Vaccination in Juvenile Rheumatic Diseases

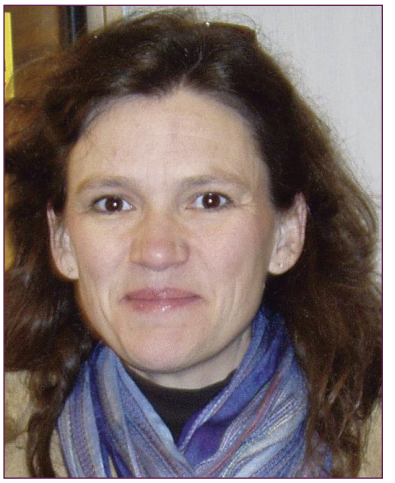
By Suzanne E. Ramsey, MD, FRCPC

A three-year-old presents with juvenile idiopathic arthritis (JIA). A 14-year-old with systemic lupus erythematosus (SLE) on prednisone has functional asplenia. A 17-month-old patient has received intravenous immunoglobulin (IVIG) for Kawasaki disease. A 10-year-old with juvenile dermatomyositis has just discontinued IVIG and methotrexate (MTX). What vaccine issues must be addressed in these patients?

With many new immunosuppressive therapies and evolving provincial immunization schedules[1-4] we review our guidelines annually with our vaccinology colleagues and make reference to international guidelines.[5] Routine inactivated vaccines should be brought up-to-date. Live virus vaccines are generally considered contraindicated in immunosuppressed children and should be given before escalating treatment or when there is a gap in immunosuppression. High dose steroids (prednisone 10 mg/d-20mg/d or 0.2 mg/kg/d for more than two weeks), disease modifying anti-rheumatic drugs (DMARDs), and biologics may reduce vaccine response, as may active inflammatory disease. Systemic corticosteroids are one of the greatest risk factors for infection in rheumatology patients;[6] DMARDs and biologics impact infection risk variably and require further study.

Viral Vaccines

Vaccination to ensure two doses of the measles, mumps, rubella, and varicella (MMRV) vaccine should be considered early in a child's life. MMRV can be given as early as 12 months and repeated within three months.[1] This vaccine may be safe in JIA patients on low dose MTX (< 10 mg/m^2) but its safety has not been established during more intensive therapies.[7] Limited data exist on varicella zoster virus (VZV) vaccine safety in rheumatology patients. Extrapolation from children with hematologic malignancy is difficult given that rheumatologic immunosuppression is typically chronic. Indeterminate VZV or negative hepatitis B serology in previously vaccinated patients may improve with an additional booster.[2,3] Secondary prophylaxis for VZV may be necessary. Rheumatology patients may benefit from personal and household annual influenza vaccines. Cold-adapted live flu vaccine (nasal mist) is more effective than injected inactivated vaccine; however, there is no safety data in immunocompromised children. Vaccination of siblings should be safe unless the patient is considered profoundly immunosuppressed, in which case live vaccines should be avoided for household contacts.[2]



Dr. Ramsey is a well-respected clinician-educator in the field of pediatric rheumatologic diseases.

Live vaccines are delayed in children treated with IVIG, as it typically contains inactivating levels of MMR and VZV antibody. Specifically, MMRV vaccines for Kawasaki disease patients must be delayed for 11 months after treatment with high-dose IVIG (2 gm/kg). Lower doses of IVIG and other blood products require a lesser delay.[1] Plans for international travel should trigger consultation with a Public Health or a Travel Medicine consultant, as travel vaccines such as yellow fever and oral typhoid are contraindicated in immunosuppressed patients.[1]

Bacterial Vaccines

Gram-positive infections may add to morbidity and mortality. Unvaccinated children should receive

pneumococcal vaccines, although the ideal timing in the disease course is unclear. Guidelines for previously unvaccinated immunocompromised children are pneumococcal conjugate vaccine (PCV) (*e.g.*, Prevnar®13) followed no sooner than eight weeks by pneumococcal polysaccharide vaccine (PPSV) (*e.g.*, Pneumovax® 23).[1] Patients with surgical or autoimmune splenectomy require special consideration and pneumococcal, hemophilus influenza, and meningococcal vaccine are all recommended prior to planned splenectomy followed by pneumococcal antibiotic prophylaxis.[8]

Further Considerations

Following the cessation of immunosuppression, a protocol should be established for each child. While a remote risk of disease flare or adverse event may exist with vaccination, risk-benefit ratios typically strongly favour immunization. It is generally accepted, however, that a vaccine should be avoided if it has precipitated a disease flare or with highly active disease.[2]

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A Call To Action For Adult Vaccination: Immunocompromised Patients At Increased Risk

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The Issue

Pediatric vaccination in Canada experiences high levels of adherence due to well-established protocols, public health support, and school-based programs. The same cannot be said for adult immunization. There is no established "check point" for adults regarding updating their vaccines and, according to the 2006 Canadian Immunization Survey, most adult Canadians are under-immunized for all vaccines. It has been suggested that a good time for this preventative health care discussion may occur at age 50 when adult screening tests for bowel and breast cancers, amongst others, begin.

This is not yet the current standard practice in Canada; as such, when patients require treatments which may suppress their immune system, specialists prescribing these therapies cannot assume that their patient's vaccinations have been updated. At the time of treatment initiation, the question becomes: "Who is responsible for ensuring vaccinations are given?" While the family physician has traditionally been responsible for advising on the use and administration of vaccines, specialists initiating treatment that will suppress the immune system have a level of responsibility to discuss and ensure their patients are vaccinated before treatment initiation. At the CRA Annual