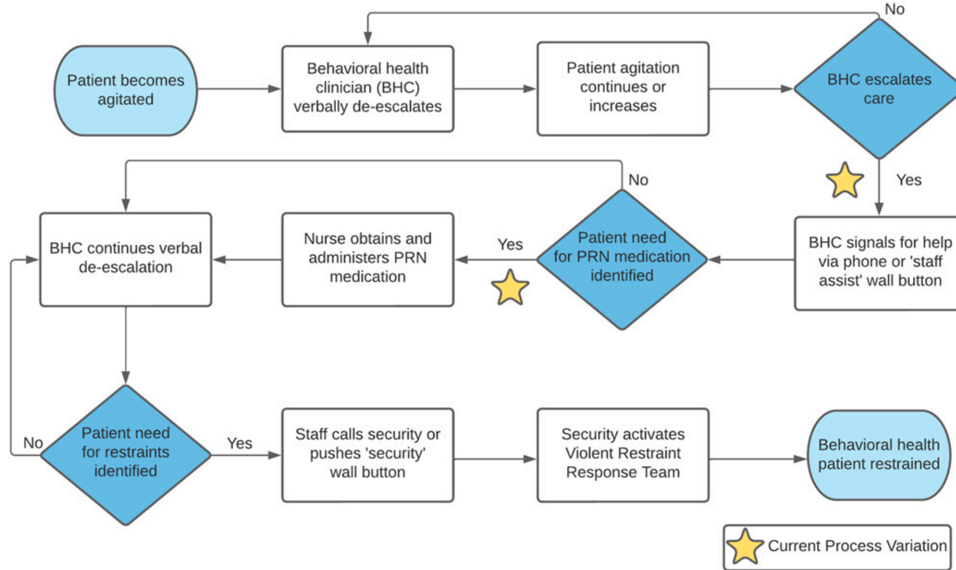
Supplemental Information



SUPPLEMENTAL FIGURE 6
MBU baseline de-escalation process map. MBU, medical behavioral unit; PRN, as needed.

How to Score Agitation

New patient = score one point per behavior
Old patient = score one point per behavior increased from normal

Present = 1

- [ ] **Disoriented** — Cannot follow directions or commands appropriately
- [ ] **Irritable** — Easily angry or annoyed
- [ ] **Boisterous** — Overly loud, shouting or slamming doors
- [ ] **Verbal Threats** — Verbal abuse, name calling, or aggressive tone
- [ ] **Physical Threats** — Making a fist, raising an arm or grabbing person
- [ ] **Attacking Objects** — Throwing, kicking or banging on any object
- [ ] **Total Score (0-6)**

Score	Agitation Level	Agitation Color
0-1	None	Green
2-3	Moderate	Yellow
4-6	Severe	Red

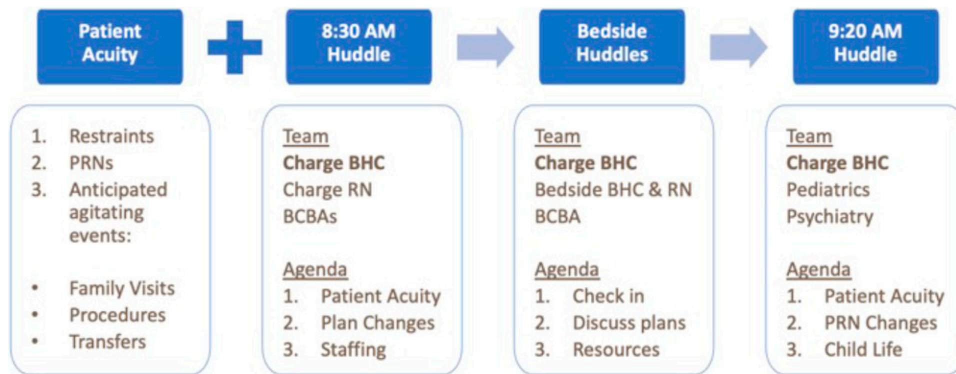
Step 1: Identify Patient Agitation Level and Color

Level	Color
None	Green
Moderate	Yellow
Severe	Red

Step 2: Communicate Color & Start Interventions

	Green	Yellow	Red
Communication	Present plan during rounds	Call nurse with ASCOM	Call nurse or push button
Medication	Order PRN meds	Offer oral med Set up IM med	Offer oral med Offer IM med
Room	Keep safe Avoid triggers	Adjust lights Lower sounds	Remove people Clear path to door
Intervention	Clear directions Give MBU Bucks Consult Child Life	Give space Offer choices Redirection	Select 1 leader Give warnings Clear consequence

SUPPLEMENTAL FIGURE 7
MBU de-escalation protocol. ASCOM, ASCOM© wireless phone; MBU, medical behavioral unit.



