Milk of breast is best: protection against RSV and subsequent wheeze with breastmilk

Respiratory syncytial virus (RSV) is a significant pathogen infecting infants and young children; approximately 70% of infants are infected with RSV before their first birthday and almost all children have been infected at least once by two years of age. Bronchiolitis occurs when the virus spreads to the smallest air passageways in the lower portion of the lungs. Most children experience mild bronchiolitis, but approximately 2-3% will be hospitalised with severe disease. Severe bronchiolitis is strongly associated with the development of recurring wheeze and asthma in later childhood. This is likely to occur if the immune system is skewed toward allergic-like responses and exacerbated immune system activation**,** although the mechanisms behind this are not fully understood.

Following birth, a newborn's immune system is unable to mount a complete immune response. It is thought that components in breastmilk help prevent infection and support an infant's immune system until the infant's system can elicit an adequate immune response unaided. For example, breastmilk contains several substances that can block the adherence of bacteria and viruses to the cells of the lung, and also contains maternal immune cells that "remember" specific pathogens and prevent their infection in the infant. Breastfed infants have decreased incidence of RSV infection, possibly due to these factors.

Interestingly, studies have also found that breastfeeding provides protection against severe RSV disease and subsequent wheezing. This effect is likely to result from factors in breastmilk that may help to push the infantile immune system away from developing skewed allergic-like responses and toward appropriate immune activation. These factors include immune cells, non-pathogenic bacteria, and hormone-like immune factors.
In conclusion, further investigation into the components of breastmilk and the roles they play in altering the development of the infant immune system is required. To promote healthy infant immune system development and ultimately children's well-being, it is possible these beneficial factors may be included in future infant formula or be developed into infant and maternal supplements.

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Publication

The Role of Human Milk Immunomodulators in Protecting Against Viral Bronchiolitis and Development of Chronic Wheezing Illness.

Dixon DL
Children (Basel). 2015 Jul 7