

## Supplementary Appendix: Huddle Implementation and Facilitation Tips

Detailed structure of morning inpatient huddle (mesosystem level):

- Starts promptly at 8 am, all attendees are welcomed by the Manager of Patient Services
- Manager of Patient Services reports on:
  - Overall inpatient census at 6 am
  - Overall inpatient and individual unit capacity using classification scheme:
    - <85% = green (plenty of capacity exists throughout system)
    - 85-90% = yellow (nearing capacity limits, delays in admissions and transfers may occur)
    - >90% = red (very close to capacity limits, delays in admissions and transfers are likely)
  - Emergency department volume to predict flow
  - Any code events, transfers from acute care to critical care, and unrecognized clinical deterioration events in last 24 hours
  - Prediction of patient flow for the day and any areas where delays in admissions and transfers may occur.
- Each inpatient unit charge nurse (n=19) reports on:
  - Current unit census
  - Predicted discharges, admissions, and transfers
  - Nurse staffing and staffing requests
  - High-risk patients as classified by:
    - “watcher” status: patients that nurses or physicians have a “gut feeling” that they are at high risk for clinical deterioration
    - Pediatric early warning score (PEWS) of  $\geq 5$  (score based on deviations from normal/expected in behaviour, cardiovascular, and respiratory domains)
    - Family concerns about patient safety
    - Communication concerns (usually with multiple medical teams) that may impact patient safety
    - High-risk therapies (therapies that are risky or unfamiliar to that unit)
  - High-risk situations for patient/family experience failures
    - Representative from family relations assists in focused discussion
- If no concerns are identified, report takes 15-30 seconds
- If concerns are identified, MPS and Safety Officer of Day question/coach charge nurse regarding:
  - Previous communication with physician team
  - Presence of clear plan
  - Comfort with plan
  - How and when MPS and Safety Officer of Day can assist with follow-up
- Adjourns between 8:15 and 8:30 am
- More complex patient safety concerns are discussed between charge nurse, MPS, and Safety Officer after the meeting

## Details of Huddle System

	Question	Structure	Implementation/Facilitation issues considere
Microsystem (Unit)	Who?	<ul style="list-style-type: none"> <li>Varies somewhat by unit (types of patients, number of staff)</li> <li>Led by charge nurse</li> <li>Bedside nurses in attendance</li> <li>Physician attendance varies</li> </ul>	<ul style="list-style-type: none"> <li>Led by charge nurse going off shift</li> <li>Nursing and medical director attend periodically to coach and support</li> <li>Working to increase physician participation</li> </ul>
	What?	<ul style="list-style-type: none"> <li>Structured discussion of:               <ul style="list-style-type: none"> <li>Predicted admissions/ discharges</li> <li>Nurse staffing needs</li> <li>High-risk patients including watchers</li> <li>Potential family experience issues</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Tested and implemented after inpatient huddle when there was good understanding of data to monitor (e.g., watcher) and mechanism to escalate</li> <li>Much of the data already integrated into electronic health record</li> </ul>
	When?	<ul style="list-style-type: none"> <li>Varies somewhat by unit</li> <li>Nursing change of shift               <ul style="list-style-type: none"> <li>7 am, 3 pm, 7 pm, 11 pm</li> </ul> </li> <li>7 days per week</li> <li>Always &lt;10 minutes, usually 3-5</li> </ul>	<ul style="list-style-type: none"> <li>Took advantage of existing structures around nursing change of shift</li> <li>Important to keep brief and focused to ensure continued buy-in</li> <li>Better integration with physicians still needed</li> </ul>
	Where?	<ul style="list-style-type: none"> <li>On unit</li> </ul>	<ul style="list-style-type: none"> <li>Semi-private space important for shared discussion</li> </ul>
	Why?	<ul style="list-style-type: none"> <li>Goals are to identify:               <ul style="list-style-type: none"> <li>Unit risk level</li> <li>High-risk patients that need monitoring/mitigation by charge nurse and physician team</li> <li>Any high-risk patients/situations that need to be escalated to inpatient huddle</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Clear mechanism to escalate through inpatient huddle needs to be established so that value of identifying high-risk patients is clear</li> <li>Measures are in place to identify outcomes such as unrecognized clinical deterioration and delayed discharges</li> </ul>
Mesosystem (Inpatient)	Who?	<ul style="list-style-type: none"> <li>Co-led by Manager of Patient Services (MPS, nurse manager of inpatient) and Safety Officer of the Day (SOD, senior attending pediatrician)</li> <li>Attended by charge nurse from each inpatient unit</li> <li>Also attended by Protective Services, Family Relations, Social work manager, Equipment supervisor, ED manager</li> </ul>	<ul style="list-style-type: none"> <li>Coached and facilitated by senior clinicians</li> <li>Requires continuous group and individual coaching</li> <li>Peer coaching/modeling allowed less experienced charge nurses to learn from more experienced in collaborative setting</li> </ul>
	What?	<ul style="list-style-type: none"> <li>Each charge nurse presents:               <ul style="list-style-type: none"> <li>Number of patients on unit, predicted admissions, discharges, and transfers</li> <li>Nurse staffing</li> <li>Any high risk-patients</li> <li>Risk for experience issues</li> </ul> </li> <li>Structured discussion of high-risk patients regarding plan and follow-up led by MPS/SOD</li> </ul>	<ul style="list-style-type: none"> <li>Structured paper data collection forms completed by charge nurses before huddle</li> <li>Data placed on screen in front of room in real-time through Microsoft Excel®</li> <li>Two years after start high-risk patients identified through separate patient list in electronic health record</li> </ul>
	When?	<ul style="list-style-type: none"> <li>Three times daily:</li> </ul>	<ul style="list-style-type: none"> <li>Initial focus was to build infrastructure and</li> </ul>