SUPPLEMENTAL FIGURE 8
MBU de-escalation huddle series flow diagram. BCBA, board-certified behavior analyst; BHC, behavioral health clinician; MBU, medical behavioral unit; PRN, as needed.

8:30 MBU Huddle Format

Staff Present: BCBAs, Charge BHC & Charge Nurse

1. **Identify most acute patients**
   a. Criteria for high acuity patients
      i. Physical restraint in past 48 hours
      ii. PRN medication in past 24 hours
      iii. Situational awareness
         - Family meeting
         - Admission, transfer, or discharge
         - Behavior plan changes
2. **Discuss high acuity patient behavior support plans**
3. **Charge BHC selects patients for bedside huddles**
4. **Charge BHC and BCBAs huddle with bedside BHC and nurse using Bedside Huddle Script**

SUPPLEMENTAL FIGURE 9
8:30 AM MBU huddle script and example behavior support plan and schedule. BCBA, board-certified behavior analyst; BHC, behavioral health clinician; MBU, medical behavioral unit; PRN, as needed.

Behavior Support Plan Example

Patient's Name: John

John's Level System

Level 2: If John is following the behavioral guidelines listed below, he will remain on Level 2

1. Refrain from physical aggression, elopement, disruptions.
2. Follow activities listed on daily schedule.
3. Comply with medical exams and vital signs (within 5 minutes of initial prompt).

Level 2 Activities:

1. Access to preferred activities as indicated on his level 2 schedule
2. May earn MBU Bucks as part of PBIS Tier 2

Level 2 Bonus Bucks:
John can earn bonus MBU Bucks if he remains on Level 2 across consecutive days. Bonus Bucks are in addition to the MBU Bucks that John earns throughout the day while on Level 2. Bonus Bucks are delivered by the bedside nurse the morning AFTER John has demonstrated consecutive days on level 2 (e.g., if John is on level 2 on Monday and Tuesday, he gets his Bonus Bucks when he wakes up on Wednesday). If John drops to level 1, he does not earn bonus MBU bucks for that day and starts back at day 1 on the Bonus Buck schedule the following day. The monitoring sheet indicating how many consecutive days at level 2 and the corresponding Bonus Buck payout will be kept at the nursing station.

Level 1: If John does not follow the behavioral guidelines listed above, he will move to Level 1. He can move back to level 2 once he has met the behavioral contingencies above for **3 hours** while **awake** (e.g., if John is compliant for 30 minutes following being on Level 1 and then engages in physical aggression, the 3 hours starts over again until he can refrain from targeted behaviors for a full 3 hours).

Level 1 Activities:
1. TV in his room
2. Board games, puzzles, coloring, and other activities provided by child life

General Interaction Strategies:
1. STRUCTURED SCHEDULE – John has a structured schedule that he should follow throughout the day. He has a schedule for level 1 and a different schedule for level 2.

2. Calls to mom: John's schedule includes 1 time (1pm) that he may call his mother. He may call once at the designated time and leave a message if she does not answer. If he asks to call at other times, remind him of his scheduled call time and refer to his schedule.

SUPPLEMENTAL FIGURE 9
continued

3. CHOICES offered when placing demands/requests, to minimize problem behavior
   Example: “Do you want to sit in the chair or on the sofa to eat breakfast?”

4. POSITIVE VERBAL PRAISE delivered for compliance with tasks.

5. If you are unable to maintain safety, call bedside nurse.

If patient engages in	Staff will
Physical Aggression: any occurrence of or attempt to hit, kick, bite, pinch, and/or throw items at others **Elopement:** any attempt to leave a designated area (his room, the unit) without permission and/or supervision **Disruption:** banging on or slamming items, throwing items that are not a part of an activity, pressing call buttons	▪ John will be placed on Level 1 without any prompts until he has met the contingencies to move back to level 2 ▪ Provide John with space (as able), using CPI strategies to de-escalate

If patient engages in	Staff will
Noncompliance with schedule and/or medical care	▪ Provide **one** verbal prompt to comply with schedule and/or medical care with a reminder that this is how he stays on level 2 ▪ Wait 5-10 seconds for John to initiate compliance with the redirection ▪ If he does not comply, he will be placed on level 1

