Care Planning Clinical Decision Support Tool Specifications

Purpose:

The CP-CDS tool was designed to:
- Facilitate the care and treatment of patients by assisting in the identification of patients who are at risk for a fall or fall-related injury and providing details to help nurses plan and communicate risk-specific interventions.
- Increase communication between caregivers and patients/family
- Help the nurse to identify when a patient's risk didn't match the current intervention plan.

Audience:

The tool was designed to provide front line nurses with real-time feedback regarding the status of the fall prevention care plans for their assigned patients. This tool could also be used by unit-based leaders (managers, clinical specialists, shared governance leaders, and superusers) as well as the operational leads for clinical and health information technology implementation.
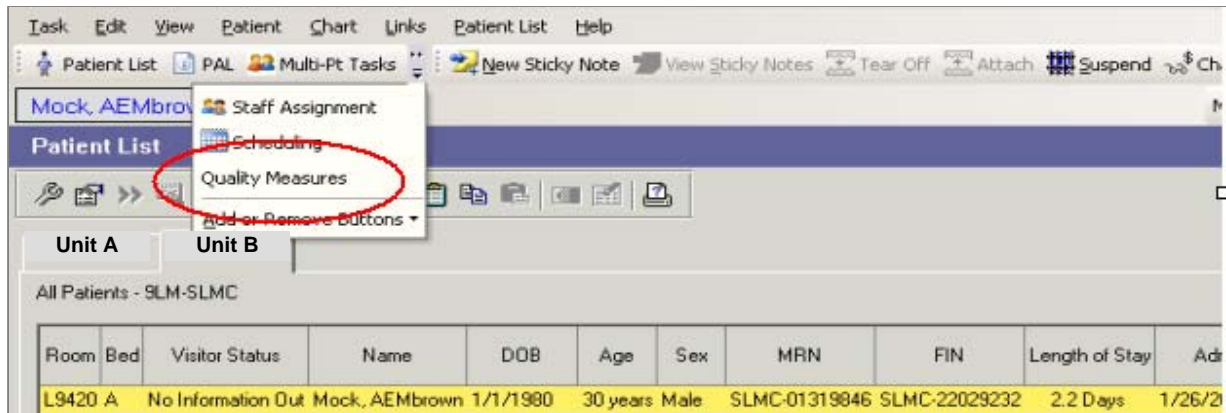
Tool Specifications:

The project team agreed to use an EHR-provider-based prototype tool for this project without customization. The tool was designed to function like a dashboard with multiple care plan sections, allowing users to view the status of each care plan for the patients selected for the aggregate report. The prototype tool design was created with only one care plan section for Falls, with a plan to add additional care plans to the report in the future.

The CP-CDS tool was created using JavaScript and HTML and made available to users based on self-initiated access using a tab within the existing electronic health record (EHR). The report is sourced directly from the production EHR database. The default view for the report is based on a unit-level patient list. Users were instructed on how to set up their personal patient list prior to accessing report so that the report would only display their assigned patients for efficient loading and viewing.
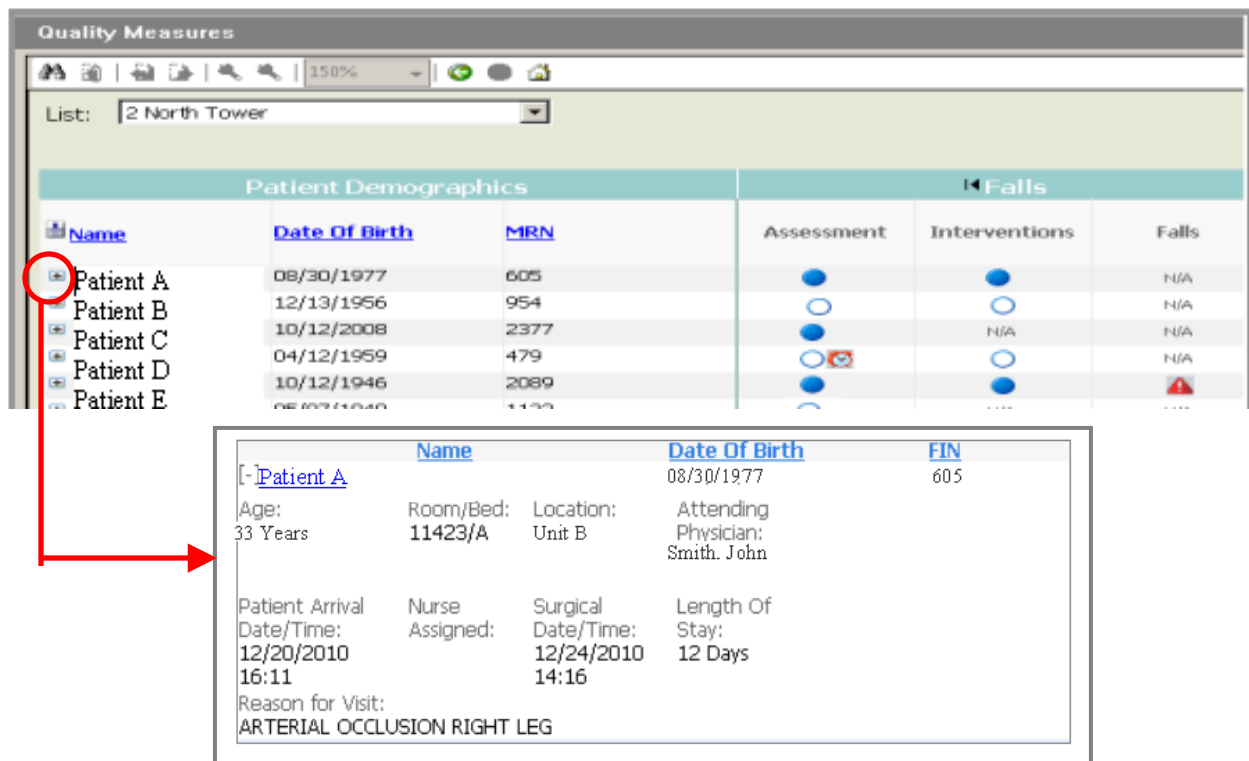
Specific Requirements

