

# Annual Return by YFVCs in England, Wales and Northern Ireland: 2022

## Executive Summary

This Annual Return (AR) reports the use of yellow fever (YF) vaccine and YF vaccination services in Yellow Fever Vaccination Centres (YFVCs) from 1 January 2022 to 31 December 2022.

## Demographics

- At the end of 2022, there were a total of 1,703 designated YFVCs in England, Wales and Northern Ireland (EWNI). This compares with 1,863 designated YFVCs at the end of 2021.
- All 1,703 designated YFVCs were asked to complete an AR, and the response rate was 95.8%.
- Most YF services were provided by pharmacies (44.6%), followed by GP practices (40.4%).
- 1,367 (83.8%) YFVCs reported that all health professionals (HPs) had received NaTHNaC YF training. 49 YFVCs reported that no HPs had received NaTHNaC YF training; all were followed up by NaTHNaC and 1 YFVC was temporarily suspended, as the training requirement under the [Conditions of Designation](#) for YFVCs was not met.

## Yellow fever vaccine doses

- 74,973 YF vaccine doses were administered in EWNI. The average number of YF vaccine doses given per YFVC in 2022 was 46 (median 18).
- The 18- to 59-year-old age group accounted for the largest proportion of vaccinated individuals (75.9%). Those aged 60 years or older accounted for 6.6% of vaccinated individuals.
- 723 reinforcing doses were given, accounting for less than 1% of all doses given.
- 1,377 (84%) YFVCs collected information about Medical Letters of Exemption (MLoE); in total 2,155 MLoE were issued to travellers.

## Clinical incidents

- 28 YFVCs reported that YF vaccine was given where a contraindication to vaccination was present. Further investigation of these reports by NaTHNaC, confirmed all as being AR survey completion errors.
- No suspected yellow fever vaccine associated viscerotropic disease (YEL-AVD) and three suspected yellow fever vaccine associated neurologic disease (YEL-AND) were reported in 2022. Further investigation by NaTHNaC revealed that none of the suspected YEL-AND were confirmed and all individuals recovered.

## Conditions of Designation and Code of Practice

- 1,517 (93%) responding YFVCs were aware of the [Report of the Commission on Human Medicine's Expert Working Group on benefit-risk and risk minimisation measures of the yellow fever vaccine](#); 101 (6.2%) were 'unsure' and 13 (0.8%) were not aware of the review and recommendations.
- 1,573 (96.4%) responding YFVCs used a traveller checklist during the travel health consultation to assist YF risk assessment. Of these, 1,269 (80.7%) YFVCs used the NaTHNaC/Public Health Scotland standardised checklist.
- 1,533 (94%) responding YFVCs supplied the YF vaccine Patient Information Leaflet (PIL) routinely to travellers receiving YF vaccination.

## Introduction

This report concerns the 2022 Annual Return of yellow fever (YF) vaccine use and practice of Yellow Fever Vaccination Centres (YFVCs) in England, Wales, and Northern Ireland (EWNI).

## Methods

A questionnaire (Appendix A) was created using SurveyMonkey online survey software (SurveyMonkey, San Mateo, California, US). YFVCs who had a current designated status between 1 January 2022 and 31 December 2022 were sent a weblink to the survey via multiple channels, including email to YFVC staff, news items on NaTHNaC’s website, and social media posts (Facebook, X [formerly known as Twitter]).

