



**SANDHILLS
CENTER**



Donor human milk

Clinical Policy ID: CCP.1185

Recent review date: 10/2021

Next review date: 2/2023

Policy contains: Human milk, infant nutrition, necrotizing enterocolitis, very low birth weight infants.

This policy is a Sandhills Center Clinical Coverage Policy adopted from AmeriHealth Caritas of North Carolina. These clinical policies are used to assist with making coverage determinations. Sandhills Center's clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of "medically necessary," and the specific facts of the particular situation are considered by Sandhills Center when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. Sandhills Center clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. Sandhills Center's clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, Sandhills Center will update its clinical policies as necessary. Sandhills Center clinical policies are not guarantees of payment.

Coverage policy

Donor human milk is clinically proven and, therefore, medically necessary when any of the following criteria are met:

- Infant is at risk for necrotizing enterocolitis, i.e., fulfills at least one of the following criteria:
 - *Very low birth weight (equal to or less than 1,500 grams).
 - *Infant was born at or before 28 weeks of gestation, and is younger than age six months.
- Infant suffers from gastrointestinal anomaly, metabolic or digestive disorder, or is recovering from intestinal surgery that causes digestive needs to require additional support.
- Infant is at risk for malabsorption
AND
- Mother's breast milk is contraindicated or otherwise unavailable (Abrams, 2017; Section on Breastfeeding, 2012).

Limitations

No limitations were identified during the writing of this policy.

Alternative covered services

Lactation specialists within network.

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Background

Breast-feeding and human milk are the standard of care for all infant feeding. Exclusive breast-feeding is recommended for the first six months of life as human milk is the ideal form of nutrition for newborn infants. Human milk, unlike infant formula, provides active enzymes that enhance maturation of the infant's gut and protect against infection related to the immune system. There are many advantages of an infant diet of human milk, including lifelong developmental benefits.

Breast-feeding and mother's milk are the best options for feeding all infants, as they provide the highest level of benefits. Human milk's composition changes over time post-delivery to provide the optimal nutritional mix to the developing infant. However, many infants most in need of the optimal nutritional benefits provided by human milk are not able to receive an adequate supply, as 30% of mothers of premature infants are unable to produce sufficient quantities of milk for their children. Donor human milk provides an alternative to formula feeding that delivers many of the benefits of a mother's own milk (Steele, 2017).

Very low birth weight infants are at increased risk for necrotizing enterocolitis. This disease results in the necrosis of the digestive system, and 90% of incidence of necrotizing enterocolitis occurs in preterm infants. Necrotizing enterocolitis can require surgery or eventually result in death or multiple comorbidities, and often these infants require lengthy stays in the neonatal intensive care unit. Human milk has been shown to have protective qualities that benefit those at risk for necrotizing enterocolitis in comparison to formula-based diets.

Donor human milk appears not to be in use uniformly across U.S. populations, neither while in the hospital nor on discharge. According to the American academy of pediatrics human milk is increasingly recognized for its nutritional and immune effects on neonates, including preterm infants. The American Academy of Pediatrics recommends donor human milk as an alternative feeding method if the mother's own milk is not available (Baoquan Zhang, MS, Wenlong Xiu, MS, Yue Dai, Changyi Yang, 2020).

A 2012 national survey of Level 3 neonatal intensive care unit directors found that safety net hospitals (those with more than 75% of admissions covered by Medicaid) were less likely to offer donor human milk. Larger hospitals (those with more than 800 annual neonatal intensive care unit admissions) and those in the Midwest and West (versus East) were more likely to offer donor human milk (Parker, 2013). Concerns about safety, administration, accessibility, and acceptability to families and providers were higher among medical directors in sites that did not use human donor milk.

A survey of nurses from 97 neonatal intensive care units, covering 6,997 very low birth weight infants, found that most very low birth weight infants are not receiving human milk of any type on discharge (Hallowell, 2016). More than half (52%) were discharged on formula only, 42% on a mix of formula and human milk, and 6% solely on human milk.

There are 572 milk banks worldwide, with Brazil having the largest number (Altobelli, 2020). Twenty-six U.S. milk bank networks are in operation, with another five being developed (Human Milk Banking Association of North America, 2020). From 2007 to 2013 in Northern California, the number of hospitals that maintained donor human milk banks rose from 27 to 55, meaning 81.3% of premature infants in the region had such access by 2013 (Kantorowska, 2016).