MBU Daily Schedule Example

8:00am Wake up and get ready for the day

9:00am Brush teeth, shower & eat breakfast

10:00am Exercise and clean up room

11:15am Order lunch

11:30am Group activity

12:30pm Lunch

1:00pm Card/Board Games, coloring, or puzzles

2:00pm Bingo

3:00pm Group activity

4:00pm Coloring, puzzles, or crafts

5:00pm Order dinner

5:15pm Take a 10-minute walk, play a game, or color

6:00pm Dinner

7:00pm Group activity

8:00pm Snack, brush teeth, prepare for bed & shower

10:00pm Lights out, turn TV & electronics off, *sleep*

SUPPLEMENTAL FIGURE 9
continued

Patient Room Number	24 hour Restraints	Reason for Restraint	24 hour PRNs (medication and time)	Are PRNs effective?	Interests	Triggers	Child Life Needs

SUPPLEMENTAL FIGURE 10
MBU charge BHC huddle grid. MBU, medical behavioral unit; PRN, as needed.

MBU De-escalation Huddle Script

Behavioral Health Clinician Questions

1. How is your patient doing so far today?
2. What can we do to support you today?
3. Are there any items that we can bring you?

Behavior Plan Questions

Green

What is their support plan or schedule?

Yellow

What can we do to calm the patient?

Red

How can we safely de-escalate the patient?

SUPPLEMENTAL FIGURE 11
MBU bedside huddle script. MBU, medical behavioral unit.

9:20 MBU Safety Huddle Format

Staff Present
Charge BHC, Charge Nurse, Psychiatry and Pediatrics teams, Behavior Analyst and Child Life Specialist

1. **Review bedside huddle patients in order of acuity (highest acuity first).**

   ****Only include patients that are identified as high risk and huddled upon at bedside****

2. **Review changes to patient behavior plan and de-escalation plan**

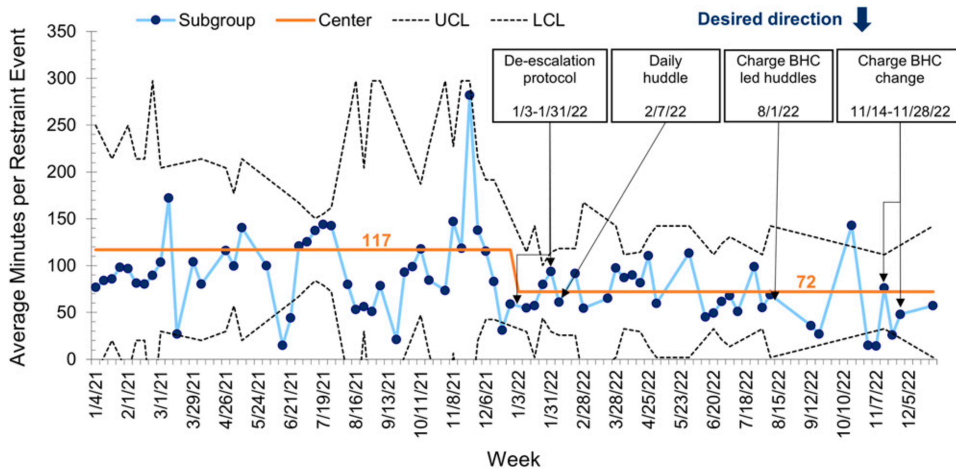
3. **Discuss needed activities or toys with Child Life**

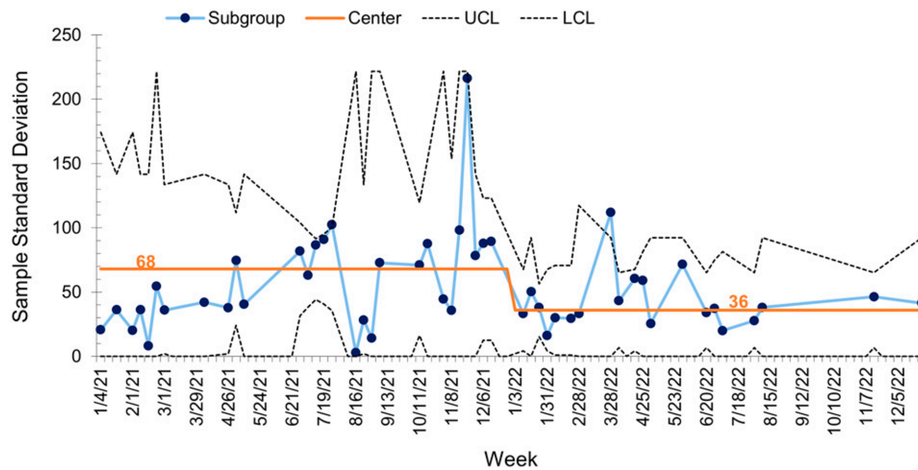
4. **Discuss PRN medication concerns with psychiatry if in last 24 hours:**

