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Donor Breastmilk

Introduction

As survival rates for preterm infants improve, more attention is being focused on improving nutrition. Mothers' own milk is being strongly recommended to decrease illnesses, shorten the hospital stay, and improve long-term health. Human milk is best for all infants, but research suggests that human milk may ***especially*** benefit the preterm infant. Human milk provides nutrition, digestive enzymes, immune factors of many types, growth factors, hormones, and other bioactive factors, with new components being discovered every day. What about those mothers who cannot provide their own milk for their preterm infants? Should their infants be denied the considerable benefits of human milk? Although not as well studied as mother's own milk, pasteurized donor breastmilk can provide many of the benefits of human milk.

Benefits of Human Milk for Preterm Infants

Breastmilk empties from the stomach faster, matures the intestines faster, and results in less feeding problems than formula. Reaching full feedings faster means fewer days of IV's, less side effects from TPN, less infections and infiltrations from IV's, and less costly and fewer hospital days. Breastmilk-fed infants have less necrotizing enterocolitis (a severe intestinal infection), less blood infections, and less other infections such as urinary tract infections. Infants fed breastmilk tend to have higher IQ scores, improved vision and less retinopathy of prematurity (ROP). Enzymes in breastmilk help immature infants absorb and use food more efficiently. Both fresh and pasteurized milk seem to have protective effects.

Composition of Preterm versus Term Human Milk

Milk from mothers who deliver prematurely (preterm milk) has been shown to be different from milk of mothers who deliver at term (term milk). Preterm milk has been noted to have increased amounts of protein, immune factors, fats, calories, and some vitamins and minerals, The long-chain fatty acids (DHA and ARA) found in both term and preterm milk have been associated with good brain and eye development. In addition, preterm milk has more growth factors and hormones to help the development of all the baby's organs. Preterm milk has more live infection fighting cells, immune factors than term milk does.

Changes in Human Milk with Pasteurization and Freezing

Donor milk must be heat-treated (pasteurized). Pasteurization does affect some of the nutritional, immune and other components of human milk. All white blood cells, bacteria, and viruses are destroyed. The nutritional components are altered somewhat, resulting in slightly slower growth when compared to infants fed their own mother's fresh milk. Many enzymes, growth factors, immune factors, vitamins and minerals are unchanged or slightly decreased. Heat treatment of donor milk may even increase the activity of some factors in human milk. Freezing destroys milk cells and most viruses, but does not appear to affect the nutrition or anti-infection action of the milk.

Human Breastmilk Donors and Banks

Human milk banking has a long tradition in many countries and a recognized role in the care of preterm and sick infants. Currently 10 US Donor Milk Banks and one Canadian milk bank belong to the Human Milk Banking Association of North America (HMBANA). All voluntarily follow guidelines drafted in consultation with the Food and Drug Administration (FDA) and the Center for

Disease Control and Prevention (CDC). These guidelines include screening of all donors for antibodies to human immunodeficiency virus-1 and 2 (HIV-1, HIV-2), human t-lymphotropic virus 1 and 2 (HTLV-1, HTLV-2), hepatitis B (HBsAg), Hepatitis C and Syphilis. Breastmilk donors also receive a full health and risk history and a tuberculosis skin test (PPD) if appropriate. Donor milk is released after it is heat-treated at 62.5 degrees centigrade (144.5° Fahrenheit) or greater for thirty minutes and bacterial cultures are negative. Donor milk is dispensed only on prescription.

Beneficiaries of Banked Donor Milk

The usual recipients of banked human milk are the very low birth weight (< 1500gm) infants whose mothers cannot provide breastmilk for various reasons: maternal illness, medications, substance abuse, or poor social support and resources. Other potential recipients are infants with severe allergies, feeding intolerance, short gut syndrome, malabsorption and other intestinal problems, who cannot tolerate formulas. Older children and adults may also benefit from pasteurized donor human milk if they have immune deficiencies or intestinal damage or sensitivity.

Financial Implications

Although healthy mothers donate human milk, the costs of screening, processing and shipping the milk are considerable. To remain financially solvent, breastmilk banks have had to rely on charitable donations, as well as billing approximately $3.50 per ounce (plus shipping) for the milk provided. It is, however, the policy of all of the milk banks that no infant shall go without milk for financial reasons. The World Health Organization/UNICEF has supported donor milk banks as part of national efforts to promote breastfeeding.

Summary

Although fresh mothers' milk is best, pasteurized banked donor milk can save lives, reduce illness, and save healthcare dollars, while helping to provide the best physical and neurologic development for babies.