A mail survey of 182 U.S. level 3 Neonatal Intensive Care directors revealed that pasteurized human donor milk use is rapidly emerging, and now available in 42% of units. Larger units and those in the West and

Midwest were more likely to use donor human milk, while safety-net hospitals were less likely. Lack of knowledge by medical directors of accessibility, safety, and parental receptiveness may be barriers to use (Parker, 2016).

Findings

A panel of experts from the United Kingdom and India recommend that donor pasteurized human milk is the second choice (expressed breast milk is the first choice) to feed preterm infants. Both types of milk should be fortified with human milk factor to meet the nutritional needs of premature infants (Kumar, 2017). Recommendations by the American Academy of Pediatrics call for exclusive breastfeeding until six months of age, as the use of mother's or donor milk for all preterm or low birth weight infants reduces the risk of developing necrotizing enterocolitis (Abrams, 2017; Section on Breastfeeding, 2012). Use of unpasteurized donor milk is not recommended (Abrams, 2017).

Meta-Analyses

- A systematic review/meta-analysis of 32 studies (six of which were randomized controlled trials) found significant reductions in the risk of necrotizing enterocolitis only if premature infants are given both their own and donated breast milk (Altobelli, 2020).
- A systematic review/meta-analysis of seven randomized controlled trials of very low birth weight infants (n = 876) compared outcomes of formula with donated breast milk. Formula showed more advantages in increasing infant weight and length than donated breast milk. Formula could also significantly increase the risks of necrotizing enterocolitis and length of hospital stay (Xie, 2019).
- A review of 44 studies concluded that human milk (including donor milk) is associated with a 4% reduction in necrotizing enterocolitis, and possibly with reductions in severe necrotizing enterocolitis, retinopathy of prematurity, and length of stay. Higher doses of human milk result in greater protection (Miller, 2018). A review of four studies concluded that donor human milk was not beneficial to preventing surgical necrotizing enterocolitis compared with formula (Silano, 2019).
- An increase in donor human milk use was associated with a statistically significant increase of any breast feeding at discharge (relative risk = 1.19), but rises in exclusive maternal breast feeding (1.12) or exclusive administration of a mother's own milk (1.08) were not significant (Williams, 2016).
- Three randomized studies (n = 814) found that supplementing mother's milk with pasteurized donor human milk did not significantly reduce bronchopulmonary dysplasia risk when compared to preterm formula ($P = .56$), but significantly reduced days on a mechanical ventilator (n = 433, $P = .02$) (Villamor-Martinez, 2018).
- A Cochrane review of nine trials (n = 1,070) included comparisons of donor breast milk with standard formula (four trials), and nutrient-enriched preterm formula (five trials). Formula-fed infants had higher in-hospital weight increase (mean difference = 2.58), length (1.93), and head circumference (1.59), while formula feeding increased necrotizing enterocolitis (Quigley, 2018). The latest data in the Cochrane review included 12 trials (n = 1,879) showed similar results similar to the prior year's. Formula-fed infants had higher risk of necrotizing enterocolitis, with a significant risk ratio of 1.87 (Quigley, 2019).

Systematic Reviews

- A review of 31 articles identified 26 factors that act as barriers to milk donation, and 38 factors that act as facilitators. The most important facilitators include having excess milk, altruism, and helping other babies, while religious and cultural concerns are the most important barriers (Doshamangir, 2019).

Surveys

- Among 22 Northern California hospitals with a clear transition to availability of donor human milk, breast-feeding at neonatal intensive care unit discharge rose 10% (Kantorowska, 2016).
- In a survey of 83 Italian neonatal intensive care units treating 4,277 very low birth weight infants, those facilities with a human milk bank had a much greater rate of discharges with exclusive breast-feeding than did those with no milk bank (29.6% versus 16%) (Arslanoglu, 2013).

