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## **The Sssh's: Snoo Smart Sleeper Use In Post-Operative Infants With Congenital Heart Disease**

Shannon Lysaught

Lori Erickson

Jennifer A. Marshall

Keith Feldman

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# The SSSH's Study: SNOO Smart Sleeper Use in Post-Operative Infants with Congenital Heart Disease

Shannon Lysaught MBA, BSN, RN, CPN; Lori A. Erickson PhD, MSN, CPNP-PC;  
Jennifer Marshall MPH, RN, RRT, CCRC; Keith Feldman PhD

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### Objective

*This study aimed to evaluate the willingness of staff and parents of cardiac infants to utilize the SNOO during recovery from cardiac surgery. As a secondary objective we sought to determine how timestamped clinical data elements could be aligned with the SNOO sleep log to allow for future investigation of physiologic trends during SNOO usage.*

### Background

Each year, approximately 300 patients under 6 months of age are admitted to CMKC for cardiac surgery. Soothing interventions are important to maintain infant reserves necessary for growth and development. Yet, given challenges for family visitation and busy staffing, such soothing is not always possible.

The SNOO Smart Sleeper (Fig 1) may be an option for post-operative cardiac infants as it responds to an infant's cries with elements of soothing through swaddling, motion and noise.



Figure 1

### Study Cohort

- Single Site, Cross-Sectional, Feasibility Study on 4 Sutherland, a 23 bed Medical/Surgical unit that specializes in cardiac patients
- Inclusion criteria: Infants ≤ 6 months of age, weighing less than 11 kilograms
- EMR and CM vital signs values were captured using Biomedical Device Interface (BMDI) and timestamped medication administration for medications related to pain and withdrawal

Author contact: [sdlysaught@cmh.edu](mailto:sdlysaught@cmh.edu)

### Methods

This work was comprised of three primary analyses:



#### Usability

- Determine if SNOO Smart Sleeper can be used within established clinical workflows as a device to assist in the care of post-operative cardiac infants
- Evaluate willingness of parents and CM clinical staff to utilize the device



#### Logistical

- Assess requirements to operationalize use of consumer-grade SNOO in hospital setting
- Develop necessary training and procedures to support use of SNOO at CM



#### Data and Analytics

- Obtain SNOO Sleep Log data from Happiest Baby™
- Extract clinical (EMR) data to represent the stress response/pain in post-operative cardiac infants
- Align EMR and SNOO data to perform analytics on patient response to SNOO

### Usability Results

In total, 11 patients were enrolled for a total of 525 SNOO hours:

Cardiac Lesion Category	Gender	Family Reported Race	Participant Age	Participant Weight
7 Single Ventricle	7 male	1 Hispanic	Mean Age	Mean Weight
4 Bi-Ventricular	4 Female	2 Multiracial 8 White	5.4 weeks	3.39 kg

### Logistical Considerations

- Trained staff on SNOO functionality at Unit Updates
- Set up of SNOO by study team ensured proper settings
- Supported staff with just-in-time training and job aids

### Data and Analytics

To demonstrate potential of data alignment, overlays were created of all timestamped heart rate, respiratory rate and O<sub>2</sub> saturations from cardiorespiratory monitors and pain medication administration from electronic medical record with the SNOO Sleep log:

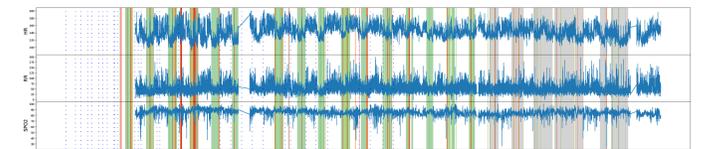


Figure 2 demonstrates a participant's heart rate, respiratory rate and oxygen saturation while: not in SNOO (white), SNOO at baseline (green), SNOO during soothing (yellow and red), SNOO during weaning mode (gray) and the administration of pain medications (blue dashed lines)

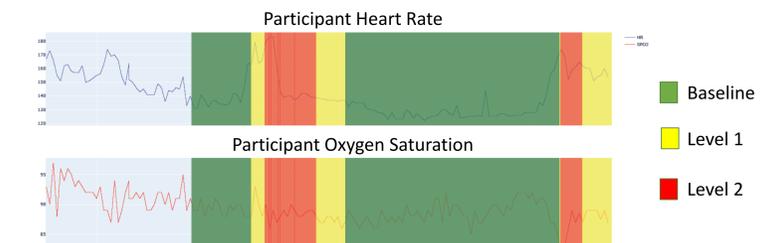


Figure 3 shows detailed views of heart rate and oxygen saturation during SNOO activation

### Conclusion

- Demonstrated feasibility of using SNOO for certain post-operative cardiac infants was demonstrated with parental enrollment and staff use
- Established process to collect and overlay data from clinically obtained participant vital signs, medication administration and SNOO Sleep Log was demonstrated
- Future broader trials may include evaluation of the physiological response to SNOO, larger scale inpatient and expanded remote patient home monitoring use

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