



# Ty-FIVE

TYPHOID IN FIJI - VACCINATION TOWARDS ELIMINATION

## Strengthening Typhoid Surveillance around Mass Vaccination Campaign in the Northern Division of Fiji

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Typhoid & Other Invasive Salmonellosis Conference  
Kigali, Rwanda  
06/12/23



International  
Vaccine  
Institute



MINISTRY OF HEALTH  
& MEDICAL SERVICES



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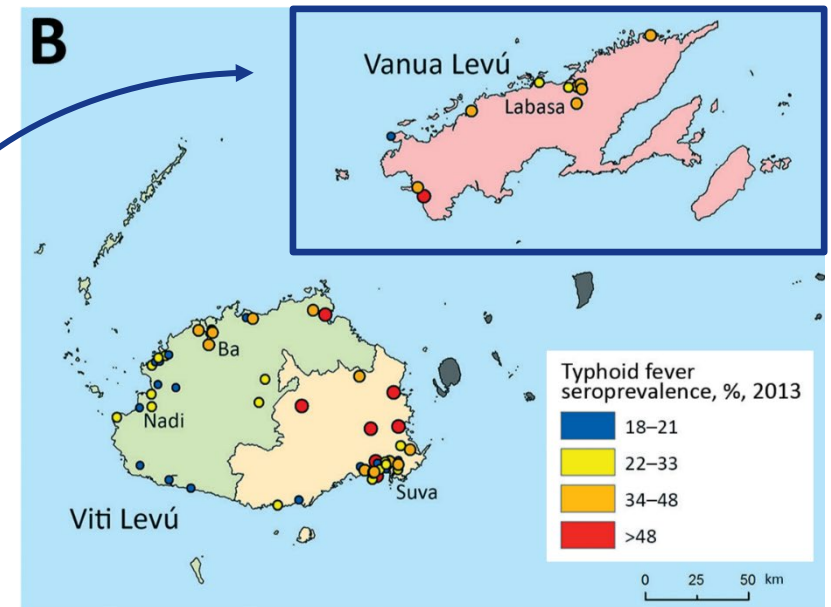
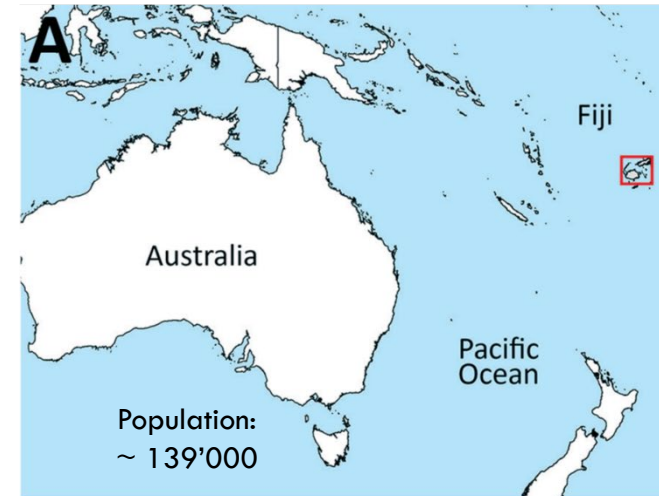
1. Background
2. Overview of project
3. Clinical surveillance
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# Ty-FIVE project – intro about typhoid in Fiji

- important public health problem, priority disease of MOH
- historically important burden in Northern Division
- middle endemicity by WHO classification
- for 2022: 55 cases per 100'000
- serology data suggest:
  - substantial under-reported burden *and/or*
  - presence of asymptomatic transmission

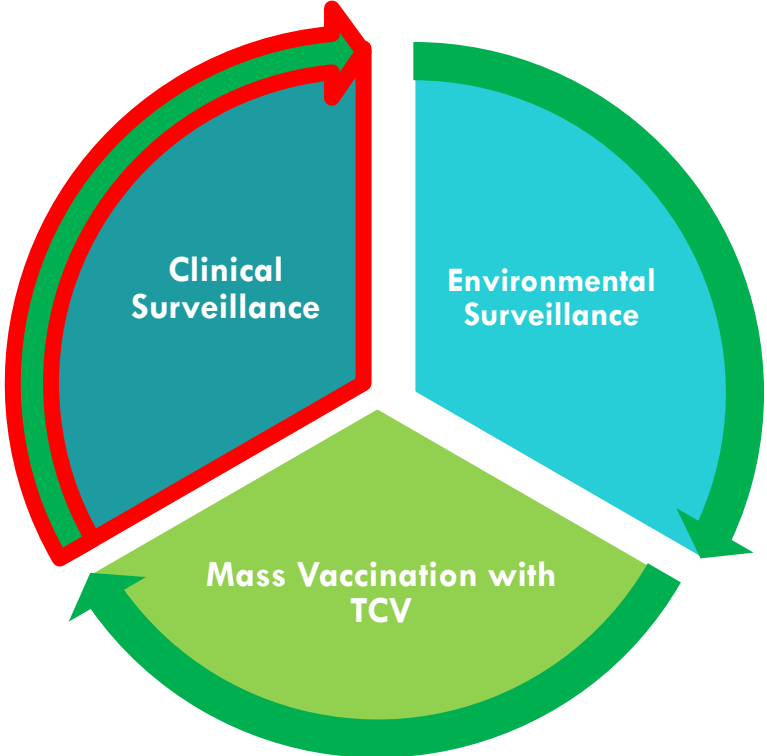
## Goal of the project:


