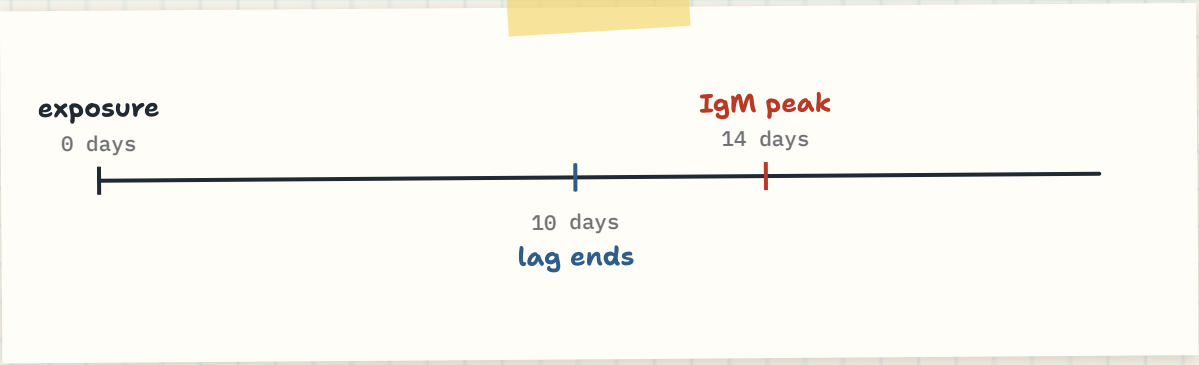
Antibody classes and switching in one page

Each class has one job; the switch keeps specificity



Step by step

1. B cell presents peptide on MHC class II
2. Helper T cell: CD40 ligand binds CD40, plus cytokines
3. AID cuts the switch regions; new constant gene joins the same variable gene
4. Cytokines choose the class

Class	Main job
IgM	First; pentamer, ten sites
IgG	Most abundant; crosses placenta
IgA	Secretory dimer; mucosa
IgE	Mast cells; parasites, allergy
IgD	B cell receptor with IgM

One main job per class

Rule of thumb

Switch the stem, keep the arms

IL-4 → IgE, TGF-β → IgA, IFN-γ → IgG

Exam traps

- Switching swaps the constant region, never the variable region
- Only IgG crosses the placenta, not IgM
- CD40 ligand with CD40 and AID are all needed for switching

Antibody isotypes and class switching

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/immunology/antibody-isotypes-class-switching-igm-igg-iga-ige

For exam study only, not medical advice. Follow local guidelines and your lab's ranges.
© 2026 Medservatory, a project of ADMR Solutions Ltd. Free to print and share for personal study.