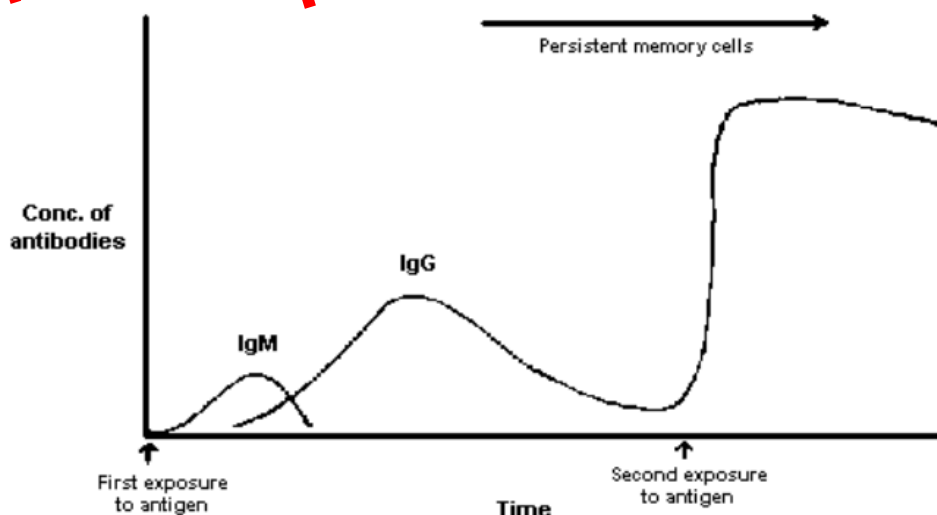


- **Vaccination (injection):** artificial induction of actively-acquired immunity – *non-pathogenic*, which is critically otherwise it would be disastrous. (Pathogenic converted into non-pathogenic – can be done by heat treatment/genetic engineering etc). Aim is to prevent disease
- **Vaccine (preparation):** A form of a pathogenic agent modified to make it non-pathogenic and suitable for use in a vaccination
- **Prophylactic:** Preventive immunisation (e.g. prophylactic measures)
- **Toxoid:** Chemically modified toxin from pathogenic organism, no longer toxic but is still an antigen, used in vaccines
- **Adjuvant:** substance that enhances body's immune response to an antigen
- **Variolation:** make wound and infect it with pathogens from another infected person/wound (to provide immunity)
- In order of rising:
 - IgA: Infection at mucosal surface
 - IgM: Early immune response
 - IgG: B-cells being educated after being in contact with IgA and IgM. Is protective antibody
- When B-cells are fully educated they produce 2000 antibodies per second
- When B-cells apoptose, plasma/memory cells are left behind; which means if you get the infection again your body does not need to learn it just pumps out the IgG antibody
- **Graph – immunological events in vaccination**
 - First exposure to antigen – can be changed to vaccination
 - Second exposure to antigen – can be changed to first exposure
 - This graph doesn't show death from the first infection – leaving open to chance of failing immune system and vaccine ability



- **Natural immunity:**
 - Strongest, most specific, long-lasting immunity to a disease
 - High risk of damage to body due to disease
 - Naturally acquired disease (e.g. not an injection)