I for Immunisation in Autoimmune Inflammatory Rheumatic Diseases(AIIRD)

PROBLEM STATEMENT

- Children with autoimmune inflammatory rheumatic diseases have an increased burden of infections due to
  - Underlying autoimmune disease
  - Comorbidities
  - Immunosuppressive medications
- Vaccination practice is generally low in this group because of concerns regarding
  - Uptake(seroconversion) of vaccines in children under medications for AIIRD, need for withholding medications and the possible risk of disease flare.
  - Immunogenicity of vaccines and worsening of disease (vaccines are potential antigens!) in this group of children.
  - Safety of vaccines in children under medications for AIIRD.

2 IMPORTANT VACCINES TO CONSIDER IN CHILDREN WITH AIIRD

- Influenza vaccine-points to consider
  - ✓ Any influenza vaccine(non-live) is preferred over no influenza vaccine
  - ✓ Vaccination "today" is preferred over delay.
- Pneumococcal vaccine-points to consider
  - ✓ Prime boost strategy
  - ✓ Prime with PCV13 vaccine, followed by PPSV23 8 weeks later (for children >2 years).

Timing of vaccination

"Shared decision making among primary care providers, Rheumatologist managing AIIRD and parents/ caretakers" considering disease activity, medications, benefits of vaccinations, possible/impending epidemic, live vs killed vaccine etc.

- For influenza & non live vaccines-

	Influenza vaccination	Other non–live attenuated vaccinations
Methotrexate	Hold methotrexate for 2 weeks *after* vaccination*	Continue methotrexate
Rituximab	Continue rituximab†	Time vaccination for when the next rituximab dose is due, and then hold rituximab for at least 2 weeks after vaccination
Immunosuppressive medications other than methotrexate and rituximab	Continue immunosuppressive medication	Continue immunosuppressive medication

*Hold only if disease activity allows. Assessment of flare risk and shared decision-making with the patient is recommended when deciding whether methotrexate should be held.

† Give influenza vaccination on schedule. Delay any subsequent rituximab dosing for at least 2 weeks after influenza vaccination if disease activity allows.

- For live vaccines-
  - ✓ For children who are taking immunosuppressive medication, deferring live attenuated vaccines is conditionally recommended, with the possible exception of cautious use of MMR booster[2]. For some live attenuated virus vaccines like oral polio, oral typhoid, and influenza, there are inactivated alternatives that can be safely given to children taking immunosuppressive medication. If live vaccinate is required absolutely (eg outbreak), then vaccination should be timed depending upon the immunosuppressive medications and disease activity. Timing should be individualized considering benefits of disease flare on withholding medications vs benefits of vaccine uptake.
  - ✓ For slow-acting conventional DMARDs, a prevaccination hold time of 4 weeks was chosen to reflect their prolonged duration of action[1].
  - ✓ For most biologic DMARDs, a hold time of 1 dosing interval before live attenuated vaccine administration is recommended[1].
  - ✓ Hold immunosuppressive medications for 4 weeks after live attenuated vaccination[1].
  - ✓ In children with autoinflammatory disorders or systemic juvenile idiopathic arthritis in whom the risk of disease flare is high if biologic DMARDs are withheld, shorter hold times can be considered if live-attenuated vaccination is critical.
  - ✓ Based on the safety data on the MMR booster vaccination, the measles virus booster vaccine (as opposed to neo-immunisation) can be considered in children on low grade of immunosuppression at risk of contracting measles infection (eg outbreak)[2]

- ✓ Low level immunosuppression is defined as methotrexate ≤0.4 mg/kg/week, azathioprine ≤3 mg/kg/day, prednisone <20 mg/day (or <2mg/kg/day for patients weighing <10 kg), or alternate-day glucocorticoid therapy[3].

VACCINATION IN SPECIAL SITUATIONS

➢ Close contacts of immunosuppressed patients

- ✓ Close contacts should receive all age-appropriate vaccination to avoid the vaccine-preventable diseases. Oral polio vaccine should be avoided due to a risk of transmission to household members, with a small risk of vaccine-associated paralytic poliomyelitis in immunosuppressed. Household members have to wash their hands after diaper changing when an infant has received a rotavirus vaccine.
- ✓ No specific precautions are needed except if a household contact develops a rash after varicella vaccination, in which case direct contact should be avoided until the rash resolves.

➢ Vaccination to infants born to mothers with AIIRD

- ✓ Children exposed to biologics at the late second and during the third trimester, can follow routine schedule, but should not receive live vaccines in the first 6 months of life[2].
- ✓ For rotavirus vaccine recommendations are based on type of biologicals used[1].

Antenatal drug exposure in second or third trimester	Within the first 6 months of life	After 6 months of life
TNFi	Give rotavirus vaccine	–
Rituximab	Do not give rotavirus vaccine	Give rotavirus vaccine

➢ Intravenous immunoglobulin

- ✓ Antiviral antibodies contained in IVIG can interfere with replication of live attenuated vaccines and reduce their efficacy.
- ✓ The CDC recommends a delay of 8–11 months (depending on IVIG dose) between receipt of high-dose IVIG and live attenuated virus vaccination.
- ✓ In situations like measles outbreak, earlier vaccination is preferred over delay because some immunity will be preferred over none.

➢ Vaccinating children on steroids.

	Influenza vaccination	Other non-live attenuated vaccinations
Prednisone ≤10 mg daily*	Give	Give
Prednisone >10 mg and <20 mg*	Give	Give
Prednisone ≥20 mg daily*	Give	Defer†

* equivalent dose of any other glucocorticoid formulation, or the equivalent pediatric dose(≤0.2mg/kg/day,>0.2-<0.4mg/kg/day, ≥0.4mg/kg/day.
† Defer vaccination until glucocorticoids are tapered to the equivalent of prednisone.

References/suggested further reading

1. Bass, A. R., Chakravarty, E., Akl, E. A., Bingham, C. O., Calabrese, L., Cappelli, L. C., & Reston, J. (2023). 2022 American College of Rheumatology guideline for vaccinations in patients with rheumatic and musculoskeletal diseases. *Arthritis Care & Research*, *75*(3), 449-464.
2. Furer V, Rondaan C, Heijstek MW, et al2019 update of EULAR recommendations for vaccination in adult patients with autoimmune inflammatory rheumatic diseasesAnnals of the Rheumatic Diseases 2020;79:39-52.
3. Kimberlin DW, Barnett ED, Lynfield R, et al. Red Book: 2021–2024 report of the Committee on Infectious Diseases. 32nd ed. Itasca (IL): American Academy of Pediatrics; 2021.

Dr Suma BALAN

Past Chairperson, PRSI

Dr Vijay VisvANAthan

Chairperson PRSI(2023-25)

Dr Vighnesh PANdiArajan

Secretary PRSI (2023-25)

Dr.SabAriNAth Mahadevan

Consultant Rheumatologist@ www.omhealthcareclinic.com

Dr UpendrA KiNjAwadekar , President CIAP (2023)