- Patients meeting the following general qualifications shall display in the CDS:
    - Patients 18 years of age and older at the time of admission (the age restriction was imposed because the Fall Prevention plan is designed for adult populations)
    - Patients in the facility or facilities specified
    - Patient types designated as inpatients, observation patients or outpatients in a bed without a discharge date

- The CP CDS tool was embedded within the EHR and accessed by navigating to a separate "Quality Measures" tab (Figure 1) visible from the main patient list screen. When the nurse accessed the tab, a query was performed that loaded the tool for the entire unit (default) or a selected patient list based on the nurse assignment feature in the EHR.

Figure 1. Screen Shot of the Quality Measures Tab Used to Access the CP-CDS Tool

- The default view for the report (Figure 2) provided a unit-level patient list (left) with patient Name, Date of Birth and medical record number (MRU). The patient name has a (+) sign to indicate that more information is available including: age, room/bed, location/(unit), attending physician, patient arrival (date/time), nurse assigned, surgical date/time, length of stay, and reason for visit (refer to example). Hyperlink functionality (designated by blue underlined font) is provided here and in other places in the tool to allow the enduser to link directly to the appropriate section in the EHR when clicked. The hyperlink must be set up to allow the enduser to return to the CP-CDS after exiting the patient chart.

Figure 2: Screenshot of CP-CDS Tool with Patient Demographic Details Section Expanded

- The section on the right provides access to the problem-specific section [e.g. Falls] with icons to display the status of the care plan for each patient on the list:
  - Assessment
  - Interventions
  - Falls (Outcome)

- The icons in the problem section were designed to give the user a dashboard-type display of the status of each plan detail. The following icons are used to display the status of each of the plan details.

Figure 3. Icons Used in the CP-CDS Tool Display

Icon	Meaning
○	Not Done
○🕑	Item is time-sensitive
●	Done
N/A	No action needed at this time
⚠	Event Occurrence

The "Assessment" Plan Detail:

- An empty circle indicates that the risk assessment has not been documented ["Not Done"] within the past 24 hours.

- An empty circle with a "clock" icon indicates that the patient has not been assessed but staff have additional time remaining in which to complete the assessment within the established standard (within 24 hours).

- A completed (blue) circle indicates that the Assessment has been documented within the first 24 hours of admission or within the past 24 hours of the patient's stay (based on completion of various risk assessment forms).

The "Interventions" Plan Detail:

- An empty circle indicates the patient was found to be at risk for falls or at risk for injury from fall and the prevention plan was not initiated ["Not Done"].

- A completed (blue) circle indicates the patient is at risk for falls or at risk for injury from fall and has a fall or fall-related injury prevention plan of care initiated.

- An N/A indicates the patient has not been identified to be at risk for falls or fall-related injury.

3.

The "Falls" Outcome Detail:

- An N/A indicates that the patient does not have a fall or injury from fall documented.

- An "!" symbol indicates the patient has a documented fall or a fall with injury.

Additional Specifications

The CP-CDS tool was a very condensed screen with visual indicators of status for each patient on the patient list. Mouse "hover over" status indicators were created to display additional information as listed, with a hyperlink to the appropriate place in the patient record where the detail can be completed or reviewed.

