

reader is referred to **SDC Section B** (<http://links.lww.com/PCC/B920>) for more detailed discussion of pain assessment tools, analgesic choices and pharmacology, and nonpharmacologic adjuncts.

Assessment of Pain.

Question: What pain assessment tools should be used in critically ill pediatric patients? (**SDC Section B1**, <http://links.lww.com/PCC/B920>).

Answer:

1) Self-report scales:

- a) “We suggest” that, in critically ill pediatric patients 6 years old and older who are capable of communicating, pain assessment via self-report be routinely performed using the Visual Analog Scale (VAS), Numeric Rating Scale, Oucher Scale, or Wong-Baker Faces pain scale (*conditional, low-level evidence*).

2) Behavioral/Observational scales:

- a) “We recommend” the use of either the Faces, Legs, Activity, Cry, and Consolability (FLACC) or COMFORT-Behavior (COMFORT-B) scales for assessing pain in noncommunicative critically ill pediatric patients (*strong, moderate-level evidence*).
- b) “We recommend” the use of observational pain assessment tools rather than vital signs alone for assessment of postoperative pain in critically ill pediatric patients (*strong, moderate-level evidence*).
- c) “We suggest” the use of observational pain assessment tools rather than vital signs alone for assessment of procedure-related pain in critically ill pediatric patients (*conditional, low-level evidence*) in critically ill pediatric patients.

Rationale: Pain assessment tools can be divided into self-report and observational rating scales. In children able to express themselves, self-report represents the “gold standard” for pain assessment (20, 22, 34–39). The most commonly used pediatric self-report tools are the VAS (40), Numerical Rating Scale (41), Oucher scale (42), and the Wong Baker Faces pain scale (43) (**SDC Table 1**, <http://links.lww.com/PCC/B920>). Although all of these tools have been broadly validated in pediatric populations as young as 3 years old, self-report tools are felt to be most reliable in patients who are at least 6 years old (17, 19, 22, 37–39, 44).

Observational pain scoring systems incorporate behavioral ± physiologic variables to assess pain in patients unable to self-report pain (45–48). The FLACC, COMFORT, and COMFORT-B scales have been the most widely applied observational tools in critically ill children (**SDC Table 2**, <http://links.lww.com/PCC/B920>) (30, 37, 38, 49, 50).

The FLACC score evaluates five behavioral components and is highly valid and reliable in assessing postoperative pain in critically ill children (51, 52). The revised FLACC was developed and validated for use in nonverbal and cognitively impaired children (53). The COMFORT score was initially developed and validated to assess general distress in critically ill pediatric patients but has additionally been shown valid for differentiating pain from other sources of distress (54, 55). The modified COMFORT-B scale removed the vital sign elements of the COMFORT scale due to concerns regarding their reliability for the assessment of pain and distress during critical illness (55, 56).

Although consensus regarding the optimum method of assessing pain in nonverbal children remains elusive, investigators increasingly advocate for scoring systems incorporating a combination of behavioral and physiologic variables (27, 28, 48, 57, 58). No pain or sedation tools have been validated for use in critically ill pediatric patients receiving neuromuscular blocking agents (NMBAs). Consequently, despite reliability limitations, changes in vital signs in these patients may indicate acute pain and should be addressed (59, 60).

Pharmacologic Management of Pain.

Question: What class of analgesic is superior for treating pain in critically ill pediatric patients? (**SDC Section B2**, <http://links.lww.com/PCC/B920>)

Answer: “We recommend” that IV opioids be used as the primary analgesic for treating moderate to severe pain in critically ill pediatric patients (*strong, moderate-level evidence*).

Rationale: Opioids remain the mainstay of therapy for management of acute surgical and medical pain in the critically ill pediatric patient, including pain associated with MV (33, 34) (**SDC Table 3**, <http://links.lww.com/PCC/B920>). There are no studies comparing analgesic classes across the spectrum of pediatric critical illness. However, multiple practice survey and intra-analgesic class comparative studies do describe IV opioids as the primary analgesic class used across the spectrum of critically ill pediatric patients (3, 5, 33, 61, 62). A variety of IV opioids have been used in this setting including fentanyl, morphine, hydromorphone, and remifentanyl (63–69). Due to lack of active metabolites, fentanyl may be preferred in the setting of renal dysfunction. Morphine and hydromorphone should be used cautiously in patients with