

# neonatal INTENSIVE CARE

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the general birthing population; however, there was substantial improvement,” lead study author Dr I Ibibebe of Royal North Shore Hospital in New South Wales and colleagues write. “Although body mass index (BMI) was not directly assessed in this study, bariatric surgery performed for the management of obesity, in accordance with current clinical criteria, is likely to result in improved pregnancy outcomes in women who have a subsequent pregnancy,” Ibibebe and colleagues write. During the study period, there was a 13-fold increase in hospitalizations for women having bariatric surgery for the first time, the analysis found. Compared with women in the general population, those who had bariatric surgery had higher rates of high blood pressure, diabetes and preterm deliveries overall. But women who had bariatric surgery between their first and second pregnancies were 61% less likely to experience high blood pressure, 37% less likely to have infants that were large for their gestational age, 63% less likely to have a preemie and 36% less likely to have their baby sent to the neonatal intensive care unit (NICU) than in their first pregnancies. Women who had surgery and those in the general population were around the same age when they had their first pregnancy. But the women who had bariatric surgery waited an average of two years longer to have their second child, the study found.

## EXECUTIVE PROFILE

### Astarte Medical

#### Describe your product(s) and its unique features.

NICUtrition by Astarte Medical is a real-time clinical decision support tool to more effectively implement a hospital's own enteral feeding protocol and promote compliance to overcome the challenges of manual standardization, understand protocol adherence or lack thereof, and gather useful insights from feeding data. The platform analyzes preterm infant feeding and developmental milestones while in the NICU for the benefit of neonatologist, nurses, dieticians and department heads. Optimizing nutrition management in the NICU, particularly through successful progression of parenteral to enteral to oral feeding of preterm infants, remains a major challenge for clinicians. Clinical practice groups have developed feeding guidelines in an attempt to provide evidence-based care with less variability, which is known to improve outcomes and shorten length of stay, but there's no practical way to know whether clinicians are adhering to these guidelines. Studies have shown that implementing a standardized feeding strategy can accelerate the attainment of enteral and oral feeding milestones with a demonstrated reduction in central line days and parenteral nutrition, as well as reduced duration of ventilation days. With the ability to integrate through FHIR standards or Epic's AppOrchard, implementation is much simpler than custom integration projects or EMR reports with manual review. NICUtrition provides real time analytics which allows clinical teams to track milestones and metrics over time and observe the correlating patient outcomes.

#### Tell us about the latest advances in the area your product serves.

Nutrition, with direct impact on growth and cognitive outcomes, has become increasingly complex with a growing catalog of available dietary options. Optimization of human milk

fortification, mainly through individualization and the quality of the fortifiers, are getting increased attention as recent studies suggest that it's not only growth *per se*, but the quality of growth that matters. Human milk fortifiers are used for targeted fortification of breast milk to provide preterm infants with the extra protein, calcium, phosphorus, and even salt, needed to build strong bones and healthy organs. However, these requirements are variable depending on the clinical condition and characteristics of each infant either present at birth or evolving during NICU stay. Therefore, human milk fortification needs to be adapted to the specific needs of each infant at each feed. Because there are so many variables and these infants are changing on a daily basis, it's difficult for any one person to keep up with all the data. A clinical decision support solution, like NICUtrition, enables neonatologists and dieticians with the tools they need to plan macronutrients between parenteral and enteral feeds to track daily and cumulative nutritional deficits by infant and across the unit.

#### Discuss your R&D process, including clinical user input.

NICUtrition was developed in consultation with the top thought leaders in neonatal nutrition. William W. Hay, Jr., MD, is a thought leader in preterm infant nutrition and highly respected neonatologist with more than 40 years of clinical neonatology and neonatal research experience. Dr. Hay serves as the company's Chief Medical Officer. He is widely published, with his research and scholarship appearing in more than 400 articles and books. Nicholas Embleton, MD, is a neonatologist and chair of the UK Neonatal Nutrition Network and is a member of our Scientific Advisory Board. Dr. Embleton has published over 100 peer-reviewed publications and book chapters. Katherine Gregory, RN, PhD, a NICU nurse by background, provided unique insights integrating her clinical experience with translational research focused on preterm infant gut health and nutrition. Dr. Gregory is Associate Chief Nursing Officer, Women and Newborn Health, at Brigham and Women's Hospital and is the company's Scientific Co-founder. Because feeding is a time-intensive activity primarily for the nurses, we also facilitated user focus groups with over 30 NICU nurses. The ability to design software that not only addresses the key needs of our users but also captures their daily priorities and mindset was imperative.

#### What new technology do you see as having the greatest impact on your area of expertise?

In order to truly harness the power and impact of precision nutrition for preterm infants, we need to consider how the microbial community in our gut is shaped by nutritional factors and how that community then shapes growth and development. Astarte Medical has the largest dataset of microbiome sequence data and corresponding clinical data to develop the first vital sign and monitoring system for the gut. This new, patent pending technology called MAGI, the Microbiome And Growth Indicator, is a digital diagnostic that leverages machine learning to provide real-time quantification of gut health. With the ability to stratify infants, MAGI will enable better stewardship of antibiotics, optimized nutrition, and acceleration of microbial interventions, such as pre and probiotics. With the addition of MAGI to our NICUtrition platform, we will have a comprehensive clinical decision support solution for optimal feeding, nutrition and gut health in the NICU.