- strengthen typhoid surveillance in Northern Division
- vaccinate the whole Northern Division against typhoid (Bharat TCV)
- reduce disease burden -> typhoid elimination?








# Overview of Ty-FIVE Project



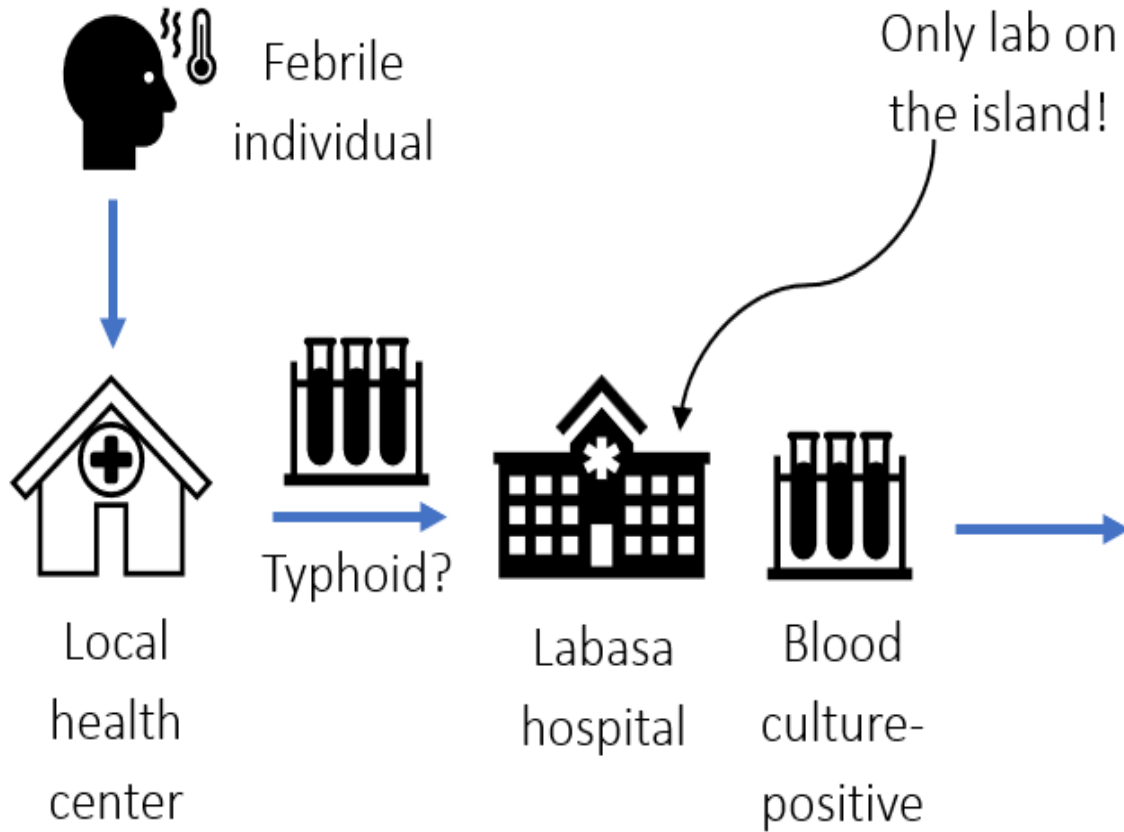
 **+ Vaccination prevents Typhoid!**  
**Get your vaccine today!**

