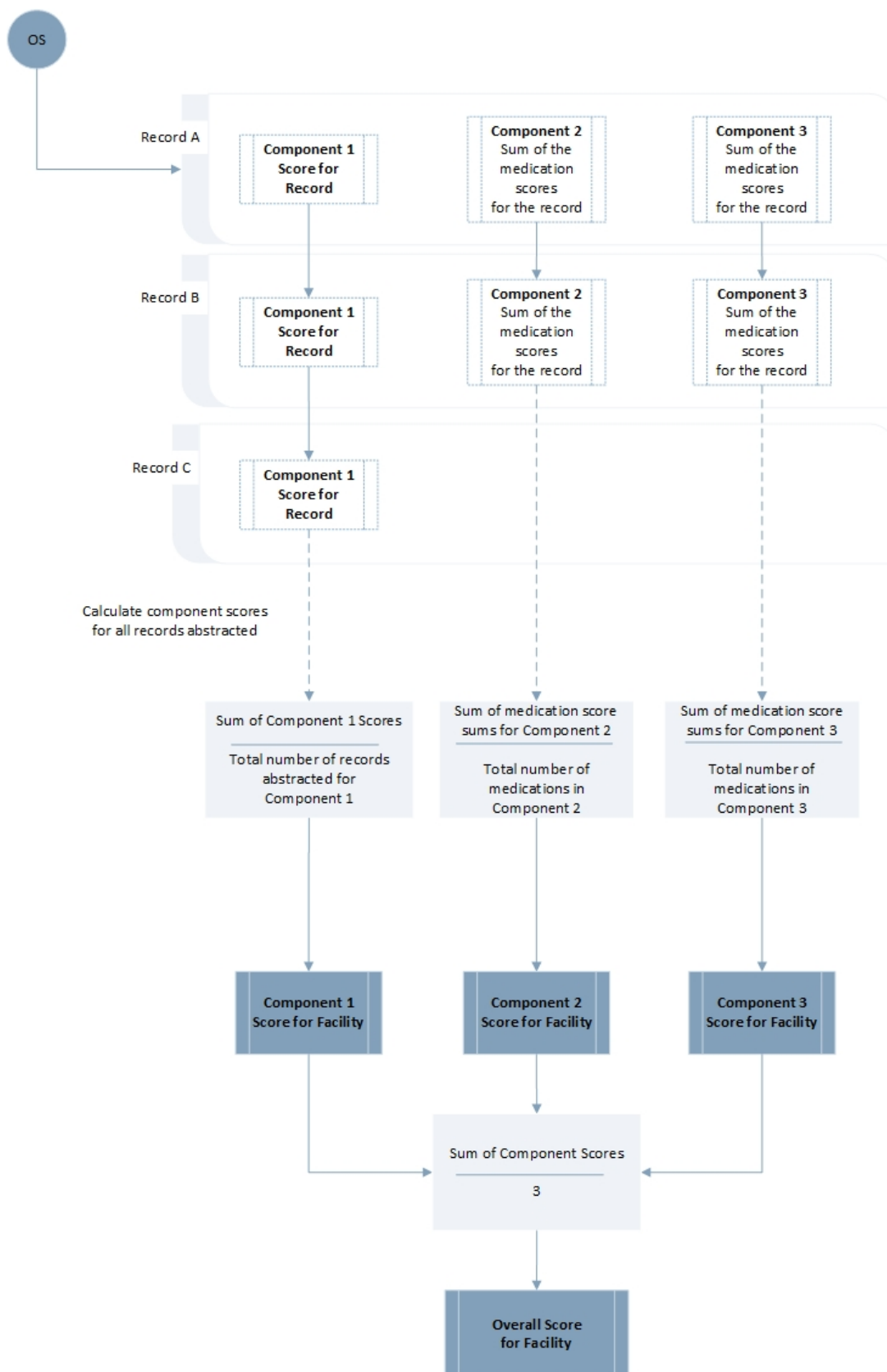
C-1: Component 1  
C-2: Component 2  
C-3: Component 3  
OS: Overall Score











## Medication Reconciliation on Admission Narratives

**Numerator Statement:** The numerator is a facility-level score of the completeness of the medication reconciliation process within 48 hours of admission. This score is calculated by averaging the scores of the three components of the medication reconciliation process.

**Denominator Statement:** The same denominator applies to each component: Admissions to an inpatient facility from home or a non-acute setting with a length of stay greater than or equal to 48 hours.

### Measure Population:

1. Start processing. Run cases that are included in the Initial Patient Population.
2. Check Length of Stay (automatically calculated in hours as equal to the Discharge Date and Time minus the Admission Date and Time).
  - a. If the length of stay is greater than or equal to 48 hours, proceed to Transfer From an Acute Care Setting.
  - b. If the length of stay is less than 48 hours, the record will be excluded. Stop processing.
3. Check Transfer From an Acute Care Setting.
  - a. If the patient was admitted from any other admission source, proceed to Component 1 (C-1).
  - b. If the patient was transferred from an acute care setting, the record will be excluded. Stop processing.

### Component 1 (C-1)

4. Check Designated Medication Reconciliation Form/Area.
  - a. If the Designated Medication Reconciliation Form/Area equals "Yes," proceed to the Medications on PTA Medication List.
  - b. If the Designated Medication Reconciliation Form/Area equals "No," the C-1 Score for the record will equal zero percent and will count toward the facility's Overall Score. Proceed to Overall Score.
5. Check Medications on PTA Medication List.
  - a. If Medications on PTA Medication List equals "Yes," the record will receive 25 percentage points for this data element in C-1 (with medications). Proceed to Patient Source (with medications).
  - b. If Medications on PTA Medication List equals "No," the record will receive 20 percentage points for this data element in C-1 (without medications). Proceed to Patient Source (without medications).
6. Check Patient Source (with medications).
  - a. If Patient Source (with medications) equals "Yes," the record will receive 25 additional percentage points for this data element in C-1 (with medications). Proceed to Health System Source (with medications).

- b. If Patient Source equals “No,” the record will receive zero percentage points for this data element in C-1 (with medications). Proceed to Health System Source (with medications).
- 7. Check Patient Source (without medications).
  - a. If Patient Source (without medications) equals “Yes,” the record will receive 20 additional percentage points for this data element in C-1 (without medications). Proceed to Health System Source (without medications).
  - b. If Patient Source (without medications) equals “No,” the record will receive zero percentage points for this data element in C-1 (without medications). Proceed to Health System Source (without medications).
- 8. Check Health System Source (with medications).
  - a. If Health System Source (with medications) equals “Yes,” the record will receive 25 additional percentage points for this data element in C-1 (with medications). Proceed to Contains All H&P Medications (with medications).
  - b. If Health System Source (with medications) equals “No,” the record will receive zero percentage points for this data element in C-1 (with medications). Proceed to Contains All H&P Medications (with medications).
- 9. Check Health System Source (without medications).
  - a. If Health System Source (without medications) equals “Yes,” the record will receive 20 additional percentage points for this data element in C-1 (without medications). Proceed to Contains All H&P Medications (without medications).
  - b. If Health System Source (without medications) equals “No,” the record will receive zero percentage points for this data element in C-1 (without medications). Proceed to Contains All H&P Medications (without medications).
- 10. Check Contains All H&P Medications (with medications).
  - a. If Contains All H&P Medications (with medications) equals “Yes,” the record will receive 25 additional percentage points for this data element in C-1 (with medications). Proceed to Component 2 (C-2).
  - b. If Contains All H&P Medications (with medications) equals “No,” the record will receive zero percentage points for this data element in C-1 (with medications). Proceed to C-2.
- 11. Check Contains All H&P Medications (without medications).
  - a. If Contains All H&P Medications (without medications) equals “Yes,” the record will receive 20 additional percentage points for this data element in C-1 (without medications). Proceed to Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 Hours of Admission.
  - b. If Contains All H&P Medications (without medications) equals “No,” the record will receive zero percentage points for this data element in C-1 (without medications). Proceed to Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 hours of Admission.
- 12. Check Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 Hours of Admission.
  - a. If Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 Hours of Admission equals “Yes,” the record will receive 20 additional percentage



- points for this data element in C-1 (without medications). Proceed to Overall Score for the facility.
- b. If Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 Hours of Admission equals “No,” the record will receive zero percentage points for this data element in C-1 (without medications). Proceed to Overall Score for the facility.

**Component 2 (C-2)**

- 13. Check Medication Name.
  - a. For each medication, if the Medication Name equals “Yes or Documented,” the record will receive 20 percentage points for this data element toward C-2. Proceed to Medication Dose.
  - b. For each medication, if the Medication Name equals “No or Not Documented,” the record will receive zero percentage points for this data element toward C-2. Proceed to Medication Dose.
- 14. Check Medication Dose.
  - a. For each medication, if the Medication Dose equals “Yes or Documented,” the record will receive 20 percentage points for this data element toward C-2. Proceed to Medication Route.
  - b. For each medication, if the Medication Dose equals “No or Not Documented,” the record will receive zero percentage points for this data element toward C-2. Proceed to Medication Route.
- 15. Check Medication Route.
  - a. For each medication, if the Medication Route equals “Yes or Documented,” the record will receive 20 percentage points for this data element toward C-2. Proceed to Medication Frequency.
  - b. For each medication, if the Medication Route equals “No or Not Documented,” the record will receive zero percentage points for this data element toward C-2. Proceed to Medication Frequency.
- 16. Check Medication Frequency.
  - a. For each medication, if the Medication Frequency equals “Yes or Documented,” the record will receive 20 percentage points for this data element toward C-2. Proceed to Last Time Medication Taken.
  - b. For each medication, if the Medication Frequency equals “No or Not Documented,” the record will receive zero percentage points for this data element toward C-2. Proceed to Last Time Medication Taken.
- 17. Check Last Time Medication Taken.
  - a. For each medication, if the Last Time Medication Taken equals “Yes or Documented,” the record will receive 20 percentage points for this data element toward C-2. Proceed to step 18.
  - b. For each medication, if the Last Time Medication Taken equals “No or Not Documented,” the record will receive zero percentage points for this data element toward C-2. Proceed to step 18.
- 18. Calculate an overall medication score for each medication listed on the PTA Medication list.



19. Determine the medication score for the record by calculating the sum of all medication scores. Proceed to Component 3 (C-3).

**Component 3 (C-3)**

20. Check Medication Reconciled Action Within 48 Hours of Admission.
  - a. For each medication, if Reconciled Action and Medication Reconciled Action Within 48 Hours of Admission equals “Yes,” the record will receive 100 percentage points for this data element toward C-3. Proceed to step 21.
  - b. For each medication, if Reconciled Action and Medication Reconciled Action Within 48 Hours of Admission equals “No,” the record will receive zero percentage points for this data element toward C-3. Proceed to step 21.
21. Calculate an overall medication score for each medication listed on the PTA Medication list.
22. Determine the medication score for the record by calculating the sum of all medication scores. Proceed to Overall Score for the facility.

**Overall Score**

23. Determine the C-1 Score for the facility by calculating the sum of all C-1 scores divided by the total number of records abstracted for C-1.
24. Determine the C-2 Score for the facility by summing all of the record-level medication score sums for C-2 and dividing by the total number of medications abstracted in the facility sample.
25. Determine the C-3 Score for the facility by summing all of the record-level medication score sums for C-3 and dividing by the total number of medications abstracted in the facility sample.
26. Determine the Overall Score for the facility by calculating the sum of the scores obtained in steps 23, 24, and 25 dividing by 3.

## Draft Data Dictionary

**Data Element Name:** Admission Date

**Definition:** The month, day, and year of admission to an inpatient facility.

**Suggested Data Collection Question:** What was the date the patient was admitted to the inpatient facility?

**Format:**

**Length:** 10 – MM-DD-YYYY (includes dashes)

**Type:** Date

**Occurs:** 1

**Allowable Values:**

Date:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (20xx)

**Notes for Abstraction:**

- The intent of this data element is to determine the date that the patient was admitted to an inpatient facility, as evidenced by an admission order. Because this data element is critical in determining the population for the measure, the abstractor should NOT assume that the billing or claim information for the admission date is correct. If the abstractor determines through chart review that the date from billing is incorrect, for purposes of abstraction, she/he should enter the correct admission date and time documented in the admission order. Admission dates from billing information should only be considered if the admission order is not available or does not include a date.
- For patients who are admitted to Observation status and subsequently admitted to inpatient care, abstract the date that the order was made to admit to inpatient care. Do not abstract the date that the patient was admitted to Observation.

Example: Medical record documentation reflects that the patient was admitted to observation on 04-05-20xx. On 04-06-20xx, the physician writes an order to admit to inpatient care effective 04-05-20xx. The Admission Date would be abstracted as 04-06-20xx, the date the determination was made to admit to inpatient care and the order was written.

