Assessing delirium in older adults using the 4AT tool

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Problem

- Delirium is an acutely altered mental status characterized by inattention and fluctuating course
- All hospitalized patients may experience delirium, but older adults are particularly vulnerable
- Delirium is underrecognized in 60% of patients and is associated with increased: morbidity and mortality, length of hospitalization, need for rehabilitation, and rates of institutionalization
- Delirium screening/ evaluation has not been implemented in adult inpatient units at University of Chicago Medicine (UCM)
- The 4AT is a short delirium assessment tool measuring patients' level of alertness, orientation, attention, and acute change or fluctuation in course
- Studies at other institutions have established the 4AT as a good predictor of clinical outcomes

Goal

- Measure the implementation of the 4AT screening tool on the general medicine floor of UCM since 11/2021
- Evaluate the association between 4AT score ≥ 4 (indicating delirium) and adverse outcomes in older adults at UCM, including:
  - In-hospital mortality
  - Length of hospitalization
  - Discharge location
  - 30-day readmission rate

Intervention Design

- 4AT tool was built into Epic in March 2021

4AT Score	Score category	Delirium status
0	No impairment	No delirium
1-3	Mild cognitive impairment	No delirium
≥ 4	Delirium	Delirium

- All patients screened by nurses every shift (Q12 hours)
- Each hospitalization was categorized based on maximum 4AT score
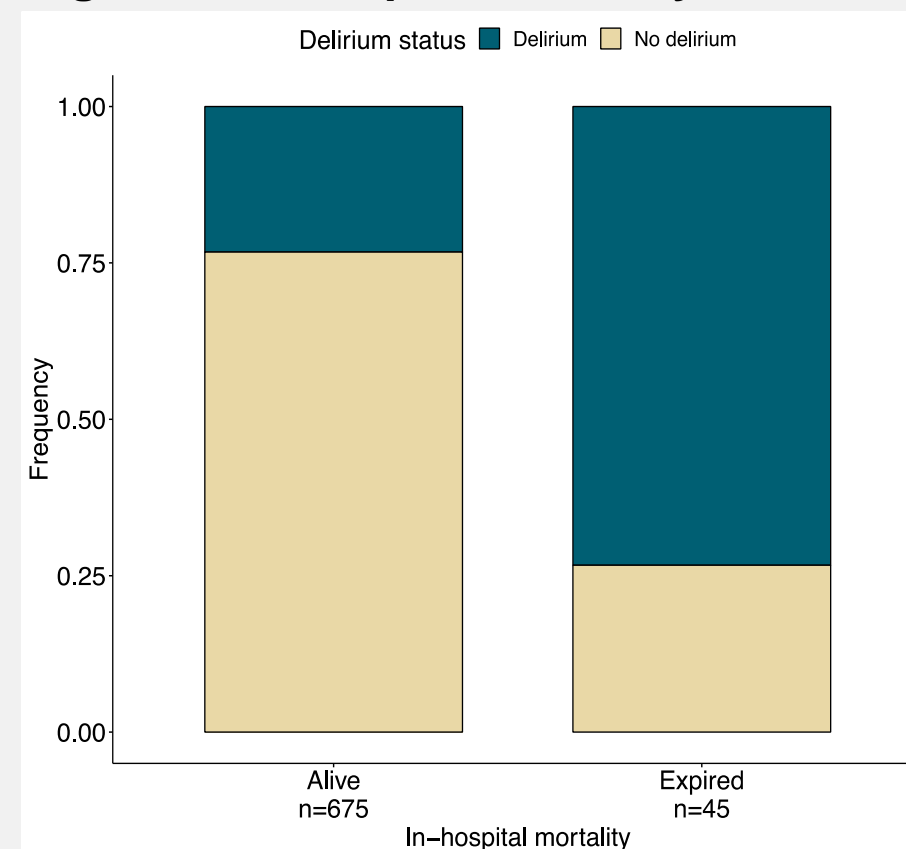- Analyzed all data collected on the general medicine floor (9E &9W) of UCM from 11/2021- 05/17/2022 in R