The Assessment Detail
- If the circle is not filled in (with no clock icon), the hover over status indicator will display a message: "Falls Risk and Risk for Injury from falls assessment NOT completed within the last 24 hours" A hyperlink to the patient record was provided.

- If the circle is blank and the clock icon appears, the hover over status indicator was designed to display a message: "Falls Risk and Risk of Injury from Falls Assessment has not been documented within the last 24 hours; 4 Hours or less remain to complete." A hyperlink to the patient record was provided.

- If the circle is filled in, the hover over status indicator was designed to display a message: "Falls Risk and Risk of Injury from Falls Assessment has been documented within 24 hours of admission and every 24 hours following admission".

Figure 4. CP-CDS Tool Mouse Hover Messages for Assessment

The "Interventions" Details

- If the patient is not at risk for falls, the "N/A" message will display with no hover message.

- If the circle is filled in, the hover over status indicator will display a message: "Intervention: Risk for falls and/or Risk for Injury from Falls [plan name]" (Figure 5). This icon should be designed to report if one or more plans are initiated. A hyperlink to the care plan section of the patient record is provided to evaluate the plan if needed.

Figure 5. CP-CDS Tool Mouse Hover Message for Interventions that Were "Done"

- If the circle is not filled in, the hover over status indicator will display a message: "Patient has been found at risk for falls and/or at risk for injury from falls and no plan or orderset is defined" (Figure 6).

Figure 6. CP-CDS Tool Mouse Hover Over Message for Interventions that Were "Not Done"

The "Falls" Details

- "N/A" status displays information to tell user that no fall events have been documented

- If a fall (triangle icon) appears, the hover over status indicator will display a message with the date and time of each fall or injury assessment result (Figure 7). If there is more than one fall, the falls will be labeled #1, #2, etc. with the most recent fall first.

Figure 7. CP-CDS Tool Mouse Hover Over Message for Falls

Data Model and Data Dictionary

This section will show the general data model used to source the report. All data were extracted directly from fields existing in the EHR at the study organization.

Fields that map to the "Assessment" Details:

Documentation of one or more of the following elements found in the database:
ADL
ADL's Prior to Admission
Affect/Behavior
Alteration in Voiding Parameter
Behavior Parameter
Cardiovascular – Health History
Cast Assessment
Changes in Voiding Habits Details
Cognitive Barrier

Documentation of one or more of the following elements found in the database:
Cognitive Parameter
Devices Equipment
Dizziness Parameter
Hematologic – Health History
LOC Parameter
Memory Parameter
Morse Fall Scale Total Score
Musculoskeletal – Health History
Mobility Assistive Devices
Neurological – Health History
Orientation Parameter
Participative in Fall Prevention
Stool Characteristics – GI
Stools Parameter
Seizure Parameter

One or more of the following Anticoagulant or Antiplatelet Medication orders found:
Anticoagulant (exceptions: Hep-Lock; Hep-Lock 10 Units/mL injectable solution; Hep-Lock 100 Units/mL injectable solution; Heparin Flush; Heparin Flush peds; Heparin Lock Flush; Heparin Lock Flush 2 Units/mL injectable solution; heparin 20 units/mL injectable solution kit; heparin 10 units/mL injectable solution; heparin 2 units/mL injectable solution; heparin 2 units/mL-NaCl 0.9% intravenous solution; Hepa 100/1; Hepa100LF; HEPA1-LF; HEPApf500LF; HEPA100kit; HEPA50LF; HEPA100i5; HEPA100i2; HEPA100i10.
Aspirin/Dipyridamole
Aspirin (exception 81 mg or 325 mg daily)
Aspirin/Pravastin
Cilostazol
Clopidogrel
Dipyridamole
Ticlopidine

One or more of the following found on the PROBLEM (medical) List:
Collapse of lumbar vertebra due to osteoporosis
Collapse of thoracic vertebra due to osteoporosis

One or more of the following found on the PROBLEM (medical) List:
Drug-induced osteoporosis with pathological fracture
Idiopathic osteoporosis with pathological fracture
Juvenile osteoporosis
Osteoporosis
Pathological fracture due to metastatic bone disease
Postmenopausal osteoporosis with pathological fracture
Secondary malignant neoplasm of bone
Or one of the following final diagnoses: 198.5, 733.00, 733.01. 733.02, 733.09

Fields that map to the "Interventions" Details to Indicate an Intervention is needed

One or more of the following found on the PROBLEM List: (vs. care plans?)
At risk for falls
At risk for injury due to falls
Post-falls (phase)

Fields that map to the "Falls" Details:

At least one of the following found in the database:
Clinical Result on Initial Post-Fall Assessment Form
Date/Time of Fall