   a. Patient received >1 PRN
   b. Nursing or psych techs concerned that PRN medications are ineffective for patient
   c. Patient received intramuscular (IM) PRN

SUPPLEMENTAL FIGURE 12

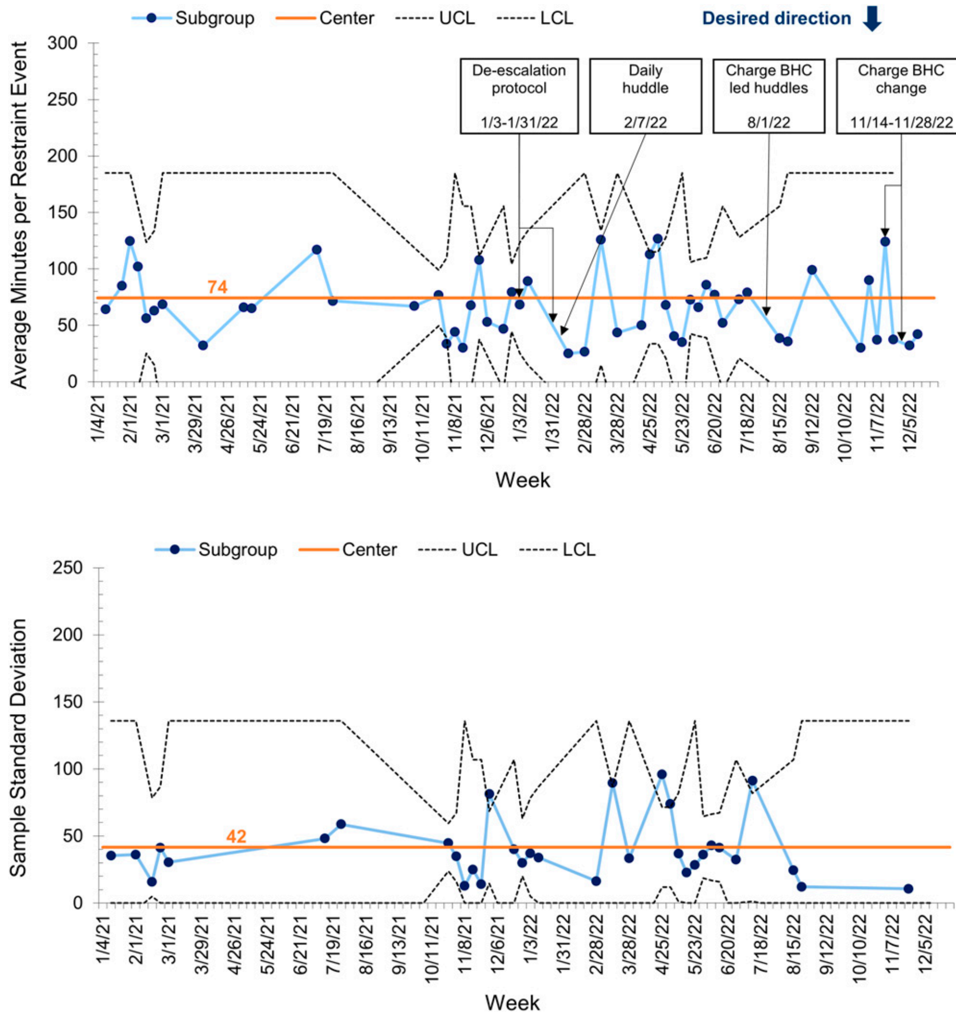
9:20 AM MBU huddle script. MBU, medical behavioral unit; PRN, as needed.





SUPPLEMENTAL FIGURE 13

X-bar and s-chart of the average weekly duration of MBU physical restraint events for patients of Black race. BHC, behavioral health clinician; LCL, lower control limit; MBU, medical behavioral unit; UCL, upper control limit.