Mass Vaccination Campaign:  
July 4<sup>th</sup> - August 31<sup>st</sup>

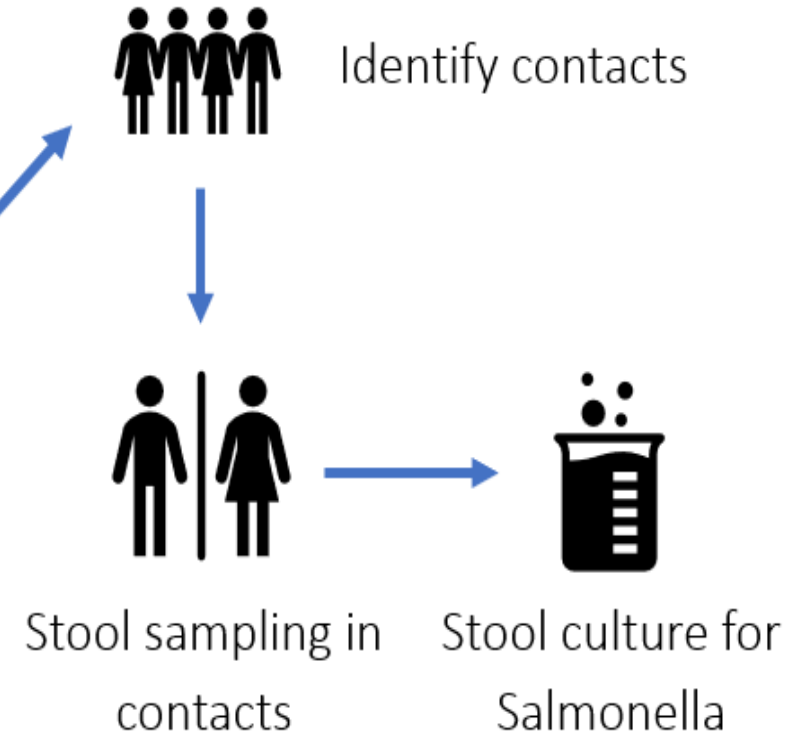
  

# Clinical Surveillance Principle

## CASE IDENTIFICATION



## CONTACT TRACING



# Strengthening Clinical Surveillance



Standardisation  
of documents  
and processes

Capacity  
building and  
training



Improvements in  
lab results  
sharing

Field assistance





# STRENGTHENING TYPHOID SURVEILLANCE

## - Standardization of documents and Processes

### Typhoid Case Investigation Form – Northern Division Fiji

I. Interview Details		
1. Date of Interview (dd/mm/yyyy)	2. Notification Number	3. Date Notification Received (dd/mm/yyyy)
4. Interviewer Name	6. Other members of the Investigation team present (select all that apply) <input type="checkbox"/> Health Inspector <input type="checkbox"/> Medical Officer <input type="checkbox"/> Zone Nurse	
5. Interviewer Designation	<input type="checkbox"/> Others please specify: _____	
II. Patient Details		
7. First/Given name	8. Surname	9. Alias/Nickname
10. DOB (dd/mm/yyyy)	11. Race <input type="checkbox"/> It <input type="checkbox"/> IF <input type="checkbox"/> O	12. Sex <input type="checkbox"/> Male <input type="checkbox"/> Female
13. Phone No. (most reachable number)	14. National Health Number (NHN)	
15. Occupation	16. Place of Work	
17. Home Address	18. GPS co-ordinates (if available) <small>GPS can be obtained by dropping a pin on Google Maps app</small>	
19. Have you ever been vaccinated against Typhoid? <input type="checkbox"/> Y <input type="checkbox"/> N		
20. If Yes to 19, what year was this vaccination against Typhoid given to you?		
21. Involved in a food handling trade? <input type="checkbox"/> Y <input type="checkbox"/> N	23. Involved in a child/elderly/healthcare setting? <input type="checkbox"/> Y <input type="checkbox"/> N	
22. If Yes to 21, have you attended a Good Hygiene Safety Practice Workshop? <input type="checkbox"/> Y <input type="checkbox"/> N		
24. If Yes to 21 or 23, have you been restricted from the activities (food handling, caregiving, healthcare)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A		