Results

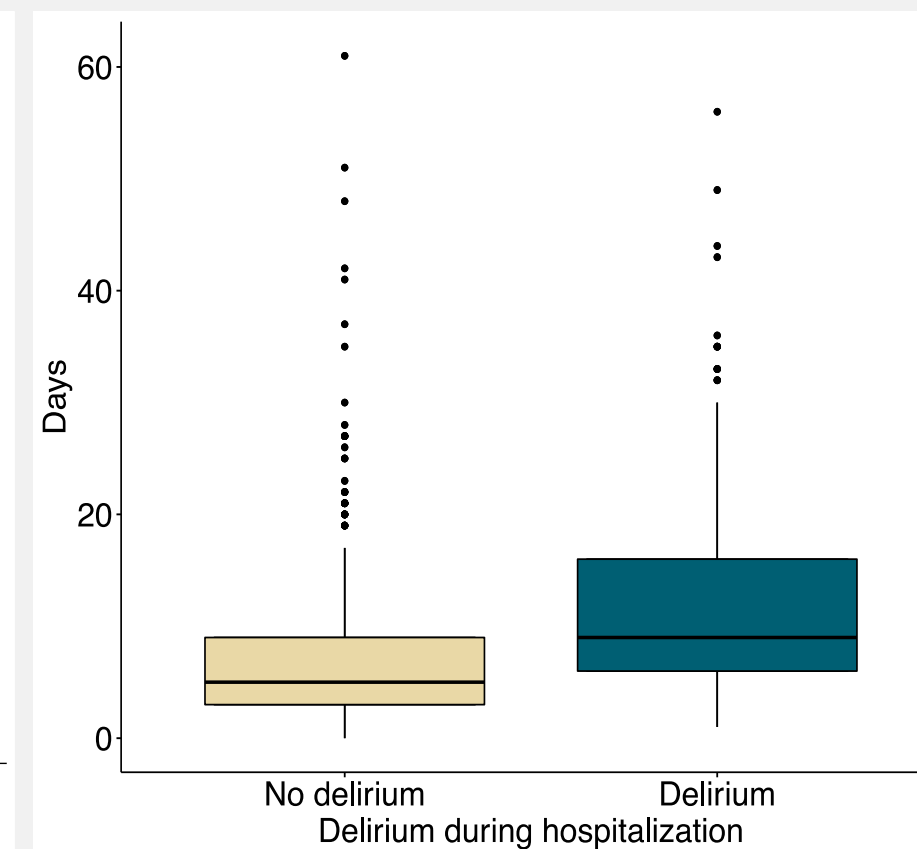### Figure 1. Monthly 9E & 9W 4AT screening rate
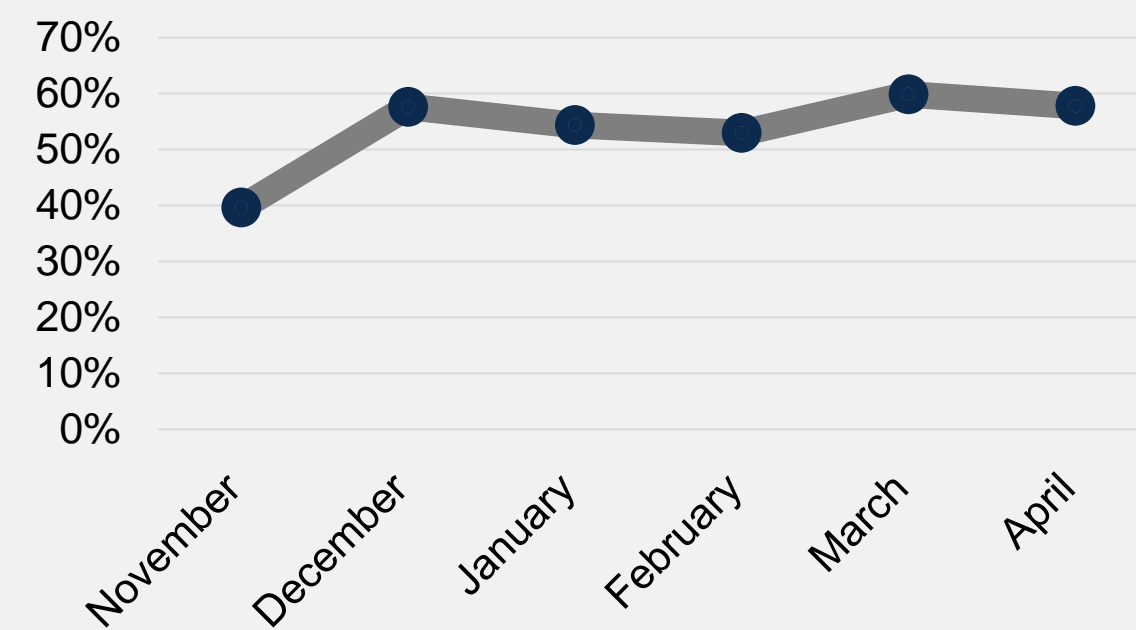
- 1,746 hospitalizations analyzed, 756 of these hospitalizations were for older adults
- 4AT screening rate was approximately 54% from 11/21- 04/22 *screening rate not available for 05/22*

