

# Rubella virus persists after vaccination in some patients with rare immune disorders

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Some patients with rare primary immunodeficiency disorders may be at risk for infection by rubella virus, and possibly serious skin inflammation, after receiving the rubella vaccine, usually administered as part of the measles-mumps-rubella (MMR) vaccine. Although the vaccine for rubella (German measles) has an established record of safety and effectiveness in the general population, patients with severe deficiencies in their immune defenses may be susceptible to side effects from the vaccine.

"Up to now, the risk of adverse effects from rubella vaccine has been a theoretical concern for many immune deficient patients," said study leader Kathleen E. Sullivan, MD, PhD, chief of the Division of Allergy and Immunology at Children's Hospital of Philadelphia (CHOP). "The vaccine's package insert states that it shouldn't be given to immune-deficient individuals. Our new study found genuine evidence of harm in a subset of patients with these rare disorders."

Her study appears in the November 2016 issue of the *Journal of Allergy and Clinical Immunology*, where it is highlighted as an "Editor's Choice" article.

Primary immunodeficiency diseases (PID) are a diverse group of rare, chronic disorders with genetic origins, characterized by malfunctions in the body's immune system. Most patients have recurrent infections, along with other health problems. Some PID patients have cutaneous granulomas—inflammatory skin lesions that may progress to life-

threatening ulcers.

In previous, smaller case reports, researchers had found vaccine-related rubella virus in granulomas of PIDD patients. In the current study, Sullivan and colleagues analyzed data from a larger group of 14 patients with different PIDDs who had cutaneous granulomas. Twelve of those patients were from the USIDNET, a national registry of American PIDD patients, and two other patients were from European outreach. Four patients were adults, the others children. Three of the 11 children died from severe infections. Of the 14 patients, 7 had evidence of rubella virus antigen in their granulomas.

The team's findings suggest that because PIDDs compromise a patient's immune system, patients are unable to clear out the weakened [rubella virus](#) contained in the vaccine. That virus persists in their bodies, damaging skin cells and even leading to ulcers.

"This research reinforces the warning already found in rubella vaccine package inserts," said Sullivan. "It gives additional guidance to physicians and families as to who should be restricted from the MMR vaccine. All of the patients with this complication had pretty severe immune compromise of their T cells—the cells responsible for clearing viral infections."

**More information:** Ludmila Perelygina et al, Rubella persistence in epidermal keratinocytes and granuloma M2 macrophages in patients with primary immunodeficiencies, *Journal of Allergy and Clinical Immunology* (2016). [DOI: 10.1016/j.jaci.2016.06.030](https://doi.org/10.1016/j.jaci.2016.06.030)

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