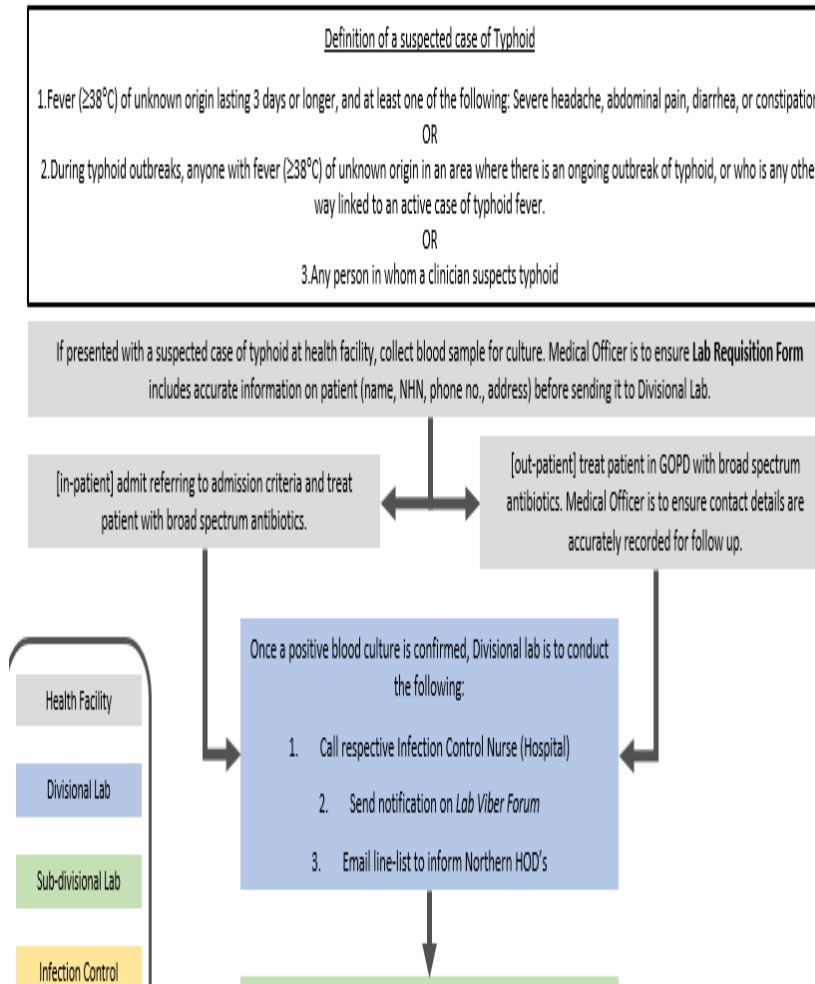
### NOTIFICATION FORM FOR COMMUNICABLE DISEASES

Form to be completed by Infection Control Nurse. Please check one of the following:

LEPTOSPIROSIS  TYPHOID  DENGUE

SECTION A _ PATIENT INFORMATION			
NAME	DOB (DD/MM/YYYY)	AGE	
NHN	RACE	SEX	M / F
HOME/PERMANENT ADDRESS	DESCRIPTION OF HOME LOCATION		
TEMPORARY ADDRESS	DESCRIPTION OF TEMPORARY LOCATION		
HISTORY OF TRAVEL (IN LAST 4 WKS)	PHONE # OF PATIENT		
NAME OF EMERGENCY CONTACT	PHONE # OF EMERGENCY CONTACT		
SECTION B _ DISEASE INFORMATION			
BRIEF DESCRIPTION OF SYMPTOMS	CONTACT WITH KNOWN TYPHOID PATIENT (IN LAST 4 WKS)		
CONFIRMATORY SAMPLE	DATE OF SAMPLE SENT		
DATE OF REPORT RECEIVED			
SENSITIVITY AVAILABLE			
DATE OF SYMPTOM	DATE OF DIAGNOSIS		

### Typhoid Surveillance Flowchart for Macuata Subdivision



# STRENGTHENING TYPHOID SURVEILLANCE

## - Capacity Building & Training

### Training

#### 1. Training of Health Care Workers

- Training Components-Surveillance System, Standardized documents, Notification Flowchart, Case Definitions and Classification, Treatment regime as per antibiotic guidelines and Community Awareness.

#### 2. Training of the Community Health Workers

- Training Components- roles they play in the Typhoid Surveillance (Stool Collection), Stool collection guidelines, and Sanitation (WASH)

#### 3. Training on ELISA at the IVI headquarters

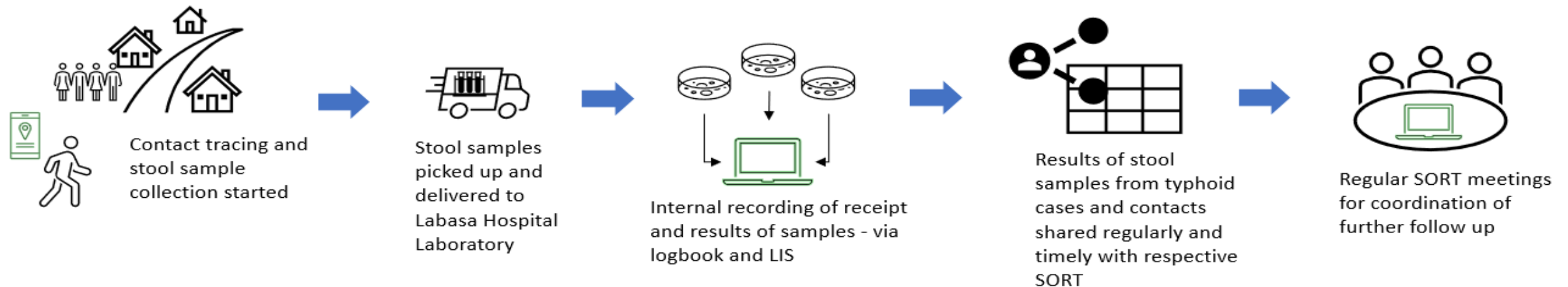
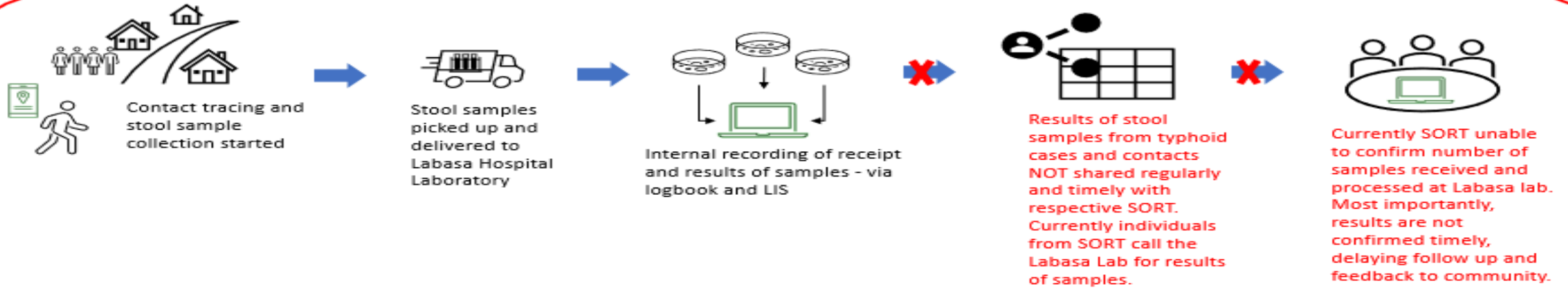
Also reviewing of Typhoid Diagnosis Laboratory Algorithm with the Microbiology Diagnostic Unit (University of Melbourne).