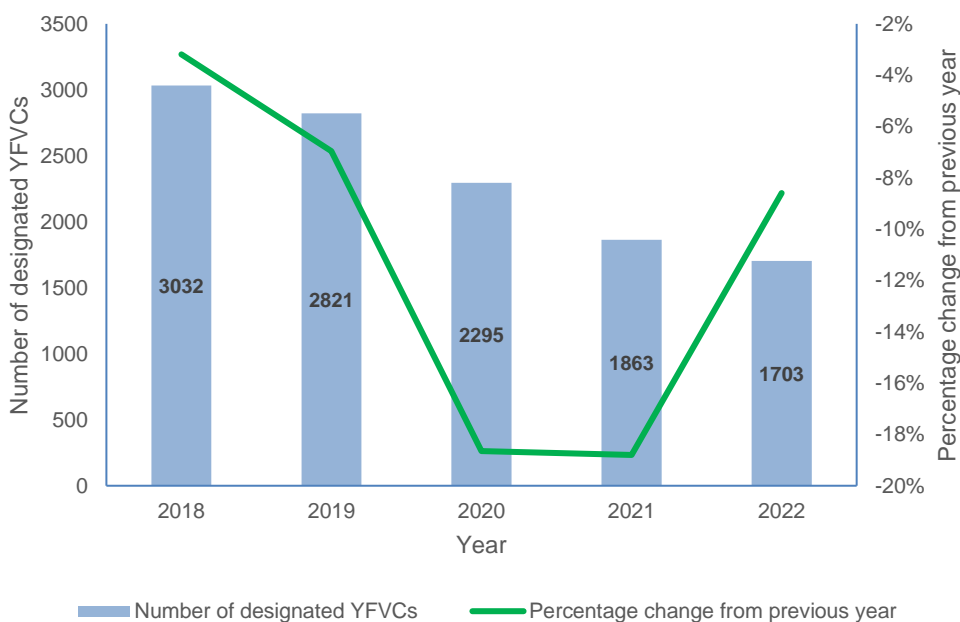
The online questionnaire was open for responses between 17 February and 16 June 2023. Email reminders were sent to non-responding YFVCs at regular intervals.

Data was extracted from SurveyMonkey, cleaned and transformed using various Python packages and analysed in Excel.

## Results

A total of 1,703 YFVCs in EWNI remained designated at the end of 2022. This compares with 1,863 YFVCs at the end of 2021. The number of YFVCs have been declining slowly over time with the biggest proportional decrease in 2020 and 2021, during the time of most significant COVID-19 restrictions (Figure 1).

Figure 1: Designated Yellow Fever Vaccination Centres 2018 - 2022

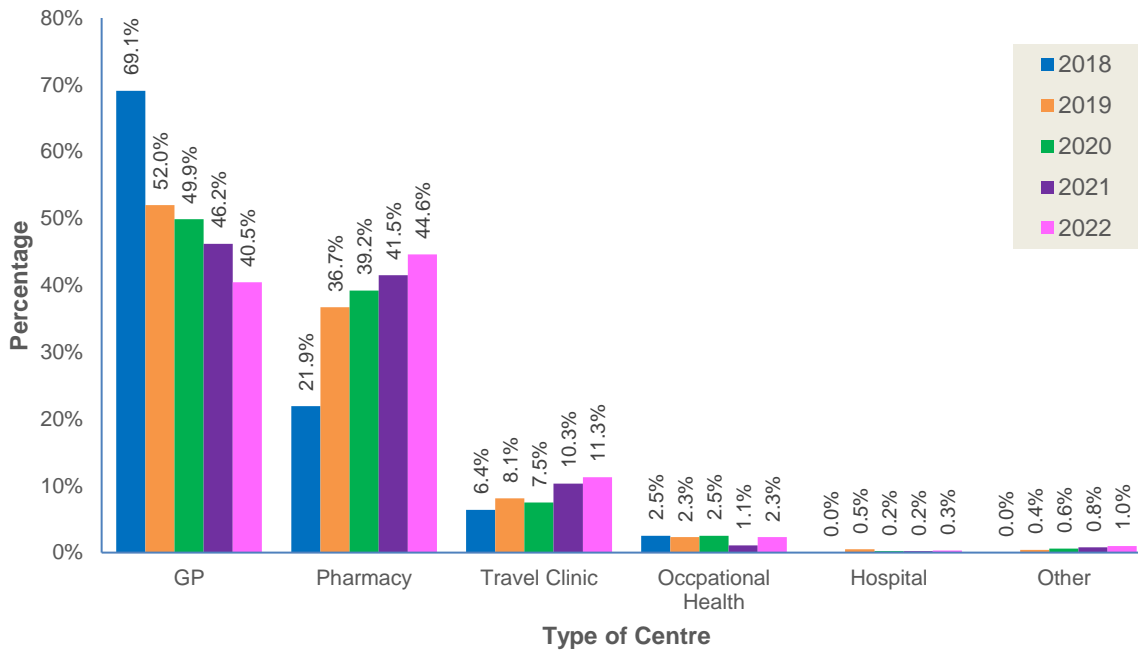


All 1,703 designated YFVCs were invited to complete an AR, with 1,631 responses (response rate of 95.8%). The response rates in the previous five years (2021-2017) were 71%, 88%, 87%, 93% and 86% respectively.