Randomized Trials and Other Large Studies

- A study of 2,804 preterm newborns with enteral milk feeding was randomized by daily rate of feeding, i.e., 30 versus 18 milliliters per kilogram of body weight. No significant difference were observed between the two groups for survival without moderate or severe neurodevelopmental disability at 24 months (65.5% versus 68.1%, $P = .16$). Rates for the two groups were similar for late-onset sepsis (29.8% and 31.1%) and necrotizing enterocolitis (5.0% and 5.6%) (Dorling, 2019).
- A study of 1,791 very low weight births were divided into those before ($n = 1,334$) and after ($n = 457$) the introduction of probiotics and donor human milk. Significantly lower mortality (7.6% versus 2.4%, $P < .001$) and incidence of sepsis (6.2% versus 3.5%, $P = .028$) were observed in the after-donor milk/probiotic group. The after-donor group was also associated with an insignificantly lower rate of necrotizing enterocolitis (2.8% versus 1.5%, $P = .14$) and borderline significant rate of associated gastrointestinal perforation (1.6% versus 0.4%, $P = .052$) (Sharpe, 2018).
- After an increase in necrotizing enterocolitis and subsequent initiation of a protocol of enteral feeding (in the absence of hemodynamic problems), trophic feeding of five to seven days, and 20 to 30 ml/kg/day of breast or donor milk among very low birth weight infants, one hospital observed a fall in necrotizing enterocolitis rates from 7.7% (12/155 infants pre-protocol) to 0.9% (1/115 infants), significant at $P = .008$, and a reduction in mortality from 17.4% to 7.8%, significant at $P = .02$, with no increase in length of hospital stays or sepsis (Sanchez-Tamayo, 2016).
- A comparison between 443 premature infants (< 33 weeks gestation) in a neonatal intensive care unit over a 6.5-year period who consumed only bovine milk products and 199 infants in a later 2.5-year period who consumed only human milk found that necrotizing enterocolitis cases beginning after day seven of life fell from 3.4% to 1.0%, or from 15/443 to 2/199 cases (Herrmann, 2014).
- A retrospective study of a cohort of 550 very low birth weight infants found that those given either maternal breast milk or donor human milk on more than 50% of their days in the neonatal intensive care unit had a lower rate of necrotizing enterocolitis (3.4% versus 13.5%) and lower mortality (1.0% versus 4.2%), compared with those given maternal or donor milk less than 50% of their days in the neonatal intensive care unit (Chowning, 2016).
- In a multisite study in Ontario, Canada, of children who as infants had very low birth weight and were treated with either donor milk or preterm formula, rates of necrotizing enterocolitis (measured at 90 days post-enrollment or at hospital discharge) were lower in the donor milk group, both for all stages of necrotizing enterocolitis (risk difference -7.1%, $P = .01$), and for necrotizing enterocolitis stage $> II$ (risk difference -4.9%, $P = .02$) (O'Connor, 2016).
- Among 22 northern California hospitals that had a marked transition to availability of donor human milk, necrotizing enterocolitis rates declined by 2.6% (Kantorowska, 2016). Alternative measures to necrotizing enterocolitis incidence and mortality may demonstrate the benefits of donor human milk. Among 201 neonatal intensive care unit infants born under 1,000 g, the median hours of oxygen use were lower (24 versus 63) for infants fed donor milk versus formula-fed infants, as were hours of mechanical ventilation (60 versus 192), which researchers interpret as supporting the safety of donor

milk (Verd, 2015).

In addition to the observation noted above that human milk may be associated with lower growth suggesting a need for fortification, some other outcome measures may not improve with greater use of donor human milk (Chowning, 2016).

In a multisite comparison of neurocognitive measures at 18 months between children in Ontario Canada, who as infants with very low birth weight were fed with either human donor milk or formula; no significant differences were found in neurodevelopment as assessed by Bayley-III cognitive composite score, language composite score, or motor composite score, or for morbidity and mortality index, or changes in growth Z scores. However, more children in the donor milk group than in the formula group had cognitive composite scores indicative of neurological impairment, a finding which was statistically significant. Language trended in this same direction, but was not statistically significant (O'Connor, 2016).

References

On July 16, 2021, we searched PubMed and the databases of the Cochrane Library, the U.K. National Health Services Centre for Reviews and Dissemination, the Agency for Healthcare Research and Quality, and the Centers for Medicare & Medicaid Services. Search terms were “donor human milk.” We included the best available evidence according to established evidence hierarchies (typically systematic reviews, meta-analyses, and full economic analyses, where available) and professional guidelines based on such evidence and clinical expertise.

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Policy updates

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