**APPENDIX 1: COHORT ASSEMBLY FOR PATIENT POPULATION DESCRIBED IN FIGURE 1**



Unplanned Transfer is defined as a transfer to ICU from the general medical-surgical ward or transitional care unit. Patients who were direct transfers to the ICU from the operating room are not include. A ward death refers to patients who died on the ward or transitional care unit whose care directive was “Full Code.”

We conducted a manual chart review of 580 patients at the first pilot site who died on the ward while full code or had an unplanned transfer. We shared the results of this manual chart review with staff and clinicians at the first pilot site to educate and increase awareness about the outcomes we are trying to prevent.

Under the supervision of the lead author (Dummett) South San Francisco quality assurance nurses reviewed the charts and clinical events. Because patients in the data set had multiple hospitalizations, only the first hospitalization during the time period was used. Patients who transferred to another hospital were excluded. The nurse reviewers were all instructed on how to use the extraction tool in the same way. They were observed and coached for their first 5-10 note extractions for quality control purposes. They documented clinical information in the free text of the chart that, in their professional ICU nursing opinion, contributed to their clinical outcome. They documented content, date, time, associated organ system, type of finding, and intervention. Their responses were aggregated into larger related problem categories and the most common are shown in Figure 1 in the main text of the paper. Patients had more than one finding preceding the outcome (unplanned transfer or ward death). It was difficult to distinguish between early and late signs of deterioration. The data was used to demonstrate that unplanned transfers are an urgent and prevalent problem occurring about once a day. We educated providers on the reasons for deterioration to focus our attention on detecting and intervening as early as possible.

**APPENDIX 2: STRUCTURE AND CONTENTS OF PHYSICIAN AND NURSE DOCUMENTATION NOTES**

**PHYSICIAN**

|  |  |  |
| --- | --- | --- |
| **COMPONENT** | **CONTENT** | **MODE\*** |
| Title | “ADVANCED ALERT MONITOR PHYSICIAN NOTE” | Optional |
| Demographics | Name Gender Room number date time, hospital day, if relevant post postoperative day | Automated |
| Background | AAM LAPS COPS Score, Date Time and Value, Hospital Problem list | Automated |
| Assessment | Future problem identification and prognostication of disease course | Free Text |
| Mitigation | Mitigation plan including diagnostics for monitoring and treatments | Free Text |
| Escalation | Escalation plan in the form of an IF THEN statement for role accountability | Free Text |
| Surrogate | Surrogate Identification referencing demographics of emergency contact | Partial |
| Consultation | Further consultation requested from social work for life care planning of palliative care for goals of care discussion |  |
| Score | AAM SCORE COMPONENTS (LABS, VITALS, MENTAL STATUS) given the length and the fact that the chart review is done previously | Optional |

**RAPID RESPONSE NURSE - INITIAL**

|  |  |  |
| --- | --- | --- |
| **COMPONENT** | **CONTENT** | **MODE\*** |
| Title | “ADVANCED ALERT MONITOR RRT INITIAL NOTE” | Automated |
| Demographics | Name Gender Room number date time, hospital day | Automated |
| Background | AAM LAPS COPS Scores, Date Time and Value | Automated |
| Tasks | Notify responding MD and document in a structured field named “critical notification”; MD Name, Date, Time, AAM score value. This allows for storage and trending if the score occurs again | Free Text |
| Add to Patient List | Add patient to AAM Patient Shared list | Drop Down |
| Notifications | MD notified time date and score. Must be refreshed after tasks is complete to show up | Automated |
| PC/SW Notification | If criteria for escalation met, referral for life care planning pathway is completed by calling and/or leaving a message or placing a supportive care team consult  Document date time and individual involved | Free text |
| AAM score 24 hr trending | Populates the note if there were any prior elevated AAM scores as documented under critical notifications in tasks section | Automatic |

**RAPID RESPONSE NURSE – FOLLOW-UP**

|  |  |  |
| --- | --- | --- |
| **COMPONENT** | **CONTENT** | **MODE\*** |
| Section Name | Contents | Free text vs Automated |
| Title | ADVANCED ALERT MONITOR RRT FOLLOW UP NOTE | Automated |
| Demographics | Room number, date | Automated |
| Vitals | Updated vitals Temp, Pulse, Respirations, Blood pressure, Saturation, Oxygen needs, Pain score | Free text |
| Interventions follow up | Lists all prior interventions done according to the following categories: Airway/Breathing, Circulation, Tests Completed, Lab Completed and Results Reviewed, Medication(s) Administered, Other Interventions, specify | Free text |
| Nurse evaluation | Evaluation of condition following interventions (is patient stable, better, or getting worse) | Free text |
| Recommendation | Nurse recommends if further intervention is required or the plan is sufficient and working | Free text |
| MD Notification | MD notified at what time and the most current AAM score | Free Text |

MODE: refers to how note is populated. “Free text” means that physician can enter own text; “Automated” means that, when note template is summoned, indicated information is automatically populated by the EMR; “Partial” means that a combination of the two processes occurs; “Optional” means that clinician may or may not elect to employ an automated population process; “Drop down” means a drop down menu with choices shows up on the screen.

**APPENDIX 3: SUMMARY OF STAFF RESPONSIBILITIES WITH RESPECT TO EARLY WARNING SYSTEM**

1. Rapid response team nurse (is “out of the count”)
2. Reviews early warning system scores every 6 hours
3. Reviews chart of any patient who is above threshold; informs hospitalist that patient is above threshold
4. Evaluates patient within 10 minutes of the alert; can request rapid resolution of issues with hospitalist (e.g., request a fluid bolus order)
5. Works with bedside nurse and provides additional support with assessment, interventions, plans, and follow up
6. Primary ward nurse
7. Obtains a new set of vital signs when notified that a patient is above threshold
8. Meets with rapid response team at the bedside to answer questions regarding the patient’s current status and treatment plan
9. Executes any new orders requested by the hospitalist
10. Follows up with physician and rapid response team as needed
11. Hospitalist
12. Once advised of the alert, performs chart review and evaluates patient at bedside
13. Orders appropriate treatments, intervention, follow up, and consults (including supportive or palliative care consultation
14. Documents patient concerns, actions taken, timing of follow-up, and escalation plan