		<ul style="list-style-type: none"> <li>○ 8 am, 4:30 pm, and 12 midnight</li> <li>○ 7 days/week</li> <li>○ Always &lt;30 minutes, 90% &lt;20 minutes</li> </ul>	<p>demonstrate value of 8 am before expanding to 4:30 pm and midnight</p> <ul style="list-style-type: none"> <li>● Night shift huddle is crucial</li> <li>● Start on time</li> </ul>
	Where?	<ul style="list-style-type: none"> <li>● Conference room near inpatient units</li> <li>● Environment aims to be comfortable but not too comfortable</li> <li>● Data is displayed to keep everyone focused</li> <li>● Side conversations kept to bare minimum</li> </ul>	<ul style="list-style-type: none"> <li>● Aimed to make environment collegial</li> <li>● Use first names, welcome and orient new people</li> <li>● Constructive feedback generalized in public, personal feedback private and after meeting</li> </ul>
	Why?	<ul style="list-style-type: none"> <li>● Goals are to address in near real-time any: <ul style="list-style-type: none"> <li>○ Escalated patient safety concerns</li> <li>○ Escalated patient/family experience concerns</li> <li>○ Patient flow concerns/hot spots</li> <li>○ Nurse staffing concerns</li> <li>○ Predictions for risk in any of the above domains in next 8 hours</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Huddle aims were clearly tied to organization's strategic priorities around safety, patient/family experience, and flow</li> <li>● Positive feedback and coaching were delivered in real-time</li> <li>● Able to coach on how to make predictions even when it is often not comfortable in face of uncertainty</li> </ul>
Macrosystem (Daily Operations Brief)	Who?	<ul style="list-style-type: none"> <li>● Co-Led by Nurse or administrative senior leader and Safety Officer of the Day administrator of the day</li> <li>● Mesosystem and department leaders report out</li> <li>● Project manager attends and manages logistics and follow-up</li> </ul>	<ul style="list-style-type: none"> <li>● CEO set expectation for attendance and participation</li> <li>● CEO attends periodically</li> <li>● Expectation clear department leader attends or delegates if necessary</li> </ul>
	What?	<ul style="list-style-type: none"> <li>● Leaders report out on:</li> <li>● Unexpected events of the previous 24 hours</li> <li>● Any predicted issues/threats of next 24 hours</li> <li>● Resolution/follow-up to issues of the previous 24-48 hours</li> </ul>	<ul style="list-style-type: none"> <li>● Each mesosystem/department has developed huddles to prepare for Daily Operations Brief daily</li> <li>● Significant coaching and feedback required to make leaders effective on prediction</li> <li>● Trust developed over time to discuss failures openly</li> </ul>
	When?	<ul style="list-style-type: none"> <li>● Once daily at 8:35 am</li> <li>● 7 days/week</li> <li>● Always &lt;23 minutes, 90% &lt; 17 minutes</li> </ul>	<ul style="list-style-type: none"> <li>● Crucial to start on time</li> <li>● Follow-up immediately when individual misses call. This occurs rarely</li> </ul>
	Where?	<ul style="list-style-type: none"> <li>● Conference room near inpatient unit with call-in number <ul style="list-style-type: none"> <li>○ Most leaders call in</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● In person preferred, but campus is too large.</li> <li>● Crucial to have and use effective technology</li> </ul>
	Why?	<ul style="list-style-type: none"> <li>● Goals are to each day: <ul style="list-style-type: none"> <li>○ Predict and plan for big issues of the day</li> <li>○ Facilitate cross-discipline (across "silos") problem-solving for issues at intersection of departments</li> <li>○ Share learnings from unanticipated events between mesosystems/departments</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Key driver to establish high reliability culture</li> <li>● Establishes expectation leaders are aware of real-time failures and are continuously anticipating potential threats</li> <li>● Establishes expectation of rapid problem resolution and follow-up</li> </ul>