Figure 2. In-hospital mortality

Fisher's Exact Test
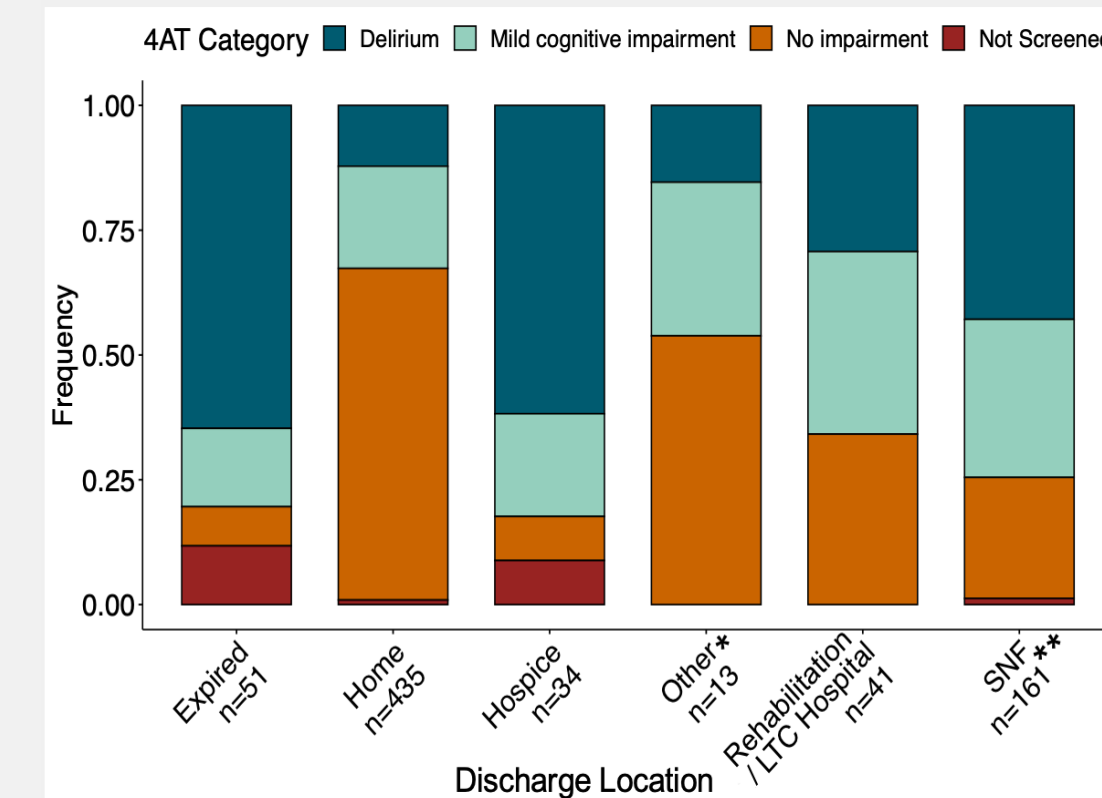**p-value = 1.23e-11**
Odds ratio: 9.04 (4.42-19.7)

