Neonatal probiotic supplementation can improve infant illness and reduce death, but vitamin A does not, and may have adverse effects

Nutritional support during the first month of life is vital for the short- and long-term survival of the newborn. Neonatal nutrition interventions have the potential to decrease death and illness in young infants in low- and middle-income countries.

What is this review about?
This review assesses the efficacy of synthetic vitamin A, dextrose, and probiotic supplementation during the neonatal period. These interventions were assessed separately and not in combination with each other.

What studies are included?
Sixteen studies that assessed the effect of vitamin A supplementation during the neonatal period were included. Thirteen of these studies were conducted in the community setting and three studies were conducted in the hospital setting. All the included studies on neonatal vitamin A supplementation were conducted in low- and middle-income countries. Most of the studies had a low risk of bias.

No experimental studies were found that evaluated the use of dextrose for the prevention or treatment of low blood sugar during the neonatal period.

Thirty-three studies assessed the use of probiotics during the first month of life. All included studies on probiotic supplementation were randomized and conducted in low- and middle-income countries. Most of the included studies had a low risk of bias. The probiotics studies mainly included babies born early and/or with low birthweight, and these studies were mostly conducted in hospital settings.

What are the main findings of the review?
Combined results from thirteen vitamin A studies conducted in the community settings showed that there was no significant effect of vitamin A supplementation for reduction of death in young infants at 1, 6, or 12 months of age. However, neonatal vitamin A supplementation increased the incidence of bulging fontanelle by 53%.
The pooled data from probiotics studies showed that this intervention reduced the risk of death by 20% compared to controls. Further analysis showed that compared to controls, probiotic supplementation reduced the risk of a severe form of gastrointestinal illness in neonates called necrotizing enterocolitis by 54%. Probiotic supplementation also reduced the risk of blood infection called sepsis by 22% compared to controls. The quality grade ratings for these outcomes were ‘high.’

What do the findings of this review mean?
Vitamin A supplementation during the first month of life does not reduce the risk of death during the first year of life in low- and middle-income countries. However, neonatal vitamin A supplementation increases the risk of bulging fontanelle, which may cause damage to the brain.

We did not find any experimental studies from low- and middle-income countries that assessed the use of dextrose gel supplementation during the first month of life for the prevention or treatment of low blood sugar.

Probiotic supplementation during the first month of life to babies born preterm and/or low birthweight can reduce the risk of death, blood infection and bowel sickness (NEC).

There was clinical heterogeneity in the use of probiotics and we could not recommend any single strain or combination of probiotics for wider use based of these results.

There is a lack of studies on probiotic supplementation in the first month of life in community settings. More research is needed to assess the effect of probiotics administered to neonates in home/community settings in low- and middle-income countries.

How up-to-date is this review?
The review authors searched for studies published up to November 2019.

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About this summary

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