The UK Training Manual for Delirium Screening using the Cornell Assessment for Paediatric Delirium

FINAL Version 1.0, 7th Nov 2021

Introduction

In the PICU, delirium often goes unrecognised and undertreated and the longer that a child experiences delirium, the more traumatic the consequences. Delirium manifests as a change in the child or infant's attention and awareness that was not previously there. It develops over a short time and it fluctuates.[1] Knowing when a child has delirium can be challenging because of the variation in age, development and diagnoses. Despite validated tools for screening delirium in children, few PICUs internationally perform screening.[2] International prevalence studies have reported that at least 30% of critically ill children and adolescents have delirium.[3,4] We do not yet know the prevalence in the UK as, until now, screening was rarely performed in the UK.

The UK Paediatric Delirium Group, established in 2020, is working to address this patient important issue. This group has representation from nearly all UK PICUs. The majority of PICUs were not screening for delirium and this led to agreement to use a common screening tool – the Cornell Assessment for Paediatric Delirium. The first step in establishing the prevalence of delirium is screening. Once this is known, then we can assess the effectiveness of clinical interventions to prevent or manage delirium.

This Training Manual and additional resources were developed by experts in the field of delirium, educational and implementation from the UK Delirium Group. It was designed to assist CAPD training within UK PICUs. The core contributors were:

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Contents

UK Paediatric Delirium Group website

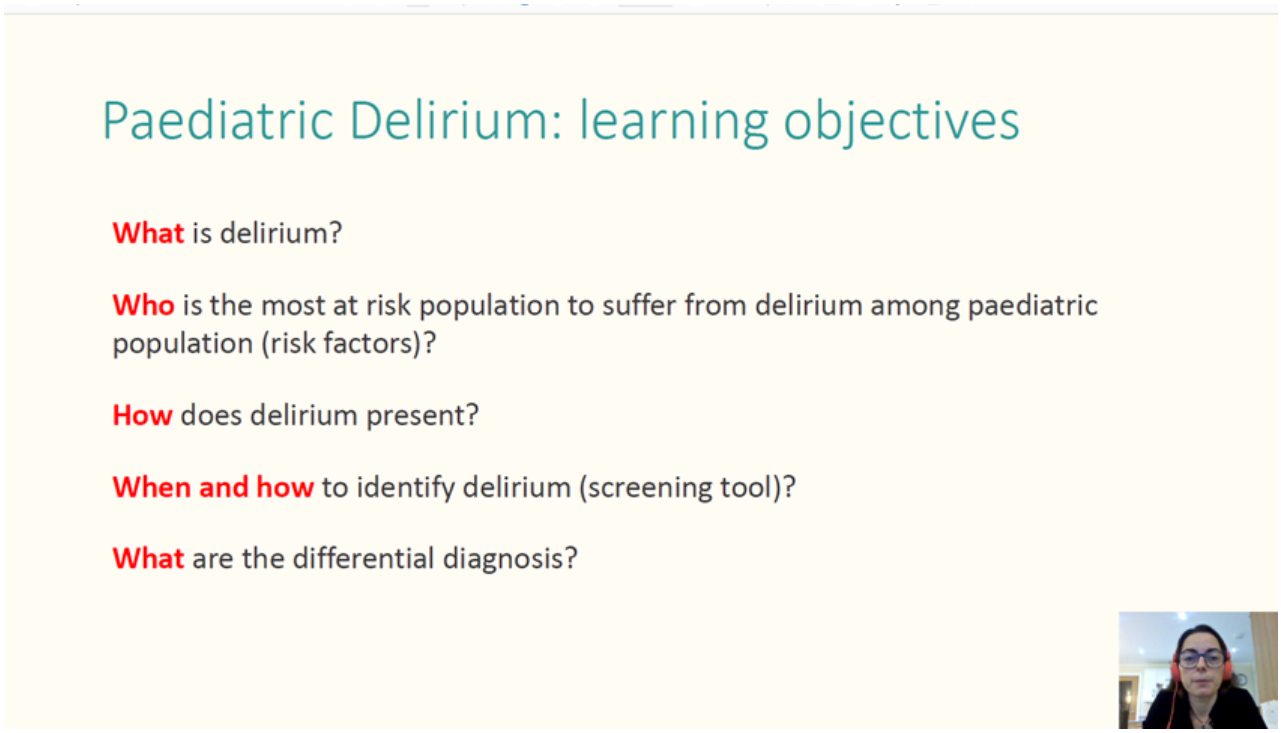
The link to the website is https://www.qub.ac.uk/sites/uk-paediatric-delirium-group

The website was launched on 8 November 2021 and will be updated regularly.

