

Supplemental Tables and Figures:

Preventing and Treating Pain and Anxiety during Needle-Based Procedures in Children with Cancer in Low- and Middle-Income Countries

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Table of Contents

Item	Page
Supplemental Figure S1: Patient/Parent Satisfaction Card	2
Supplemental Figure S2: Provider Self Report Form	3
Supplemental Figure S3: Auditing Form	4
Supplemental Table S1: Outcome, Process, Balance Measures	6
Supplemental Figure S4: Patient/Parent Report of Pain During Procedure	6
Supplemental Table S2: Patient/Parent Satisfaction	7
Supplemental Figure S5: Patient Experience for Patient in Philippines	7
Supplemental Figure S6A: Self-Reported Percentage Use of Sucrose or Breastfeeding When Appropriate	7
Supplemental Figure S6B: Self-Reported Percentage Use of Topical Anesthesia	8
Supplemental Table S3: Number of Comfort Promise Interventions	8
Supplemental Figure S7A: Average needlestick procedure duration time	9
Supplemental Figure S7B: Average Attempts Per Patient Encounter	9
Supplemental Table S4: Provider Satisfaction	10

Supplemental Figure S1 Patient/Parent Satisfaction Card

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The Comfort Promise



1. What is your child's age? _____ (years) _____ (months)

2. Was your child in pain?

☐

Yes

☐

No

2. If Yes, do you think the hospital staff did everything they could to help prevent or alleviate the pain?

☐

Yes, definitely

☐

Yes, to some extent

☐

No

3. Where was the needle stick performed?

☐

Inpatient unit

☐

Outpatient clinic

4. Roughly, how many minutes did you have to wait for this needle-stick? _____ minutes

Date: MM / DD / YY
Time: _____ AM PM
Weekday: ☐
Weekend: ☐

Supplemental Figure S2 Provider Self-Report Form:

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The Comfort Promise



Facility code:	Date/Time: MM/DD/YYYY (hh:mm)
Type of Unit:	<input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient
Your role:	<input type="checkbox"/> Nurse <input type="checkbox"/> Physician <input type="checkbox"/> Phlebotomist <input type="checkbox"/> Other (specify): _____

Patient Age: Child age _____ (years) _____ (months)
Needle Stick Performed <input type="checkbox"/> Lab Draw <input type="checkbox"/> Peripheral IV Placement
How many attempts did it take? _____

Were age-appropriate positioning techniques used?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Were age-appropriate distraction techniques used?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Was a topical anesthetic used?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Was sucrose or breastfeeding used for infant less than 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Start time for the procedure:	_____
End time for the procedure:	_____
Was the procedure successful?	<input type="checkbox"/> Yes <input type="checkbox"/> No
How satisfied are you with how the procedure went?	<input type="checkbox"/> Very Satisfied <input type="checkbox"/> Satisfied <input type="checkbox"/> Somewhat Satisfied <input type="checkbox"/> Not Satisfied

Supplemental Figure S3 Auditing Form

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The Comfort Promise



Facility code: _____	Date/Time: MM/DD/YYYY (hh:mm) _____
Type of Unit: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient	Shift: <input type="checkbox"/> Weekday <input type="checkbox"/> Weekend
Performer role: <input type="checkbox"/> Nurse <input type="checkbox"/> Physician <input type="checkbox"/> Phlebotomist <input type="checkbox"/> Other (specify): _____	
Observer role: <input type="checkbox"/> Nurse <input type="checkbox"/> Physician <input type="checkbox"/> Phlebotomist <input type="checkbox"/> Other (specify): _____	

Availability

Were topical anesthetics readily available in the clinical area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Were distraction supplies readily available in the clinical area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Were reminders, posters, or educational materials available in the clinical area?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Needle-sticks Observations

Obs	Component	Obs	Component
1	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components	2	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components
3	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components	4	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components
5	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components	6	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components
7	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components	8	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components
9	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components	10	Child age _____ (years) _____ (months) <input type="checkbox"/> age-appropriate distractions techniques <input type="checkbox"/> age-appropriate positioning techniques <input type="checkbox"/> topical anesthesia <input type="checkbox"/> sucrose or breast feeding when appropriate o All components

Calculating Adherence			
Component	Numerator ¹	Denominator ²	Adherence ³
Age-appropriate distractions techniques			
Appropriate positioning techniques			
Topical anesthesia			
Sucrose or breast feeding when appropriate			
All components			

¹Write the total number of providers who used each component during the needle-stick procedure.

² Write the total number of observations for that component; notice that some components are not applicable to all patients and depend on their age.

³Calculate by dividing the total of provider who used the component (numerator) by the total of observations(denominator) and multiply by 100.

