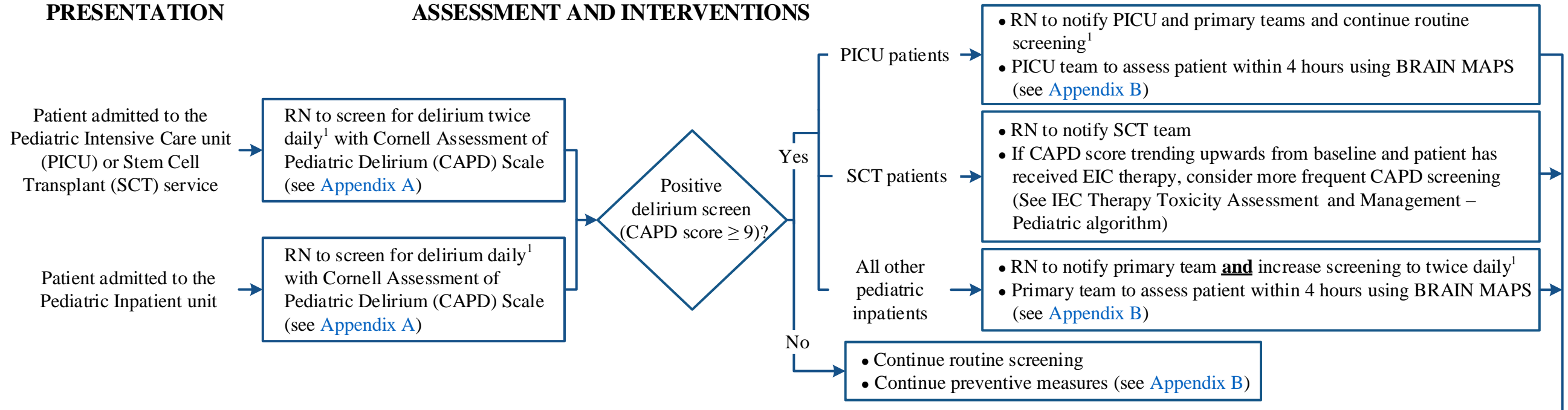


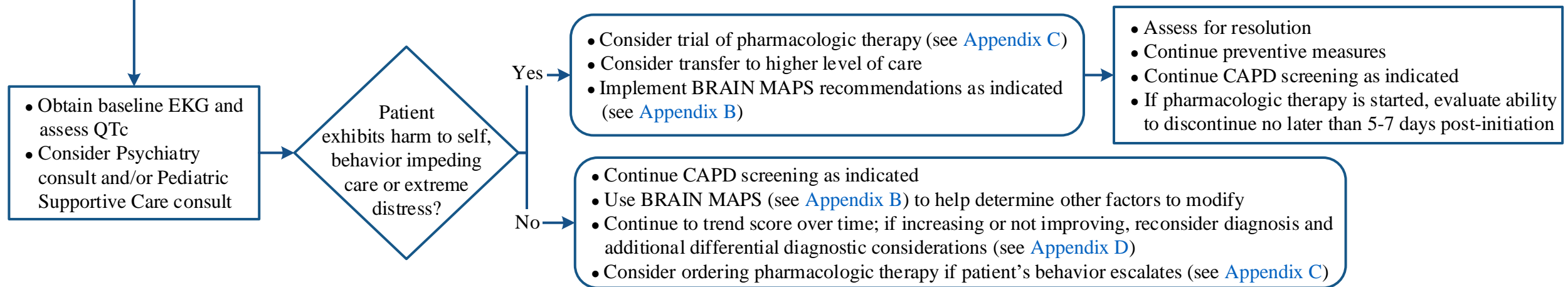
Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

PRESENTATION

ASSESSMENT AND INTERVENTIONS



INTERVENTION AND FOLLOW-UP



¹ Perform assessment throughout the nursing shift and document results at the end of the shift

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APPENDIX A: Cornell Assessment of Pediatric Delirium (CAPD) Scale