The current version holds a copy of the training manual, videos referred to this manual and addition resources that can be downloaded to screen and record delirium

Video 2 Paediatric Delirium

In the presentation which you can open from the website, Dr Gala-Peralta presents an overview of delirium, risk factors, types of delirium and differential diagnosis.



Definition

Delirium is a serious global cerebral dysfunction that affects neurocognitive and sensorial functions.

It is characterized by an ACUTE onset and a FLUCTUATING course with disturbances in awareness and cognition as a result of PREDISPOSING and PRECIPITATING FACTORS.

It is associated with poor outcome, mortality, higher health care cost, prolonged length of stay and mechanical ventilation.

Predisposing and precipitating risks factors

Risk Factors for development of delirium	
Predisposing Risk Factors *(Non-modifiable Risk Factors)*	**Precipitating Risk Factors** *(Modifiable Risk Factors)*
Age <2 years	Anticholinergic medications
Developmental delay	Benzodiazepines
High severity of illness	Cardiac bypass surgery
Low albumin	Immobilization
Prolonged Mechanical ventilation	Prolonged ICU length of stay
Pre-existing medical condition	Restraints
Status epilepticus as primary diagnosis*	Sleep rhythm disruption*
	Suboptimal pain management*

A.Patel, MJ Bell and C.Traube. Delirium in Paediatric Critical Care. Pediatr Clin N Am 64 (2017) 1117–1132
**Dervan L, Di Gennaro J, Farris R, Scott Watson R. Delirium in a Tertiary PICU: Risk Factors and Outcomes. Pediatr Crit Care Med 2020 Jan;21(1):21-32*

Types of delirium

Type of delirium	Symptoms	Examples
Hyperactive	Agitation Restlessness Combative	Pulling at lines Hallucination
Hypoactive ***misdiagnosed for over sedation or clinical depression in older patients (teenagers) *** most common	Apathetic Withdrawn Unresponsive	Slow movements No interest in toys No response to family
Mixed *** second most common	Signs of both hyperactive and hypoactive	Fluctuation between both types

A.Patel, MJ Bell and C.Traube. Delirium in Paediatric Critical Care. Pediatr Clin N Am 64 (2017) 1117–1132

Differential diagnosis

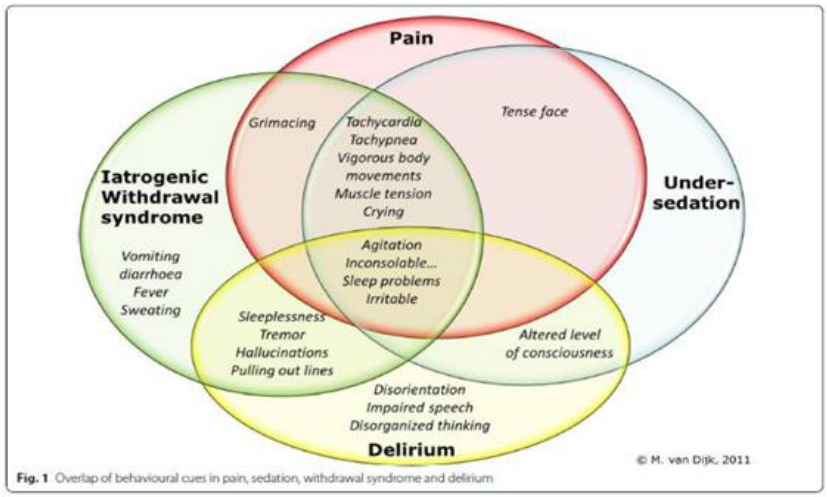
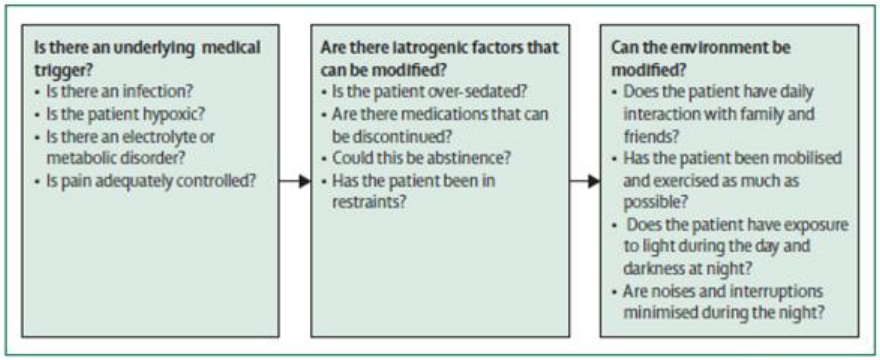