# STRENGTHENING TYPHOID SURVEILLANCE

## - Improvements in lab result sharing



# STRENGTHENING TYPHOID SURVEILLANCE

## - Provision of Field Assistance

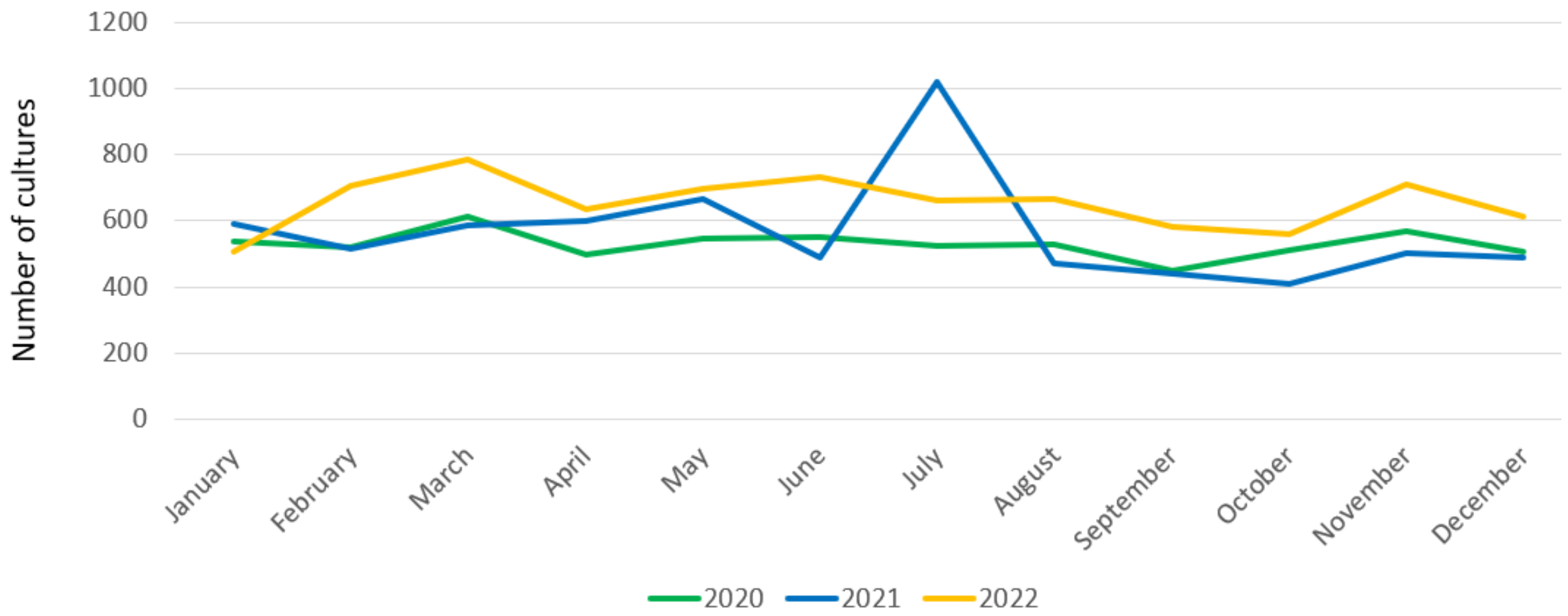
### Field Assistance to Zone nurse and Health Inspectors

