INTRODUCTION
• Routes for opioid administration include: oral (PO), intravenous (IV), and subcutaneous (SC)
• Opioids are measured in milligram morphine equivalents (MME)
• A study by Ackerman et al (JAMA IM 2018) piloted changing the standard of care from IV to SC opioids if PO was not possible
  - Showed reduction in IV, parenteral, and total MMEs.
  - Pain scores similar or lower in first 5 days of hospitalization
• This pilot was expanded to other inpatient medicine units at Yale New Haven Hospital
• Research Question: Was the reduction in IV and overall MMEs seen after changing the standard of care? Did this hold true for older adults?

METHODS
Inclusion:
Inpatient admission between April 2016-Oct 2016 (pre-change) or April 2017-Oct 2017 (post-change)
At least one midnight on a medicine unit
Exclusion:
More than 10 visits in the time frame
Length of stay >100 days
Data for MMEs or pain scores from a non-medicine unit

Outcomes
Full Sample
1. Average daily IV MME
2. Average daily total MME
3. Average proportion of opioids administered IV
Pain Scores Documented
1. Average daily IV MME
2. Average daily total MME
3. Average daily pain score

Methods
• Each outcome analyzed with a multivariate model with a dichotomous intervention variable utilizing age, race, gender, and ethnicity as predictors
• Outcomes were modeled using negative binomial regression models. The sum of each outcome for a visit was modeled with the log of study days as offset

RESULTS

<table>
<thead>
<tr>
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<th>Pre-change (95% CI)</th>
<th>Post-change (95% CI)</th>
<th>Significance</th>
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</thead>
<tbody>
<tr>
<td>Full Sample (N=12802 visits)</td>
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<tr>
<td>Mean daily IV MME</td>
<td>1.84 (1.23-2.74)</td>
<td>0.58 (0.39-0.88)</td>
<td>&lt;0.0001</td>
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<tr>
<td>Mean daily total MME</td>
<td>6.71 (5.13-8.78)</td>
<td>5.78 (4.4-7.59)</td>
<td>0.0027</td>
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<td>Visits with documented pain score (N=7883)</td>
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<tr>
<td>Mean daily IV MME</td>
<td>3.06 (1.99-4.7)</td>
<td>0.92 (0.6-1.42)</td>
<td>&lt;0.0001</td>
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<td>Mean daily total MME</td>
<td>10.61 (8.21-13.72)</td>
<td>8.89 (6.88-11.49)</td>
<td>0.0002</td>
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<tr>
<td>Mean daily pain score</td>
<td>2.74 (2.47-3.04)</td>
<td>2.73 (2.46-3.02)</td>
<td>0.7448</td>
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</tbody>
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DISCUSSION
• QI scale achieved the intended endpoints from the pilot:
  - Decreased average IV opioid administration
  - Decreased average total MMEs
  - Pain scores were not different
• Decreased program effectiveness in older adults:
  - Lower mean doses at baseline

Changing hospital standard of care to the use of subcutaneous opioids instead of intravenous opioids decreased amount of opioid medication administered without increasing pain scores.

Practice transformation from intravenous to subcutaneous opioids is seen most in <65 age group and least in the 85+ age group.