Fig. 1 Overlap of behavioural cues in pain, sedation, withdrawal syndrome and delirium

Harris et al. Clinical recommendations for pain, sedation, withdrawal and delirium assessment in critically ill infants and children: an ESPNIC position statement for healthcare professionals. 2016 Jun;42(6):972-86

Differential Diagnosis and triggering factors

FIRST STEP is to investigate for a medical trigger
SECOND STEP is to identify modifiable iatrogenic factors
THIRD STEP is to assess modifiable environmental factors



Dechnik A, Traube C. Delirium in hospitalised children. Lancet Child Adolesc Health. 2020 April; 4(4): 312-321

Conclusions

Delirium is a common and under-recognised problem in critically ill children

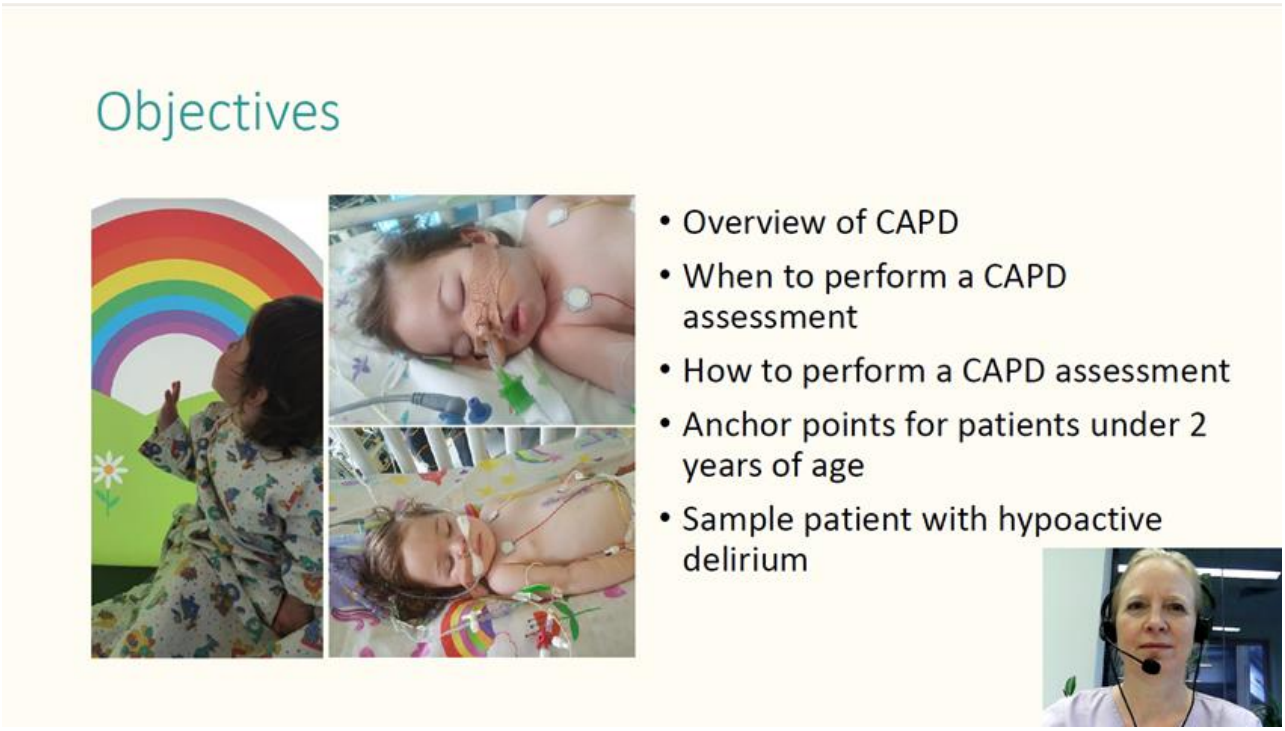
Early recognition is key to successful intervention