i. YFVC characteristics

Responding YFVCs were most commonly from pharmacies (44.6%), followed by General Practice (GP) (40.5%), travel clinics (11.3%), occupational health departments (2.3%) and hospitals (0.3%). Since 2018, there has been a decrease in the proportion of GP YFVCs and an increase in the proportion of pharmacy YFVCs (Figure 2); for the first time in 2022, the number of pharmacy YFVCs was greater than GP YFVCs. 7% of YFVCs had been registered for less than a year.

Figure 2: Yellow Fever Vaccination Centre organisation type 2018 - 2022



Most YFVCs had one health professional (HP) administering YF vaccines (range 0 to 14) (Table 1).

Table 1: Number of health professionals administering YF vaccines at YFVC.

Number of health professionals	Number of centres	Percentage (%)
0	54	3.3%
1	789	48.4%
2	467	28.7%
3	191	11.7%
4	61	3.7%
5	31	1.9%
6	14	0.9%
7	9	0.6%
8	4	0.2%
9	1	0.1%
10	2	0.1%
11	1	0.1%
12	4	0.2%
14	1	0.1%
<b>Total</b>	<b>1629*</b>	<b>100.0%</b>

\*Two completion errors

Of responding YFVCs, 1,367 (83.8%) reported that all HPs administering YF vaccine had received NaTHNaC YF training and 215 (13.2%) reported that some HPs had received YF training. 49 (3%) YFVCs reported that no HPs administering YF vaccine had received NaTHNaC training; all 49 YFVCs were followed up by NaTHNaC. Of these reports, 44 were survey completion errors and 4 were no longer designated YFVCs. As a result of follow up, one YFVC was suspended from providing YF vaccination services, as the training requirement under the [Conditions of Designation](#) for YFVCs had not been met.

ii. YF vaccine doses administered.

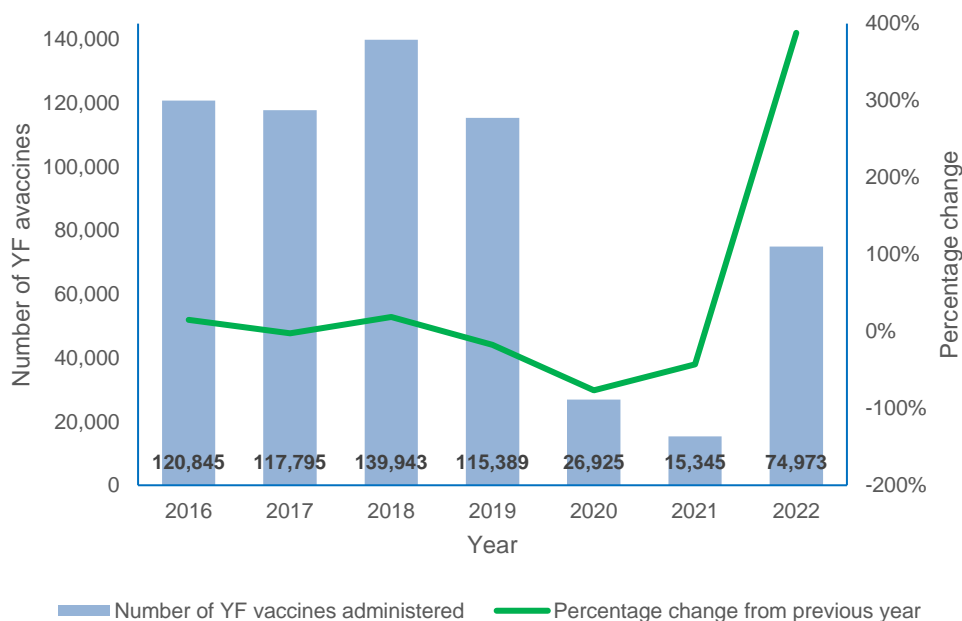
74,973 YF vaccine doses were administered by responding YFVCs in EWNI. The average number of YF vaccine doses given per YFVC was 46 (median: 18) (Table 2). 198 (12.1% of responding YFVCs) YFVCs did not administer any YF vaccines; compared with 425 (32.3% of responding YFVCs) YFVCs in 2021.

