Increased vital signs, Expression, and Sleeplessness. Each indicator is scored from 0 to 2, with a total possible pain score, representing the worst pain, of 10. A pain score greater than 4 is considered significant. This tool has been tested for reliability and validity for postoperative pain in infants between the ages of 32 weeks of gestation up to 20 weeks postterm (60 weeks) (Sweet and McGrath, 1998).

TABLE 5-3

Summary of Pain Assessment Scales for Infants

Ages of Use	Reliability and Validity	Variables	Scoring Range
Neonatal Infant Pain Scale (NIPS) (Lawrence, Alcock, McGrath, et al, 1993)			
Average gestational age: 33.5 weeks	Interrater reliability: 0.92 and 0.97 Construct validity using analysis of variance between scores before, during, and after procedure: F = 18.97, df = 2.42, $p < 0.001$ Concurrent validity between NIPS and visual analog scale (VAS) using Pearson correlations: 0.53-0.84 Internal consistency using Cronbach alpha: 0.95, 0.87, and 0.88 for before, during, and after procedure scores	Facial expression (0-1) Arms (0-1) Cry (0-2) Legs (0-1) Breathing patterns (0-1) State of arousal (0-1)	0 = no pain; 7 = worst pain
CRIES (Krechel and Bildner, 1995)			
32-60 weeks of gestational age	Concurrent validity between CRIES and POPS: 0.73 ($p < 0.0001$, $n = 1382$); Spearman correlation between subjective report and POPS and CRIES: 0.49 ($p < 0.0001$, $n > 1300$) Discriminant validity using before and after analgesia scores: Wilcoxon sign rank test; mean decline of 3.0 units ($p < 0.0001$, $n = 74$) Interrater reliability using Spearman correlation coefficient: r = 0.72 ($p < 0.0001$, $n = 680$)	Crying (0-2) Requires increased oxygen (0-2) Increased vital signs (0-2) Expression (0-2) Sleepless (0-2)	0 = no pain; 10 = worst pain
Premature Infant Pain Profile (PIPP) (Stevens, Johnston, Petryshen, et al, 1996)			
28-40 weeks of gestational age	Internal consistency using Cronbach alpha: 0.75-0.59; standardized item alpha for six items: 0.71 Construct validity using handling versus painful situations: Statistically significant differences (paired t = 12.24, two-tailed $p < 0.0001$, and Mann-Whitney U = 765.5, $p < 0.00001$) and using real versus sham heel stick procedures with infants ages 28-30 weeks of gestational age (t = 2.4, two-tailed $p < 0.02$, and Mann-Whitney U = 132, $p < 0.016$) and with full-term boys undergoing circumcision with topical anesthetic versus placebo (t = 2.6, two-tailed $p < 0.02$, or nonparametric equivalent Mann-Whitney U test, U = 145.7, two-tailed $p < 0.02$)	Gestational age (0-3) Eye squeeze (0-3) Behavioral state (0-3) Nasolabial furrow (0-3) Heart rate (0-3) Oxygen saturation (0-3) Brow bulge (0-3)	0 = no pain; 21 = worst pain
Neonatal Pain, Agitation, and Sedation Scale (NPASS) (Puchalski and Hummel, 2002)			
Birth (23 weeks of	Interrater reliability using ICC: 0.95 CI for preintervention and postintervention pain scale;	Cry/irritability (0-2)	Pain score: 0 = no pain;