Widespread screening for paediatric delirium is a necessary first step

Detecting and treating paediatric delirium may improve short and long-term outcome for children

Video 3 Screening for paediatric delirium using the CAPD

In this presentation, available on the website, Dr Jennie Craske presents an overview of the CAPD tool, the anchor points and an example of screening using the CAPD tool.



Cornell Assessment of Pediatric Delirium (CAPD)

http://www.icudelirium.org/pediatric.html

Please answer the following questions based on your interactions with the patient over the course of your shift:						
	Never	Rarely	Sometimes	Often	Always	Score
	4	3	2	1	0	
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	Rarely	Sometimes	Often	Always	
	0	1	2	3	4	
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	

Who to screen
- Critically ill children
- All ages and developmental stages
- Uncooperative patients

When to screen
- Towards the end of each nursing shift, after sufficient interactions with the awake patient, upon which to base an assessment

When not to screen
- Deep sedation or comatose (COMFORT-B ≤11)
- Muscle-relaxed

Traube C, Silver G, Kearney J, Patel A, Atkinson TM, Yoon MJ, et al. Cornell Assessment of Pediatric Delirium: A Valid, Rapid, Observational Tool for Screening Delirium in the PICU. Critical Care Medicine. 2014 Mar;42(3):656–63.

Performing a CAPD screen

Eight behaviours observed over a shift.
Score how frequently each occurs.
Sum the item scores.

CAPD≥9 suggests delirium

	Never	Rarely	Sometimes	Often	Always	Score
	4	3	2	1	0	
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	Rarely	Sometimes	Often	Always	
	0	1	2	3	4	
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	

First 4 behaviours
Eye contact
Purposeful actions
Awareness
Communicates needs and wants

Never	4
Rarely	3
Sometimes	2
Often	1
Always	0

Scoring reverses

Last 4 behaviours
Restless
Inconsolable
Underactive
Slow to respond

Never	0
Rarely	1
Sometimes	2
Often	3
Always	4

The CAPD is designed to work well even in preverbal children

Assess in partnership with parents

Use the Developmental Anchor Points Chart as a reference for different age groups