- If there are multiple inpatient admission orders, use the order that most accurately reflects the date that the patient was admitted, based on other documentation in the record.

- For interrupted stays, where the patient is readmitted to the facility, use the admission order that most accurately reflects the admission date that corresponds to the stay that is being reviewed.

**Suggested Data Sources:**

**Note:** The physician order is the priority data source for this data element.

**Only Allowable Sources:**

1. Physician order
2. Face sheet
3. UB-04

**Excluded Data Sources:**

UB-04 “From” and “Through” dates

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

- Admit to observation
- Arrival date
- Emergency department (ED) admission date
- ED admission date

**Data Element Name:** Admission Time

**Definition:** The time of admission to an inpatient facility.

**Suggested Data Collection Question:** What was the time the patient was admitted to the inpatient facility?

**Format:**

**Length:** 5 – HH:MM (with or without colon) or UTD (unable to determine)

**Type:** Time

**Occurs:** 1

**Allowable Values:**

Time: Military

HH = (00-23)

MM = (00-59)

- Time must be recorded in military time format.
- With the exception of Midnight and Noon:
  - If the time is in the a.m., conversion is not required.
  - If the time is in the p.m., add 12 to the clock time hour.

Examples:

Midnight - 00:00      Noon - 12:00

5:31 am - 05:31      5:31 pm - 17:31

11:59 am - 11:59      11:59 pm - 23:59

**Notes for Abstraction:**

- The intent of this data element is to determine the time that the patient was officially admitted to the inpatient facility, as evidenced by an admission order. If the admission order is not available or does not include the order time, billing information can be used to determine the admission time.
- For times that include “seconds,” remove the seconds and record the military time.  
  
Example: 15:00:35 would be recorded as 15:00.
- If the time of the decision to admit to inpatient cannot be determined from medical record or billing documentation, enter “UTD” (unable to determine).
- The medical record must be abstracted as documented (taken at “face value”). If the time documented is in error (not a valid format/range) and no other documentation is found that provides this information, the abstractor should enter “UTD” (unable to determine).

Example: Documentation indicates the Admit Time was 3300. No other documentation in the list of ONLY Acceptable Sources provides a valid time. Since the Admit Time is outside of the range in the Allowable Values for “Hour,” it is not a valid time and the abstractor should enter “UTD.”

- When reviewing the medical record do NOT include any documentation from external sources (e.g., ambulance records, physician/advanced practice nurse/physician assistant [physician/APN/PA] office record, laboratory reports, or ECGs) obtained prior to arrival concerning the admission time. The intent is to utilize any documentation which reflects processes that occurred in the hospital.
- For patients who are admitted to Observation status and subsequently admitted to inpatient care, abstract the time that the order was made to admit to inpatient care. Do not abstract the time when the patient was admitted to Observation.

Example: Medical record documentation reflects that the patient was admitted to observation at 15:00 on 04-05-20xx. On 04-06-20xx at 7:30 a.m., the physician writes an order to admit to inpatient care effective 04-05-20xx. The Admission Time would be abstracted as 07:30, the date the determination was made to admit to inpatient care and the order was written.

- If there are multiple inpatient orders, use the order that most accurately reflects the date that the patient was admitted, based on other documentation in the record.
- For interrupted stays, where the patient is readmitted to the facility, use the admission order that most accurately reflects the admission date/time that corresponds to the stay that is being reviewed.

**Suggested Data Sources:**

**Note:** The physician order is the priority data source for this data element. If there is not a physician order in the medical record, use the other allowable sources to determine the *Admission Date and Time*.

**Only Allowable Sources:**

1. Physician order
2. Face sheet
3. UB-04

**Excluded Data Sources:**

None

**Inclusion Guidelines for Abstraction:**

- Admit order time

**Exclusion Guidelines for Abstraction:**

- Admit to observation time
- Arrival time
- Bed assignment time
- Emergency department (ED) admission time
- Report called time

**Data Element Name:** Contains All H&P Medications

**Definition:** The medications on the PTA Medication List in the Medication Reconciliation Form/Area include all medications listed in the H&P or equivalent document.

**Suggested Data Collection Question:** Are all medications in the H&P or equivalent document listed in the PTA Medication List in the Medication Reconciliation Form/Area?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes) All medications listed in the H&P or equivalent document are listed in the PTA Medication List.

0 (No) Not all medications listed in the H&P or equivalent document are listed in the PTA Medication List.

**Notes for Abstraction:**

- The intent of this data element is to ensure that all medications the patient is taking prior to admission are contained within the PTA Medication List to avoid potential medication errors. A comparison of the PTA Medication List and the H&P or equivalent document is needed to determine that all medications in the H&P or equivalent document were included on the PTA Medication List.
- Medications that are listed in the narrative of the H&P or equivalent document should be compared to those on the PTA list in the Medication Reconciliation Form/Area.
- The PTA medication list can include more medications than the H&P or equivalent document, but it must include at a minimum all medications listed on the H&P or equivalent document.
- An equivalent document to the H&P may include a Full Psychiatric Evaluation or other formal admission notes by the admitting physician. However, regardless of the document chosen for abstraction, only one document may be referenced by a given facility and this document must be used for all charts submitted in the measurement year.
- The abstractor should choose “1 (Yes),” if all medications noted in the H&P or equivalent document were included on the PTA Medication List.
- The abstractor should choose “0 (No),” if there were any medications noted in the H&P or equivalent document that were not included on the PTA Medication List.

**Suggested Data Sources:**

- PTA Medication List in the Medication Reconciliation Form/Area.



- Either H&P or equivalent document (e.g., comprehensive initial psychiatric evaluation) prepared by the admitting physician aimed at capturing the patient's history on admission, including the PTA medications. Note: Only one of these sources should be referenced. Select the appropriate document for comparison, based on the standard workflow at your facility.

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Designated Medication Reconciliation Form/Area

**Definition:** Documentation in the medical record on a form or within an area exclusively designated to capture a comprehensive list of all medications that the patient was taking prior to admission (Prior to Admission [PTA] Medication List) and used for the purpose of reconciling each medication.

**Suggested Data Collection Question:** Does the medical record contain a dedicated Medication Reconciliation Form/Area that includes the PTA Medication List?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      There is a designated Medication Reconciliation Form/Area that is located outside of a progress note or history and physical (H&P).

0 (No)      There is a no designated Medication Reconciliation Form/Area that is located outside of a progress note or H&P.

**Notes for Abstraction:**

- The abstractor should choose “1 (Yes)” if the record contains a designated form/area for the documentation of the PTA Medication List, even if there are no PTA medications listed or the form/area is blank.
- The abstractor should choose “0 (No)” if:
  - The record does not contain a form/area for the documentation of the PTA Medication List.
  - The PTA Medication List is documented on a practitioner’s note or in a form/area not exclusively designated for medication reconciliation (e.g., H&P, progress notes, nurse’s notes, admissions record).

**Only Allowable Sources:**

Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

- A PTA Medication List that is documented on a practitioner’s note (e.g., H&P, progress notes, nurse’s note, admissions record) but not in a designated form/area of the chart to perform the medication reconciliation.

**Data Element Name:** Discharge Date

**Definition:** The month, day, and year of discharge from an inpatient facility.

**Suggested Data Collection Question:** What was the date the patient was discharged from the inpatient facility?

**Format:**

**Length:** 10 – MM-DD-YYYY (includes dashes)

**Type:** Date

**Occurs:** 1

**Allowable Values:**

Date:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (20xx)

**Notes for Abstraction:**

Because this data element is critical in determining the population for the measure, the abstractor should NOT assume that the claim information for the discharge date is correct. If the abstractor determines through chart review that the date is incorrect, she/he should correct and override the value. If the abstractor is unable to determine the correct discharge date through chart review, she/he should default to the discharge date on the claim information.

**Only Allowable Sources:**

1. Physician orders
2. Death certificate
3. Discharge summary
4. Nursing discharge notes
5. Transfer note
6. Face sheet
7. UB-04

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Discharge Time

**Definition:** The time of discharge from an inpatient facility.

**Suggested Data Collection Question:** What was the time the patient was discharged from the inpatient facility?

**Format:**

**Length:** 5 –HH:MM (includes colon)

**Type:** Time

**Occurs:** 1

**Allowable Values:**

Time: Military

HH = (00-23)

MM = (00-59)

- Time must be recorded in military time format.
- With the exception of Midnight and Noon:
  - If the time is in the a.m., conversion is not required.
  - If the time is in the p.m., add 12 to the clock time hour.

Examples:

Midnight - 00:00      Noon - 12:00

5:31 am - 05:31      5:31 pm - 17:31

11:59 am - 11:59      11:59 pm - 23:59

**Notes for Abstraction:**

- If the time the patient expired is unable to be determined from medical record documentation, enter “UTD.”
- The medical record must be abstracted as documented (taken at “face value”). When the time documented is obviously in error (not a valid date/format) and no other documentation is found that provides this information, the abstractor should enter “UTD.”

Example:

Documentation indicates the patient expired at 26-42-20xx. No other documentation in the medical record provides a valid date. Since the Time Expired is outside of the range listed in the Allowable Values for “Hour,” it is not a valid time and the abstractor should enter “UTD.”

- If the patient expired and there are multiple times, such as a time the patient was pronounced in physician notes and an administrative time the patient was discharged, use the time the patient was pronounced.
- If the patient was transferred out to another facility or to home, use the time the patient actually left, not the time the order was written.

- If there are multiple times documented when the patient left, use the earliest time.

**Only Allowable Sources:**

1. Physician orders
2. Death certificate
3. Discharge summary
4. Nursing discharge notes
5. Transfer note
6. Face sheet
7. UB-04

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Health System Source

**Definition:** Documentation that a health system source was used to generate the PTA Medication List.

**Suggested Data Collection Question:** Was at least one health system source from the acceptable list referenced to generate the PTA Medication List in the Medication Reconciliation Form/Area?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      There is documentation that a health system source was referenced to generate the PTA Medication List.

0 (No)      There is no documentation that a health system source was referenced to generate the PTA Medication List.

**Notes for Abstraction:**

- There should be explicit documentation in each medical record that at least one of the acceptable health system sources listed below was used to generate the PTA medication list:
  - Electronic prescribing network system (e.g., Allscripts®, Surescripts®) or aggregate pharmacy billing data (e.g., claims data using state/federal healthcare plans)
  - Nursing home
  - Outpatient provider or emergency department
  - Retail pharmacy (or attempt made to contact within 48 hours of admission)
  - Prescription Drug Monitoring Program (PDMP)
  - Prescription in medical record from a prior encounter
- The intent of this data element is to ensure that facilities gather a comprehensive PTA Medication List by considering information obtained from the Health System Source category. The intent is not to capture a Health System Source for each medication, but rather capture documentation that demonstrates that at least one of the acceptable Health System Sources were referenced to generate the PTA Medication List.
- Health system sources are not confined to information from prior encounters that are available in the medical record. They can also include information that is provided upon request by the inpatient facility from pharmacies, outpatient providers, or other institutional settings.

- The abstractor should choose “1 (Yes),” if there is documentation that an attempt was made within 48 hours of admission to contact a retail pharmacy to obtain a list of PTA medications, but the retail pharmacy was closed.

**Suggested Data Sources:**

Any documentation referencing health system sources in the medical record may be considered.

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Last Time Medication Taken

**Definition:** Documentation in the Medication Reconciliation Form/Area of the time since the last medication dose was taken by the patient prior to arrival at the inpatient facility.

**Suggested Data Collection Question:** Was documentation of the last dose taken by the patient prior to arrival at the inpatient facility present in the Medication Reconciliation Form/Area?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      The documentation of when the medication was last taken by the patient is present.

0 (No)      The documentation of when the medication was last taken by the patient is not present.

**Notes for Abstraction:**

- The abstractor must choose a response for each medication listed on the PTA Medication List in the Medication Reconciliation Form/Area.
- Consider only FDA-approved medications. FDA-approved medications include prescribed and over-the-counter medications.
- The abstractor should choose “1 (Yes),” if:
  - There is documentation of when the last dose was taken, even if that time period was prolonged (e.g., 3 months ago). Other examples of documented time since last dose include: today, yesterday, *n* hours/days/weeks ago.
  - It is clearly stated that a patient is no longer actively taking the medication.
  - There is documentation that the “patient does not remember” or documentation that the patient was clinically unable to communicate when the last dose was taken.  
Note: this specific allowance is acceptable only for the Last Time Medication Taken data element and is not allowed for the Medication Name, Medication Dose, Medication Route, or Medication Frequency data elements because the Last Time Medication Taken cannot likely be identified from a health system source or patient proxy.
- The abstractor should choose “0 (No)” for a given medication if there is no documentation of the last time the medication was taken in the Medication Reconciliation Form/Area.

