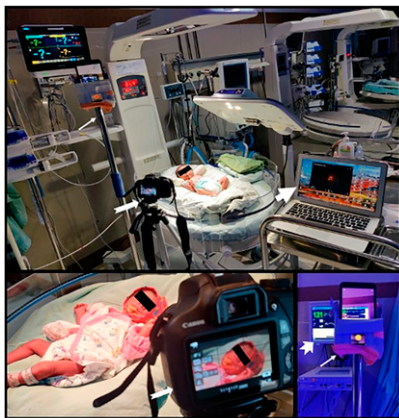


Supplemental Information



SUPPLEMENTAL FIGURE 5

Arrangements made for the heel-lance procedure, showing a digital camera (EOS 1300, Canon; notched arrow) that recorded the infants' facial expressions, a modified intravenous stand-mounted mobile phone camera (Xiaomi Mi Max 2) (arrow) that recorded the vitals from the monitor (notched arrowhead), and a laptop computer (arrowhead).

Video sr no. _____		USER CODE: _____		Baseline state			Raw data					PIPP-Score			PIPP-R score			
Process	Indicators	Score	score	Corrected GA	Baseline HR	Baseline SpO2	PIPP 30 (raw)	PIPP 30 (final)	PIPP 60 (raw)	PIPP 60 (final)	PIPP 120 (raw)	PIPP 120 (final)	PIPP 30 (score)	PIPP 60 (score)	PIPP 120 (score)	PIPP-R 30	PIPP-R 60	PIPP-R 120
Chart	Corrected Gestational age (weeks)	>=36	0															
		32- 35 ^{6/7}	1															
		28-31 ^{6/7}	2															
		< 28	3															
Observe infant for 15 sec	Behavioral state	Active awake, eyes open, facial movements +	0	Baseline behaviour score														
		Quite awake, eyes open, no facial movements	1	Min	Max	Predominant												
		Active sleep, eyes closed, facial movements +	2															
		Quite sleep, eyes closed, no facial movements	3															
Observe baseline HR and O2 sats for 30 sec	Max HR increase	0-4/min	0															
		5-14/min	1															
		15-24/min	2															
		>= 25/min	3															
	Min SPO ₂ fall %	0-2.4 %	0															
		2.5-4.9%	1															
		5-7.4%	2															
		>= 7.5%	3															
Observe infant's facial action for 30 seconds	Brow bulge (% of time spent)	None (0-9%)	0															
		Minimum (10-39%)	1															
		Moderate (40-69%)	2															
		Maximum (>= 70%)	3															
	Eye squeeze (% of time spent)	None (0-9%)	0															
		Minimum (10-39%)	1															
		Moderate (40-69%)	2															
		Maximum (>= 70%)	3															
	Naso-labial furrow (% of time spent)	None (0-9%)	0															
		Minimum (10-39%)	1															
		Moderate (40-69%)	2															
		Maximum (>= 70%)	3															
FINAL SCORE			Subtotal score															

SUPPLEMENTAL FIGURE 6
The sheet used for scoring PIPP and PIPP-R.

SUPPLEMENTAL TABLE 3 Description of the Various Video Segments

Video Segment	Phase	Duration (s)	Time Period	Purpose
1	a	15	1 min 30 s to 1 min 45 s	Baseline physiologic parameters, behavioral state
2	e	30	4 min 30 s to 5 min 0 s	PIPP at 30 s
3	e	30	5 min 0 s to 5 min 30 s	PIPP at 60 s
4	e	30	6 min 0 s to 6 min 30 s	PIPP at 120 s

SUPPLEMENTAL TABLE 4 Instructions for Scoring PIPP and PIPP-R

Instructions for Scoring	
PIPP	<p>Step 1: Familiarize yourself with each indicator and how it is to be scored.</p> <p>Step 2: Nurse stands where the baby's body and face can be seen clearly.</p> <p>Step 3: Score gestational age before you begin the assessment.</p> <p>Step 4: Score behavioral state by observing the infant for 15 s.</p> <p>Step 5: Record baseline heart rate and oxygen saturation.</p> <p>Step 6: Observe the infant for 30 s. You will need to look back and forth from the heart monitor to the baby's face.</p> <p>Step 7: Score physiologic and facial changes seen during that time and record immediately following the observation period.</p> <p>Step 8: Calculate the total score.</p>
PIPP-R	<p>Step 1: Observe the infant for 15 s at rest and assess the vital sign indicators (highest HR and lowest SpO₂ and behavioral state).</p> <p>Step 2: Observe infant for 30 s after procedure and assess the change in vital sign indicators (maximum HR, lowest SpO₂, and duration of facial actions observed). If an infant requires an increase in oxygen at any time before or during the procedure, score as 3 for SpO₂ indicator.</p> <p>Step 3: Calculate the subtotal score from step 2.</p> <p>Step 4: Score for corrected gestational age and behavioral state if the subtotal score >0.</p> <p>Step 5: Calculate the total score by adding subtotal, gestational age, and behavioral state scores.</p>

HR, heart rate; SpO₂, pulse oxygen saturation.

SUPPLEMENTARY TABLE 5 Exploratory Subgroup Analysis

Pain Score	25% Dextrose	24% Sucrose	P
28 wk and 0 d to 31 wk and 6 d (<i>n</i> = 7 and 9, respectively)			
PIPP at 30 s	6.50 (4.75–9.25)	7.00 (5.25–9.25)	.792
PIPP at 60 s	5.50 (4.75–7.00)	5.50 (4.50–6.50)	.958
PIPP at 120 s	6.00 (4.75–8.00)	5.00 (4.00–6.50)	.428
PIPP-R at 30 s	6.50 (4.75–9.25)	7.00 (5.25–9.25)	.792
PIPP-R at 60 s	5.50 (4.75–7.00)	5.50 (4.50–6.50)	.958
PIPP-R at 120 s	6.00 (4.75–8.00)	5.00 (0.00–6.50)	.313
32 wk and 0 d to 35 wk and 6 d (<i>n</i> = 25 and 22, respectively)			
PIPP at 30 s	5.50 (4.00–7.50)	7.00 (7.50–8.50)	.181
PIPP at 60 s	4.50 (3.75–6.00)	5.00 (4.50–7.00)	.096
PIPP at 120 s	4.00 (3.00–6.00)	5.00 (4.00–5.00)	.138
PIPP-R at 30 s	5.50 (4.00–7.50)	7.00 (5.50–8.50)	.185
PIPP-R at 60 s	4.50 (0.00–6.00)	5.00 (4.50–7.00)	.112
PIPP-R at 120 s	3.50 (0.00–6.00)	5.00 (4.00–5.00)	0.173
Infants not on nCPAP (<i>n</i> = 25 and 26, respectively)			
PIPP at 30 s	6.48 (2.4)	7.12 (2.03)	.311
PIPP at 60 s	5.08 (2.27)	5.46 (1.56)	.486
PIPP at 120 s	4.68 (1.95)	5.08 (1.35)	0.405

Data are presented as median (IQR) or mean (SD). nCPAP, nasal continuous positive airway pressure.