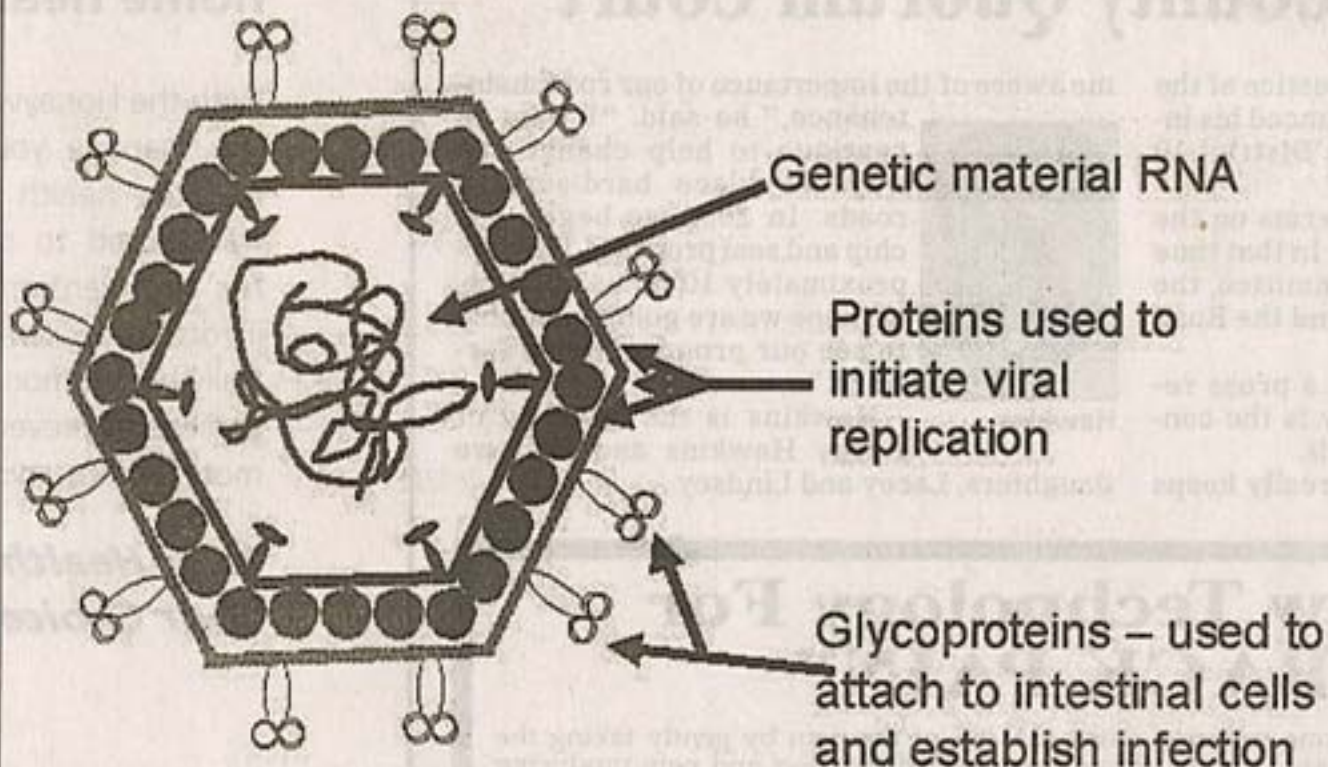


# New vaccines effective against Rotavirus

## Rotavirus "Wheel-like" Structure



**EDITOR'S NOTE:** The following article is part of an ongoing science series written by Arkansas State University Staff members and published periodically by *The Sun*

**BY ALDEMARO ROMERO  
AND JEANNETTE M. LOUTSCH**  
SPECIAL TO THE SUN

Rotavirus is the most common cause of severe diarrhea among children ages 3 months to 2 years, with 95 percent of children having been infected by age 5. This type of diarrhea results in dehydration, requiring hospitalization of approximately 55,000 children and 20 deaths each year in the United States. The medical cost is estimated to be \$274 million with more than \$1 billion in societal cost.

A recent article in *The New England Journal of Medicine* is giving hope for this very deadly but rarely recognized source of child deaths around the

The basic structure of a rotavirus.

Jeannette Loutsch

PLEASE SEE **VIRUS, A9**

# VIRUS: Infections common from November to April

FROM PAGE A8

world, as many as 800,000 per year. The article, authored by several dozen of specialists from around the world, reports that after one of the largest clinical trials in the history of medicine, two new vaccines have proven highly effective in controlling the spread of rotaviruses.

Rotaviral infections are especially common from November to April and are spread by a fecal-oral route. The virus has a wheel-like appearance that is around its segmented RNA genome. The RNA is contained in a protein shell and a layer of glycoproteins (proteins with sugars attached) that aid in establishing the infection in the small intestine.

The incubation period for rotavirus is approximately 2 days followed by vomiting, nausea, fever, abdominal pain, and diarrhea for 3-8 days. Loss of fluids because of the vomiting, fever and diarrhea results in dehydration that leads to life threatening conditions. Most treatments consist

of keeping the child hydrated; 1 in 40 children require hospitalization.

The first time a person is infected, they develop immunity to the same strain of the virus and to severe disease with other strains. Drug companies use this property to develop a vaccine that allows the virus to divide in the intestines but not to cause diarrhea. The article reports promising results from large clinical trials that examined two new rotavirus vaccines: Rotateq from Merck and Rotarix from GlaxoSmith-Kline.

These vaccines are given orally and are intended to be given to infants at the same time as their other immunizations. It is the aim to use the vaccines in a world wide campaign to reduce the casualties due to rotavirus diarrhea. The obstacles that need to be overcome are the cost of the vaccine, distribution and follow-up vaccinations in developing countries.

This is not the first vaccine for rotavirus. In 1998 the U.S. Food and Drug Administration approved a live virus vac-

cine (Rotashield) for use in children. This vaccination resulted in 1 in 10,000 children developing intussusception, a condition where the bowel folds in on itself. This prompted the company to remove the vaccine from the market less than a year after being introduced. No similar conditions have been seen with the new vaccines which may be because the vaccine is given much earlier than in the previous study.

Rotavirus infection is contagious and can spread through daycare facilities. Its spread can be decreased by good hygiene practices. Persons responsible for child care should wash their hands after using the toilet, diaper change and before handling food.

For more information contact the ASU Department of Biological Sciences at biology.astate.edu.

Dr. Aldamaro Romero is chairman and professor and Dr. Jeannette M. Loutsch is assistant professor of in the Department of Biological Sciences at Arkansas State University.