- Follow up on active cases
- Contact tracing after disease investigation
- Stool and serum sample collection
  - After treatment
  - Periodic (3m/6m/1y) follow up
- Community Awareness on typhoid
- Training for Community Health Workers



# Impact: more blood culture taken since beginning of project!

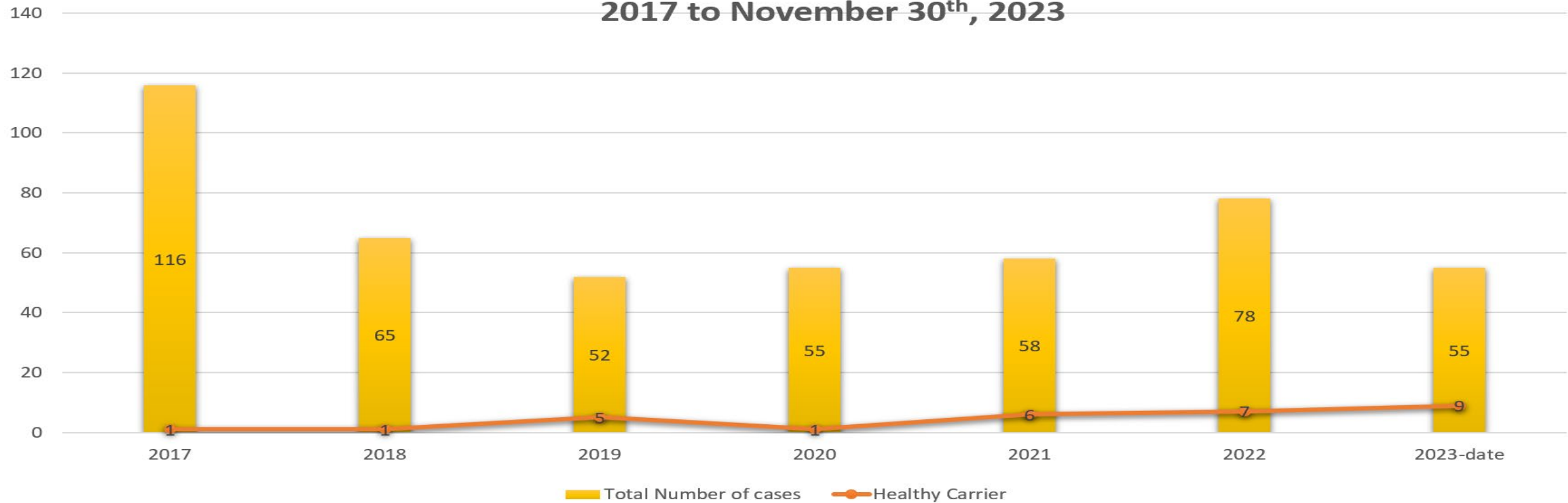
## Monthly blood cultures processed in Labasa microbiology lab from 2020 to 2022