**Table 2: Number of doses administered.**

Number of doses	Number of centres	Percentage
0	198	12.1%
1-10	442	27.1%
11-20	282	17.3%
21-30	167	10.2%
31-40	92	5.6%
41+	450	27.6%
<b>Total</b>	<b>1631</b>	<b>99.9%</b>

There was a 388% increase in YF vaccine administered in 2022 compared with 2021, when 15,345 doses of YF vaccine were reported as being administered. This is a 35% decrease compared with 2019 when 115,389 doses of YF vaccine were reported as being administered (Figure 3).

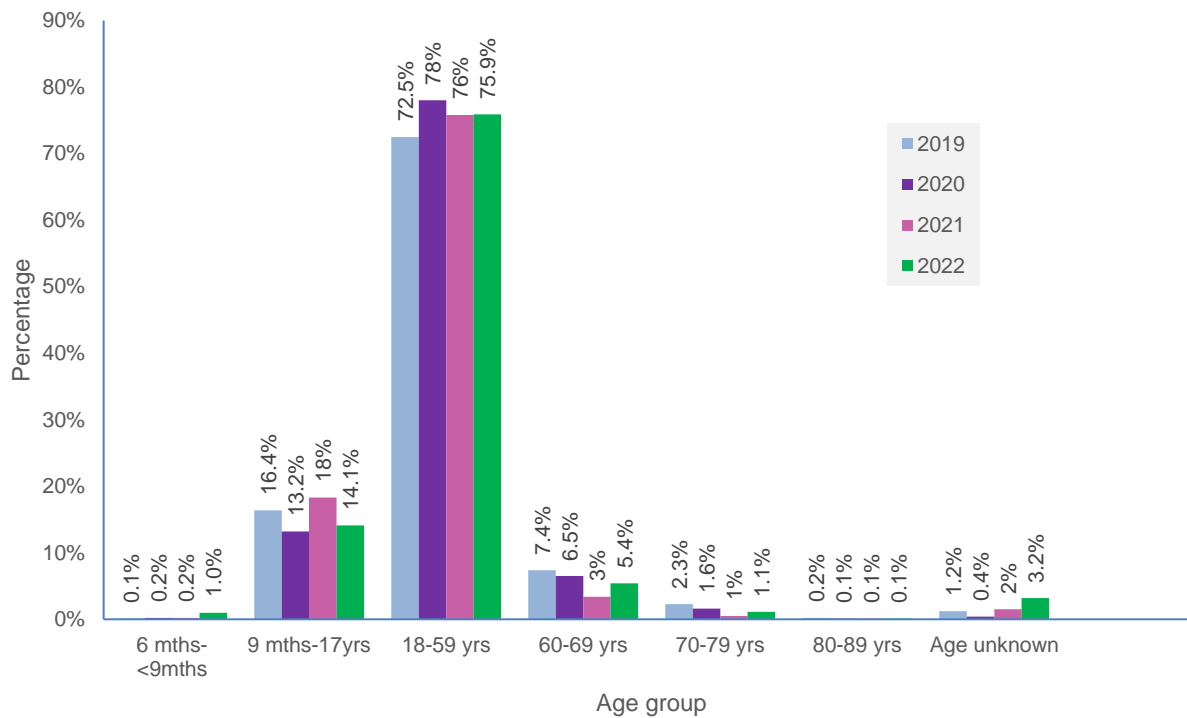
**Figure 3: Number of YF vaccines administered 2016-2022**



iii. Vaccine recipients.

75.9% of vaccines administered in responding YFVCs were given to those aged between 18 and 59 years of age. 6.6% of YF vaccine was administered to those aged 60 years and over. This represents a 50% proportional increase compared with 2021 when 4.4% of YF vaccine was given to those aged 60 years and over; but remains lower than 2020 and 2019 when 8.8% and 9.9% (respectively) of YF vaccine was given in this age group (Figure 4).

