

# Interrupted vaccination schedules: general principles

## Guidance on how to manage interrupted vaccination schedules

Studies show that vaccines given to the recommended schedule provide the best protection. However, travellers often present with incomplete vaccine schedules. The following provides guidance on managing interrupted vaccination courses.

The immune response that occurs following vaccination is complex. A vaccine contains one or more weakened, inactivated or engineered agents (antigens) that resemble the disease-causing organism(s). Generally, in a person with a healthy immune system, vaccination induces an immune response to the antigen in the vaccine resulting in antibody production and protection, without causing the disease. Furthermore, specialist memory cells enable the immune system to recognise and quickly respond when exposed to natural infections (immune memory) [1, 2].

Some travel related vaccines only need one dose to induce an immune response, which may be relatively short-lasting (e.g., injectable typhoid vaccine) or confer long-lasting immunity, and effective immune memory (e.g. yellow fever). For others a primary course of vaccine, requiring multiple doses given over a specified period, is required (e.g., hepatitis B, Japanese encephalitis, oral typhoid, poliomyelitis, rabies), with a re-enforcing ('booster') dose recommended at a defined period following the primary course to maintain immunity (where the traveller continues to be at risk) [1, 2].

For all vaccines, it is best practice to complete the primary course and receive a booster dose (if indicated) at the recommended time intervals [1]. However, in some circumstances this may not be possible e.g., if travel is postponed, the traveller fails to return as directed or during exceptional times such as the COVID-19 pandemic when clinical activities are reprioritised [3].

## General principles

### Keep to the recommended vaccination schedule

Clinical studies following vaccine development determine which vaccine schedule (spacing between vaccines and interval to reinforcing dose) offers the best chance for immunity to develop. Recommended schedules should be adhered to wherever possible [4].

### Every dose in a course counts

A course of vaccine may require multiple doses over a specified time period and each dose is important. The first vaccine in a multiple dose schedule begins to prime the immune system. However, further doses, given at the recommended intervals, are necessary for immunity to

develop.

## For interrupted schedules

If the individual still requires protection, start where the course was left. Immune memory already laid down by previous dose(s) of a vaccine means that repeating doses or re-starting a course of vaccine is rarely necessary (but also see 'exceptions'). For most vaccines, where a record exists of previous doses, start where the course was left and complete the course, observing the same interval between future doses as indicated by the manufacturer [1, 2].

## Lengthening intervals between doses

The effectiveness of vaccines given outside the recommended schedule may not have been evaluated in clinical studies [1]; although, generally, the immune response is not impaired where doses are given at longer than the recommended interval (but also see 'exceptions') [1].

## Shortening intervals between doses

Where doses are given at less than the recommended interval, the immune response may be impaired. Where possible, avoid shortening the interval unless a recognised rapid schedule is recommended by the manufacturer or the relevant chapter in [immunisation against infectious disease](#) [1, 5]. If vaccine has been administered with a reduced interval between doses, is it advisable to seek further support, on a case-by-case basis.

For vaccines given according to the UK schedule, further guidance about schedule flexibility is provided in [chapter 11 of immunisation against infectious disease](#), the 'Green book'.

## Exceptions

### Re-starting a course of vaccine

In some circumstances such as where the effect of interrupted doses in a schedule may not be clear (i.e. oral typhoid vaccine or oral cholera vaccine - Dukoral) re-starting a course may be recommended. Additionally, where there is no, or inadequate documentation of previous doses, re-starting a course of vaccine may be an option after individual risk assessment, to be certain that a person is protected. Further advice on a case-by-case basis may be needed.

Health professionals can call the [NaTHNaC Advice Line](#) for further guidance.

## Resources

- [electronic medicines compendium](#)

- [UK Health Security Agency: Off-label vaccine: leaflets](#)
- [UK Health Security Agency: The Green Book: Immunisation against infectious disease](#)
- [UK Health Security Agency: Vaccine incident guidance: responding to errors in vaccine storage, handling and administration](#)
- [UK Health Security Agency: Vaccination of individuals with uncertain or incomplete immunisation status](#)
- [Royal College of Nursing: Immunisation](#)

## REFERENCES

1. **Kroger AT, Atkinson WL, Pickering LK. General Immunization Practices. In: Plotkin SA, Orenstein WA, Offit PA, Edwards KM, editors. Plotkin's Vaccines. 7th ed. Philadelphia 2018. p. 96-120.**
2. [UK Health Security Agency. The Green Book: Immunisation against infectious disease. Chapter 1. Immunity and how vaccines work. 5 January 2021. \[Accessed 16 March 2022\]](#)
3. [Royal College of General Practitioners. RCGP Guidance on workload prioritisation during COVID-19: Version 5. 23 March 2020. \[Accessed 16 March 2022\]](#)
4. [UK Health Security Agency. The Green Book: Immunisation against infectious disease. Chapter 11. UK immunisation schedule. 2 January 2020. \[Accessed 16 March 2022\]](#)
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