

## Finding Comfort and Functionality With Infant CPAP

In this feature, Neonatal Intensive Care interviews clinicians and healthcare providers about the actual application of specific products and therapies. This interview is with Jessica Sexton, MS, RRT-NPS, an Education Specialist II, Respiratory Care at Cincinnati Children's, Cincinnati, OH.

NeoPAP® is a sophisticated respiratory support system that boasts patient comfort, high functionality, and ease of use. NeoPAP is a major departure from the traditional time-intensive approach to infant CPAP therapy that demands continuous monitoring.

1. The Circadian NeoPAP System is intended to provide continuous positive airway pressure (CPAP) for use in hospitals to treat newborns and infants with respiratory distress syndrome (RDS) or recovering from RDS. The system is intended for use on patients less than 5kg in weight. Stable airway pressure is important in the development of premature infants because they often lack the lung infrastructure to maintain an adequate lung volume following exhalation.

### When following these guidelines, what has been your overall success with the NeoPAP system?

Our overall success is that the NeoPAP system provides effective CPAP with variable flow, utilizing their Baby-Trak technology, with appropriate alarms for safety. As the system measures parameters at the interface, we can be assured that the readings at the machine are more accurate and better informed decisions regarding the patient's care can be made.

2. NeoPAP offers the versatility of three therapy modes: CPAP mode, flow mode, and resuscitation mode. FiO<sub>2</sub> concentration can be set between 21% and 100% while operating in any mode. It also incorporates a standby mode that allows clinicians to set up the unit in anticipation of admitting a baby needing CPAP or when an interruption of Therapy is required.

### What are the advantages of having all of these therapies and features available in one system instead of having to use multiple systems?

Being able to utilize one machine for multiple therapies benefits the neonatal patient, the clinician, as well as the facility. The clinician can prepare for the patient prior to their arrival by putting the machine in stand-by. The patient interface does not need to be switched out when changing between CPAP and flow mode. This reduces the clinician's time needed to switch out equipment and changing circuits/interfaces. The amount of resources in equipment and disposables can also decrease, benefitting the facility.

3. NeoPAP offers set parameters and measured parameters visually on the screen allowing for real-time confirmation of settings and changes to settings as they happen.

### How does having real time accurate pressure measurements taken from the patient interface benefit the patient?

The system's adjustments are going to be based on accurate pressure measurements and alarms are more reliable.

### What are the benefits of being able to visually see the pressure measurement on the screen in real-time?

The clinician is able to make recommendations and changes based on accurate measurements taken closest to the patient, rather than estimated values measured from the machine.

4. NeoPAP incorporates Baby-Trak leak compensation technology in CPAP mode to create a dynamic variable flow system that increases or decreases the flow to manage the CPAP pressure set by the clinician. The Baby-Trak leak compensation technology algorithm quickly responds to patients' changing respiratory requirements related to breathing patterns. During exhalation, the CPAP level is maintained, but the flow level is automatically reduced to decrease the resistance on exhalation to the baby. During inspiration, if there is a reduction in pressure as the infant inhales, NeoPAP increases flow to maintain the set pressure. This allows the device to provide the patient with constant measured pressure support despite minor leaks that may be present at the patient interface or elsewhere in the patient circuit. When the device recognizes a pressure drop from a leak, it will provide additional flow to compensate for the leak and maintain the pressure level set by the clinician.

### How has Baby-Trak technology given you peace of mind that your patient will always get the proper measured CPAP therapy?

I know with the Baby-Trak technology that the flow is going to adjust to ensure my patient is given the set pressure.

5. Because of accurate measurements at the patient interface, NeoPAP robust alarm settings can be adjusted to minimize false alarms.

### What are the advantages of having NeoPAP alarms vs CPAP systems that don't have any alarms?

So many times myself or other clinicians have walked up to a patient's bedside only to find that the water is no longer bubbling with bubble CPAP systems and is therefore not providing

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If you would like to participate in this feature, as a company or healthcare provider, please contact Steve Goldstein at [s.gold4@verizon.net](mailto:s.gold4@verizon.net)

adequate therapy. Having alarms helps to ensure effective therapy is being delivered before it begins to negatively affect the patient clinically.

### How can you tell with other CPAP systems if the baby is getting the proper therapy without an alarm system? Can you explain?

In my experience, you often do not know the patient is not getting proper therapy until it affects them clinically, meaning physiologic changes are happening such as the patient begins to desaturate and a vital sign monitor alarms.

6. Many NICUs across the country are concerned with ambient noise within their unit. NeoPAP has 3 adjustable alarm volume settings as well as a visual alarm indicator. At the lowest volume, it is the quietest CPAP or High Flow device with an alarm available.

### How does your NICU feel about ambient noise?

Our NICU aims to reduce any extraneous noises when possible, providing a healing environment that promotes growth and development for the smallest of patients.