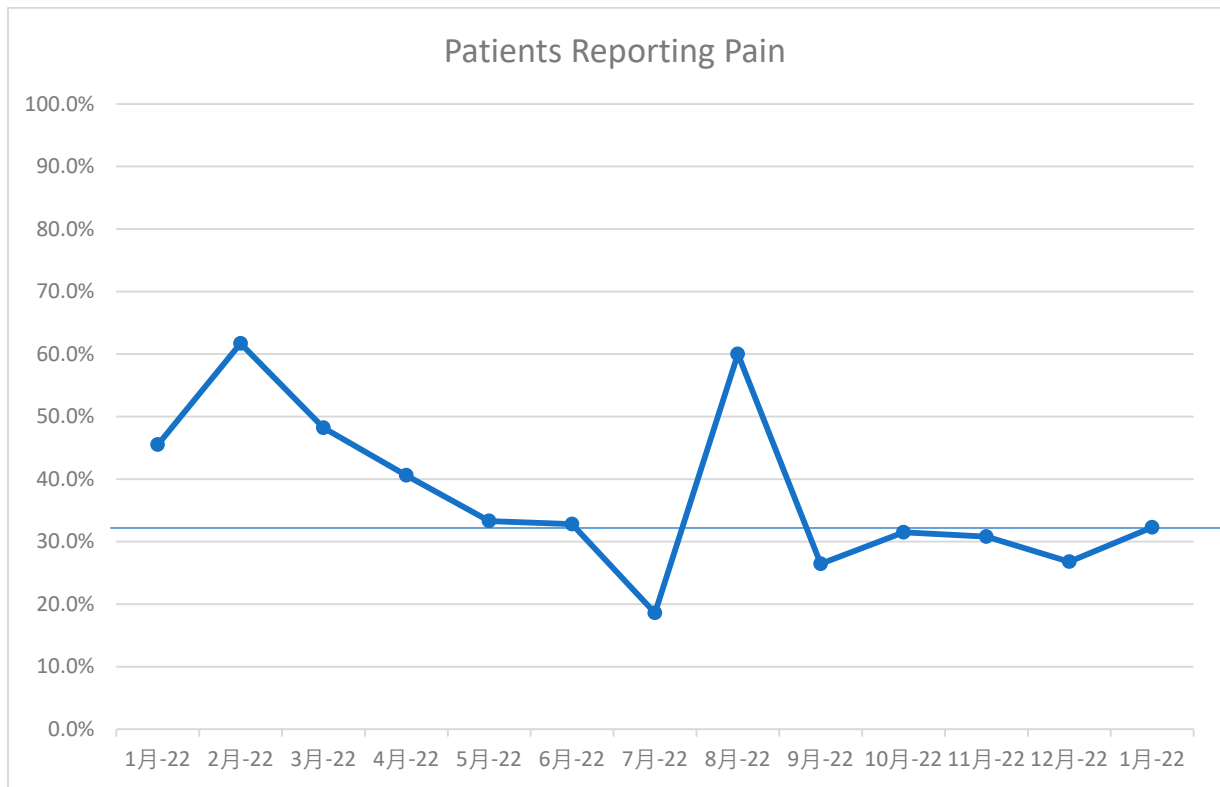
Parents Satisfaction Survey Interviews

Int	Questions	Int	
1	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)	2	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)
3	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)	4	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)
5	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)	6	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)
7	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)	8	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)
9	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)	10	Child age _____ (years) _____ (months) Parent reported pain <input type="checkbox"/> Yes <input type="checkbox"/> No Hospital staff prevent or alleviate the pain: <input type="checkbox"/> Yes, definitely <input type="checkbox"/> Yes, to some extent <input type="checkbox"/> No Unit where needle stick was performed: <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient Needle-stick waiting time: _____ (minutes)

Supplemental Table S1: Outcome, Process, and Balance Measures for Global Comfort Promise

Outcome Measures	Process Measures	Balance Measures
<ol style="list-style-type: none"> 1. Realtime Patient/Parent satisfaction 2. Prevalence of Patient/Parent satisfaction 	<ol style="list-style-type: none"> 1. Frequency of use of the four Comfort Promise principles 2. <i>Utilization of ≥ 2 principles per patient encounter (calculated)</i> 3. Frequency of availability of topical anesthetics in clinical area 4. Frequency of availability of distraction supplies in clinical area 	<ol style="list-style-type: none"> 1. Length of time waiting for procedure to start 2. Length of time the procedure takes 3. Success rate of the procedure 4. Number of attempts per patient encounter 5. Provider satisfaction