Figure 4: Yellow fever vaccinations administered by age group 2019-2022



723 reinforcing doses of YF vaccine were given by responding YFVCs during 2022: representing less than 1% of all doses. The most common reason for administration of a reinforcing dose was for certification purposes where the original certificate or details of vaccination were unavailable (90%), followed by first YF vaccine dose given when aged less than two years (7%).

28 YFVCs reported administering YF vaccine inadvertently, where a contraindication to YF vaccine was present. All were followed up by NaTHNaC; and all were found to be survey completion errors.

385 responding YFVCs reported seeing travellers with a [precaution to YF vaccine](#). This data will be analysed in detail and is expected to be published as a separate report in due course.

No suspected yellow fever vaccine associated viscerotropic disease (YEL-AVD) or anaphylaxis and three suspected yellow fever vaccine associated neurologic disease (YEL-AND) were reported in 2022. The three reported cases of suspected YEL-AND were followed up by NaTHNaC; no cases were confirmed as YEL-AND and all recovered.

1,377 (84%) YFVCs collected information about MLoE; and during 2022, 2,155 MLoE were issued to individuals who were travellers (Table 3).

Table 3: MLoE issued and reason.

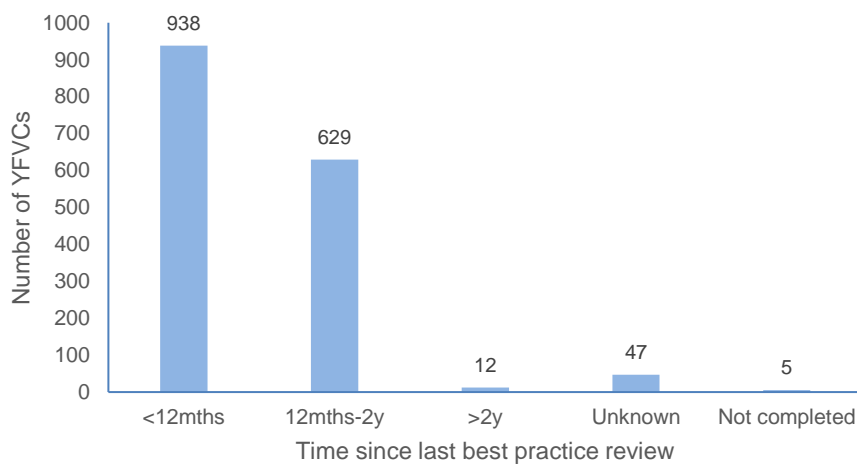
Reason for MLoE	Total	Percentage
<b>Contraindication</b>		
All	917	42.5%
<b>Precaution</b>		
Aged 6-9 months	4	0.2%
Aged over 60yrs	944	43.8%
Pregnancy	21	1%
Breastfeeding	6	0.3%
HIV	29	1.3%
Low dose immunosuppressants	118	5.5%
Other	116	5.4%
<b>Total</b>	<b>2155</b>	<b>100%</b>

iv. Conditions of Designation and Code of Practice

1,517 (93%) respondents were aware of the [Report of the Commission on Human Medicine’s Expert Working Group on benefit-risk and risk minimisation measures of the yellow fever vaccine](#) , 101 (6.2%) were ‘unsure’ and 13 (0.8%) were ‘not aware’.

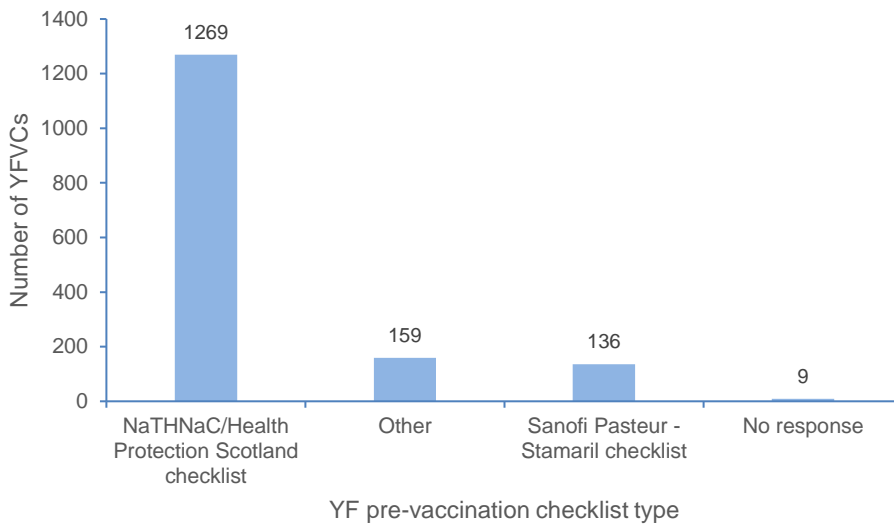
A [best practice review](#) had been completed by a total of 1,579 (96.8%) responding YFVCs: 938 within the last year, 629 within the last 12-24 months and 12 more than 2 years ago. 5 (0.3%) YFVCs had not completed a best practice review and 47 (2.9%) YFVCs were unsure (Figure 5).