	NB	4 weeks	6 weeks	8 weeks	28 weeks	1 year	2 years
1. Does the child make eye contact with the caregiver?	Fixates on face	Holds gaze briefly Follows 90 degrees	Holds gaze	Follows moving object/caregiver past midline, regards examiner's hand holding object, focused attention	Holds gaze. Prefers primary parent. Looks at speaker.	Holds gaze. Prefers primary parent. Looks at speaker.	Holds gaze. Prefers primary parent. Looks at speaker Figure0002
2. Are the child's actions purposeful?	Moves head to side, dominated by primitive reflexes	Reaches (with some discoordination)	Reaches	Symmetric movements, will passively grasp handed object	Reaches with coordinated smooth movement	Reaches and manipulates objects, tries to change position, if mobile may try to get up.	Reaches and manipulates objects, tries to change position, if mobile may try to get up and walk
3. Is the child aware of his/her surroundings?	Calm awake time	Awake alert time Turns to primary caretaker's voice May turn to smell of primary care taker	Increasing awake alert time Turns to primary caretaker's voice May turn to smell of primary care taker	Facial brightening or smile in response to nodding head, frown to bell, coos	Strongly prefers mother, then other familiars. Differentiates between novel and familiar objects	Prefers primary parent, then other familiars, upset when separated from preferred care takers. Comforted by familiar objects especially favorite blanket or stuffed animal	Prefers primary parent, then other familiars, upset when separated from preferred care takers. Comforted by familiar objects, especially favorite blanket or stuffed animal
4. Does the child communicate needs and wants?	Cries when hungry or uncomfortable	Cries when hungry or uncomfortable	Cries when hungry or uncomfortable	Cries when hungry or uncomfortable	Vocalizes /indicates about needs, e.g., hunger, discomfort, curiosity in objects, or surroundings	Uses single words or signs	3 to 4 word sentences, or signs. May indicate toilet needs, calls self or me
5. Is the child restless?	No sustained awake alert state	No sustained calm state	No sustained calm state	No sustained awake alert state	No sustained calm state	No sustained calm state	No sustained calm state
6. Is the child inconsolable?	Not soothed by parental rocking, singing, feeding, comforting actions	Not soothed by parental rocking, singing, feeding, comforting actions	Not soothed by parental rocking, singing, feeding, comforting actions	Not soothed by parental rocking, singing, comforting actions	Not soothed by usual methods, e.g., singing, holding, talking	Not soothed by usual methods, e.g., singing, holding, talking, reading	Not soothed by usual methods, e.g., singing, holding, talking, reading (may tantrum, but can organize)
7. Is the child underactive—very little movement while awake?	Little if any flexed and then relaxed state with primitive reflexes (Child should be sleeping comfortably most of the time)	Little if any reaching, kicking, grasping (still may be somewhat discoordinated)	Little if any reaching, kicking, grasping (may begin to be more coordinated)	Little if any purposive grasping, control of head and arm movements, such as pushing things that are noxious away	Little if any reaching, grasping, moving around in bed, pushing things away	Little if any play, efforts to sit up, pull up, and if mobile crawl or walk around	Little if any more elaborate play, efforts to sit up and move around, and if able to stand, walk, or jump
8. Does it take the child a long time to respond to interactions?	Not making sounds or reflexes active as expected (grasp, suck, moro)	Not making sounds or reflexes active as expected (grasp, suck, moro)	Not kicking or crying with noxious stimuli	Not cooing, smiling, or focusing gaze in response to interactions	Not babbling or smiling/laughing in social interactions (or even actively rejecting an interaction)	Not following simple directions. If verbal, not engaging in simple dialogue with words or jargon	Not following 1–2 step simple commands. If verbal, not engaging in more complex dialogue

Anchor points

New born, 4 weeks, 6 weeks, 8 weeks, 28 weeks, 1 year, 2 years

New born patient		One year old patient
Fixates on face	*Eye contact*	Holds gaze. Prefers primary parent. Looks at speaker
Moves head to side, dominated by primitive reflexes	*Purposeful actions*	Reaches and manipulates objects, tries to change position, if mobile may try to get up
Calm, awake time	*Awareness*	Prefers primary parent, then other familiars, upset when separated from preferred care takers. Comforted by familiar objects (blanket, toys)
Cries when hungry or uncomfortable	*Communicate needs and wants*	Uses single words, or sings
No sustained awake alert state	*Restless*	No sustained calm state
Not soothed by parental rocking, singing, feeding, comforting actions	*Inconsolable*	Not soothed by usual methods (singing, holding, talking, reading)
Little if any flexed and then relaxed state with primitive reflexes	*Underactive*	Little if any play, efforts to sit up, pull up, and if mobile crawl or walk around
Not making sounds or reflexes active as expected (grasp, suck, Moro)	*Slow to respond*	Not following simple directions. If verbal not engaging in simple dialogue with words or jargon

Behavioural signs of delirium

Hypoactive delirium in a 14 month old.

CAPD items			
1	Eye contact	5	Restless
2	Purposeful actions	6	Inconsolable
3	Aware of surroundings	7	Underactive
4	Communicate needs and wants	8	Slow to respond

Remember

Who needs to be screened for delirium?

Every patient every shift

That means day of admission and day of discharge.