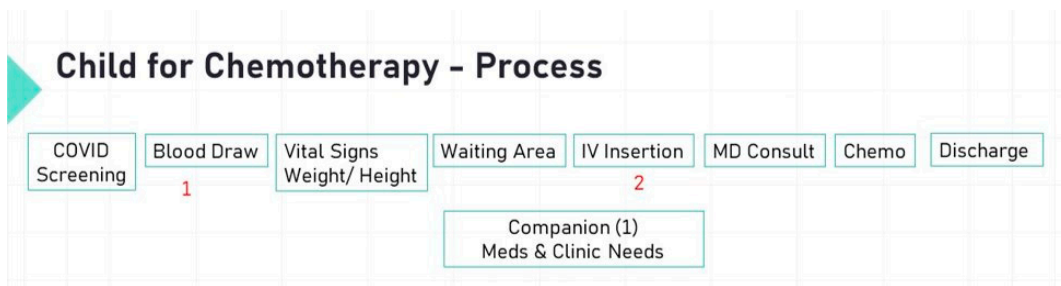
Supplemental Figure S4: Patient/Parent Reporting Pain After Real-Time Needlestick Procedure



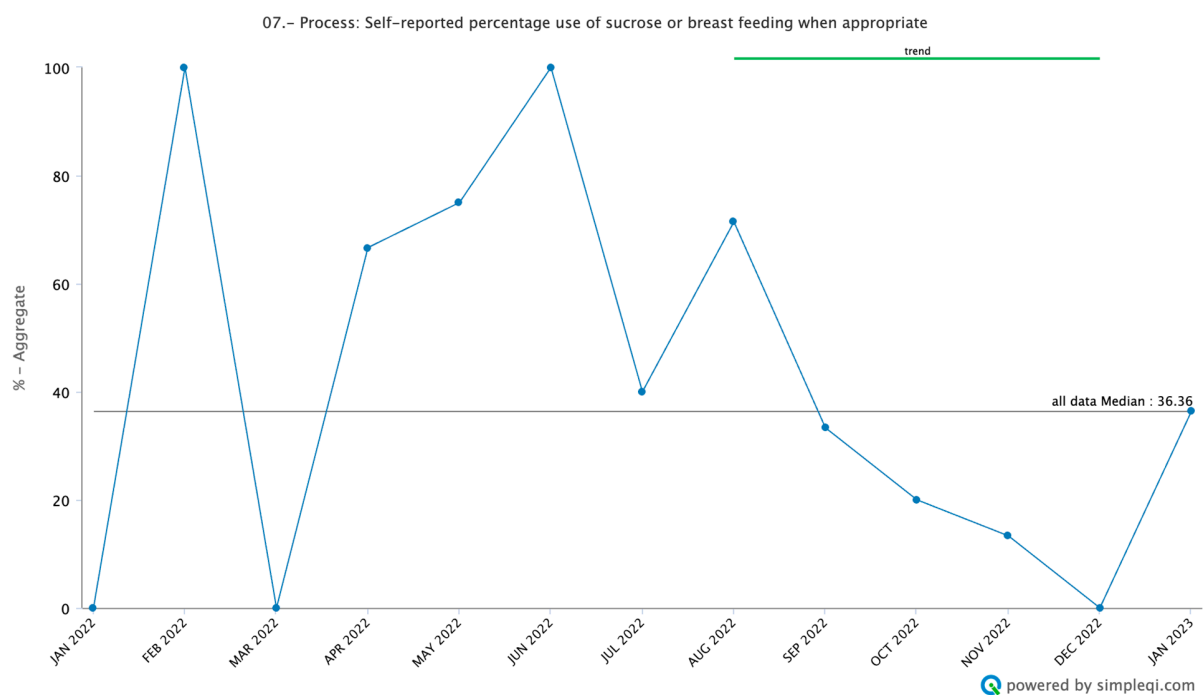
Supplemental Table S2: Patient/Parent Satisfaction

Total	2199
Pain Y/N	
Yes	743 (33.7%)
No	1456 (66.3%)
If Yes, Was the Pain Alleviated Y/N	
Yes, definitely	702 (94.7%)
Yes, to some extent	40 (5.3%)

Supplemental Figure S5:

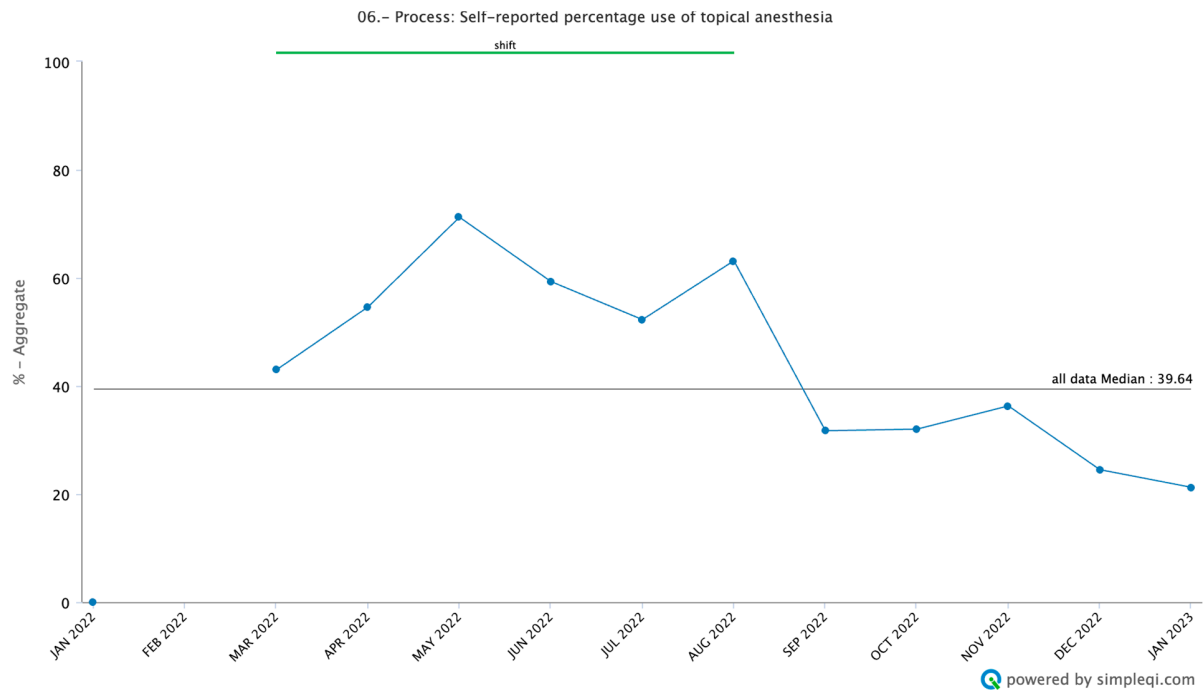


Supplemental Figure S6A: Self-Reported Percentage Use of Sucrose or Breastfeeding When Appropriate



Supplemental Figure S6A: Percentage of healthcare professionals that recorded using sucrose or breastfeeding when appropriate during the needle-based procedure performed, over the total number of needle-based procedures performed. This data was collected each week and then aggregated into monthly data points for analysis.

Supplemental Figure S6B Self-Reported Percentage Use of Topical Anesthesia



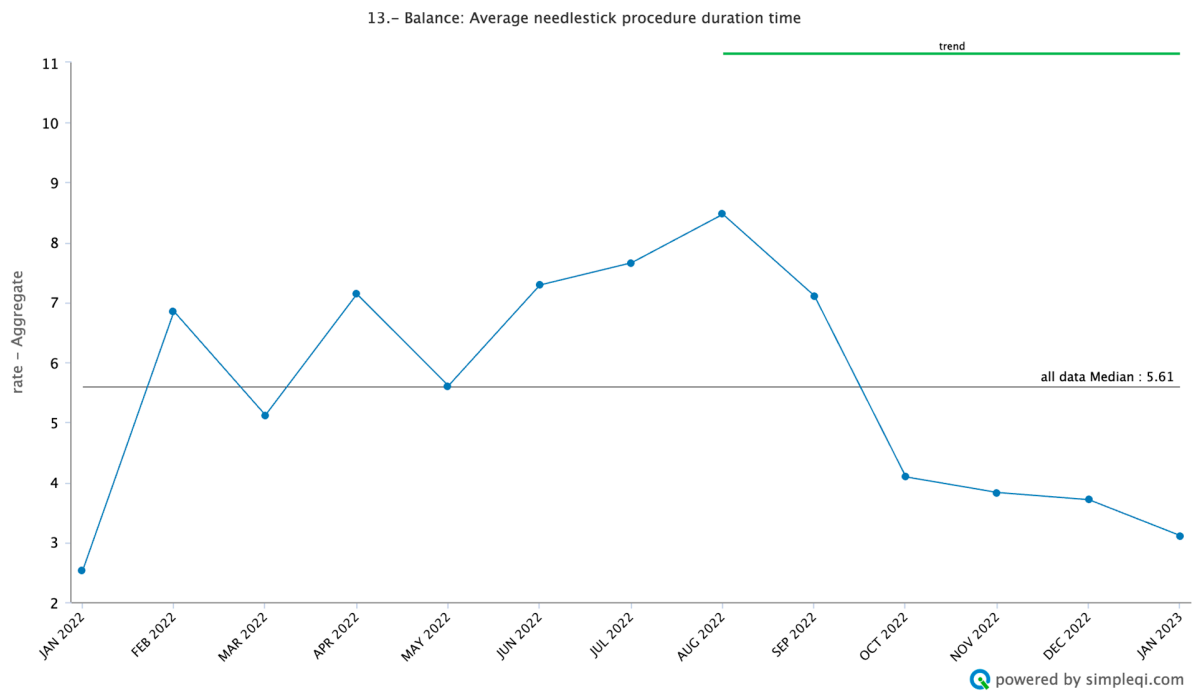
Supplemental Figure S6B: Percentage of healthcare professionals that recorded using anesthesia during the needle-based procedure performed, over the total number of needle-based procedures performed. This data was collected each week and then aggregated into monthly data points for analysis.

