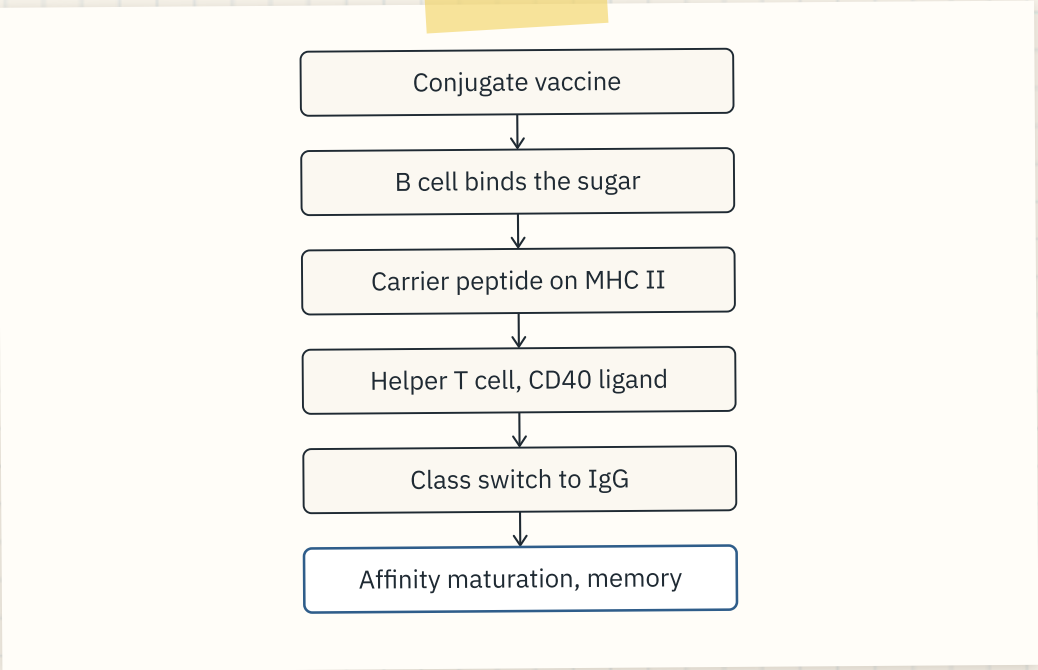
The spleen and encapsulated bacteria

Why asplenia invites sepsis and how conjugate vaccines help



Step by step

1. Capsule resists phagocytosis
2. Opsonins: antibody and complement
3. Spleen filters opsonised bacteria
4. Marginal zone makes IgM
5. No spleen: OPSI

	Polysaccharide	Conjugate
Antigen type	T-independent	T-dependent
Infants	Weak response	Good response
Antibody	Mostly IgM	Class switch to IgG
Memory	None	Memory B cells
In asplenia	Relies on the lost marginal zone	Still raise IgG

Two kinds of vaccine

Rule of thumb

Sugar alone: T-independent, IgM, no memory

Sugar plus carrier protein: T help, IgG, memory

Vaccinate against pneumococcus, Hib and meningococcus

Exam traps

- Howell-Jolly bodies are nuclear remnants in red cells a healthy spleen would remove.
- Sickle cell disease causes functional asplenia and is managed as asplenic.
- OPSI can strike decades after the operation.
- A plain polysaccharide vaccine builds no memory; the carrier protein of a conjugate brings T cell help.

Encapsulated organisms and the spleen: asplenia and conjugate vaccines

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/microbiology/encapsulated-organisms-spleen-asplenia-conjugate-vaccines

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