Figure 5: Time elapsed since last YFVC best practice review.



A checklist was used by 1,573 (96.4%) responding YFVCs to support YF vaccine risk assessment; and of these, 1,269 (80.7%) used the NaTHNaC/PHS YF pre-vaccination checklist, 159 (10.1%) an alternative checklist, 136 (8.6%) the Stamaril checklist supplied by Sanofi Pasteur, and nine (0.6%) did not respond (Figure 6).

Figure 6: YF risk assessment tool used by YFVC.



1,533 (94%) YFVCs supplied the YF vaccine PIL routinely to travellers receiving a YF vaccine; 98 YFVCs either did not provide or were unsure if the YF vaccine PIL was provided to travellers.

## Conclusion

The 2022 AR reports on activity within YFVCs from 1 January 2022 to 31 December 2022. The easing of international travel restrictions is likely to have contributed to an increase in the total number of YF vaccines administered during 2022 as well as a smaller proportional decline in the total number of designated YFVCs compared with 2020 and 2021.

For the first time in 2022, pharmacy YFVCs were the largest provider of YF services, overtaking GP practices, who had been the largest group of YFVCs since analysis started in its current form in 2016.

The type of vaccine recipient remains, overall, representative of data collected in previous years.

For the first time, additional optional questions, which did not form part of the AR report, were included. This data will be analysed and reported separately.

The AR data provides an overview of YF activities in YFVCs in EWNI and enables follow up of areas of concern.

We would like to thank YFVCs who participated in the 2022 AR.

## **Appendix A: Questionnaire sent to all YFVCs that remained designated during 2022**

### Yellow Fever Vaccination Centres – Annual Return 2022

#### Your YFVC

All Yellow Fever Vaccination Centres (YFVCs) in England, Wales and Northern Ireland (EWNI) are required, as a [Condition of Designation](#), to submit an Annual Return of yellow fever vaccine use and associated adverse events to NaTHNaC. This detail will help inform what is known about yellow fever vaccination practice in EWNI.

YFVCs that do not comply with the requirement to submit an Annual Return by the closing date, may be temporarily de-designated until their return is received.

You will not receive a copy of your submitted Annual Return. If you wish to keep your own record, please print, or take screenshots of each page.

1. What is your YFVC ID Number? This is the 4-digit number after 'UKYFVC' on the YFVC's rubber stamp
  
2. What is the full postcode of the YFVC?
  
3. Which of the following best describes your YFVC?
  - General Practice
  - Pharmacy
  - Occupational Health Department
  - Travel Clinic
  - Hospital
  - British Armed Forces
  - Other (please specify)



4. When was your YFVC designated?

- We have been designated for less than one year (this is the Annual Return for only part of 2022)
- We have been designated for over one year (this is the Annual Return for 2022)

#### YFVC Activity

5. How many health professionals administered yellow fever (YF) vaccine at your YFVC in 2022?

6. Of those health professionals who gave YF vaccine in 2022, how many had undertaken NaTHNaC YF vaccination training (e-learning +/- virtual classroom) during the last 2 years?

- All
- Some
- None

7. How many doses of YF vaccine were administered at your YFVC in 2022?

8. How many doses were administered in each of the following age groups?

If no doses were administered enter 0

- 6 months to under 9 months
- 9 months to 17 years
- 18 to 59 years
- 60 to 69 years
- 70 to 79 years
- 80 years and older
- Age unknown

9. How many reinforcing doses (to ensure continued protection according to the [Green book flowchart](#)), were administered during 2022?