**Only Allowable Sources:**

PTA Medication List in Medication Reconciliation Form/Area



**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Length of Stay

**Definition:** Determination whether the length of stay in the inpatient psychiatric facility was 48 hours or more.

**Suggested Data Collection Question:** Was length of stay during the inpatient facility admission 48 hours or more?

**Format:****Length:** 1**Type:** Numerical**Occurs:** 1**Allowable Values:**

1 (Yes)      The patient was admitted to the inpatient facility for 48 or more hours.

0 (No)      The patient was admitted to the inpatient facility for less than 48 hours.

**Notes for Abstraction:**

- This data element is auto-populated, using the following formula: *Discharge Date and Discharge Time* minus the *Admission Date and Admission Time*.

**Only Allowable Sources:**

- Date and Time entered in the *Discharge Date and Discharge Time* data elements
- Date and Time entered in the *Admission Date and Admission Time* data elements

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Medication Dose

**Definition:** Documentation in the Medication Reconciliation Form/Area of a dose described by a specific amount of a medication administered in a single dose that the patient was taking prior to admission.

**Suggested Data Collection Question:** Was documentation of a valid dose present in the Medication Reconciliation Form/Area?

**Format:****Length:** 1**Type:** Numerical**Occurs:** 1**Allowable Values:**

1 (Yes)      There is a valid documented dose for the listed PTA medication.

0 (No)      There is no valid documented dose for the listed PTA medication.

**Notes for Abstraction:**

- The abstractor must choose a response for each medication on the PTA Medication List in the Medication Reconciliation Form/Area.
- Only consider the dose of FDA-approved medications. FDA-approved medications include prescribed or over-the-counter medications.
- A valid documented dose must include both a numeric value and unit (e.g., ml, mg, units).

Example: 1 tablet, 1 puff, 1,000 mg, 2 drops, 1 suppository, 1 patch, pea size amount of gel, one inch of ointment, inhale 2 actuations, etc.

**Only Allowable Sources:**

PTA Medication List in Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Medication Frequency

**Definition:** Documentation in the Medication Reconciliation Form/Area of the frequency of the medication that was taken by the patient prior to admission.

**Suggested Data Collection Question:** Was documentation of the frequency each medication was taken present in the Medication Reconciliation Form/Area?

**Format:****Length:** 1**Type:** Numerical**Occurs:** 1**Allowable Values:**

1 (Yes)      There is a documented frequency for the listed PTA medication.

0 (No)      There is no documented frequency for the listed PTA medication.

**Notes for Abstraction:**

- The abstractor must choose a response for each medication on the PTA Medication List in the Medication Reconciliation Form/Area.
- Only consider the frequency of FDA-approved medications. FDA-approved medications include prescribed or over-the-counter medications.  
A valid frequency must include the number of administrations in a specified time period.

Example: 1 per day/week/month, once a day, every 6 hours

- As needed (PRN) is an acceptable frequency.
- Some medications are only used at one specific frequency; however, the abstractor should not assume a time interval/frequency. The frequency must be explicitly documented in the PTA Medication List.

Example: If the medical record states the medication name *Abilify Maintena* (which is a medication that is only used every 4 weeks), do not assume that the medication frequency is every 4 weeks unless explicitly stated.

**Only Allowable Sources:**

PTA Medication List in the Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Medication Name

**Definition:** Documentation in the Medication Reconciliation Form/Area of the name of the FDA-approved medication that the patient was taking prior to admission as documented on the PTA Medication List.

**Suggested Data Collection Question:** Was documentation of the medication name present in the Medication Reconciliation Form/Area?

**Format:****Length:** 1**Type:** Numerical**Occurs:** 1**Allowable Values:**

1 (Yes)      There is an FDA-approved medication name documented for the listed PTA medication.

0 (No)      There is no FDA-approved medication name documented for the listed PTA medication.

**Notes for Abstraction:**

- The abstractor must choose a response for each medication on the PTA Medication List in the Medication Reconciliation Form/Area.
- Only consider the name of FDA-approved medications. FDA-approved medication names can include both brand or generic names and can include prescribed and over-the-counter medications.
- Medication names should allow unambiguous identification of one specific medication.

Example: "Insulin" does not identify the type of insulin a patient is using, while "Lantus" does. Distinction of sustained versus immediate release dosage forms is not expected.

**Only Allowable Sources:**

PTA Medication List in the Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Medication Reconciled Action Within 48 Hours of Admission

**Definition:** The reconciliation action for the medication on the PTA Medication List in the Medication Reconciliation Form/Area was documented within 48 hours of admission to the inpatient facility.

**Suggested Data Collection Question:** Was a date and time of the reconciliation action for the PTA medication documented in the Medication Reconciliation Form/Area within 48 hours of admission to the inpatient facility?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      The documented reconciliation action date and time for the listed PTA medication is within 48 hours of admission.

0 (No)      The documented reconciliation action date and time for the listed PTA medication is not within 48 hours of admission.

**Notes for Abstraction:**

- This data element is auto-populated, based on the following formula: *Reconciled Action Date and Time* minus the *Admission Date and Admission Time*.

**Only Allowable Sources:**

- Date\_Time entered in the *Reconciled Action Date and Time* data elements
- Date\_Time entered in the *Admission Date and Admission Time* data elements

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Medication Reconciliation Form/Area Reconciled Date and Time

**Definition:** Documented date and time the licensed prescriber reviewed the reconciled Medication Reconciliation Form/Area.

**Suggested Data Collection Question:** What was the date and time the Medication Reconciliation Form/Area was reviewed by a licensed prescriber?

**Format:**

**Length:** 16 – MM-DD-YYYY HH:MM (includes dashes, space and colon)

**Type:** Date\_Time

**Occurs:** 1

**Allowable Values:**

Date:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (20xx)

Time: Military

HH = (00-23)

MM = (00-59)

- Time must be recorded in military time format.
- With the exception of Midnight and Noon:
  - If the time is in the a.m., conversion is not required.
  - If the time is in the p.m., add 12 to the clock time hour.

Examples:

Midnight - 00:00      Noon - 12:00

5:31 am - 05:31      5:31 pm - 17:31

11:59 am - 11:59      11:59 pm - 23:59

**Notes for Abstraction:**

- Enter the date and time that the Medication Reconciliation Form/Area was reviewed by a licensed prescriber.
- An explicit statement by the prescriber is not necessary, a prescriber's signature, date and time is sufficient.
- This data element must be completed for all PTA Medication Lists that do not include any medications.
- If no signature by a licensed prescriber or no date and time are available, enter UTD (unable to determine).

**Only Allowable Sources:**

Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None



**Data Element Name:** Medication Reconciliation Form/Area Reviewed by Prescriber Within 48 hours of Admission

**Definition:** The Medication Reconciliation Form/Area was reviewed by a prescriber within 48 hours of admission to the inpatient facility.

**Suggested Data Collection Question:** Was the date and time of the licensed prescriber review of the Medication Reconciliation Form/Area within 48 hours of admission to the inpatient facility?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

- |         |  |
|---------|--|
| 1 (Yes) | The date and time the Medication Reconciliation Form/Area was reviewed by a licensed prescriber is within 48 hours of admission.     |
| 0 (No)  | The date and time the Medication Reconciliation Form/Area was reviewed by a licensed prescriber is not within 48 hours of admission. |

**Notes for Abstraction:**

- This data element is auto-populated, based on the following formula: *Medication Reconciliation Form/Area Reconciled Date and Time* minus the *Admission Date and Admission Time*)  $\leq$  48 hours
- This question only applies if there are no medications on the PTA Medication List in the Medication Reconciliation Form/Area.
- The review by a licensed prescriber must be documented in the Medication Reconciliation Form/Area. Other documents that include such documentation are NOT acceptable.

**Only Allowable Sources:**

- Date\_Time entered in the *Medication Reconciliation Form/Area Reconciled Date and Time* data element
- Date\_Time entered in the *Admission Date and Time* data element

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Medication Route

**Definition:** Documentation in the Medication Reconciliation Form/Area of the route the medication was taken by the patient prior to admission.

**Suggested Data Collection Question:** Was documentation of the route the medication was taken prior to admission present in the Medication Reconciliation Form/Area?

**Format:****Length:** 1**Type:** Numerical**Occurs:** 1**Allowable Values:**

1 (Yes)      There is a documented route for the listed PTA medication.

0 (No)      There is no documented route for the listed PTA medication.

**Notes for Abstraction:**

- The abstractor must choose a response for each medication on the PTA Medication List in the Medication Reconciliation Form/Area.
- Only consider the route of FDA-approved medications. FDA-approved medications include prescribed or over-the-counter medications.
- When evaluating whether information is appropriate, the abstractor should not interpret the information on the PTA Medication List or make inferences; for example, even though insulin is only administered parenterally, the route must be documented in the Medication Reconciliation Form/Area to justify selection of “1 (Yes).”

**Only Allowable Sources:**

PTA Medication List in the Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Medications on PTA Medication List

**Definition:** Documentation of the presence of medications on the PTA Medication List in the Medication Reconciliation Form/Area.

**Suggested Data Collection Question:** Are there any medications listed in the PTA Medication List in the Medication Reconciliation Form/Area?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      There was at least one medication entered on the PTA Medication List.

0 (No)      There were no medications listed on the PTA Medication List.

**Notes for Abstraction:**

- If a PTA Medication List was generated, but there were no listed medications or the PTA Medication List is left blank, choose “0 (No).”

**Only Allowable Sources:**

PTA Medication List in the Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Patient Source

**Definition:** Documentation that at least one patient source was used to generate the PTA Medication List in the Medication Reconciliation Form/Area.

**Suggested Data Collection Question:** Was at least one patient source from the acceptable list referenced to generate the PTA Medication List in the Medication Reconciliation Form/Area or was the patient clinically unable to provide information on his/her medications?

**Format:****Length:** 1**Type:** Numerical**Occurs:** 1**Allowable Values:**

- |         |  |
|---------|--|
| 1 (Yes) | There is documentation that at least one patient-generated source was referenced to generate the PTA Medication List in the Medication Reconciliation Form/Area. |
| 0 (No)  | There is no evidence that any patient-generated sources were referenced to generate the PTA Medication List in the Medication Reconciliation Form/Area.          |

**Notes for Abstraction:**

- There should be explicit documentation in each medical record that at least one of the acceptable patient sources listed below was used to generate the PTA medication list:
  - Interview of the patient or patient proxy
  - Medication container brought in by patient or patient proxy
  - Medication list brought by patient or patient proxy
  - Patient clinically unable to provide medication information and a patient proxy was not available
  - Patient support network including a group home
- The intent of this data element is to ensure that facilities gather a comprehensive PTA Medication List by considering information obtained from the Patient Source category. The intent is not to capture a Patient Source for each medication, but rather capture documentation that demonstrates that at least one of the acceptable Patient Sources were referenced to generate the PTA Medication List.
- In addition to any notes/information contained within the Medication Reconciliation Form/Area, the entire medical record can be referenced to ascertain if patient-generated information was used to inform some of the data collected in the PTA Medication List. Only consider information that has been explicitly stated.

Example: A note includes “Patient states no longer taking this medication”, or “patient took this medication this morning”. Since interviewing the patient would have been necessary to obtain this information, it is correct to ascertain that a patient source was used to generate the PTA Medication List.

- Select 1 (Yes) if there is evidence that the patient was clinically unable to provide reliable information on the PTA medications. There must be specific documentation of a clinical factor that impeded the collection or ascertainment of any medication information. Statements that the patient is expected to be a poor historian are not acceptable clinical reasons to forego an interview; such scenarios suggest that a patient interview was possible even though the outcome may have been unsatisfactory. Examples of acceptable reasons a patient may be considered clinically unable to provide medication information are listed below:
  - Patient admitted with acute psychosis
  - Patient admitted in combative or delirious state

**Suggested Data Sources:**

Any documentation referencing patient-generated sources in the medical record may be considered.

**Inclusion Guidelines for Abstraction:**

None

**Exclusion Guidelines for Abstraction:**

None

**Data Element Name:** Reconciled Action

**Definition:** Documentation in the Medication Reconciliation Form/Area of a reconciled action (continued, discontinued, or modified) for each of the medications listed on the PTA Medication List.

**Suggested Data Collection Question:** Was documentation of a reconciled action present for the medication on the PTA Medication List in the Medication Reconciliation Form/Area?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      The reconciled action for the medication on the PTA Medication List is documented as either “Continued,” “Discontinued,” or “Modified.”

0 (No)      There is no documented reconciled action for the medication on the PTA Medication List.

**Notes for Abstraction:**

Any documentation that suggests the following three types of actions:

- Continued
- Discontinued
- Modified

Note of an initial decision including any of the 3 types of actions is satisfactory even if the order is later changed.