Supplemental Table S3: Number of Comfort Promise Interventions

#Comfort Promise Principles	N
1	15
2	1026
3	1075
4	69
TOTAL	2185

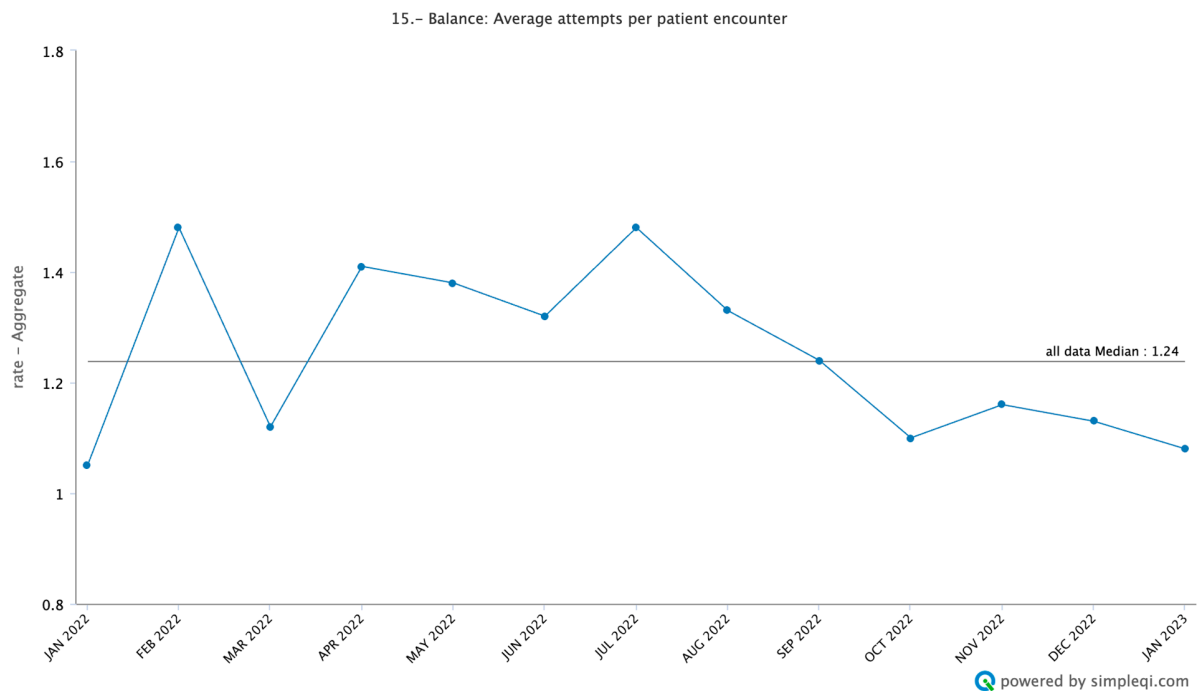
*Only children <2 had all 4 interventions.

Supplemental Figure S7A: Average needlestick procedure duration time



Supplemental Figure S7A: The time in minutes between procedure start and end time were recorded for each procedure. This was then recorded as a single number for each procedure. The average for each month was then obtained recorded in minutes.

Supplemental Figure S7B: Average Attempts Per Patient Encounter



Supplemental Figure S7B: The number of attempts for the needlestick in minutes were recorded for each procedure. The average for each month was then obtained recorded.

Supplemental Table S4: Provider Satisfaction

Procedure Satisfaction	N	%
Very Satisfied	1632	74.60%
Satisfied	519	23.70%
Somewhat Satisfied	28	1.28%
Not Satisfied	6	0.27%
TOTAL	2185	99.85%