### How does NeoPAP's adjustable alarm volume help with this issue?

Adjustable alarms allow for the most appropriate alarm for the setting it is being used in, setting it the lowest we can that is safe for the situation.

7. NeoPAP is the only respiratory device available where a cannula or mask can be used in Hi Flow mode. This allows you to switch from CPAP mode to Hi Flow mode without having to change the patient interface or to a separate Hi flow machine. Many NICU's have stated that it takes between 25-40 minutes to switch from one therapy to another.

### What is your main concern for the patient during the switch from one therapy to another?

My concern is that some of the therapeutic value you have gained is lost in the transition between two different therapies, or that it may take too long to escalate therapy if needed. The transition for the neonatal patient may be distressing both clinically and developmentally.

### What are the advantages of not having to change interfaces or machines to go from CPAP therapy to Hi Flow therapy as the baby is weaned off CPAP therapy?

Advantages include it being less stressful for the baby, less clinician time spent switching devices, and less equipment/circuits used. There are positives from a clinical perspective as well as from a financial perspective.

### Now that you have NeoPAP, what are your thoughts about having to switch between therapies?

Anytime we can avoid switching therapies, especially if it's the same or similar we are going to try to avoid it.

### How long does it take now?

If staying on the NeoPAP, it is only as long as it takes to make a few changes on the device.

8. Most CPAP therapies available today cover up the baby's face and make it difficult for the parent or caregiver to make eye contact. The NeoPAP patient interface system was designed to be developmental friendly. It allows for constant eye contact. It also allows for skin to skin contact during kangaroo care without having to discontinue the therapy.

### As a caregiver, what are your thoughts about having a system that is developmentally friendly?

This is so important, and has been challenging

with other devices. The NeoPAP's design sits more like a traditional nasal cannula, rather than going up and over the nose and forehead. The baby's view is not obstructed and it allows for skin-to-skin, which we know is so important for bonding, growth and healing.

10. The NeoPAP's innovative bonnet is made with Fabrifoam\* lining to help minimize torsional stress placed on the patient interface. This unique design virtually eliminate the need to tighten the interface to the patient. When properly placed on the baby, it allows the clinician or caregiver to open up the bonnet to do an hourly head/skin check, Scalp IV check, or cranial ultrasound without having to remove the bonnet or discontinue therapy.



**NeoPAP® Infant Respiratory Support System**

**Enhanced comfort and functionality with infant CPAP:**

- CPAP, high flow and resuscitation modes are built into one easy to use device, improving workflow efficiency and reducing costs
- Change from CPAP Mode to Flow Mode and back, with the push of a button and without changing patient interfaces
- Unique flow-by design allows the use of a mask or cannula in both CPAP and flow modes
- Baby-Trak® leak compensation and alarms give you peace of mind and the ability to focus on the specialized needs of your RDS patients
- Novel bonnet and patient-friendly interface support developmental care and may help reduce costly skin damage

**Please see the interview featuring NeoPAP on page 16.**

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**How does this help with clinician workflow efficiency?**

There can be a great deal of time spent trying to properly place a neonatal patient on non-invasive CPAP therapy. Any time you can avoid having to re-do all of that work improves workflow efficiency, and of course is beneficial to the patient.

**What are the clinicians and parents thoughts about the softness of the Fabrifoam\* lining?**

Clinicians are impressed with the softness and quality of the Fabrifoam lining. With the delicate nature of the neonatal patient's skin, we are always looking for material that is going to be developmentally appropriate that also does not cause the patient to incur skin breakdown.

11. NeoPAP has a two hour battery and can be used for transport on an oxygen cylinder within the hospital.

**What are the advantages of being able to continue therapy during transport verses having to unhook the baby and discontinue therapy?**

Being able to continue therapy, especially without having to change interfaces unnecessarily is so beneficial to the neonatal population. Not only is it more developmentally appropriate, but it also avoids potential loss of lung volumes due to less effective therapy during the transport.

12. The NeoPAP Infant Respiratory Support system is manufactured, marketed, and clinically supported by Circadiance.

**Please share your overall experience with Circadiance as a partner to deliver the best education for your staff and care for your patients.**

Circadiance has been receptive via email, phone and in-person. They have provided in-services as well as educational materials. We have been able to troubleshoot over the phone with a challenging patient.

NICU physicians and caregivers from a growing number of prominent healthcare facilities in the United States have discovered that NeoPAP is the ideal solution for infant CPAP therapy. NeoPAP allows the medical staff to spend more time caring for patients and less time tending to the device.

Circadiance develops, manufactures and markets remote patient monitoring and respiratory therapy products. Circadiance products deliver superior patient comfort in the home care and acute care settings, ultimately resulting in reduced cost of care and improved patient outcomes.