(Except children with COMFORT-B ≤11)

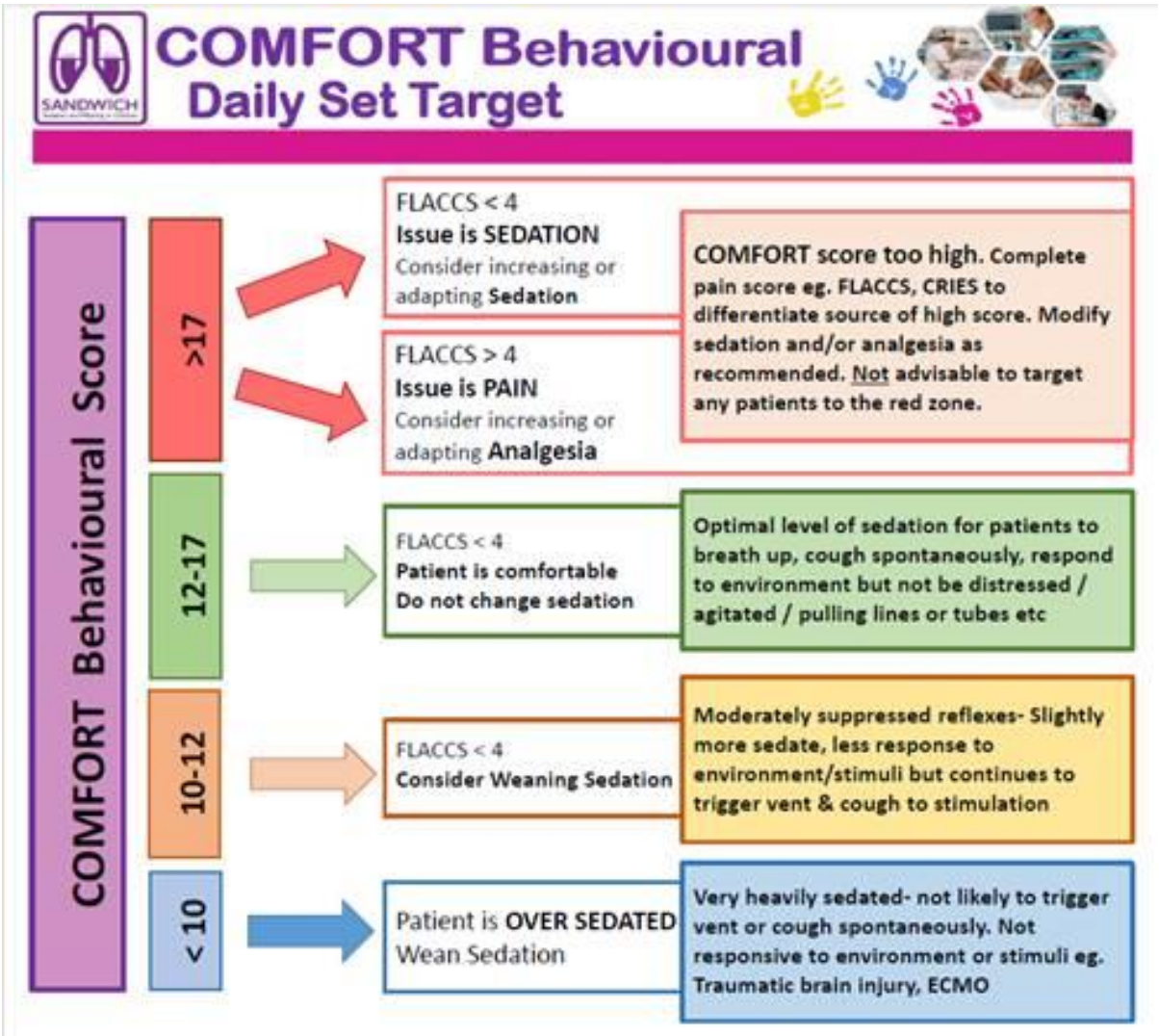
COMFORT Behavioural Assessment

Delirium screening cannot be undertaken in infants or children who are deeply sedated or comatose.

The majority of UK PICUs use the COMFORT Behavioural tool to assess sedation. The COMFORT score target-setting guide, shown below, was recommended by the SANDWICH trial to guide optimal sedation scores for children.[5]

If a child has a COMFORT score of 11 or less, it indicates that the child is over-sedated, and in this case, a reliable assessment of delirium cannot be made.

Unless there is a medically prescribed clinical reason for maintaining deep sedation, we recommend that you reduce sedation to achieve a COMFORT score within the green zone (optimal sedation). Aim for a higher score within the green zone if the child is weaning from mechanical ventilation.



The CAPD screening tool record sheet

To capture screening using the CAPD and enable staff to view delirium trends over time, we designed this record sheet.