- 0
- 1 or more (please enter the number of reinforcing doses administered)

10. How many reinforcing doses were given for the following reasons?

The totals for questions 9 and 10 should be the same.

- Where the first dose given was:
  - when aged less than two years old
  - during pregnancy
  - whilst infected with HIV
  - when immune suppressed
  - before undergoing a bone marrow transplant
  
- Where previously vaccinated but ICVP (certificate) lost and reissue not possible
- Other

11. If Other, please specify

#### Contraindications

12. Was YF vaccine given when there was a contraindication to vaccination? See the [Green Book](#) for a list of contraindications to YF vaccine.

- Yes
- No

13. If YF vaccine was given when the vaccine was [contraindicated](#), please give further details. NaTHNaC may contact a YFVC for clarification in some circumstances.

#### Precautions

14. Were any travellers with a [precaution](#) to YF vaccine seen in your YFVC during 2022?

- Yes
- No
- Unsure

15. Would your YFVC offer YF vaccine to travellers with a [precaution](#) to vaccination?

- Yes, we do not exclude those with a precaution
- Yes, but we do exclude some with a precaution
- No; never
- Unsure

16. Which of the following groups were given YF vaccine at your YFVC in 2022? Please tick all that apply

- Infants aged 6-9 months
- Aged 60 years and over [vaccine risk considered to outweigh the risk of disease]
- Pregnancy
- Breastfeeding mother
- HIV infection with CD4 >200 and suppressed viral load
- Taking lower dose immunosuppressive therapies (see chapter 6 and 35 of the [Green Book](#))
- Other (please specify)

17. Was specialist advice sought from any of the following?

- No specialist advice sought
- NaTHNaC
- Travax
- Traveller's specialist team
- Other (please specify)

18. Which of the following groups would not be offered YF vaccine at your YFVC? Please tick all that apply.

- Infants aged 6-9 months
- Aged 60 years and over
- Pregnancy
- Breastfeeding mothers
- HIV infection with CD4 >200 and suppressed viral load
- Taking lower dose immunosuppressive therapies (see chapter 6 and 35 of the [Green book](#))

19. Please give up to four key reasons for not giving YF vaccine to these groups?

20. What is the main action taken if YF vaccine is recommended but your centre does not offer vaccination?

21. Would you seek specialist advice from any of the following?

- No specialist advice sought
- NaTHNaC
- Travax
- Traveller's specialist team
- Other (please specify)

22. Please give up to four key reasons why your YFVC does not offer YF vaccine to those with a [precaution](#) to vaccination?

23. What is the main action taken if YF vaccine is recommended but your YFVC does not offer vaccination?

24. Would you seek specialist advice sought from any of the following?

- No specialist advice
- NaTHNaC
- Travax
- Traveller's specialist team
- Other (please specify)

### Medical Letters of Exemption

25. How many Medical Letter(s) of Exemption (MLOE) were issued by your YFVC in 2022?

- 0
- Unknown
- 1 or more (please enter the number of MLoE issued)

26. How many Medical Letter(s) of Exemption (MLOE) were issued where there was a contraindication to yellow fever vaccine administration?

Where none were issued enter 0

27. How many Medical Letters of Exemption (MLOE) were issued where there was a precaution to yellow fever vaccine administration? Where none were issued enter 0.

- Infants aged 6-9 months
- Aged 60 years and over [vaccine risk considered to outweigh the risk of disease]
- Pregnancy
- Breast feeding mother
- HIV infection with CD4 >200 and suppressed viral load
- Taking lower dose immunosuppressive therapies (see chapter 6 and 35 of the [Green Book](#))
- Other

28. If you have given a Medical Letter of Exemption (MLOE) for 'other', please give further details below

#### Yellow Fever Vaccine Associated Severe Adverse Events (YEL-SAE)

29. How many of the following serious Yellow Fever Vaccine Associated Severe Adverse Events ([YEL-SAE](#)) occurred at your YFVC in 2022? If none, please record 0

NaTHNaC may contact a YFVC for clarification on data submitted in some circumstances.