Example, a prescriber documents: “continue as ordered,” but after review of the order, the medication dosage, route, and/or frequency was actually modified. This scenario would qualify as an acceptable action for the medication and the abstractor should select 1 (Yes).

**Only Allowable Sources:**

Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements

**Data Element Name:** Reconciled Action Date and Time

**Definition:** Date and time the medication listed on the PTA Medication List in the Medication Reconciliation Form/Area was reconciled by a licensed prescriber.

**Suggested Data Collection Question:** What was the documented date and time that the licensed prescriber reconciled the medication on the PTA Medication List in the Medication Reconciliation Form/Area?

**Format:**

**Length:** 16 – MM-DD-YYYY HH:MM (includes dashes, space and colon)

**Type:** Date\_Time

**Occurs:** 1

**Allowable Values:**

Date:

MM = Month (01-12)

DD = Day (01-31)

YYYY = Year (20xx)

Time: Military

HH = (00-23)

MM = (00-59)

- Time must be recorded in military time format.
- With the exception of Midnight and Noon:
  - If the time is in the a.m., conversion is not required.
  - If the time is in the p.m., add 12 to the clock time hour.

Examples:

Midnight - 00:00      Noon - 12:00

5:31 am - 05:31      5:31 pm - 17:31

11:59 am - 11:59      11:59 pm - 23:59

**Notes for Abstraction:**

- For each medication, enter the date and time that the PTA medication was reconciled by the licensed prescriber.
- If the prescriber assigned a reconciled action for each medication and attested his/her review of the PTA Medication List with a single signature, date, and time, this same date and time can be used for each of the medications included as part of this attestation. If a medication is missing an associated reconciled action, then that medication cannot be attributed the same date and time. That medication would be considered as unreconciled.
- If a time is not available, enter UTD (unable to determine).

**Only Allowable Sources:**

Medication Reconciliation Form/Area

**Inclusion Guidelines for Abstraction:**

Only FDA-approved medications

**Exclusion Guidelines for Abstraction:**

Nutritional supplements



**Data Element Name:** Transfer From an Acute Care Setting

**Definition:** Documentation that the patient was received as a transfer from an acute care setting.

**Suggested Data Collection Question:** Was the patient admitted to the inpatient facility from an acute care setting?

**Format:**

**Length:** 1

**Type:** Numerical

**Occurs:** 1

**Allowable Values:**

1 (Yes)      The patient was admitted to the inpatient facility from an acute care setting.

0 (No)      The patient was not admitted to the inpatient facility from an acute care setting.

**Notes for Abstraction:**

- If admitted from an acute care setting, stop abstraction and select another case. An acute care setting includes: short-term acute care hospitals or inpatient psychiatric facilities.
- Select 1 (Yes) if the patient was:
  - Transferred to your hospital from an outside acute care setting where he/she was an inpatient. This applies even if the two acute care settings are close in proximity, part of the same system, have the same provider number, and/or there is one medical record.
- Select 0 (No) if the patient was:
  - Transferred from any emergency department (ED). This applies even if the emergency department is part of your hospital's system (e.g., your hospital's free-standing or satellite emergency department), has a shared medical record or provider number, or is in close proximity.
  - Transferred from a long-term acute care (LTAC): Any LTAC hospital or unit (outside or inside your hospital).
  - Transferred from acute rehabilitation: Rehab unit in outside hospital, free-standing rehab hospital/facility/pavilion outside your hospital, OR rehab hospital inside your hospital.
  - Transferred from the following other types of facilities:
    - Urgent care center
    - Dialysis center (unless documented as an outpatient department of an outside hospital)

- Same day surgery or other outpatient department inside your hospital
- Clinic (outside or inside your hospital)
- Assisted living facilities and nursing homes
- Skilled nursing facility (SNF) care: Any facility or unit (outside or inside your hospital) providing SNF level of care to patient

**For Conflicting Information or Unable to Determine Admission Source:**

- Select 1 (Yes) if there is conflicting documentation in the record, and you are unable to determine the admission source, UNLESS there is supporting documentation for one setting over the other.

**Examples:**

- One source reports patient was transferred from an outside inpatient acute care hospital; another source reports patient was transferred from an outside ED with no additional documentation. The information is conflicting; therefore, select “Yes.”
  - One source states patient came from physician office; another source reports patient was transferred from an outside acute care hospital, and transfer records from the outside acute care hospital are included in the record. Although there is conflicting documentation, there is more supporting documentation that the patient was transferred from an outside inpatient acute care hospital over the physician office. Select “Yes.”
- Select 0 (No) in cases other than conflicting documentation, you are unable to determine whether or not the patient was received as a transfer from an acute care setting (e.g., “Transferred from Park Meadows” documented—documentation is not clear whether Park Meadows is a hospital or not.).

**Suggested Data Sources:**

- Ambulance record
- Emergency department record
- Face sheet
- History and physical
- Nursing admission assessment
- Physician order
- Progress notes
- UB04 – Filed 15 (Source of Admission)

**Inclusion Guidelines for Abstraction:**

- Transfers from long-term care facilities
- Transfers from emergency departments

**Exclusion Guidelines for Abstraction:**

Patients admitted from an acute care setting

## Draft Measure Justification Form

**Project Title**

Inpatient Psychiatric Facility (IPF) Outcome and Process Measure Development and Maintenance

**Project Overview**

The Centers for Medicare & Medicaid Services (CMS) has contracted with HSAG to develop, maintain, reevaluate, and support the implementation of quality outcome and process measures for the CMS Inpatient Psychiatric Facility Quality Reporting (IPFQR) Program. The contract name is Inpatient Psychiatric Facility Outcome and Process Measure Development and Maintenance. The contract number is HHSM-500-2013-13007I; HHSM-500-T000.

**Type of Measure**

Composite

**Importance****1a—Opportunity for Improvement****1a.1.**

This is a measure of the average completeness of the medication reconciliation process within 48 hours of admission to an inpatient facility. The measure was constructed to assess the three elements of The Joint Commission's National Patient Safety Goal (NPSG.03.06.01) on medication safety that are relevant to the admission process (See Section 1a.3). To align with those goals, the measure assesses three components of the medication reconciliation process:

Component 1: Comprehensive prior to admission (PTA) medication information gathering and documentation

Component 2: Completeness of critical PTA medication information

Component 3: Reconciliation action for each PTA medication

It is important to measure all three components because incomplete or inaccurate PTA medication lists may result in inadequate medication reconciliation actions by the prescriber, the ultimate focus of this measure, which aims to prevent medication errors and adverse drug events. According to a 2015 study by the Agency for Healthcare Research and Quality (AHRQ), more than half of admitted patients' medication lists contain at least one discrepancy and 40% of these identified discrepancies have the potential to cause harm (AHRQ, 2015). These errors in prescription medication histories most commonly occur during the admission process (Cornish, et al., 2005).

Furthermore, interviews with patients and caregivers during the measure development process identified comprehensive medication reconciliation on admission as a current quality gap. Several patients noted that the inpatient setting should verify medications reported by patients on admission with another source because patients are very sick when they first arrive at an inpatient facility. Component 1 addresses this quality gap by ensuring that facilities consult more than one source to obtain patients' PTA

medications and that the information is documented in a dedicated area of the medical record for easy reference by providers. Component 2 also addresses this quality gap by encouraging the collection of information on each PTA medications that is necessary to make a reconciliation action, including ordering the medication.

Once the PTA medication information is collected, it is important for the patient's care provider to use that information to inform clinical decision making and reconcile the PTA medications against admission orders. Lack of medication reconciliation during care transitions such as admission to the hospital is responsible for up to 50% of all medication errors and nearly 20% of adverse drug events (ADEs) in the hospital setting (Aspden, Wolcott, Bootman, & Cronenwett, 2007). Component 3 of the measure addresses this quality gap by requiring that a clinician reviews the PTA medications list within 48 hours of admission and documents whether each medication should be continued, discontinued, or modified.

By evaluating not just that a medication reconciliation has been completed but that the medication reconciliation meets several key criteria necessary to reduce medication errors, this measure has the potential to reduce preventable adverse drug events, which are estimated by the Institute of Medicine (IOM) to affect 1.5 million patients per year in the U.S. (Aspden, Wolcott, Bootman, & Cronenwett, 2007).

#### Citations:

- Agency for Healthcare Research and Quality. (2015). Medication reconciliation. Rockville, MD: U.S. Department of Health and Human Services. Retrieved from: <http://psnet.ahrq.gov/primer.aspx?primerID=1>.
- Aspden, P., Wolcott, J., Bootman, J. L., & Cronenwett, L. R. (2007). Preventing medication errors: Quality chasm series. Washington, DC: The National Academies Press.
- Cornish, P. L., Knowles, S. R., Marchesano, R., Tam, V., Shadowitz, S., Juurlink, D. N., & Etchells, E. E. (2005). Unintended medication discrepancies at the time of hospital admission. *Archives of Internal Medicine*, 165(4), 424-429. doi:10.1001/archinte.165.4.424
- Mueller, S. K., Sponsler, K. C., Kripalani, S., & Schnipper, J. L. (2012). Hospital-based medication reconciliation practices: A systematic review. *Archives of Internal Medicine*, 172(14), 1057-1069. doi: 10.1001/archinternmed.2012.2246
- The Joint Commission. Topic library item. Facts about the National Patient Safety Goals. Development of the Goals. (December 2, 2015). Retrieved November 23, 2016, from [https://www.jointcommission.org/facts\\_about\\_the\\_national\\_patient\\_safety\\_goals/](https://www.jointcommission.org/facts_about_the_national_patient_safety_goals/)

## 1a.2.—Linkage

### 1a.2.1 Rationale

The logic model establishing the process-outcome link for this measure concept is listed below. The process step corresponding to the measure concept is shown in bold:

Patient is admitted for inpatient care → **Care team obtains information on medications the patient was taking prior to admission from patient/caregiver(s) and health system sources within 48 hours of admission** → **Physician reconciles all medications within 48 hours of admission by indicating whether to continue, modify, or discontinue each medication** → Medication errors during the inpatient stay are reduced → Adverse drug events are prevented.

There is empirical evidence that the medication reconciliation process can reduce medication errors and harm in the inpatient setting. A systematic review of the literature on medication reconciliation, which is described in 1a.7., reported the consistent finding that medication reconciliation reduces medication discrepancies and adverse drug events. One study in a Canadian community hospital found that the medication reconciliation process identified and corrected 75% of clinically important medication errors before harm occurred (Vira, Colquhoun, & Etchells, 2006). Another study conducted for acute care hospital patients discharged to long term care indicated that medication reconciliation reduced medication errors related to ADEs (Boockvar et al., 2006). Given that the rate of ADEs is one-third higher in IPFs than in acute care hospitals (Rothschild, et al., 2007), medication reconciliation on admission has the potential to greatly reduce harm to psychiatric patients.

### 1a.3.—Linkage

#### 1a.3.1. Source of Systematic Review

Boockvar, K. S., LaCorte, H. C., Giambanco, V., Fridman, & B., Siu, A. (2006).

Medication reconciliation for reducing drug-discrepancy adverse events. *The American Journal of Geriatric Pharmacotherapy*, 4(3), 236-243.

doi:10.1016/j.amjopharm.2006.09.003

Rothschild, J. M., Mann, K., Keohane, C. A., Williams, D. H., Foskett, C., Rosen, S. L., & Bates, D. W. (2007). Medication safety in a psychiatric hospital. *General Hospital Psychiatry*, 29(2), 156-162. doi:10.1016/j.genhosppsych.2006.12.002

Vira, T., Colquhoun, M., & Etchells, E. (2006). Reconcilable differences: Correcting medication errors at hospital admission and discharge. *Quality and Safety in Health Care*, 15(2), 122-126. doi: 10.1136/qshc.2005.015347

### 1a.4.—Clinical Practice Guideline Recommendation

#### 1a.4.1. Guideline Citation

The Joint Commission. Topic library item. Facts about the National Patient Safety Goals. Development of the Goals. (December 2, 2015). Retrieved November 23, 2016 from [https://www.jointcommission.org/facts\\_about\\_the\\_national\\_patient\\_safety\\_goals/](https://www.jointcommission.org/facts_about_the_national_patient_safety_goals/)

#### 1a.4.2. Specific Guideline

While not formal clinical practice guideline recommendations, we have included The Joint Commission National Patient Safety Goals (NPSG) for hospitals in this section because they were developed by “a panel of widely recognized patient safety

experts...composed of nurses, physicians, pharmacists, risk managers, clinical engineers and other professionals who have hands-on experience in addressing patient safety issues in a wide variety of health care settings.” The three components of this measure are based on the three aspects of NPSG.03.06.01 (Maintain and Communicate Accurate Patient Medication Information) that are related to admission to the inpatient setting:

- “Obtain information on the medications the patient is currently taking when he or she is admitted to the hospital or is seen in an outpatient setting. This information is documented in a list or other format that is useful to those who manage medications.
  - Note 1: Current medications include those taken at scheduled times and those taken on an as-needed basis.
  - Note 2: It is often difficult to obtain complete information on current medications from a patient. A good faith effort to obtain this information from the patient and/or other sources will be considered as meeting the intent of the EP [element of performance].”
- “Define the types of medication information to be collected in non–24-hour settings and different patient circumstances.
  - Note 1: Examples of non–24-hour settings include the emergency department, primary care, outpatient radiology, ambulatory surgery, and diagnostic settings.
  - Note 2: Examples of medication information that may be collected include name, dose, route, frequency, and purpose.”
- “Compare the medication information the patient brought to the hospital with the medications ordered for the patient by the hospital in order to identify and resolve discrepancies.
  - Note: Discrepancies include omissions, duplications, contraindications, unclear information, and changes. A qualified individual, identified by the hospital, does the comparison.”