Please answer the following questions based on your interactions with the patient over the course of your shift:						
	Never 4	Rarely 3	Sometimes 2	Often 1	Always 0	Score
1. Does the child make eye contact with the caregiver?						
2. Are the child's actions purposeful?						
3. Is the child aware of his/her surroundings?						
4. Does the child communicate needs and wants?						
	Never 0	Rarely 1	Sometimes 2	Often 3	Always 4	Score
5. Is the child restless?						
6. Is the child inconsolable?						
7. Is the child underactive – very little movement while awake?						
8. Does it take the child a long time to respond to interactions?						
TOTAL SCORE						

Note: The CAPD scale should not be used in patients with a Richmond Agitation-Sedation Scale (RASS) \leq -4 (see [Appendix E](#)). To assist with completing the scale in patients age \leq 2 years, refer to the Developmental Anchor Points for Youngest Patients as found in the electronic health record.

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APPENDIX B: BRAIN MAPS – Common Causes of Delirium and Recommendations for Management

	Assessment	Evaluation	Recommendations
B	Bring Oxygen	Evaluate for hypoxemia, low cardiac output, anemia	Improve oxygenation via O ₂ delivery, transfuse PRBCs for anemia
R	Remove/Reduce Drugs	Evaluate the continued need for anticholinergics and sedative medications (especially benzodiazepines)	Discontinue if possible
A	Atmosphere	<ul style="list-style-type: none"> • Room setup • Restraint use • Caregiver presence • Schedule/routine • Use of adaptive equipment and/or communication aids (e.g., glasses and hearing aids) 	<ul style="list-style-type: none"> • Promote a familiar environment (toys, plants, photos) • Control light and noise in the patient’s room <ul style="list-style-type: none"> ◦ Lights on with window shades up during the day ◦ Doors and window shades closed with lights, TV and music off while asleep • Minimize/avoid restraint use • Encourage consistent and familiar caregiver presence; promote parenteral involvement • Encourage normal day/night routine • Re-orient patient to time and place
I	Infection/Mobilization/Inflammation	Infectious workup	<ul style="list-style-type: none"> • Treat infection and fever • Encourage early mobilization as appropriate • Consult child life, PT/OT
N M	New Organ Dysfunction and Metabolic Disturbance	<ul style="list-style-type: none"> • CNS, CV, pulmonary, hepatic, renal, endocrine systems • Evaluate with CMP and ABG for hypo/hypermnatremia, hypo/hyperkalemia, hypocalcemia, alkalosis/acidosis 	<ul style="list-style-type: none"> • Normalize electrolytes • See Appendix D for emergence agitation and NMDA encephalitis
A	Awake	<ul style="list-style-type: none"> • No bedtime routine • Sleep wake cycle disturbance 	<ul style="list-style-type: none"> • Establish day/night cycles <ul style="list-style-type: none"> ◦ Cluster care at night ◦ Sleep hygiene – schedule uninterrupted 5-6 hours of night time sleep and age appropriate daytime nap; consider use of ear plugs/muffs and eye mask as appropriate
P	Pain	<ul style="list-style-type: none"> • Untreated or undertreated pain • Over-treated (sedated) 	<ul style="list-style-type: none"> • Adjust analgesia regimen if appropriate • Daily review of need for tubes/lines
S	Sedation	<ul style="list-style-type: none"> • Critically evaluate all benzodiazepine use • Set sedation target 	<ul style="list-style-type: none"> • Consider weaning or discontinuing benzodiazepines • Consider adding dexmedetomidine in patients with appropriate hemodynamics

“Clinical Team to Bedside to Assess Patient: BRAIN MAPS,” by The Children’s Hospital of Philadelphia’s CICU/PCU/PICU Delirium Clinical Pathway, n.d. Copyright 2019 by Children’s Hospital of Philadelphia

Department of Clinical Effectiveness V2

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APPENDIX C: Pharmacologic Therapies^{1,2}

