Reducing Inappropriate Utilization of the Intermediate Intensive Care Unit Amongst Cardiovascular Medicine Providers

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Background

- Stanford Health Care has implemented Acuity Adaptable Units in order to more efficiently transition patients between an intermediate intensive care unit (IICU or "step-down") and acute or "floor" level of care.
- While this change reduced the burden of transferring patients between units when their status changed, there was an increase in inappropriate utilization of the IICU level of care, with audits revealing an approximately 40% rate of inappropriate utilization of this resource.
- In hospitalized cardiovascular medicine patients, IICU overutilization contributes to significant increases in staffing needs and direct accommodation costs as well as delays in bed flow throughout the hospital.
- We aimed to reduce the percentage of IICU level of care hours amongst cardiovascular medicine patients to less than 25% within six months with subsequent maintenance below this threshold.

Methods

- With this problem identified, a root cause analysis was performed via audits of inappropriate IICU use patterns as well as discussions with key stakeholders including faculty physicians, house staff physicians, nursing staff members, and our case managers.
- Key drivers for reducing inappropriate IICU utilization were identified and included:
  - Appropriate ordering of IICU care upon hospital admission
  - Real time provider awareness of a patient's level of care and utilization review determination
  - Timely de-escalation for for admitted patients that no longer met criteria for IICU
  - Efficient transfers between levels of care

<u>Phase I Interventions</u>
Two Epic (EHR) Best Practice Advisories (See Figures 1 and 2)

<u>Phase II Interventions</u>
Physician Education Sessions
Addition of Level of Care Column to House Staff EHR Lists
Addition of Utilization Review Status to House Staff EHR Lists
Feedback Regarding Level of Care Utilization to House Staff

Best Practice Advisory

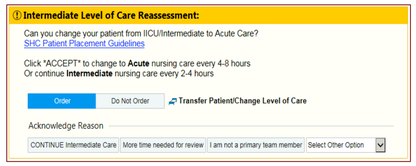

Figure 1: A once daily interruptive Epic Best Practice Advisory for IICU level of care reassessment. Provided to primary inpatient physician upon first order entry session for the day.

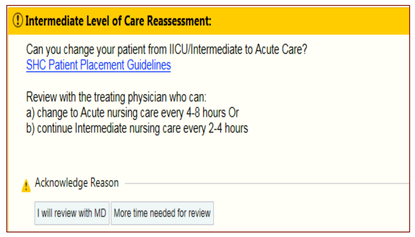

Figure 2: A non-interruptive Epic Best Practice Advisory for IICU level of care reassessment provided to primary nurse. A similar non-interruptive advisory was displayed for physicians with an attached one-click pathway for de-escalation of care if warranted.

Results

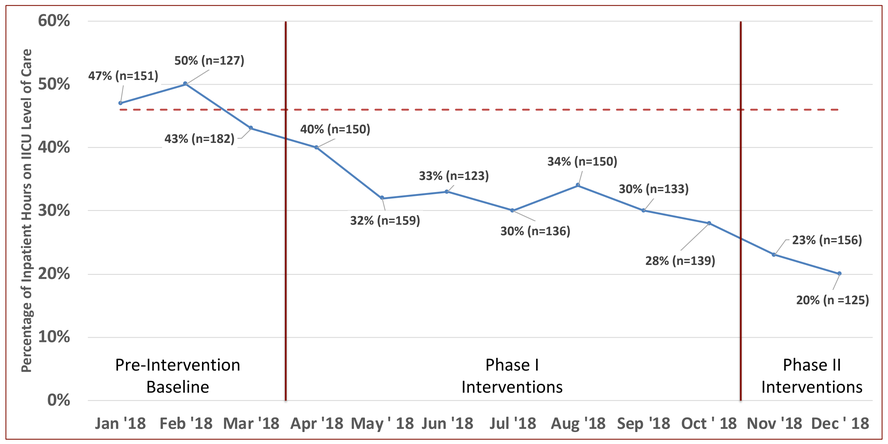

Figure 3: Percentage of non-critical care inpatient hours on the intermediate ICU (IICU) level of care for cardiovascular medicine patients by month.

	Baseline (4/1/17 – 3/31/18)	Post-Intervention (4/1/18 - 1/13/19)
Average Hours on IICU	69	42
% Patients Discharged on IICU	55%	24%
Total Patient Volume	1,640	1,324

Figure 4: Additional comparison of baseline and post-intervention utilization of the intermediate ICU level of care.

Conclusions

- A non-interruptive or minimally-interruptive Epic Best Practice Advisory (BPA) in addition to house staff utilization feedback can be an effective means of facilitating timely transfer of patients to the most appropriate level of care, in turn reducing direct costs associated with overutilization.
- From April 2018 to January 2019, the percentage of IICU level of care hours per admission decreased from an average of 46% to 30%.
- Overall there was an average decrease of 27 IICU level of care hours per patient admission.
- Nursing and Case Management Staff reinforcement of appropriate level of care utilization is critically important.
- House Staff play a significant role in determining the initial level of care for a patient as well as the decision to de-escalate from IICU to acute care when appropriate.
- Reducing variability in House Staff awareness of IICU utilization and appropriate use criteria may contribute to more significant and more sustained improvement in reducing IICU overutilization.
- Variability in IICU utilization persists on a weekly and monthly basis.

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