The real-time benefits of Radiometer's NICU Solution

TESTIMONIAL | **Antoine Béclère Hospital**, Paris, France

The atmosphere in the Neonatal Intensive Care Unit (NICU) at Paris' Saclay University – Antoine Béclère Hospital is subdued, but definitively positive. Here, Full Professor of Neonatology and Division Chief, Daniele De Luca, leads one of the biggest NICUs in Europe, with 28 high dependency beds for critically ill infants and an additional 12 for intermediate care. The hospital delivers around 4,000 neonates in-house per year, with an additional two teams dedicated to transporting around 1,800 critically ill infants per year.

Prof. De Luca became a neonatal critical care physician in 2002 and Division Chief in 2013. As a practitioner of proactive critical care, Prof. De Luca was an early adopter of Radiometer's holistic NICU Solution. The NICU Solution combines the ABL90 FLEX PLUS blood gas analyzer with the TCM CombiM or TCM5 FLEX transcutaneous monitor, and *safe*CLINITUBES capillary tubes. Years later, the Solution's comprehensive indicators remain a stalwart of the department's day-to-day practice.

Prof. De Luca explains the pivotal role Radiometer's NICU Solution plays in a NICU's point-of-care (POC) workflow.

Compassionate care of babies in need

For the past 20 years, Radiometer has supported Prof. De Luca and his team in limiting invasive procedures for babies in life-threatening situations. Caring for patients of diverse gestational ages, sizes and states of fragility, Prof. De Luca always strives for a balance between pain – known to potentially affect development – and sensible, clinically-informed care:

"Blood gases are critical to titrating therapies and ventilation. If we don't do blood gas analyses, we provide 'blind' care, 'blind' therapies, that could negatively influence babies' brain development. We need to find a balance, which is why a wise doctor could use both non-invasive transcutaneous monitoring, alongside minimally invasive therapies such as blood gas analyses, using capillary samplers."

The value of continuous, non-invasive monitoring

The team commonly uses transcutaneous monitoring as a safe and precise way to gather real-time insight into a baby's ventilation status, specifically their CO_2 levels. In critical situations, staff use transcutaneous monitoring to measure the transcutaneous partial pressure of oxygen (tcpO_2) to estimate the oxygenation in babies without an arterial line.

We use transcutaneous monitoring almost every day to tailor ventilation, check how a baby is generally and to try and conserve as much blood as is possible. Of course, we also conduct blood gas analyses, but TCM provides an opportunity to reduce blood gas analyses overall."

—Daniele De Luca
Full Professor of Neonatology and Division Chief

Prof. De Luca says this reduction is "fundamental to caring for stable babies without an arterial line", to reduce pain and blood loss in these fragile patients.

As a veteran user of Radiometer's NICU Solution, Prof. De Luca is familiar with both the TCM CombiM and the TCM5 FLEX. While recognizing their **clinical accuracy** as indistinguishable, he explains that he finds the TCM5 FLEX "easier to use, and the new screen more intuitive". This is extremely valuable in what is a challenging and often emotional environment, especially with a **nursing headcount of over 90 – all of whom are trained as users.**

Analyzing small volume blood samples at POC

While the real-time benefits of transcutaneous monitoring in the NICU are unparalleled, blood gas analysis remains central to monitoring a neonate's respiratory and metabolic status. The NICU at A. Béclère uses Radiometer's complete NICU Solution including the ABL90 FLEX PLUS. The analyzer which offers a MicroMode providing 17 parameters from a capillary sample of just 45 µL.

In addition to blood gases, Prof. De Luca highlights the value of measuring analytes such as bilirubin and electrolytes, which have specific relevance in caring for neonates:

"For example, think about the amount of fluid given to a baby. Think about correcting electrolytes such as calcium or potassium. The ABL90 FLEX PLUS can measure parameters that are very important for monitoring and personalizing care, **without needing to send tests to the central laboratory**. This conserves blood, saves time and is possible without involving the hospital's central laboratory."