#### *1a.4.3. Grade*

None identified

#### *1a.4.5. Methodology Citation*

See 1a.4.1.

#### *1a.4.6. Quantity, Quality, and Consistency*

Not applicable

### **1a.5.—United States Preventative Services Task Force Recommendation**

#### *1a.5.1. Recommendation Citation*



Not applicable.

*1a.5.2. Specific Recommendation*

Not applicable.

*1a.5.3. Grade*

Not applicable.

*1a.5.4. Grades and Associated Definitions*

Not applicable.

*1a.5.5. Methodology Citation*

Not applicable.

**1a.6.—Other Systematic Review of the Body of Evidence**

*1a.6.1. Review Citation*

Mueller, S. K., Sponsler, K. C., Kripalani, S., & Schnipper, J. L. (2012). Hospital-based medication reconciliation practices: a systematic review. *Archives of Internal Medicine*, 172(14), 1057-1069. doi: 10.1001/archinternmed.2012.2246

*1a.6.2. Methodology Citation*

See 1a.6.1.

**1a.7.—Findings from Systematic Review of Body of the Evidence Supporting the Measure**

*1a.7.1. Specifics Addressed in Evidence Review*

A systematic review published in 2012 identified 26 controlled studies related to hospital-based medication reconciliation practices (Mueller, Sponsler, Kripalani, & Schnipper, 2012). This review used the 2007 Institute for Healthcare Improvement definition of medication reconciliation, which is the “process of identifying the most accurate list of all medications a patient is taking...and using this list to provide correct medications for patients anywhere within the health care system.” The review concludes that the identified studies “consistently demonstrated a reduction in medication discrepancies (17/17 studies), potential adverse drug events (5/6 studies), and adverse drug events (2/2 studies)...Key aspects of successful interventions included intensive pharmacy staff involvement and targeting the intervention to a ‘high-risk’ patient population.” Of note, the systematic review did not discriminate between medication reconciliation at admission, transfer between hospital units, or discharge.

Institute for Healthcare Improvement. (2007) Medication reconciliation review. Retrieved on May 3, 2012 from <http://www.ihc.org/knowledge/Pages/Tools/MedicationReconciliationReview.aspx>



#### *1a.7.2. Grade*

Of the 26 studies identified, 6 were rated as good quality, 5 as fair, and 15 as poor, using the United States Preventive Services Task Force (USPSTF) criteria.

#### *1a.7.3. Grades and Associated Definitions*

The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor):

- Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.
- Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.
- Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

#### *1a.7.4. Time Period*

MEDLINE search from 1966 through February 2012

#### *1a.7.5. Number and Type of Study Designs*

Twenty-six controlled studies

#### *1a.7.6. Overall Quality of Evidence*

Twenty-six controlled studies were included in the systematic review. Ten of the studies were randomized controlled trials, three were nonrandomized trials with a concurrent control group, and 13 were pre-post studies. Based on the USPSTF grades, 11 of the 26 studies were graded as good to fair quality.

#### *1a.7.7. Estimates of Benefit*

The studies in the review “consistently demonstrated a reduction in medication discrepancies (17/17 studies), potential adverse drug events (5/6 studies), and adverse drug events (2/2 studies) but showed an inconsistent reduction in post-discharge health care utilization (improvement in 2 of 8 studies)”.

#### *1a.7.8. Benefits Over Harms*

This review did not identify any harms from this intervention.

#### *1a.7.9. Provide for Each New Study*

We identified new studies by adapting the literature search strategy (medication reconciliation\* and patient admission) from Mueller et al. to retrieve additional studies that

focused on medication reconciliation on admission and were published from November 2010 to present. Using the search terms in PubMed, 277 studies were identified. We included studies written in English and focused on medication reconciliation on admission in hospitalized adults. We excluded studies that evaluated improvement of already existing medication reconciliation processes. Initial independent assessments of titles for relevance and subsequent examination of abstracts resulted in 13 studies retrieved for full-text review. Of these, ten studies were recognized as relevant references. Seven of the studies in the updated review consistently found reductions in medication discrepancies or lower rates of adverse drug events with medication reconciliation on admission as described below:

1. Andreoli et al. (2014) showed a reduction in medication discrepancies by 35%.
2. van den Bermt, van der Schrieck-de Loos, van der Linden, Theeuwes, and Pol (2013) reported a decrease in the percentage of participants with one or more unintentional medication discrepancies from 62% to 32% (OR = 0.29, 95% CI = 0.23-0.37).
3. Chan et al. (2010) measured medication discrepancy rates before and after performing medication reconciliation on admission with the mean rate of 2.6 (SD 2.6) discrepancies per admission dropping to 1.0 (SD 1.1).
4. Giménez Manzorro et al. (2011) implemented a medication reconciliation process at admission and demonstrated a decrease in the rate of medication discrepancies from 7.24% (95% CI = 6.0-8.5) to 4.18% (95% CI = 3.2-5.1).
5. Hron et al. (2015) observed a 53% decrease ( $P = 0.02$ ) in medication reconciliation errors after implementing an electronic tool on admission.
6. Zoni et al. (2012) reported unintentional medication discrepancies decreased from 3.5% to 1.8% ( $p < 0.03$ ) when an electronic tool compared a patient's home medication with those prescribed on admission.
7. Boockvar et al. (2011) estimated a 43% reduction in adverse drug events with medication reconciliation on admission.

Three studies did not find associations between medication reconciliation on admission and hospital length of stay or ED revisits after discharge (Hellström, Zoni, Rodríguez Rieiro, et al., 2012; Lisby, Thomsen, Nielsen, et al, 2010; Mendes, Lombardi, Andrzejewski, et al 2016). Of note, measurement of patient outcomes to evaluate the effectiveness of preventive interventions is complicated by the diversity of mechanisms by which inappropriate drug therapy can cause harm.

One additional study was identified through a targeted search for literature specific to the IPF setting (Boswell et. al., 2015). This study found that updating and standardizing medication reconciliation processes increased the accuracy of medications from 45% to 80%.

## Citations:

- Andreoli L., Alexandra J.F., Tesmoingt C., Eerdeken, C., Macrez, A., Papo, T.,...Papy, E. (2014). Medication reconciliation: A prospective study in an internal medicine unit. *Drugs and Aging*, 31(5):387-393.
- Boockvar K.S., Blum S., Kugler A., Livote, E., Mergenhagen, K., Nebeker, J., ...Yeh, J. (2011). Effect of admission medication reconciliation on adverse drug events from admission medication changes. *Archives of Internal Medicine*, 171(9):860-861.
- Boswell, J.C., Lee, J., Burghart, S.M., Scholtes, K., Miller, L.N. (2015). Medication reconciliation improvement in a private psychiatric inpatient hospital. *Mental Health Clinician*, 5(1), 35-39. doi:http://dx.doi.org/10.9740/mhc.2015.01.035
- Chan A.H., Garratt E., Lawrence B., Turnbull, N., Pratapsingh, P., & Black, P. (2010). Effect of education on the recording of medicines on admission to hospital. *Journal of General Internal Medicine*, 25(6):537-542.
- Giménez Manzorro, Á., Zoni, A.C., Rodríguez Rieiro, C., Duran- Garcia, E., Lopez, A., Sanz, C.,...Munoz, A. (2011). Developing a programme for medication reconciliation at the time of admission into hospital. *International Journal of Clinical Pharmacy*. 33(4):603-609.
- Hellström, L.M., Höglund, P, Bondesson, A., Peterson, G, & Eriksson, T. (2012). Clinical implementation of systematic medication reconciliation and review as part of the Lund Integrated Medicines Management model-impact on all-cause emergency department revisits. *Journal of Clinical Pharmacies and Therapeutics*, 37(6):686-692.
- Hron, J.D., Manzi, S., Dionne, R., Chiang, V., Brostoff, M., Altavilla, S., ...Harper, M. (2015). Electronic medication reconciliation and medication errors. *International Journal for Quality in Health Care*, 27(4):314-319.
- Lisby, M., Thomsen, A., Nielsen, L.P., Lyhne, N., Breum-Leer, C., Fredburg, U.,...Brock, B. (2010). The effect of systematic medication review in elderly patients admitted to an acute ward of internal medicine. *Basic and Clinical Pharmacology and Toxicology*, 106(5):422-427.
- Mendes, A.E., Lombardi, N.F., Andrzejewski, V.S., Frandoloso, G., Correr, C., & Carvalho, M. (2016). Medication reconciliation at patient admission: a randomized controlled trial. *Pharmacy Practice*, 14(1):656.
- van den Bemt, P.M., van der Schrieck-de Loos, E.M., van der Linden, C., Theeuwes, A., & Pol, A. (2013). Effect of medication reconciliation on unintentional medication discrepancies in acute hospital admissions of elderly adults: a multicenter study. *Journal of the American Geriatric Society*, 61(8):1262-1268.
- Zoni, A.C., Durán García, M.E., Jiménez Muñoz, A.B., Perez, R., Martin, P., & Alonso, A. (2012). The impact of medication reconciliation program at admission in an internal medicine department. *European Journal of Internal Medicine*, 23(8):696-700.

## 1a.8.—Other Source of Evidence

### 1a.8.1. Process Used

Not applicable

### 1a.8.2. Citation

Not applicable

## 1b.—Evidence to Support Measure Focus

### 1b.1. Rationale

Improvements to the medication reconciliation process on admission to an inpatient facility has the potential to greatly reduce harm to psychiatric patients. A study of medication reconciliation interventions conducted in an IPF found that updating and standardizing its medication reconciliation process resulted in increased accuracy of medications from 45% to 80% (Boswell, Lee, Burghart, Scholtes, & Miller, 2015).

Boswell, J.C., Lee, J., Burghart, S.M., Scholtes, K., Miller, L.N. (2015). Medication reconciliation improvement in a private psychiatric inpatient hospital. *Mental Health Clinician*, 5(1), 35-39.

### 1b.2. Performance Scores

HSAG calculated the performance scores using chart-abstracted data from 9 Inpatient Psychiatric Facilities (IPFs). The distribution of these performance scores are shown below. The average record scores for Component 1 range from 32.4% to 86.8% (Table 1).

**Table 1. Average IPF scores in percent for Component 1**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Avg	Range
<b>Designated area</b>	100.0	70.0	100.0	100.0	71.0	89.0	100.0	100.0	77.0	89.7	70.0-100.0
<b>Patient source</b>	89.0	11.0	100.0	97.0	14.0	51.0	80.0	100.0	73.0	68.3	11.0-100.0
<b>Health system source</b>	84.0	11.0	46.0	38.0	40.0	49.0	35.0	53.0	19.0	41.7	11.0-84.0
<b>PTA med list ≥ H&amp;P</b>	43.0	37.0	95.0	92.0	22.0	60.0	45.0	61.0	55.0	56.7	22.0-95.0
<b>PTA med list reviewed within 24h of admission (for # meds =0)</b>	33.3	6.1	92.9	69.0	29.8	5.0	0.0	95.0	6.3	37.5	0.0-95.0
<b># of records with 0 meds</b>	3	33	42	29	47	20	39	20	32	29.4	3, 47

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Avg	Range
<b>Range of record scores</b>	20, 100	0, 100	50, 100	40, 100	40, 100	0, 100	20, 100	50, 100	0, 100	N/A	N/A
<b>Component 1 score</b>	<b>79</b>	<b>32.4</b>	<b>86.8</b>	<b>81.4</b>	<b>37.8</b>	<b>61.5</b>	<b>60.7</b>	<b>79.2</b>	<b>55.3</b>	<b>63.8</b>	<b>32.4-86.8</b>

For Components 2 and 3, the total number of medications per facility varies across facilities with an average of 2.3 to 9.1 medications per medical record (Table 2). The average completeness for all scoring elements in Component 2 is above 90% with the exception of *Last Time Taken*, at 36.4%. The final Component 2 scores range from 74.0% to 96.2% across facilities.

