

Immunology

1. Allergy Management

- **Allergic Rhinitis (Hay Fever):**
 - Antihistamines (e.g., Loratadine, Cetirizine).
 - Intranasal corticosteroids (e.g., Fluticasone, Budesonide).
 - Decongestants (e.g., Pseudoephedrine).
- **Food Allergies:**
 - Avoidance of allergenic foods and emergency management with epinephrine auto-injectors (e.g., EpiPen).
- **Skin Allergies:**
 - Topical corticosteroids for eczema or dermatitis.
 - Oral antihistamines for hives or itching.
- **Allergy Shots (Immunotherapy):**
 - Desensitization to specific allergens through regular injections.
- **Sublingual Immunotherapy (SLIT):**
 - Allergy tablets or drops placed under the tongue.

2. Autoimmune Disease Treatments

- **Rheumatoid Arthritis, Lupus, and Other Autoimmune Disorders:**
 - Disease-modifying antirheumatic drugs (DMARDs) like Methotrexate or Hydroxychloroquine.
 - Biologic agents like TNF inhibitors (e.g., Adalimumab, Infliximab).
 - Corticosteroids for inflammation control.
- **Multiple Sclerosis (MS):**
 - Immune-modulating drugs like Interferon beta or Glatiramer acetate.
 - Monoclonal antibodies like Natalizumab or Ocrelizumab.
- **Type 1 Diabetes:**
 - Insulin therapy and immunomodulatory research therapies.

3. Immunodeficiency Treatments

- **Primary Immunodeficiency Disorders:**
 - Immunoglobulin replacement therapy (IVIG or SCIG) for conditions like common variable immunodeficiency (CVID).

- Prophylactic antibiotics to prevent infections.
- **Secondary Immunodeficiency:**
 - Management of immune suppression caused by conditions like HIV/AIDS or cancer therapy.
 - Antiretroviral therapy (ART) for HIV infection.
- **Bone Marrow or Stem Cell Transplant:**
 - For severe combined immunodeficiency (SCID) or other life-threatening immune conditions.

4. Vaccination and Preventive Care

- **Routine Immunizations:**
 - Vaccines to protect against infectious diseases (e.g., flu, hepatitis, COVID-19).
- **Specialized Vaccines:**
 - For immunocompromised patients, such as Pneumococcal or Meningococcal vaccines.

5. Hypersensitivity Reaction Management

- **Anaphylaxis:**
 - Emergency use of epinephrine (e.g., EpiPen).
 - Supportive care with oxygen, IV fluids, and antihistamines.
- **Serum Sickness:**
 - Corticosteroids or antihistamines to manage symptoms caused by immune complex reactions.

6. Chronic Inflammatory Conditions

- **Inflammatory Bowel Disease (IBD):**
 - Immunosuppressive drugs like Azathioprine or biologics like Infliximab for Crohn's disease and ulcerative colitis.
- **Psoriasis and Psoriatic Arthritis:**
 - Biologic therapies (e.g., Etanercept, Ustekinumab) or immunomodulators.

7. Advanced Immunotherapies

- **Monoclonal Antibodies:**
 - Target-specific therapies for autoimmune diseases, cancers, or severe allergies.
- **CAR-T Cell Therapy:**
 - Genetically engineered immune cells for certain types of cancer.
- **Checkpoint Inhibitors:**

- Immunotherapy drugs like Nivolumab or Pembrolizumab for cancer treatment.

8. Management of Immune Overactivity

- **Cytokine Storm Syndrome:**
 - Management with immunosuppressants like corticosteroids or IL-6 inhibitors (e.g., Tocilizumab).
- **Hyper IgE Syndrome:**
 - Antibiotics, antifungals, and immune-modulating therapies.

9. Diagnostic and Therapeutic Procedures

- **Allergy Testing:**
 - Skin prick tests or blood tests to identify allergens.
- **Autoantibody Testing:**
 - Diagnosis of autoimmune conditions (e.g., ANA, RF, or anti-dsDNA tests).
- **Plasmapheresis:**
 - Filtering harmful antibodies from the blood in severe autoimmune diseases.
- **Biopsy and Imaging:**
 - For diagnosing immune-related organ damage.

10. Emerging Treatments

- **Gene Therapy:**
 - Experimental approaches for genetic immunodeficiencies like SCID.
- **Tolerogenic Vaccines:**
 - Under research for autoimmune diseases like Type 1 diabetes.
- **Microbiome Modulation:**
 - Use of probiotics or fecal transplants to regulate immune function.