SUPPLEMENTAL FIGURE 14
X-bar and s-chart of the average weekly duration of MBU physical restraint events for patients of White race. BHC, behavioral health clinician; LCL, lower control limit; MBU, medical behavioral unit; UCL, upper control limit.

<table>
<tr><td colspan="2">SUPPLEMENTAL TABLE 1 Comparison of MBU Patient Scenarios Before and After Restraint Reduction Interventions</td></tr>
<tr><th colspan="2">MBU Patient Scenario</th></tr>
<tr><td colspan="2">An 11-y-old male with autism spectrum disorder is admitted to the MBU from the ED for acute on chronic worsening of aggressive behaviors toward others at home and at school.</td></tr>
<tr><td colspan="2">He was medically cleared in the ED and received intramuscular medications for agitation. He is admitted to the MBU overnight for boarding while awaiting inpatient psychiatric placement.</td></tr>
<tr><td colspan="2">He was admitted to the MBU 1 year ago and was frequently agitated during this admission. He received daily PRN medications for agitation and experienced daily physical restraint events.</td></tr>
<tr><td colspan="2">His current daily medications include risperidone and clonidine.</td></tr>
<tr><td colspan="2">On admission to the MBU, the patient is ordered for 1:1 direct observation by a BHC and standard PRN medications are ordered: first-line Benadryl, second-line Ativan, and third-line Haldol. He is expected to follow standard MBU admission guidelines including wearing a hospital gown, following the MBU daily schedule, and using approved toys and activities.</td></tr>
<tr><th>Before Interventions</th><th>After Interventions</th></tr>
<tr><td>The patient wakes up the morning after admission and refuses to wear his hospital gown. His BHC encourages him verbally to wear his gown and the patient responds by physically pushing the BHC away. The patient is redirected to play on his home tablet, which helps deescalate his agitation until the tablet runs out of battery. The patient then begins to throw his tablet at the BHC, who removes the tablet from the patient's room.</td><td>The MBU team meets at the 8:30 AM huddle and identifies the patient as one of the most behaviorally acute patients given his receipt of intramuscular PRN medications in the ED. Members of the team discuss the patient's past admission and recall that he was previously triggered by the presence of staff and when his tablet ran out of battery. The PRN medications from his previous MBU admission are identified, with the charge BHC noting his first line was changed to Risperidone because of paradoxical agitation noted after he received Benadryl.</td></tr>
<tr><td>The patient then becomes increasingly agitated. He begins screaming loudly and pacing in the room. His BHC pushes the "Staff Assist" button on the wall of the room. The patient's nurse and security hear the alert sound, see the flashing lights outside the patient's room, and enter the patient's room. The patient is offered PRN oral Benadryl and he takes the medication. He remains agitated over the following hour, destroying the computer in his room and attempting to elope from the unit.</td><td>The charge BHC and BCBAs then meet with the patient's nurse and BHC outside the patient's room. They note that the patient is becoming agitated, as he does not want to wear his hospital gown and is physically pushing his bedside BHC. The team determines that he can wear his home clothes with his gown over them. The charge BHC changes the level of observation so the bedside BHC can sit outside the room. The team also provides the bedside BHC with a backup tablet and charger in anticipation of the patient's tablet running out of battery.</td></tr>
<tr><td rowspan="3">During an elopement attempt, the patient's nurse and BHC reconvene with security and decide to place the patient in a manual hold. The patient is then brought back to his room where he receives PRN intramuscular Ativan and is placed in physical restraints.</td><td>The full MBU team convenes at the 9:20 AM huddle to discuss updates to the patient's plan. Orders are modified to reflect changes to the patient's level of observation, PRN medications, approved activities, and attire. The child life specialist is notified that the patient also enjoys stress balls and drops some off at his room.</td></tr>
<tr><td>Later in the day, the bedside BHC notes that the patient is beginning to pace and vocalize loudly. The charge BHC is notified verbally and partners with the bedside BHC. They check the patient's tablet, which has sufficient battery. The charge BHC notifies the patient's bedside nurse of his agitation, and the patient is given a PRN dose of oral risperidone. The charge BHC notices that the patient has not yet received his lunch and delivers it to him at the bedside.</td></tr>
<tr><td>Within the hour, the patient has deescalated and returned to playing on his tablet.</td></tr>
<tr><td colspan="2">BCBA, board-certified behavior analyst; BHC, behavioral health clinician; ED, emergency department; MBU, medical behavioral unit; PRN, as needed.</td></tr>
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