**Table 2. Average IPF scores in percent for Component 2**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Avg	Range
<b>Total # of meds</b>	913	417	247	320	233	829	241	419	408	447	233, 913
<b>Total # of medical records</b>	100	100	100	100	100	100	100	100	100	100	100, 100
<b># meds per record</b>	9.1	4.2	2.5	3.2	2.3	8.3	2.4	4.2	4.1	4.5	2.3, 9.1
<b>% records with meds</b>	97	67	58	71	53	80	61	80	68	70.6	53, 97
<b>% Name</b>	99.8	100	100	100	95.7	98.2	99.2	99.3	100	99.1	95.7, 100
<b>% Route</b>	99.6	100	100	99.4	95.7	89.8	98.8	71.6	88.7	93.7	71.6, 100
<b>% Dose</b>	97.4	98.6	95.6	98.4	95.3	91.0	91.7	88.8	91.9	94.3	88.8, 98.6
<b>% Frequency</b>	98.0	99.8	97.6	98.1	95.3	89.6	90.5	78.3	90.4	93.1	78.3, 99.8
<b>% Last time taken</b>	8.7	49.9	87.5	84.1	2.6	1.3	48.1	45.6	0.0	36.4	0, 87.5
<b>Component 2 score</b>	<b>80.7</b>	<b>89.7</b>	<b>96.2</b>	<b>96.0</b>	<b>76.9</b>	<b>74.0</b>	<b>85.7</b>	<b>76.7</b>	<b>74.2</b>	<b>83.3</b>	<b>74.0, 96.2</b>

The proportion of medications with a reconciled action ranges from 25.9% to 100% across facilities (Table 3). Most facilities denote a time stamp if there was an action, allowing assessment of whether the action was completed within 24 hours (as originally required in the measure specifications during testing) or 48 hours (as the measure is currently specified). The

requirement for an action within 24 hours shows an average of 65% of all medications across facilities with a range of 14.0% to 99.5%. The requirement for an action within 48 hours shows an average of 71.2% of all medications across facilities with a range of 19.3% to 99.8%.

**Table 3. Average IPF scores (in percent) for Component 3**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Avg	Range
%Action	76.1	96.2	100	99.7	91.4	25.9	78.0	99.8	31.4	77.6	25.9, 100
%Action with time	75.9	94.2	94.3	99.7	91.4	22.3	78.0	99.8	31.4	76.3	22.3, 99.8
%Action 24 hours	74.2	76.3	57.5	98.8	63.5	14.0	78.0	99.5	23.3	65.0	14, 99.5
%Action 48 hours	75.9	89.2	69.6	98.8	83.7	19.3	78.0	99.8	26.7	71.2	19.3, 99.8

The final score is calculated for each facility as the average of the three component scores. Scores for each facility range from 49.8 to 92.1% (Table 4).

**Table 4. Final Scores for each component and overall**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Avg	Range
Component 1	79.0	32.4	86.8	81.4	37.8	61.5	60.7	79.2	55.3	63.8	32.4, 86.8
Component 2	80.7	89.7	96.1	96.0	76.9	74.0	85.7	76.7	74.2	83.3	74.0, 96.1
Component 3	74.2	76.3	57.5	98.8	63.5	14.0	78.0	99.5	23.3	65.0	14.0, 99.5
Overall Score	78.0	66.1	80.1	92.1	59.4	49.8	74.8	85.1	50.9	70.7	49.8, 92.1
95% CI	76.3, 79.6	64.0, 68.2	77.8, 82.5	90.7, 93.4	56.7, 62.1	48.0, 51.7	72.3, 77.2	83.7, 86.6	48.7, 53.1	N/A	N/A

### 1b.3. Summary of Data Indicating Opportunity

The wide range of scores on this measure indicates that there is ample opportunity for improvement across the three components of the measure. Additionally, information obtained from two of the field testing sites indicated that participating in the testing of the measure has enabled them to identify opportunities for improvement to their existing medication reconciliation process. Specifically, one site noted that the PTA medications documented in the Emergency Department do not carry over onto the PTA Medication List within the Medication Reconciliation form of their Electronic Health Record, which can result in unreconciled medications. Another site discovered lack of clarity about who was responsible for reconciling the PTA medications. These examples indicate that

hospitals can benefit from implementing the measure because it would help reveal opportunities for improvement in their medication reconciliation process. We anticipate that with the implementation of sound medication reconciliation processes improvement in quality of care will be demonstrated over time.

#### 1b.4. and 1b.5. Disparities

Table 5 shows the results by gender, age, race, ethnicity and insurance status. Relative to White patients, Black patients have a 6% lower score and patients with race designated as Other have a 10% lower score. Relative to Hispanic patient admissions, patients with non-Hispanic ethnicity have a 6 % lower score and patients with unknown ethnicity have a 31% lower score. We observed 10% lower scores for patients enrolled in Medicare when compared to patients enrolled in Medicaid, perhaps because of age differences rather than insurance status. Relative to children, middle age adults have about 10% higher scores and geriatric patients have 10% lower scores. Importantly, due to the small sample size, inferences are limited. Multivariate analysis, which is impractical on the facility level given the small sample size, would be needed to understand the relationships between age, insurance status, and race/ethnicity, given the very diverse demographic distributions across the nine facilities. We will monitor for disparities in a larger sample if the measure is implemented.

**Table 5. Scores by gender, age, race, ethnicity, and insurance type**

Demographic	No. Pts	No. Drugs	Component 1	Component 2	Component 3	Score
<b>Gender</b>						
<b>Male</b>	469	1962	62.9	81.7	60.3	68.3
<b>Female</b>	431	2265	64.7	81.1	61.4	69.1
<b>Age</b>						
<b>0-18</b>	185	328	59.1	80.6	65.2	68.3
<b>19-24</b>	85	195	54.2	82.3	68.7	68.4
<b>25-34</b>	145	453	61.4	84.9	67.5	71.3
<b>35-44</b>	108	598	69.9	84.8	72.6	75.7
<b>45-54</b>	117	652	68.7	84.5	71.0	74.7
<b>55-64</b>	84	606	71.3	82.0	77.2	76.9
<b>&gt;65</b>	174	1391	64.8	77.0	39.7	60.5
<b>missing</b>	2	4	52.5	100.0	100.0	84.2
<b>Race</b>						
<b>White</b>	697	3608	66.7	81.5	61.4	69.9
<b>Black</b>	133	330	54.2	80.8	61.5	65.5



Demographic	No. Pts	No. Drugs	Component 1	Component 2	Component 3	Score
Other	70	289	52.8	80.7	54.0	62.5
Ethnicity						
Hispanic	65	164	75.2	86.6	65.2	75.7
Non-Hispanic	750	3488	63.8	82.3	66.1	70.8
Unknown Ethnicity	85	575	54.6	74.1	28.0	52.2
Insurance						
Medicaid	323	877	60.9	87.4	68.9	72.4
Medicare	203	1471	68.3	79.6	50.1	66.0
Medicare + Medicaid	95	799	69.7	80.2	64.3	71.4
Other	279	1080	61.7	79.8	66.7	69.4

### 1c.—High Priority

#### 1c.1. Demonstrated High-Priority Aspect of Health Care

This measure affects large numbers and adverse events that result from poor medication reconciliation can result in high resource use.

#### 1c.2 Other High-Priority Aspect of Health Care

This measure also addresses one of the six CMS Quality Strategy goals to “Make care safer by reducing harm caused in the delivery of care.” An objective under this goal is to “Prevent or minimize harm in all settings,” and a desired outcome is that “medication error rates are improved” (CMS, 2015). The National Action Plan for Adverse Drug Event Prevention also emphasizes that adverse drug event prevention is a patient safety priority and notes that medication reconciliation is an important care transition strategy to reduce potential medication discrepancies (HHS, 2016). This measure concept addresses these national priorities by monitoring medication reconciliation at admission in the IPF.

#### 1c.3. Epidemiologic or Resource Use Data

- **Affects large numbers:** Medication reconciliation should be performed at the beginning of each admission that is at least 48 hours in duration and did not result from a transfer. This measure will be applicable to all IPF admissions regardless of payer source.
- **High resource use:** The Institute of Medicine estimates that ADEs contribute an additional \$3.5 billion (in 2006 dollars) to U.S. health care costs (Aspden, Wolcott, Bootman, & Cronenwett, 2007). Given that lack of medication reconciliation during care transitions such as admission to the hospital is responsible for nearly 20% of



adverse drug events (ADEs) in the hospital setting, this measure has the potential to greatly reduce resource use.

#### 1c.4. Citations

Aspden, P., Wolcott, J., Bootman, J. L., & Cronenwett, L. R. (2007). Preventing medication errors: Quality chasm series. Washington, DC: The National Academies Press.

Centers for Medicare & Medicaid Services. (2015). CMS Quality Strategy. *Healthcare Information and Management Systems Society (HiMSS) Annual Conference & Exhibition*. Chicago, IL.

U.S. Department of Health and Human Services. (2016). *National Action Plan for Adverse Drug Event Prevention*. Washington, DC: U.S. Department of Health & Human Services Office of Disease Prevention and Health Promotion. Available at: <http://health.gov/hcq/ade-action-plan.asp>. Accessed June 23, 2016.

#### 1c.5. Patient-Reported Outcome Performance Measure (PRO-PM)

Not applicable

### 1d.1.—Composite Performance Measure

See 1a.1

### 1d.2.—Composite quality construct

See 1a.1

### 1d.3.—Rationale for constructing a composite measure

The measure was constructed as a composite because of its scoring methodology that first computes scores for each of its three components on the facility level and then averages these scores into a single score. While each component is necessary to describe a single construct, medication reconciliation, presentation of the measure as a composite allows close examination of the various parts that define the final single score. Thus, the measure architecture is based on the following considerations:

**Alignment with Existing Best Practices:** The three components in the measure align with the three core components of Medication Reconciliation on Admission specified by The Joint Commission NPSG.03.06.01.

**Simplification of Measure Scoring:** A subset of the data elements abstracted for this measure as defined by the data dictionary are used to calculate facility scores. The items in the subset are referred to as scoring elements. Scoring elements in Component 1 are assessed at the medical record level and scoring elements in Components 2 and 3 are assessed at the medication level. The average number of PTA medications per patient varies dramatically across patients as well as across facilities. Aggregation of medication information into a single facility-level score for Components 2 and 3 ensures that the scoring elements in Components 2 and 3

contribute consistently to the final measure scores across facilities regardless of the number of medications that were abstracted per record.

#### **1d.4.—Aggregation and weighting**

A total of 11 scoring elements define the medication reconciliation process in this measure. A complete list of the data elements that make up the scoring elements are described in the data dictionary. Descriptions of the groupings, aggregation, and weighting strategies are included below:

Component 1: Scoring elements of Component 1 are averaged for each record. There are 4 scoring elements for records with medications on the PTA medication list. There are 5 scoring elements for records without medications on the PTA medication list. These record-level averages are then averaged for each facility to produce the facility-level Component 1 score.

Component 2: The five scoring elements of Component 2 are added across all records and divided by the total number of medications abstracted for that facility to produce the facility-level Component 2 score. These scoring elements are averaged across all medications rather than at the record level to ensure that each data element for each medication contributes equally to the overall score regardless of the number of medications per record.

Component 3: A single scoring element assesses the medication reconciliation action step in Component 3. This scoring element is not grouped with the other medication-level scoring elements in Component 2 because the medication reconciliation action is a critical step in the medication reconciliation process and most directly related to the prevention of adverse drug events (i.e., it is not sufficient to merely collect medication information; it needs to inform clinical decision-making). By creating a separate component for the action step, this part of the medication reconciliation process gets equal weight to Components 1 and 2. The Component 3 score is calculated as the proportion of medications across all records that have an action step documented within 48 hours of admission.

Overall Facility-Level Score: The overall composite score is calculated as an average of the three facility-level component scores. Testing results showed that changes to the weights of the components can impact facility rankings. Based on review of those results, a technical expert panel (TEP) composed of various stakeholders recommended weighting the components equally.

### **Scientific Acceptability**

#### **1.—Data Sample Description**

##### *1.1 What Type of Data were Used for Testing?*

Manual chart abstraction

##### *1.2 Identify the Specific Dataset*

Not applicable

##### *1.3 What are the Dates of the Data Used in Testing?*

The measure was developed and tested using chart-abstracted data obtained from inpatient admissions that occurred between January 4, 2013, and August 17, 2016.

#### 1.4 What Levels of Analysis Were Tested?

The measure was tested at the facility level.

#### 1.5 How Many and Which Measured Entities Were Included in the Testing and Analysis?

A sample of nine Inpatient Psychiatric Facilities (IPFs) from eight different states (AZ, CA, CO, LA, MD, MI, WI, and WV) was used to perform the field testing of the measure. Both free standing facilities and hospital-based units of various sizes and with different types of medical record systems were included in the testing. Table 6 provides a breakdown of the characteristics of the IPFs included in the field testing. Each IPF was asked to abstract information from 100 admissions using one of two sampling approaches: (1) selection of most recent admissions or (2) random selection of admissions.