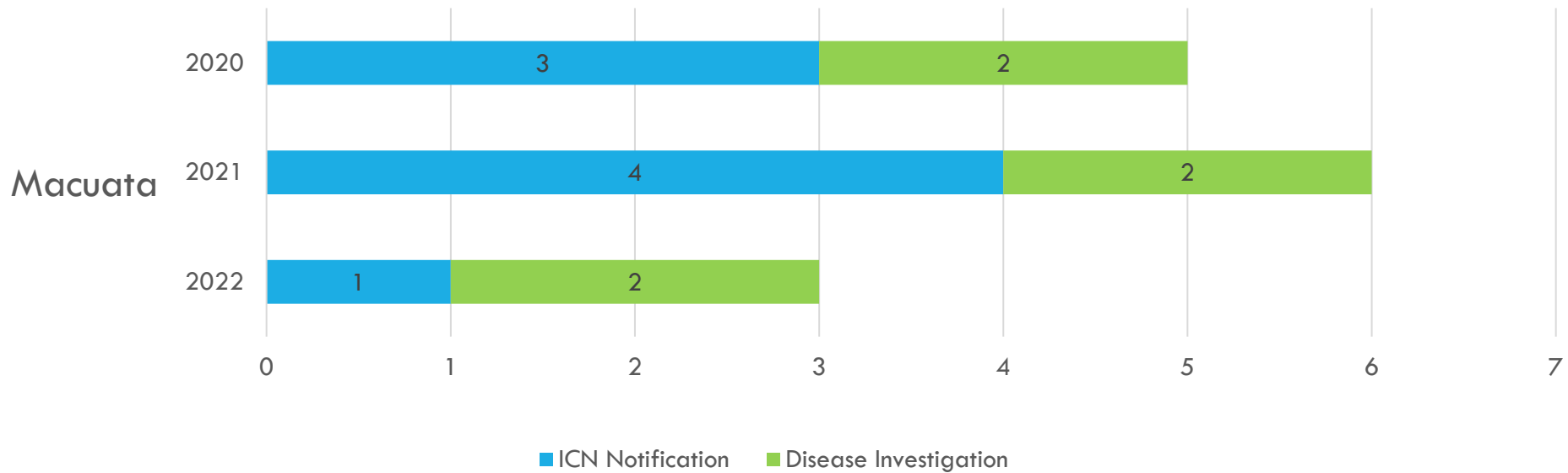
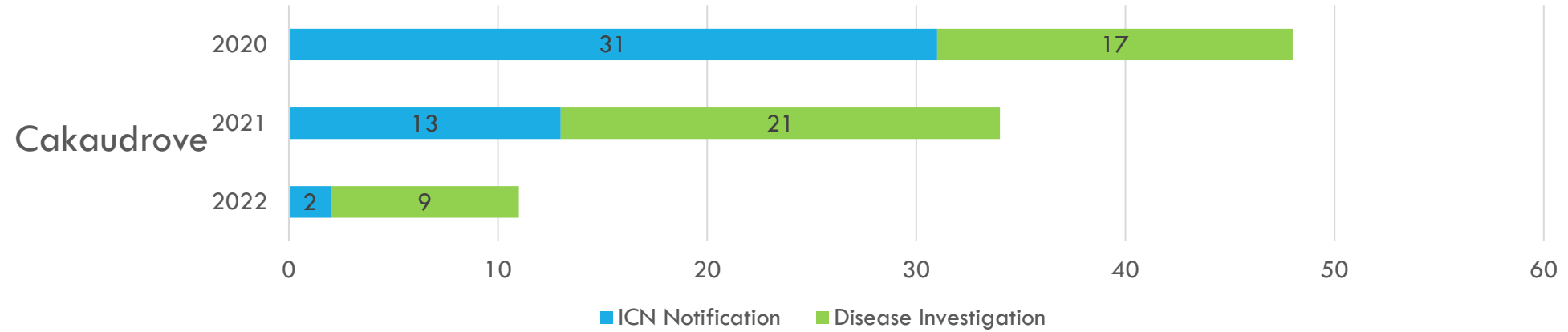


# Impact: more asymptomatic shedders detected

Comparison of Healthy Carrier detection versus Total Cases Detected from 2017 to November 30<sup>th</sup>, 2023



# Impact: faster disease investigations -> faster outbreak detection



# Vaccination Campaign



**DON'T FORGET TO  
GET YOUR  
FREE TYPHOID  
VACCINE!**

Visit your nearest  
health facility today!

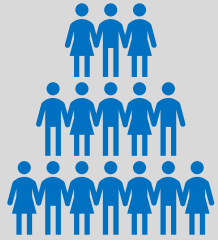
 **Ty-FIVE**

**GO**

The billboard features a smiling man in a light blue shirt holding a box of Ty-FIVE vaccine. The background of the billboard is green and white, with a large white arrow pointing right. The text is in bold, white, sans-serif font. The Ty-FIVE logo is in the bottom right corner, and a 'GO' sign is attached to the billboard's frame.



# Vaccine Delivery Strategies



**Target population:**  
everybody from  
9 months to 65 years old  
living in the North



59 Vaccination teams



Schools  
(mobile teams)



Villages  
(mobile teams)

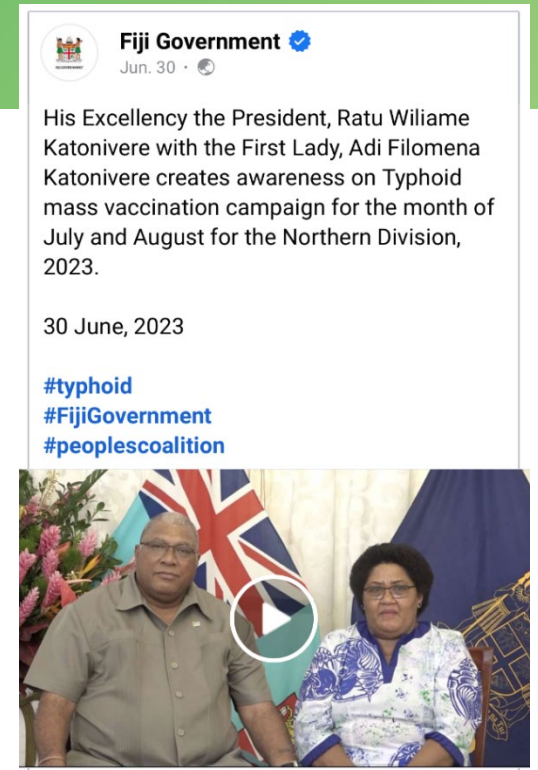


Health centers  
(fixed centers)



