Medical Xpress

For bonding and breastfeeding, newborns benefit from a cheek full of dextrose

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Satyan Lakshminrusimha, MD, professor of pediatrics at UB, and colleagues developed a protocol for treating some hypoglycemic newborns with dextrose gel. Credit: Douglas Levere, University at Buffalo

Newborns with hypoglycemia, or low blood sugar, are becoming more common worldwide, a result of the growing number of mothers who are overweight, obese or diabetic. Breastfed newborns may be treated with supplementary formula feedings or, if that fails, with intravenous fluids, which requires mother and baby to be separated for hours or days at a time. Both processes interfere with mother-baby bonding and reduce the

chances that exclusive breastfeeding will be established upon discharge from the hospital.

Now University at Buffalo researchers at Women & Children's Hospital of Buffalo (WCHOB) and other teams worldwide are proving that a dose of dextrose gel administered into a baby's cheek, as shown in this video, along with regular feedings can raise babies' blood sugar, allowing them to stay with their mothers, which promotes breastfeeding. Because this method can eliminate the need for intravenous fluids, which have to be done in the Newborn Intensive Care Unit, it also saves health care costs.

Better for bonding

"It breaks my heart to see mother and baby separated right after birth," said Satyan Lakshminrusimha, MD, professor and vice chair of pediatrics in the Jacobs School of Medicine and Biomedical Sciences at UB, chief of the division of neonatology at WCHOB and co-author of a commentary on related research published in *British Medical Journal* (*BMJ*) Evidence-Based Medicine last week as well as a paper published last fall in *Karger Biomedicine Hub*.

A photo is available here.

"Birthing is stressful enough," said Lakshminrusimha, also a pediatric neonatologist with UBMD Pediatrics. "It's further upsetting to a young mother, especially a first-time mother, if she is not able to breastfeed her baby because of low glucose so that the baby needs IV therapy."

Dextrose gel was added to the existing hypoglycemia protocol for the newborn nurseries at two Buffalo area hospitals in 2014, an idea that came out of a journal club discussion facilitated by Lakshminrusimha and Munmun Rawat, MD, then a fellow in neonatology at UB, whom he

was then mentoring, as well as colleagues at WCHOB and UB.

The UB researchers wanted to evaluate the safety and efficacy of oral dextrose therapy combined with feedings to reduce the need for IV dextrose therapy in babies born at or near-term (35 weeks or more) and to evaluate how that therapy would influence feeding patterns for babies prior to discharge from the hospital.

The UB team published their results last fall in Karger Biomedicine Hub, describing how the use of dextrose gel in asymptomatic babies with low blood sugar helped reduce overall NICU admissions at WCHOB for hypoglycemia from 42 percent to 26 percent. In a majority of babies - 74 percent - the sugar gel successfully addressed low blood sugars versus only 58 percent of babies who received regular feedings alone, prior to implementation of the new protocol.

More sugar than milk

The results highlight a drawback of the use of feedings alone, according to Praveen Chandrasekharan, MD, research assistant professor of pediatrics at UB, attending neonatologist at WCHOB, pediatric neonatologist with UBMD Pediatrics and co-author on the paper.

"Dextrose gel is used in adult diabetics all the time," he said, "while in babies, the protocol was to just do feedings. There is sugar in milk, but 100 milliliters of breastmilk or formula has only 7 grams of sugar, while 100 milliliters of gel has 40 grams of sugar."

"We found that when we used the dextrose gel, we could significantly reduce admissions to the newborn intensive care unit, improve the level of breastfeeding at discharge and reduce health care costs," he said. "Previously, if the baby didn't get better after three feeds, they automatically were admitted to the NICU."

When Chandrasekharan presented findings on this research last spring at the Pediatric Academic Societies meeting, the reaction was overwhelming. "There were so many attendees at the session, they had to open up an overflow conference room," he said. Interest in the new protocol continues to spread. The UB researchers have received requests for information from institutions in Texas, Colorado, Georgia, Connecticut and New York State.

The findings are not only improving outcomes for hypoglycemic newborns, they are also leading to new ways to prevent hypoglycemia. Positive results were recently reported by New Zealand researchers studying how to preventively treat newborns at risk for hypoglycemia, such as infants of diabetic mothers, with one dose of oral dextrose. In their commentary accompanying that paper, UB researchers said this is "a novel approach that requires further investigation."

Lakshminrusimha said it is worth noting that the protocol change in the Buffalo hospitals in treating newborns with hypoglycemia came about because of a journal club discussion about research that found dextrose gel could effectively address hypoglycemia in newborns. That discussion was initiated by Rawat, a neonatologist at WCHOB and UBMD Pediatrics, who was first author on the Biomedicine Hub paper. The recipient of a Dr. Henry C. and Bertha H. Buswell Fellowship Award at UB, she will be a research assistant professor in the UB Department of Pediatrics starting in March.

"As an academic health center, we see it as part of our mission to keep abreast of cutting-edge research so we can spread the benefits of research to the rest of our community," said Lakshminrusimha. "Journal club is one of the forums where UB medical faculty share ideas that may end up directly benefitting our patients."

More information: Munmun Rawat et al, Oral Dextrose Gel Reduces

the Need for Intravenous Dextrose Therapy in Neonatal Hypoglycemia, *Biomedicine Hub* (2016). DOI: 10.1159/000448511

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