Medication	Starting Dosing	Maximum Daily Dose	Adverse Effects	Monitoring
Haloperidol	Loading dose: 0.15 to 0.25 mg IV slowly over 30 to 45 minutes Maintenance dose: 0.015 to 0.025 mg/kg/dose IV every 6 hours	0.45 mg/kg/day	<ul style="list-style-type: none"> • Altered cardiac conduction • Anticholinergic effects (dry mouth, blurred vision, constipation, urinary retention) • Blood dyscrasias • Extrapyramidal symptoms • Neuroleptic malignant syndrome • CNS depression • Orthostatic hypotension • Falls 	<ul style="list-style-type: none"> • EKG at baseline and then periodically • CBC with differential • Vital signs • Mental status • Involuntary movements and extrapyramidal symptoms
Olanzapine	Age < 3 years: 0.625 mg PO daily at bedtime Age ≥ 3 years: 1.25 mg to 5 mg PO daily at bedtime	10 mg/day		
Quetiapine	0.5 mg/kg/dose (maximum 25 mg/dose) PO every 8 hours	500 mg/day		
Risperidone	Age < 5 years old: 0.1 to 0.2 mg PO daily at bedtime Age ≥ 5 years old: 0.2 to 0.5 mg PO daily at bedtime	Weight < 20 kg: 1 mg/day Weight 20 to 45 kg: 2.5 mg/day Weight > 45 kg: 3 mg/day		
Aripiprazole	Weight < 25 kg: 1 mg PO daily Weight ≥ 25 kg: 2 mg PO daily	15 mg/day		

¹ Consider consulting Psychiatry and/or Pediatric Supportive Care when prescribing these medications

² Gradual tapering of antipsychotics, if indicated, is recommended to prevent withdrawal symptoms and minimize the risk for relapse

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APPENDIX D: Additional Differential Diagnostic Considerations

The diagnosis of delirium may require additional considerations including:	
Emergence Agitation	This is a phenomenon noted in patients who are recovering from anesthesia. This impacts many children after surgery and also occurs in children recovering from anesthesia for non-painful procedures (e.g., MRI). Emergence agitation generally resolves once the anesthetic wears off.
Anti-NMDA Encephalitis Associated Delirium	<p>Anti-NMDA encephalitis is a rare cause of delirium and acute agitation in pediatrics. Diagnosis is made in conjunction with Neurology, Psychiatry and oncology subspecialists based off of CSF studies.</p> <p>Delirium associated with anti-NMDA encephalitis is treated best in consultation with Psychiatry. Treatment of underlying disorder is required; treatment of delirium has been described utilizing benzodiazepines, clonidine and olanzapine (limited evidence from case report)¹.</p>
Non-delirious Disorganized Behavior	<p>Disorganized behavior may manifest in some patients (especially young) in which the diagnosis of delirium is difficult to make. These patients may be delirious. If patient safety and/or dislodgement of high-risk medical devices is of concern, these patients may be treated with a trial of pharmacological therapy after the risks and benefits of these treatments have been discussed with parents/caregivers.</p> <p>Consult Psychiatry and/or Pediatric Supportive Care</p>

“Additional Differential Diagnostic Considerations” by Children’s Hospital of Philadelphia’s CICU/PCU/PICU Delirium Clinical Pathway, n.d. Copyright 2019 by Children’s Hospital of Philadelphia.

¹ Scharko, A. M., Panzer, J., & McIntyre, C. M. (2015). Treatment of delirium in the context of anti-N-methyl-D-aspartate receptor antibody encephalitis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 54(3), 233-234. doi:10.1016/j.jaac.2014.12.014

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APPENDIX E: Richmond Agitation Sedation Scale (RASS)

+4	Combative	Overly combative, violent, immediate danger to staff
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent, non-purposeful movement, fights ventilator
+1	Restless	Anxious, but movements not aggressive or vigorous
0	Alert and calm	-
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (greater than or equal to 10 seconds)
-2	Light sedation	Briefly awakens with eye contact to voice (less than 10 seconds)
-3	Moderate sedation	Movement or eye openings to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	Unarousable

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SUGGESTED READINGS

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