- Anaphylaxis
- Yellow fever vaccine associated neurological/neurotropic disease [YEL-AND]
- Yellow fever vaccine associated viscerotropic disease [YEL-AVD]

30. If any serious YEL-SAE occurred at your centre, who were they reported to?

- NaTHNaC
- MHRA via the yellow card system
- The manufacturer
- Other (please specify)

## Conditions of Designation and Code of Practice

The following section asks about the governance of your YFVC and should be answered by a health professional who is responsible for risk assessment and administration of YF vaccine

31. Are all health professionals administering vaccine at your YFVC aware of the [Commission on Human Medicines 2019 report?](#)

- Yes
- No
- Unsure

32. How often is YF practice reviewed at your YFVC?

- 0 to 12 months
- 12 months to 2 years
- More than 2 years
- Never
- Unsure

It is recommended that for good governance YFVCs undertake an [annual best practice review](#)

33. Is a standardised YF pre-vaccination checklist used during the travel health consultation to assist yellow fever vaccination risk assessment?

- Yes
- No
- Unsure

34. If yes, which standardised YF pre-vaccination checklist is used?

- [NaTHNaC/Health Protection Scotland YF pre-vaccination checklist](#)
- [Sanofi Pasteur – Stamaril checklist](#)
- Other (please specify)

35. Is the YF vaccine [Stamaril] Patient Information Leaflet [PIL] routinely given to the traveller?

- Yes, before the consultation
- Yes, during the consultation
- Yes, after the consultation
- No
- Unsure

#### Advising travellers about Neglected Tropical Diseases, including schistosomiasis

Whilst you are likely to be familiar with diseases like rabies, it would be useful for us to understand your experience on advising on other Neglected Tropical Diseases (NTD) and in particular schistosomiasis.

This is not part of the Annual Return, but we would be grateful if you could complete the following short questionnaire. Your responses will help us to tailor some of our website resources.

All responses will be anonymous.

36. The following questions are for health professionals only.

Please indicate your profession

- Doctor
- Nurse
- Pharmacist
- Other (please specify)

37. How familiar are you with the term NTD?

- Not at all familiar
- Slightly familiar
- Somewhat familiar
- Very familiar

Neglected Tropical Diseases (NTD) include, but are not exclusive to:

- Human African trypanosomiasis
- Leishmaniasis
- Leprosy
- Lymphatic filariasis
- Schistosomiasis

38. In your travel consultations, do you advise about NTD (excluding rabies)?

- Yes
- No

If yes, which NTD have you advised about?

39. How confident do you feel about advising the traveller about NTD (excluding rabies)?

- No confidence
- Little confidence
- Some confidence
- Confident
- Highly confident

### Schistosomiasis

Schistosomiasis (Bilharzia) is caused by exposure to parasitic worms (schistosomes) and is an NTD. Travellers may be exposed during specific activities.

40. How confident do you feel about advising the traveller about schistosomiasis?

- No confidence
- Little confidence
- Some confidence
- Confident
- Highly confident



41. Which of the following travel scenarios could schistosomiasis be a risk?

Multiple responses allowed.

- Backpacking around southeast Asia and Australia for six months
- Attending a three-day music festival on the shore of Lake Malawi, followed by four weeks visiting friends and relatives in Blantyre
- Camping and climbing in Corsica for three weeks and then a few days in a boutique hotel on the French Riviera
- A seven-day package 'sun and sea' holiday to Greece
- Working for a year in a village in Madagascar
- A 10-day coach tour through cities and villages of the Peruvian Andes, with a day visit to Machu Pichu

42. What advice would you offer a traveller about Schistosomiasis?

Multiple responses allowed

- They should be vaccinated if travelling to an area where schistosomiasis is known or presumed to occur
- They should avoid wading, swimming, or bathing in fresh water
- Drink water that is boiled, filtered, or bottled
- Application of insect repellent will prevent infection
- If possibly exposed seek advice about a health check to test for infection

### Contact Information

43. To confirm, what is your YFVC ID Number? This is the 4-digit number after 'UKYFVC' on the centre's rubber stamp

44. Please enter a contact email address:

*We ask for this in case we need to contact you about anything concerning your Annual Return*