

Australian Childhood & Adolescent Vaccination Schedule – Full Antigen Count

Before diving into the numbers, a few key points:

- **Antigen definition:** An antigen is any substance from a virus or bacterium that your immune system recognizes as “foreign” and responds to. Vaccines use antigens to train the immune system to recognize and fight specific diseases.
- **Why ~85 antigens but only ~14–16 diseases?**
- **Boosters:** Many vaccines require multiple doses over time to maintain immunity. Each repeated dose counts as another antigen exposure.
- **Multiple strains:** Some diseases have different strains (e.g., pneumococcal disease), and vaccines include antigens for each strain.
- **Combination vaccines:** Many injections contain multiple antigens in a single shot, but each antigen is disease-specific.

For context, 50 years ago, Australian children received far fewer antigens — roughly 10–15 antigens by the same age — because there were fewer vaccines, fewer combination shots, and fewer booster doses.

0–4 Years: Childhood Vaccines

Age	Vaccine(s)	Shots	Antigens per shot	Total antigens	Notes
Birth	Hepatitis B	1	1	1	Single antigen
2 months	DTPa (Diphtheria, Tetanus, Pertussis), IPV (Polio), Hib, Hep B, PCV13 (Pneumococcal)	2	Shot 1: DTPa/Hep B/Hib = 5, Shot 2: PCV13 = 13	18	First doses
4 months	Same as 2 months	2	5 + 13	18	Second doses / boosters
6 months	Same as 2 months	2	5 + 13	18	Third doses / boosters
12 months	MMR (Measles, Mumps, Rubella), Varicella, Hib booster, PCV booster	2	Shot 1: MMR = 3, Shot 2: Varicella + Hib + PCV = 1 + 1 + 13 = 15	18	First major boosters
18 months	DTPa booster	1	3 (D, T, P)	3	Booster
4 years	DTPa booster, IPV	2	DTPa = 3, IPV = 1	4	Pre-school boosters

Subtotal by age 4: - Total shots: 12 - Total antigens received: 80

12–13 Years: Adolescent Vaccines

Age	Vaccine(s)	Shots	Antigens per shot	Total antigens	Notes
12–13 years	HPV 2 doses, Boostrix (Tdap)	3	HPV: 1 each dose = 2, Boostrix (Tdap) = 3	5	Booster + protection against new disease (HPV)

Subtotal by age 12–13: - Additional shots: 3 - Additional antigens: 5

Grand Total by Adulthood

- Total shots (birth to adolescent vaccines): 15
- Total antigens (counting all boosters and combination components): 85
- Total diseases covered: ~14–16 (some antigens cover multiple strains, e.g., PCV13 counts as 13 antigens for different pneumococcal strains)
- Boosters included: All repeated antigens are counted individually

Summary Statement

By the time an Australian reaches adolescence:

- They have received ~15 injections containing ~85 individual antigens, including all boosters.
- These antigens protect against ~14–16 diseases.
- The high antigen count relative to the number of diseases is due to boosters, multiple strains of the same disease, and combination vaccines.
- In comparison, 50 years ago, children received far fewer antigens — roughly 10–15 — because fewer vaccines and boosters existed.