

SIMULTANEOUS ADMINISTRATION OF CERTAIN IMMUNOBIOLOGICS:

1. Simultaneous administration of the most widely used live and inactivated vaccines does not result in decreased antibody responses or increased rates of adverse reactions.
2. Simultaneous administration of all vaccines for which a child is eligible can be very important in childhood vaccination programs because it increases the probability that a child will be fully immunized at the appropriate age.
3. Individual vaccines should not be mixed in the same syringe unless they are licensed for mixing by the Food and Drug Administration. Only the sanofi-pasteur Hib/DTaP (TriHIBit) vaccine is licensed for mixing in the same syringe.
4. Live parenteral (injected) vaccines (MMR, MMRV, varicella, zoster, and yellow fever) and live attenuated influenza vaccine (LAIV) that are not administered simultaneously should be separated by at least 4 weeks. This precaution is intended to reduce or eliminate interference from the vaccine given first on the vaccine given later. If two live parenteral vaccines or LAIV are not administered simultaneously but are separated by less than 4 weeks, the vaccine given second should be repeated in 4 weeks or confirmed to be effective by serologic testing of the recipient (serologic testing is not recommended for LAIV). An exception to this recommendation is yellow fever vaccine administered less than 4 weeks after single-antigen measles vaccine. A 1999 study demonstrated that yellow fever vaccine is not affected by measles vaccine given 1-27 days earlier. The effect of nonsimultaneously administered rubella, mumps, varicella, and yellow fever vaccines is not known.
5. Live vaccines administered by the oral route (oral polio vaccine [OPV], oral typhoid, and rotavirus) are not believed to interfere with each other if not given simultaneously. These vaccines may be given at any time before or after each other. Rotavirus vaccine is not approved for children older than 32 weeks, oral typhoid is not licensed for children younger than 6 years of age, and OPV is no longer available in the United States, so these vaccines are not likely to be given to the same child.
6. Parenteral live vaccines (MMR, MMRV, varicella, zoster, and yellow fever) and LAIV are not believed to have an effect on live vaccines given by the oral route (OPV, oral typhoid and rotavirus). Live oral vaccines may be given at any time before or after live parenteral vaccines or LAIV.
7. All other combinations of two inactivated vaccines, or live and inactivated vaccines, may be given at any time before or after each other.
8. Inactivated antigens are generally not substantially affected by circulating antibody, so they can be administered before, after, or at the same time as the antibody. Simultaneous administration of antibody (in the form of immune globulin) and vaccine is recommended for postexposure prophylaxis of certain diseases, such as hepatitis B, rabies, and tetanus.
9. If a live parenteral vaccine (measles-mumps-rubella [MMR], MMRV, or varicella) must be given around the time that antibody is given, the two must be separated

by enough time so that the antibody does not interfere with viral replication. If the live vaccine is given first, it is necessary to wait at least 2 weeks (i.e., an incubation period) before giving the antibody. If the interval between the vaccine and antibody is less than 2 weeks, the recipient should be tested for immunity or the vaccine dose should be repeated.

10. If the antibody is given before a dose of MMR or varicella vaccine, it is necessary to wait until the antibody has waned (degraded) before giving the vaccine to reduce the chance of interference by the antibody. The necessary interval between an antibody-containing product and MMR or varicella vaccine depends on the concentration of antibody in the product. A table listing the recommended intervals between administration of antibody products and live vaccines (MMR and varicella) can be found below (Table 2).
11. Although passively acquired antibodies can interfere with the response to rubella vaccine, the low dose of anti-Rho(D) globulin administered to postpartum women has not been demonstrated to reduce the response to the rubella vaccine. Because of the importance of rubella immunity and varicella immunity among childbearing age women, women without evidence of immunity to rubella or varicella should receive single-antigen rubella, MMR, or varicella vaccine (but not MMRV) in the postpartum period. Vaccination should not be delayed because of receipt of anti-Rho(D) globulin or any other blood product during the last trimester of pregnancy or at delivery. These women should be vaccinated immediately after delivery and, if possible, tested 3 months later to ensure immunity to rubella and, if necessary, to measles.
12. Oral typhoid, and yellow fever vaccines are not known to be affected by the administration of immune globulin or blood products. They may be given simultaneously with blood products, or separated by any interval. The replication of live attenuated influenza vaccine (LAIV) is not believed to be affected by antibody-containing blood products. LAIV can be given any time before, during or after administration of antibody-containing vaccines.
13. Palivizumab (Synagis) contains only monoclonal antibody to respiratory syncytial virus (RSV). It does not interfere with the response to live virus vaccines and can be given anytime before, during or after administration of MMR or varicella-containing vaccines. Washed red blood cells contain a negligible amount of antibody. It can be given anytime before, during or after administration of MMR or varicella-containing vaccines.