Figure 3. Length of hospitalization

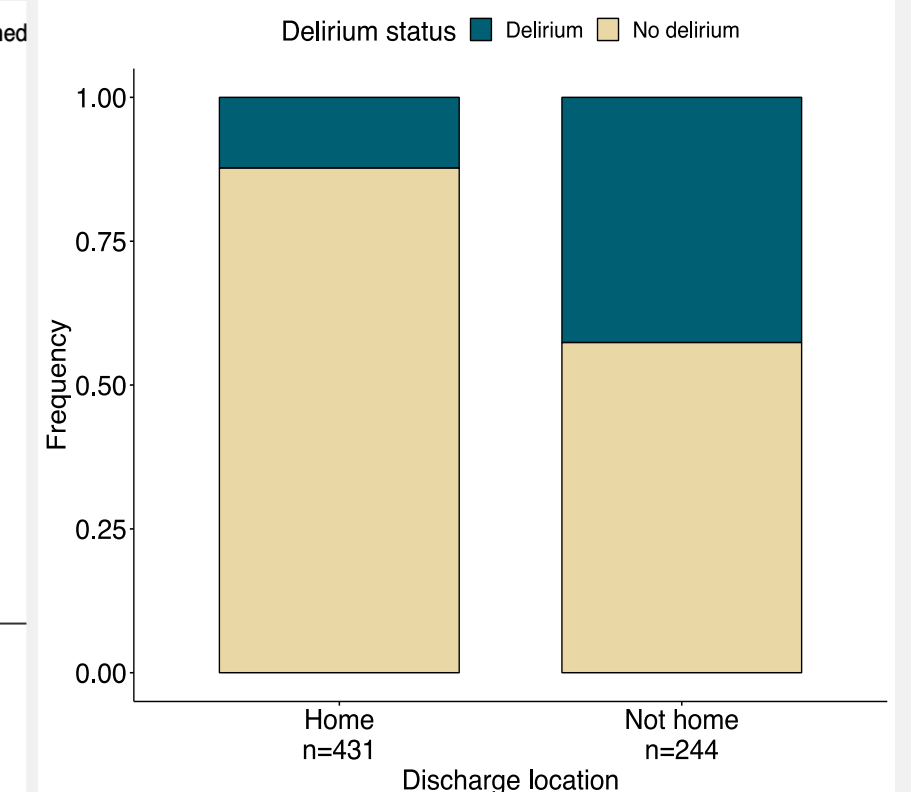Kruskal- Wallis Rank Sum Test
p-value = 2.76e-16

Results continued

Figure 4. Discharge location

*Other includes discharge against medical advice (AMA), to a psychiatric hospital/ unit, or to another hospital.
**SNF is a Skilled Nursing Facility

Figure 5. Discharge to home

Fisher's Exact Test
p-value = 2.2e-16
Odds ratio: 0.189 (0.13- 0.28)

- Older adults with 4AT score(s) indicating delirium during hospitalization had significantly increased odds of in-hospital mortality (Figure 2)
- Older adults with 4AT score(s) indicating delirium had significantly longer hospitalizations than those without delirium (Figure 3)
- Older adults with 4AT score(s) indicating delirium had significantly decreased odds of discharge to home (Figure 5)
- There was a relationship between delirium status and 30-day readmission rate for older adults, but it was not statistically significant (p-value=0.053)

Conclusions and next steps

- 4AT scores ≥ 4 are associated with adverse clinical outcomes, including increased length of stay, mortality, and discharge to locations other than home
- Enhancing delirium screening at UCM using the 4AT tool will help this institution become a more age friendly health system
- Future research will include development of a delirium prevention plan for hospitalized patients and nursing interventions for patients whose 4AT scores indicate delirium

Acknowledgements