**Table 6. Field Testing Hospital Characteristics**

IPF ID	Location	Type	Bed Size	Data Source
1	WV	Unit	70	EPIC
2	MI	Unit	28	McKesson
3	AZ	FS	90	Paper Medical Records
4	AZ	FS	75	Paper Medical Records
5	MD	FS	322	Allscripts®
6	CA	Unit	12	Cerner
7	LA	Unit	38	EPIC
8	CO	FS	24	Netsmart TIER® CareRecord™
9	WI	FS	168	Cerner

#### 1.6 How Many and Which Patients Were Included in the Testing and Analysis?

Testing included a total of 900 admissions from the nine, field-testing IPFs. The measure considers adult and pediatric patients and has no restriction on insurance type. The only inclusion criterion for testing consisted of admission from home, outpatient, emergency, or long-term care to the IPF for 24 hours or more. The requirement for admission duration was imposed because the measure required the final reconciliation action by a licensed prescriber within 24 hours. Of note, the measure specifications were modified after field testing was completed to allow for completion of medication reconciliation within 48 hours of admission. This modification was made in response to TEP concerns regarding accommodating potential delays in obtaining PTA medication information during off-hours when clinics or pharmacies may be closed or due to variable physician staffing schedules at IPFs. The decision was supported by a sensitivity analysis, which

identified an increase in scores for Component 3 if 48 instead of 24 hours were allowed. However, because a 24-hour timeframe was evaluated during field testing, the field testing results reflect the more stringent 24-hour requirement.

Tables 7 and 8 show the demographic characteristics of the sample by IPF. IPFs varied notably in the proportion of pediatric and geriatric patients as well as by race and ethnicity.

**Table 7. Age and Gender of Field Testing Population (in percent)**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9
<b>No. Records</b>	100	100	100	100	100	100	100	100	100
<b>0-18</b>	0	2	10	45	40	0	4	34	50
<b>19-24</b>	4	20	10	18	12	0	8	5	8
<b>25-34</b>	12	29	28	9	18	0	36	6	7
<b>35-44</b>	18	12	22	11	10	0	23	7	5
<b>45-54</b>	28	19	17	11	9	2	16	12	3
<b>55-64</b>	18	12	11	3	6	5	11	16	2
<b>&gt;65</b>	20	5	1	3	5	93	2	20	25
<b>Male</b>	50	59	55	43	55	44	68	51	44

**Table 8. Race/Ethnicity of Field Testing Population (in percent)**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9
<b>White</b>	96	72	89	89	60	87	40	93	71
<b>Black</b>	3	7	5	4	31	1	57	3	22
<b>Asian/ Pacific Islander</b>	0	0	1	2	3	6	0	1	0
<b>American Indian/ Alaska Native</b>	0	1	5	4	3	1	0	0	1
<b>Other</b>	1	2	0	1	3	5	3	3	0
<b>Unknown Race</b>	0	18	0	0	0	0	0	0	6
<b>Hispanic</b>	1	2	19	24	1	2	3	7	6
<b>Unknown Ethnicity</b>	0	19	0	1	5	55	1	0	4

### 1.7 Sample Differences, if Applicable

A 20% random sample of patient records of the originally sampled 100 records for each facility was re-abstracted by a second independent abstractor for the data element reliability analysis (inter-rater reliability).

## 2a.2—Reliability Testing

### 2a2.1. Level of Reliability Testing

Reliability testing was conducted at the data element and the performance measure score levels.

### 2a2.2. Method of Reliability Testing

#### Data Element Reliability

Two trained abstractors at each IPF independently completed data ascertainment for all measure elements using a random subset of approximately 20 patient records per facility for a total subsample of 175 patient records (Table 9). There were a total of 5 cases that could not be used for the inter-rater reliability (IRR) testing because these cases had differing admission dates and/or times and could not be matched to cases reviewed by both abstractors.

**Table 9. Distribution of records available for inter-rater reliability analysis across IPFs**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Total
IRR cases	19	20	18	20	20	20	19	19	20	175

Paired abstractors used a structured medical record abstraction tool developed in Microsoft Excel to independently collect the data elements that are used to calculate the measure score (5 for Component 1, 5 for Component 2, and 1 for Component 3). We introduced two additional data elements for purposes of reliability testing. First, we assessed agreement between reviewers whether the PTA medication list included any medications. If there are medications on the PTA medication list, only 4 elements are scored for Component 1. If there are no medications on the PTA medication list, a fifth element that evaluates whether the PTA medication list was reviewed by a licensed prescriber within 24 hours is included in the score for Component 1 because Components 2 and 3 would not be applicable. Thus, agreement between reviewers whether the PTA medication list contained medications was necessary to determine agreement on the fifth element of Component 1.

Second, elements of Component 2 and Component 3 of the measure are evaluated for each medication listed on the PTA medication list. Because disagreement about the number of medications on the PTA medication list will automatically result in disagreement on all data elements in those components, we created a data element for the purposes of inter-rater reliability assessment for the number of medications on the PTA medication list. To assess inter-rater reliability for Components 2 and 3, medications that were only identified by one abstractor, were removed from the analysis.

Inter-rater reliability (IRR) between the two abstractors at each site and for each scoring element was assessed using percent overall agreement and Cohen's Kappa statistic. For percent overall agreement, "Agreed" means the two abstractors provided consistent answers to the same data element question. Cohen's Kappa is a measure of inter-rater agreement that accounts for abstractors' agreement by chance alone. It is standardized

on a -1 to 1 scale, where 1 is perfect agreement, 0 is exactly what would be expected by chance, and negative values indicate agreement less than chance (i.e., systematic disagreement between abstractors). A common scale is used to interpret Kappa statistics: 0.01–0.20 is considered slight agreement; 0.21–0.40 is fair agreement; 0.41–0.60 is moderate agreement; 0.61–0.80 is substantial agreement; 0.81–0.99 is almost perfect agreement.

To calculate Cohen's Kappa, we organized the abstractors' responses to all data element questions into four categories ( $P_{11}$ : (1, 1),  $P_{10}$ : (1, 0),  $P_{01}$ : (0, 1) and  $P_{00}$ : (0, 0)) for each facility. For each IPF, overall agreement and Cohen's Kappa were calculated for each of the three measure components (by combining all component-specific data elements) and for the total score (by combining all 13 data elements).

We calculated Cohen's Kappa based on the following formula:

$$\text{Cohen's Kappa} = \frac{P_o - P_e}{1 - P_e}$$

In which  $P_o$  is the observed proportion of agreement and  $P_e$  is the expected proportion of agreement.

$$P_o = P_{11} + P_{00}$$

$$P_e = (P_{11} + P_{10}) * (P_{11} + P_{01}) + (P_{00} + P_{10}) * (P_{00} + P_{01})$$

We also report Kappa as aggregate across facilities, separately for each data element, the three components and the final score using Pooled Kappa to account for different rater pairs for each facility.

$$\text{Pooled Kappa} = \frac{\bar{P}_o - \bar{P}_e}{1 - \bar{P}_e}$$

In which  $\bar{P}_o$  is the mean of the  $P_o$ s and  $\bar{P}_e$  is the mean of the  $P_e$ s across the nine IPFs (or across a measure component). The 95% confidence intervals of the pooled kappa is  $K \pm 1.96 * SE_k$ , in which  $SE_k = \sqrt{\frac{\bar{P}_o(1 - \bar{P}_o)}{n(1 - \bar{P}_e^2)}}$ , and  $n$  is the average number of questions across the nine IPFs.

### Performance Measure Score Reliability

We used the following formula to calculate the reliability of the score for each IPF, expressed as the signal-to-noise ratio.

$$\text{Reliability} = \frac{\sigma_{\text{Between-IPFs}}^2}{\sigma_{\text{Between-IPFs}}^2 + \sigma_{\text{Within-IPFs}}^2}$$

In which  $\sigma_{\text{Between-IPFs}}^2$  is the variance of scores between IPFs and  $\sigma_{\text{Within-IPFs}}^2$  is the variance within IPFs. The reliability for each IPF score is shown in Table 12.

### 2a2.3. Statistical Results from Reliability Testing

#### Data Element Reliability

**Table 10. Percent of Agreement and Cohen's Kappa for measure score elements**

Data Elements	All Records/ Medications	Agreed	% Agreement	Cohen's Kappa (pooled) <sup>1</sup>
<b>Component 1</b>				0.66 (0.49, 0.83)
Designated Medication Reconciliation Form/Area	175	166	94.9%	0.67 (0.02, 1.00)
Patient Source	175	134	76.6%	0.20 (-0.46, 0.85)
Health System Source	175	138	78.9%	0.52 (0.11, 0.94)
PTA Medication List Contains All H&P Medications	175	146	83.4%	0.57 (0.14, 1.00)
At least one medication is on PTA Medication List*	175	168	96.0%	0.88 (0.61, 1.00)
PTA Medication List Reviewed by Prescriber within 24 hours of Admission (for records with 0 medications)	42	39	92.9%	0.22 (-1.00, 1.00)
<b>Component 2</b>				0.71 (0.61, 0.81)
Number of Medications on PTA Medication List <sup>2</sup>	790	701	88.7%	-- <sup>3</sup>
Medication Name	701	701	100.0%	-- <sup>4</sup>
Medication Route	701	695	99.1%	0.91 (0.66, 1.00)
Medication Dose	701	693	98.9%	0.89 (0.61, 1.00)
Medication Frequency	701	685	97.7%	0.67 (0.25, 1.00)
Last Time Medication Taken	701	633	90.3%	0.59 (0.33, 0.84)
<b>Component 3</b>				0.62 (0.36, 0.88)
Medication Reconciliation Action within 24 hours of Admission	701	631	90.0%	0.62 (0.36, 0.88)
<b>Total Score</b>			91.3%	0.73 (0.66, 0.80)

<sup>1</sup> For simplicity and computational efficiency, we used the normal distribution formula to establish confidence intervals. The confidence intervals based on standard normal distribution may generate upper limits smaller than -1.00 or greater than 1.00, which were adapted to -1.00 and 1.00, respectively.

<sup>2</sup> Added for purposes of reliability testing; not included in the measure score

<sup>3</sup> Cannot be calculated because of data structure (e.g., no disagreement or no variation in one category)

<sup>4</sup> Cannot be calculated because of data structure (e.g., no disagreement or no variation in one category)



**Table 11. Cohen's Kappa within facilities**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9	Pooled Kappa
<b>Total Score</b>	0.87 (0.84, 0.91)	0.71 (0.63, 0.78)	0.42 (0.28, 0.55)	0.70 (0.58, 0.83)	0.42 (0.30, 0.53)	0.83 (0.79, 0.87)	0.55 (0.44, 0.66)	0.92 (0.87, 0.96)	0.99 (0.98, 1.00)	0.73 (0.66, 0.80)

#### Performance Measure Score Reliability

**Table 12. Reliability for each IPF final measure score**

	IPF 1	IPF 2	IPF 3	IPF 4	IPF 5	IPF 6	IPF 7	IPF 8	IPF 9
<b>Between IPFs <math>\sigma^2</math></b>	224.4	224.4	224.4	224.4	224.4	224.4	224.4	224.4	224.4
<b>Within IPF <math>\sigma^2</math></b>	0.7320	1.1449	1.3456	0.49	1.9321	0.8649	1.5625	0.5625	1.2769
<b>Reliability</b>	0.99675	0.99492	0.99403	0.99782	0.99146	0.99616	0.99309	0.99750	0.99434

#### *2a2.4. Interpretation*

##### Data Element Reliability

The percent agreement across all data elements was high with an average percentage of agreement of 91.3%. The pooled Cohen's Kappa score for the 13 tested data elements across all nine facilities was 0.73 (95% confidence interval: 0.66, 0.80), indicating substantial agreement. The three data elements with less than 90% agreement and lower kappas include: *Patient Source*, *Health System Source* and *Contains All H&P Medications*. Note that the lower Kappa for *PTA Medication List within 24 hours* has wide confidence intervals due to small sample size, because it is assessed only for PTA medication lists that did not include any medications.

The relatively low agreement in *Patient Source* and *Health System Source* is likely inherent in current medical record documentation practices, which do not require specification of which sources were used to ascertain PTA medications. Thus, abstractors had to read through admission and progress notes to identify potential sources of PTA medications. We anticipate that IPFs will integrate designated fields or check boxes into their medical record if the measure were implemented, which would simplify and standardize ascertainment of these data elements. Making this information more readily available would also be valuable to providers during clinical decision making.