A score of 9 or above indicates the child is potentially delirium positive and this should be reported to medical staff for further investigation and management.

UK PAEDIATRIC DELIRIUM GROUP

CAPD Delirium Screening Record

Insert Patient Sticker:

Screen every patient once per shift, after at least 4-6 hours of observation.

	Date:	21/3								
	Time:	18:30								
(Do not assess if COMFORT B ≤11)	COMFORT B SCORE	14								
PARENT/GARDIAN PARTICIPATION IN ASSESSMENT Y/N		y								
1.Does the child make eye contact with their caregiver?	4- NEVER									
	3- RARELY									
	2- SOMETIMES	2								
	1- OFTEN									
	0- ALWAYS									
2. Are the child's actions purposeful?	4- NEVER									
	3- RARELY	3								
	2- SOMETIMES									
	1- OFTEN									
	0- ALWAYS									
3. Is the child aware of his/her surroundings?	4- NEVER									
	3- RARELY									
	2- SOMETIMES	2								
	1- OFTEN									
	0- ALWAYS									
4. Does the child communicate needs and wants?	4- NEVER									
	3- RARELY	3								
	2- SOMETIMES									
	1- OFTEN									
	0- ALWAYS									
5. Is the child restless?	0- NEVER									
	1- RARELY									
	2- SOMETIMES	2								
	3- OFTEN									
	4- ALWAYS									
6. Is the child inconsolable?	0- NEVER									
	1- RARELY									
	2- SOMETIMES	2								
	3- OFTEN									
	4- ALWAYS									
7. Is the child underactive – very little movement while awake?	0- NEVER	0								
	1- RARELY									
	2- SOMETIMES									
	3- OFTEN									
	4- ALWAYS									
8. Does it take the child a long time to respond to interactions?	0- NEVER									
	1- RARELY	1								
	2- SOMETIMES									
	3- OFTEN									
	4- ALWAYS									
	TOTAL SCORE	15								
	ASSESSOR INITIALS	LMc								

EXAMPLE

Developed with permission of Dr Chani Traube & UK Paediatric Delirium Group

UKPDG CAPD Record Sheet v1.0 FINAL 26/10/2021

The back of the record sheet has additional space where you may wish to record further comments or notes on treatment.

CAPD Delirium Screening

- **Compare behaviour with the CAPD Developmental Anchor Points tool for their age!**
- **Patient to be assessed** by the bedside nurse **with their parent/ guardian input** at least halfway through the 12-hour day/night shift to capture fluctuations in behaviour indicating delirium.
- CAPD is a screening tool. **CAPD score ≤9** indicates the need for further evaluation for delirium.
- **Do not continue** with CAPD assessment in an intubated child with a **COMFORT B score ≤11.** They are too sedated to display behavioural cues indicative of delirium.

If delirium suspected think...

B Bring oxygen (hypoxemia, decreased cardiac output, anaemia)
R Remove or Reduce deliriogenic drugs (anticholinergics, benzodiazepines)
A Atmosphere (lights, sounds, noise, restraints, absent family, 'strangers', out of routine)
I Infection, Immobilization, Inflammation
N New organ dysfunction (Neuro, Cardiovascular, Respiratory, Hepatic, Renal, Endocrine)

M Metabolic disturbances: alkalosis, acidosis, ↑/↓Na^+, ↑/↓ K^+, ↓ Glucose, ↓ Ca^{++}
A Awake (No bedtime routine, sleep- wake cycle disturbance)
P Pain (too much & not enough drug OR paint treated and now too much drug)
S Sedation (Assess need and set patient specific COMFORT B target)

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TIME & DATE	NOTES

CAPD Anchor Points

For children under the age of 2-years old, developmentally appropriate anchor points are shown to assist your assessment.

Developmental Anchor Points For Youngest Patients

	NB	4 weeks	6 weeks	8 weeks	20 weeks	1 year	2 years
1. Does the child make eye contact with the caregiver?	Fixates on face	Holds gaze briefly Follows 90 degrees	Holds gaze	Follows moving object/caregiver past midline, regards examiner's hand holding object, focused attention	Holds gaze. Prefers primary parent. Looks at speaker	Holds gaze. Prefers primary parent. Looks at speaker	Holds gaze. Prefers primary parent. Looks at speaker
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References

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