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# How to Prevent Deadly Infection in Babies? Good Bacteria

Global Health

By DONALD G. MCNEIL Jr. AUG. 21, 2017

It may be possible, scientists say, to save many thousands of newborns in poor countries by giving them a simple probiotic — a strain of bacteria originally scooped out of the diaper of a healthy baby.

A large clinical trial in rural India has found that babies fed a special strain of Lactobacillus bacteria for just one week were 40 percent less likely to develop sepsis, a life-threatening bloodstream infection.

Sepsis kills 600,000 newborns a year, many of them in India and neighboring countries.

The treatment was so successful that an oversight panel stopped the trial early because it would have been unethical to keep giving a placebo to half the babies in the study.

Moreover, the babies fed the probiotic — which costs only \$1 — also had fewer pneumonias, fewer bouts of diarrhea, fewer ear infections and even fewer infections of the umbilical cord stump.

The results, researchers said, suggest that carefully chosen probiotics could

also help prevent stunting, which afflicts 160 million of the world's children.

The condition is caused by chronic malnutrition and diarrhea, and persists even when children get enough food. Experts believe they lack the bacteria needed to absorb nutrients.

The study "is an absolute game-changer," said Dr. Tobias R. Kollmann, a pediatric immunologist at the University of British Columbia who was not involved in the research.

"There's nothing we have like this in our armamentarium to prevent infections in newborns. Also, there's how cheap it is, its ease of use — it's oral — and its independence of pharmaceutical companies and their patent issues."

Generally, probiotic supplements are intended to colonize the gut with beneficial bacteria to prevent harmful strains from gaining hold.

Scientists are unsure how the test formulation works, but they believe it may strengthen the gut wall to prevent leaking of harmful bacteria into the blood and also activate immune cells in the lymphoid tissues lining the gut, which migrate to distant organs to attack infections there.

The journal Nature published the study last week; an accompanying commentary by Daniel J. Tancredi, a health statistician at the University of California, Davis, called the results "astonishing."

The study's lead author, however, cautioned that he did not consider all probiotics beneficial, or even safe. Mixtures like those sold in health-food stores "are completely nonsense," said the author, Dr. Pinaki Panigrahi, a pediatrician at the University of Nebraska Medical Center's Child Health Research Institute.

Probiotics must be as exactly matched to the illness for which they are prescribed as antibiotics are, Dr. Panigrahi said. Taking an inappropriate probiotic would be like taking cold medicine for tuberculosis, he said, just because both affect the respiratory tract.

: “If you mix three or four or five, that’s your funeral.”

Giving the wrong bacteria to a sick baby could be deadly, so his team spent over a decade testing 280 different strains, looking for one that clung to the gut, never entered the bloodstream and could outgrow harmful bacteria.

Some samples came from Indian yogurts or health food shops, but their ability to colonize the gut was “almost zero,” he said.

The winner was sample No. ATCC-202195 of Lactobacillus plantarum from a healthy 11-month-old Maryland child.

(Some reports published last week said the bacteria were from an Indian baby, but Dr. Panigrahi explained that he was teaching at the University of Maryland Medical School at the time and international transport of biological samples was restricted.)

The Lactobacillus had to be given with an indigestible sugar he called “food for the bug.”

His work was funded by the National Institutes of Health. He hopes to extend testing to premature and sickly infants, who are in greater danger of sepsis.

Dr. Christopher P. Duggan, a pediatrician at Harvard Medical School who studies children’s nutrition in India and Africa, said he found the study “fascinating” but wants to see it repeated elsewhere “just to be sure that it’s not too good to be true.”

Having treated infants with damaged bowels, he agreed with Dr. Panigrahi that the wrong probiotic could cause sepsis rather than prevent it.

Other experts, including Dr. David Clark, a neonatologist at Albany Medical Center, and Dr. Gregor Reid, a probiotics researcher at Western University in London, Canada, agreed that future clinical trials might prove that probiotics even prevent stunting.

In some countries, stunting leaves almost half of children smaller than they should be and suffering from lifelong learning difficulties.

But getting the money to do such studies is hard, experts say, because of prejudices against probiotics at many funding institutions, which view their use as naturopathy rather than evidence-based medicine.

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A version of this article appears in print on August 22, 2017, on Page D3 of the New York edition with the headline: Protected From Bacteria by Bacteria.

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