Regarding the data element *Contains All H&P Medications*, some inconsistencies in abstractors' assessment that the PTA medication list was inclusive of all medications on the H&P resulted from multiple documents that are considered the History & Physical (H&P). Some IPFs noted that separate admission notes are recorded by a psychiatrist



and a general practitioner in their facilities. To account for this, our measure abstraction instructions were refined to specify that the IPF must identify their principal admission note prior to abstraction so that only one document is used consistently for comparison against the PTA medication list.

Comparing Kappas across IPFs, the measure achieves moderate (IPF 3, 5 and 7), substantial (IPF 2 and 4) and perfect agreement (IPF 1, 6, 8 and 9). Facility 5 identified several reasons for discrepancies including inconsistent documentation practices. Inconsistencies in IPF 3 and 7 can be explained in part by differing interpretations of admission time, leading to inconsistencies in data elements that relied on elapsed time from admission. Instructions to use the time of the admission order have been added to the abstraction tool to alleviate this problem.

### Performance Measure Score Reliability

Due to the large number of data points for each facility inherent in the use of individual PTA medications as the unit of analysis in Components 2 and 3, the variance within IPFs is small. The results indicate that the measure score is highly reliable for all nine IPFs included in the sample. All reliability scores are >0.99.

## **2b2—Validity Testing**

### *2b2.1. Level of Validity Testing*

A systematic assessment of face validity was conducted to test the validity of the measure.

### *2b2.2. Method of Validity Testing*

Face validity of the measure score was obtained by a TEP vote at the conclusion of measure development and testing. The TEP was provided with the final measure specifications and presented the results of field testing. After review and discussion, HSAG asked the TEP members to indicate whether they agreed, disagreed, or were unable to rate the following face validity statement:

*“The performance rating from the Medication Reconciliation measure, as specified, represents an accurate reflection of facility-level completeness of the medication reconciliation process on admission to an IPF.”*

### **2b2.3. Statistical Results from Validity Testing**

Seven of 17 members of the IPF TEP were present for the face validity vote. The distribution of the votes is shown in Table 13.

**Table 13. Face Validity Results by Agreement Category**

Agreement Category	Number of Votes	Percent
Agree	6	86%
Disagree	1	14%
Unable to rate	0	0%

#### *2b2.4. Interpretation*

The face validity vote (6/7, 86%) indicates that the measure is viewed as valid by the TEP, which is representative of key stakeholders and experts from the IPF setting.

### **2b3—Exclusion Analysis**

#### *2b3.1. Method of Testing Exclusion*

Not applicable because this measure does not have any exclusions.

#### *2b3.2. Statistical Results from Testing Exclusion*

Not applicable because this measure does not have any exclusions.

#### *2b3.3. Interpretation*

Not applicable because this measure does not have any exclusions.

### **2b4—Risk Adjustment or Stratification**

#### *2b4.1. Method of controlling for differences*

This measure is not risk adjusted or stratified.

#### *2b4.2. Rationale why Risk Adjustment is not Needed*

This is a process measure.

#### *2b4.3. Conceptual, Clinical, and Statistical Methods*

Not applicable because this measure is not risk adjusted.

#### *2b4.4. Statistical Results*

Not applicable because this measure is not risk adjusted.

#### *2b4.5. Method Used to Develop the Statistical Model or Stratification Approach*

Not applicable because this measure is not risk adjusted.

#### *2b4.6. Statistical Risk Model Discrimination Statistics (e.g., c-statistic, $R^2$ )*

Not applicable because this measure is not risk adjusted.

#### *2b4.7. Statistical Risk Model Calibration Statistics (e.g., Hosmer-Lemeshow statistic)*

Not applicable because this measure is not risk adjusted.

#### *2b4.8. Statistical Risk Model Calibration—Risk decile plots or calibration curves*

Not applicable because this measure is not risk adjusted.

#### *2b4.9. Results of Risk Stratification Analysis*

Not applicable because this measure is not risk adjusted.

#### *2b4.10. Interpretation*

Not applicable because this measure is not risk adjusted.

#### 2b4.11. Optional Additional Testing for Risk Adjustment

Not applicable because this measure is not risk adjusted

### 2b5—Identification of statistically significant and clinically meaningful differences

#### 2b5.1. Method

To determine statistically significant differences across the small sample of testing facilities, we calculated the final scores and 95% confidence intervals for each facility, using the following formula:

$S_{\text{final score}} = (S_{C1} + S_{C2} + S_{C3}) / 3$ , in which  $S_{C1}$  is the score of Component 1,  $S_{C2}$  is the score of Component 2, and  $S_{C3}$  is the score of Component 3.

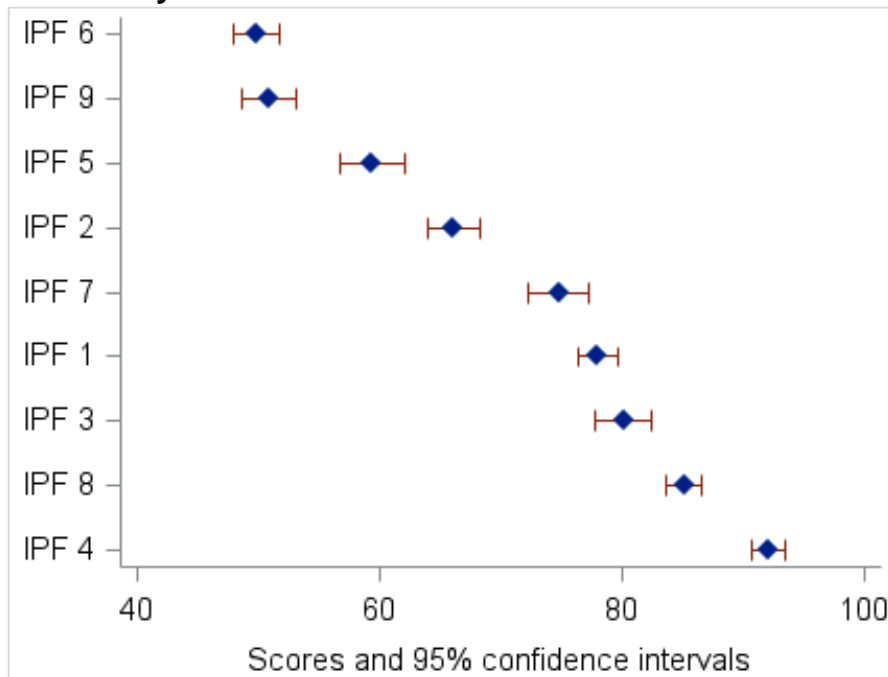
$Se_{\text{final score}} = \sqrt{\frac{1}{9} \frac{S_{C1}(100-S_{C1})}{4n_1} + \frac{1}{9} \frac{S_{C2}(100-S_{C2})}{5n_2} + \frac{1}{9} \frac{S_{C3}(100-S_{C3})}{n_2}}$ , in which  $n_1$  is the number of records and  $n_2$  is the number of medications for each IPF. We constructed the Se of the final score based on the assumption that each individual component score represents a proportion of answers with “Yes” to a set of questions. For simplicity, for Component 1, we assume the score is the  $n_1$ \*proportion of answers with “Yes” to four elements. The 95% confidence intervals for the final score is  $S_{\text{final score}} \pm 1.96 * Se_{\text{final score}}$ . Visual examination of a forest plot depicting measure scores and 95% confidence intervals for each facility can be used to determine whether a given pair of IPFs has statistically significant differences in performance.

For clinically meaningful differences, we reviewed the results of the overall facility level measure scores and the scores of the individual components with our expert workgroup and technical expert panel.

#### 2b5.2. Statistical Results

Figure 1 displays facility scores with 95% confidence intervals sorted by score.

**Figure 1. Facility Measure Scores with 95% Confidence Intervals**



### 2b5.3. Interpretation

The final IPF facility-level scores indicate substantial variation across facilities with ample room for improvement. Owing to the good precision of the score and the broad range of facility level results, the forest plot illustrates that five of eight adjacent pairs have no overlapping confidence intervals, suggesting statistically significant differences in scores.

As the measure score summarizes the proportion of the medication reconciliation components that were properly completed, the clinical interpretation of differences suggests substantial differences across IPFs in the completeness of information gathering and the reconciliation action.

## 2b6—Comparability of performance scores

### 2b6.1. Method of testing conducted to demonstrate comparability

Not applicable because only one set of specifications is used.

### 2b6.2. Statistical Results

Not applicable because only one set of specifications is used.

### 2b6.3. Interpretation

Not applicable because only one set of specifications is used.

## Feasibility

### 3a.1. How are the data elements needed to compute measure scores generated?

Chart abstraction

*3b.1. Are the data elements needed for the measure as specified available electronically?*

If an IPF has an electronic health record (EHR), some data elements may be stored and retrieved electronically. However, this is not an electronic clinical quality measure (eCQM).

*3b.3. If this is an eMeasure, provide a summary of the feasibility assessment*

This is not an eMeasure.

*3c.1. Describe what you have learned or modified as a result of testing*

During testing, we learned that the average time to abstract each record was 10.6 minutes across all test facilities with a range of 4.0 minutes per record to 21.5 minutes per record. Facilities that treat patients who are typically on more medications had longer abstraction times due to the time required to abstract information for each medication. We anticipate the average abstraction time will decrease if the measure is implemented as facilities modify their medication reconciliation forms to include some of the data elements in structured fields. A sampling approach will be selected to minimize the burden of data collection for facilities if the measure is implemented.

*3c.2. Describe any fees, licensing, or other requirements*

There are no fees or other requirements to use this measure as specified.

## **Usability and Use**

### **4.1—Current and Planned Use**

*4a.1. Program, sponsor, purpose, geographic area, accountable entities, patients*

This measure is under development for potential use in the Inpatient Psychiatric Facility Quality Reporting (IPFQR) program.

*4a.2. If not publicly reported or used for accountability, reasons*

Not applicable, this is a new measure.

*4a.3. If not, provide a credible plan for implementation*

Not applicable

*4b.1. Progress on improvement*

Not applicable

*4b.2. If no improvement was demonstrated, what are the reasons*

Not applicable

## **Related and Competing Measures**

### **5—Relation to Other NQF-Endorsed Measures**

*5.1a. The measure titles and NQF numbers are listed here*

Currently, the following seven existing related NQF-endorsed measures address medication reconciliation:

- NQF 0097 Medication Reconciliation
- NQF 0293 Medication Information
- NQF 0419 Documentation of Current Medications in the Medical Record
- NQF 0553 Care for Older Adults (COA) – Medication Review
- NQF 0554 Medication Reconciliation Post-Discharge (MRP)
- NQF 0646 Reconciled Medication List Received by Discharged Patients (Discharges from an Inpatient Facility to Home/Self Care or Any Other Site of Care)
- NQF 2456 Medication Reconciliation: Number of Unintentional Medication Discrepancies per Patient

*5.1b. If the measures are not NQF-endorsed, indicate the measure title*

Not applicable

### **5a—Harmonization**

*5a.1. Are the measure specifications completely harmonized*

No, this measure is not completely harmonized with existing measures.

*5a.2. If not completely harmonized, identify the differences rationale, and impact*

The proposed measure is different from the other related measures in several important aspects. First, four of the existing measures are not constructed for the inpatient setting. The proposed measure is specified to address the unique aspects of medication reconciliation in the inpatient setting. Second, the measure focuses on the reconciliation process upon admission to an inpatient facility; whereas, the process measure in the inpatient setting focus on reconciliation at discharge or transfer (NQF 0293 and NQF 0646). Finally, this measure focuses on assessing the quality of the medication reconciliation process versus simply documenting that the process was completed or that medication discrepancies were present. Assessing the reconciliation processes will provide facilities with information on the specific aspects of the medication reconciliation process that can be improved to drive quality.

### **5b—Competing measures**

*5b.1 Describe why this measure is superior to competing measures*

This measure complements other existing measures because it focuses on the medication reconciliation process during the first 48 hours of admission to an inpatient facility, which is not addressed by any existing measure. Medication reconciliation at admission is important for accurate medication reconciliation at discharge, which is evaluated by two of the existing measures. Medication reconciliation at admission also ensures that efforts to reconcile medications in the outpatient setting are continued at the transition to the inpatient setting.

**Additional Information****Ad.1. Workgroup/Expert Panel Involved in Measure Development****Technical Expert Panel:**

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**Ad.2. Year the Measure Was First Released**

Not applicable

**Ad.3. Month and Year of Most Recent Revision**

Not applicable

**Ad.4. What is your frequency for review/update of this measure?**

Not applicable

**Ad.5. When is your next scheduled review/update for this measure?**

Not applicable

**Ad.6. Copyright Statement**

Not applicable; the measure is in the public domain.

**Ad.7. Disclaimers**

None

**Ad.8. Additional Information/Comments**

None