”Leak is one of the biggest problems during mask ventilation and staff may fail to recognize this. If it is not corrected, the baby may not improve and this may have a major impact on the outcome. The Monivent Neo Training has been a fantastic tool in demonstrating what happens during leaks and how to troubleshoot.”

DR VISHNU DASIREDDY
Neonatologist who is responsible for simulation training at Nepean Hospital NICU, Sydney, Australia.

In Australia, more than 300,000 babies are born each year and approximately 15% of these newborns require some kind of resuscitation at birth.
The Australian and New Zealand Committee on Resuscitation (ANZCOR) guidelines facilitate a standard approach to resuscitation best practice in Australia. The Nepean Neonatal Resuscitation Program (NNRP) is a successful training program for health care professionals preparing and making them proficient in resuscitating babies.

DR VISHNU DASIREDDY

Neonatologist who is responsible for simulation training at Nepean Hospital NICU, Sydney, Australia.

Dr Vishnu Dasireddy, joined Nepean NICU team in 2016 and his primary interest is resuscitation training, simulation training and scenario creation for medical and nursing staff.

"Simulation providers must have relevant current knowledge, technical and non-technical skills. Simulation-based training and education allows participants to become familiar with critical conditions and learn how to trouble shoot in unexpected situations. This experience prepares the team for real life incidents in a safe environment".

Signed, delivered and implemented in days

In April 2018, Nepean Hospital NICU Director and Head of Department Dr Lyn Downe, managed to secure funding for two Monivent Neo Training devices through the generous help of *Penrith Lions Club, Australia (Photo below)*. Soon after the two systems had arrived to Nepean NICU, they were implemented and incorporated in the NNRP training sessions for positive pressure ventilation.

"We have nearly 15 participants in each neonatal resuscitation training session. The Monivent Neo Training systems were introduced in our NNRP and received fantastic positive response from the participants. They could see how they were performing in terms of providing adequate ventilation and also appropriate ventilation rate (too many/too few breaths can be an issue). They were able to understand the importance of face mask seal and how it can impact chest rise and fall following my demonstration using the Monivent device."

NNRP – Extensive training program in line with ANZCOR

The dedicated Nepean Neonatal Resuscitation Program (NNRP) is conducted bi-monthly (6 sessions a year) – which is an 8-hour full day program. Dr Dasireddy explains that the program includes numerous presentations and several practical skill stations, and clinical scenarios. These clinical scenarios enable the participants to become familiar with complex situations, but also prepare participants how to work in a team and be able to perform resuscitation steps confidently as per the guidelines.

The communication session is another important part of the program as well as the debriefing after simulation. The post simulation debriefing is the most effective way of summarizing the learning objectives and enhances future clinical performance.

Positive Pressure Ventilation Practice

Optimizing positive pressure ventilation of a baby depends on minimizing mask leak, obtaining adequate tidal volumes and inflating pressures while maintaining a consistent rate. The positive pressure ventilation station is dedicated to practice mask ventilation. The Monivent Neo Training device is used to demonstrate the significant impact of face mask leak on positive pressure ventilation, strategies to minimize the leak and deliver adequate number of breaths (around 40-60 breaths per minute).

"Providing effective ventilation is a key step for successful resuscitation. The Monivent device is a great tool to demonstrate the significance of mask leak, strategies to improve ventilation while maintaining recommended breathing rate."

Participants range from junior and senior medical and nursing staff from NICU, Paediatrics, Obstetrics & Gynaecology, Anaesthesia, Emergency department, and General Practitioners.

Typically, there are 15 participants in each NNRP. Dr Dasireddy estimates that nearly 100 participants per year get the positive pressure ventilation training experience from the Monivent Neo Training devices.

NNRP – Going out and beyond..

The NICU at Nepean Hospital is a tertiary referral centre which caters to a large catchment area. The team also conduct NRP sessions in regional and country hospitals, which requires travelling more than 400 km. These training sessions help staff in these rural hospitals provide the best care for our little babies in limited resource settings.

"Sometimes the retrieval team could be hours away to take over care and transfer babies to a tertiary centre from regional hospitals. It is quite stressful for staff who are not often exposed to compromised newborn infants. It is well-invested time to conduct these training sessions to prepare staff in regional centres who do an amazing job keeping the babies stable and preparing them for a safe transfer. These sessions are well received by the staff and hearing the feedback after these training sessions is quite rewarding."

Small and successful team – Making a difference

We have a small team to run the NNRP courses at our centre. Our core team members are Dr Lyn Downe (HOD), Dr Ulrike Brandenburg (Senior Neonatologist), Dr Maria Tabar (CMO), Barbara Jolley (Clinical Nurse Consultant) and myself. I feel privileged to join the team who established this program and have been running the program for many years at Nepean Hospital.

"It is a lot of hard work, but quite rewarding to hear great feedback especially when participants feel confident in managing unexpected sick babies in emergency situations after attending the course."

It is recognized in literature that participation in simulation training, can be emotional, stressful and intimidating. Dr Dasireddy had this in mind when building the program and his aim was to create a positive learning experience where participants feel confident and ready to face real-life situations.

Dr Dasireddy and his colleagues work has made a big difference over these last five years.

"Over the last few years, I have successfully been able to change the mindset of staff related to simulation training. Staff are willing to come, want to know when the next session is and voluntarily request to participate in the training. There is interest outside neonatal department about our program and staff want us to do simulation sessions for them", he says.

"My colleagues have also used the Monivent Neo Training Device and were impressed with its utility in teaching. We are hoping to see to using this technology in our clinical practice soon."

Mask leakage – Important to solve

"Performing resuscitation is stressful and thus practicing in a simulation setting with scenarios can allow staff to explore troubleshooting options for different situations", says Dr Dasireddy.

"Leak is one of the biggest problems during mask ventilation and staff may fail to recognize this. If it is not corrected, the baby may not improve and this may have a major impact on the outcome. The Monivent Neo Training Device has been fantastic tool in demonstrating what happens during leaks and how to troubleshoot."

Learning by simulation – Preparing for reality

Using the Monivent Neo Training Device in the NNRP enables healthcare professionals at Nepean Hospital and also staff working at remote and regional hospitals to practice and be prepared to perform effective positive pressure ventilation. In addition, they achieve a better understanding of the issues related to mask leak and risks of volume and baro (pressure) trauma.

Dr Dasireddy has successfully incorporated this device into the NNRP for the benefit of not only his local hospital, but also regional centres.

About Nepean Hospital

Nepean Hospital, located at the base of the Blue Mountains in Penrith NSW, Australia. Nepean Hospital is a teaching hospital of the University of Sydney for medical students and also provides nursing and allied health training for many other universities. The hospital services include maternity, gynaecology, neonatal intensive care, emergency, diagnostics, paediatric, surgical, intensive care, coronary care, rehabilitation and mental health.

The Nepean Hospital NICU provides state-of-the-art, comprehensive specialty care to newborn infants with a wide range of congenital and acquired conditions, including extremely premature infants born as early as 23 weeks gestation. The NICU admits between 1000 and 1100 newborns per year, approximately 10% of these are under 30 weeks gestation at birth.

The Nepean NICU is a tertiary NICU with a total capacity for 36 babies divided between 12 ICU beds and 24 special care beds.

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