



## Does a *Baby* Good

In 1963, President and Mrs. John F. Kennedy welcomed their third child, five weeks before his due date. Barely two days later, their baby's heart stopped. "To show you how far we've come, today if a woman gives birth 16 weeks early, there's a chance the NICU can take care of that baby," says Maryanne Perrin, assistant professor in UNCC's School of Health and Human Sciences.

What NICUs feed preemies during this critical window has immediate health implications, adds Perrin, whose research on infant nutrition guides hospitals' practices. With an industrial engineering degree, a doctorate in nutrition, and an MBA, she is one of the first researchers to study the comprehensive process of milk banking.

Best-case scenario, Perrin says, a baby drinks its mother's milk. But that's not always possible, especially for preemies, because the mother's mammary glands don't fully develop until the end of pregnancy.

"That's where donor milk comes in," she says.

Breast milk is especially important for the over 15 million infants born prematurely each year. Because preemies' digestive tracts aren't fully developed, toxic bacteria can penetrate weak gut linings. "Breast milk contains proteins that bind pathogenic bacteria, so they can't get through," Perrin explains. It also delivers healthy bacteria that reduce GI infections and disease.

In the four years after the Surgeon General issued a call to advance donor milk access, NICU use increased by 75 percent. The trend is encouraging, but it brings up a host of questions that, until now, have not been explored.

"There are over 40 studies on how pasteurization affects donor milk – but what happens at the milk bank prior to pasteurization, and what happens to the milk afterwards, at the hospital?" asks Perrin. "Are we mixing, fortifying, and storing it correctly?"

Add to that the variability in human milk's nutritional value.

"If you think you are giving a preemie 67-calorie milk and instead the milk is 54 calories, it can have a big impact on their growth," Perrin explains. "You have a small window of time for infants to grow, and if they miss that window, they can't catch up."

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**In a recent study, Perrin and her collaborators found that a common fortifier – added to breast milk to provide more nutrition for preemies – likely interferes with the milk's immune benefits.**

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Perrin's research, such as a recent study documenting the impact of maternal diet on milk composition, aids milk banks as they assess donor eligibility and sort milk to provide more uniform nutritional content.

She also applies her unique expertise on the board of directors for the Human Milk Banking Association of North America, where she helps set guidelines and develop answers to complex questions related to collection, screening, processing, and distribution. These include whether women should be paid for their breast milk and who should use the milk. "Groups other than infants want breast milk, like athletes and cancer patients," she says.

Last October, Perrin attended a summit at Oxford University where global milk-banking representatives and the World Health Organization discussed ethical considerations that will guide future public health recommendations around access to human milk. "Human milk has been used outside the maternal-child relationship as far back as we know – the first U.S. milk banks formed in 1919. But the bioethics component is new," says Perrin.

"It's an exciting time to be in this field."

By Robin Sutton Anders • Learn more at [go.uncg.edu/perrin](http://go.uncg.edu/perrin)