These small samples are taken using *safe*CLINITUBES capillary tubes, which Prof. De Luca says are "fantastic; safe, easy to use plastic capillary tubes". He went on to explain how *safe*CLINITUBES support nurses in reducing preanalytical errors:

"Radiometer provides interesting solutions to reduce preanalytical errors. Each *safe*CLINITUBES is coated with heparin which is often enough to prevent the formation of blood clots. You can also place a clot catcher and introduce it into the ABL90 FLEX PLUS. This effectively prevents potential clots from making their way into the analyzer. The whole NICU Solution is very suited to our needs, especially as the analyzers are stationed at POC. **"This means that the time between taking a blood sample and having it analyzed is just a few seconds."**

The impact of a combined solution

"There is no 'before' and 'after' transcutaneous monitoring under my watch", Prof. De Luca explains as he has always been using Radiometer's monitors in his department. "But we know the use of transcutaneous monitoring devices can significantly reduce loss of blood as has also been described in the literature." And with a combined solution, the clinical team at A. Béclère can **tailor the care of every patient** to their specific needs.

A partnership that puts patients and people first

While caring for babies in life-threatening situations, staff pay particular attention to maintaining a positive environment. The NICU team holds regular social and teambuilding events which Prof. De Luca emphasizes are extremely important in general, and especially in "critical situations and very stressful periods". He also notes that their partnership with Radiometer creates a broader sense of teamwork and a more extensive support network:

> ***"Radiometer has always been very happy to help. Engineers train our staff on how to use products and are available for sparring in challenging situations. Radiometer has also helped by funding our research which is so important. We can do many things by ourselves, but it's a teamwork across the larger industry that's needed to see results."***
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> **—Daniele De Luca**
> Full Professor of Neonatology and Division Chief

Conclusion

Prof. De Luca and his team do essential work providing evidence-based critical care for neonates, and Radiometer's NICU Solution provides them with a precise way of observing ventilation trends. "I'm very happy to use Radiometer solutions," says Prof. De Luca. "I'm inclined to the Radiometer Solution because it's **reliable and overall, very accurate**. Here at A. Béclère, the devices are close to the patients' beds, so it's a **POC solution that's ready at a moment's notice**."

Those moments matter in the NICU, and the Radiometer NICU Solution helps Prof. De Luca and his team minimize invasive diagnostics, while tailoring care to the needs of every patient.

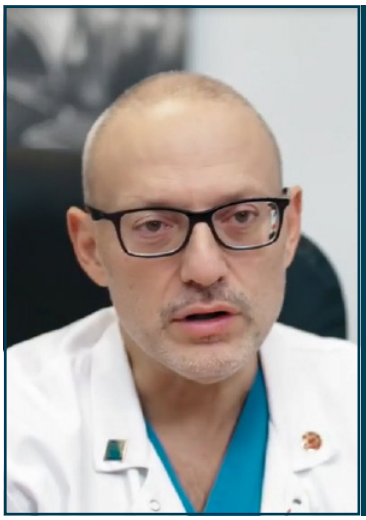
About the Hospital

Antoine Béclère Hospital – Paris Saclay University, France

A. Béclère is part of the Greater Paris Hospital Network. As one of the main perinatal hospitals in France and in Europe, the hospital provides high level neonatal care for southern Paris and surrounding areas.

In summary:

- NICU specializes in respiratory critical care, hypothermia for perinatal asphyxia, PPHN, bronchiolitis, neonatal dialysis, and care of neonates with congenital heart defects.
- First institution to use point-of-care lung ultrasounds in Europe.
- Research and education: respiratory critical care including epidemiology, lung ultrasound imaging, new respiratory support techniques, and surfactant biology – in partnership with the Institut Pasteur).
- Supported the birth of France's first in vitro baby (1982).



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Financial disclosures: Prof. De Luca has previously been involved in an advisory board held by Radiometer and received compensation for his work. Prof. De Luca has not been paid for providing his testimonial on the use of Radiometers products in his NICU.

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