# Overview of Vaccination Campaign

- completed – 10 weeks from July 4th to Sep 15<sup>th</sup>
- vaccine: Bharat TypBar TCV
- WHO pre-qualified 6 months to 65 years
- target population: around 133'000
- age-range : 9 months to 65 years
- As of Sep 15<sup>th</sup> – 69'635 doses given (coverage 52.2%), no severe adverse event





# Vaccination Digital Platform

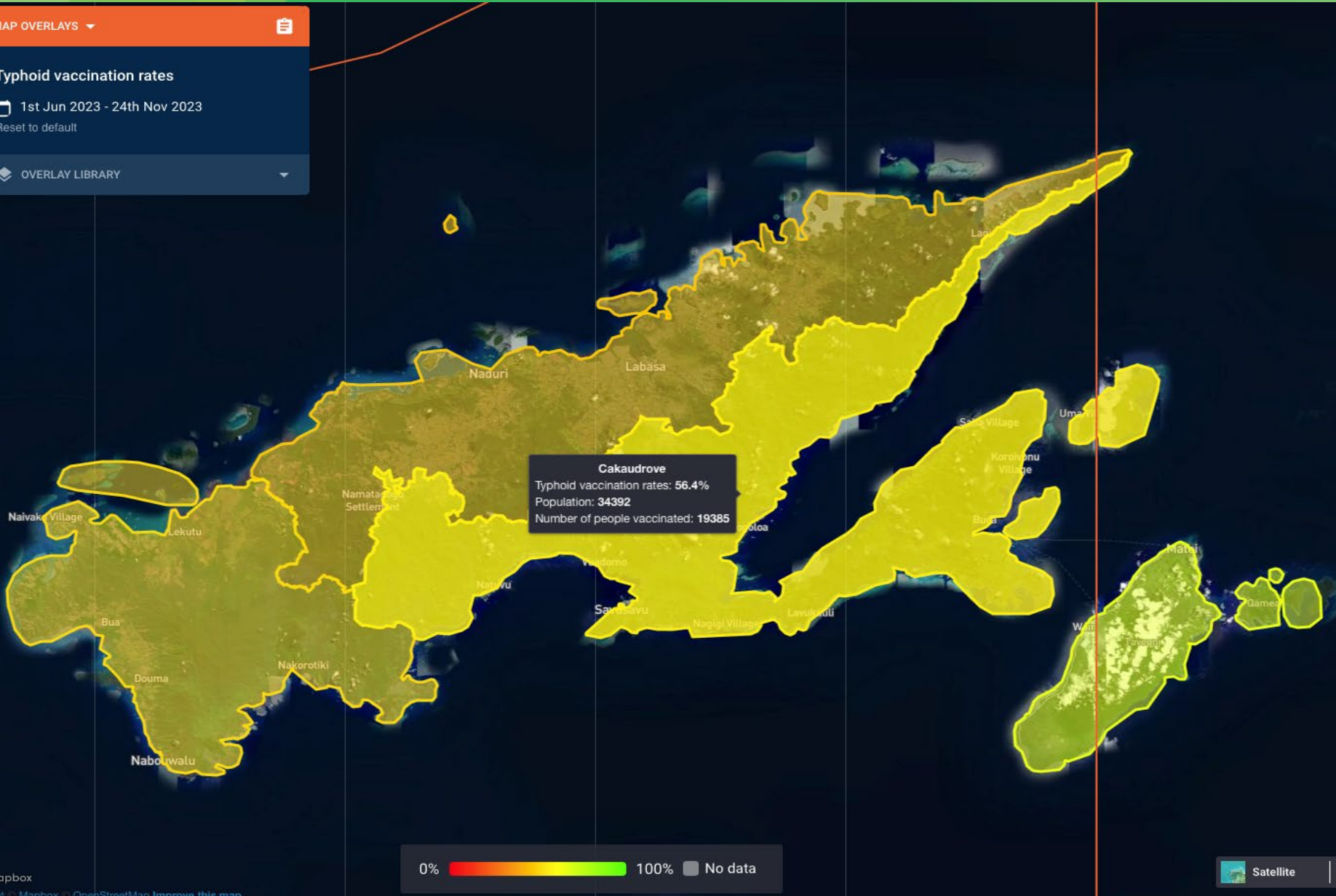
MAP OVERLAYS 

**Typhoid vaccination rates**

 1st Jun 2023 - 24th Nov 2023

[Reset to default](#)

 OVERLAY LIBRARY 



Fiji

Typhoid Vaccination Project

Number vaccinated

**69,359**

Percentage vaccinated (Coverage)

**52.2%**

Number vaccine not given

**13,185**

Population

**132,933**

Number vaccinated by day of vaccination



Cumulative percentage vaccinated by day of

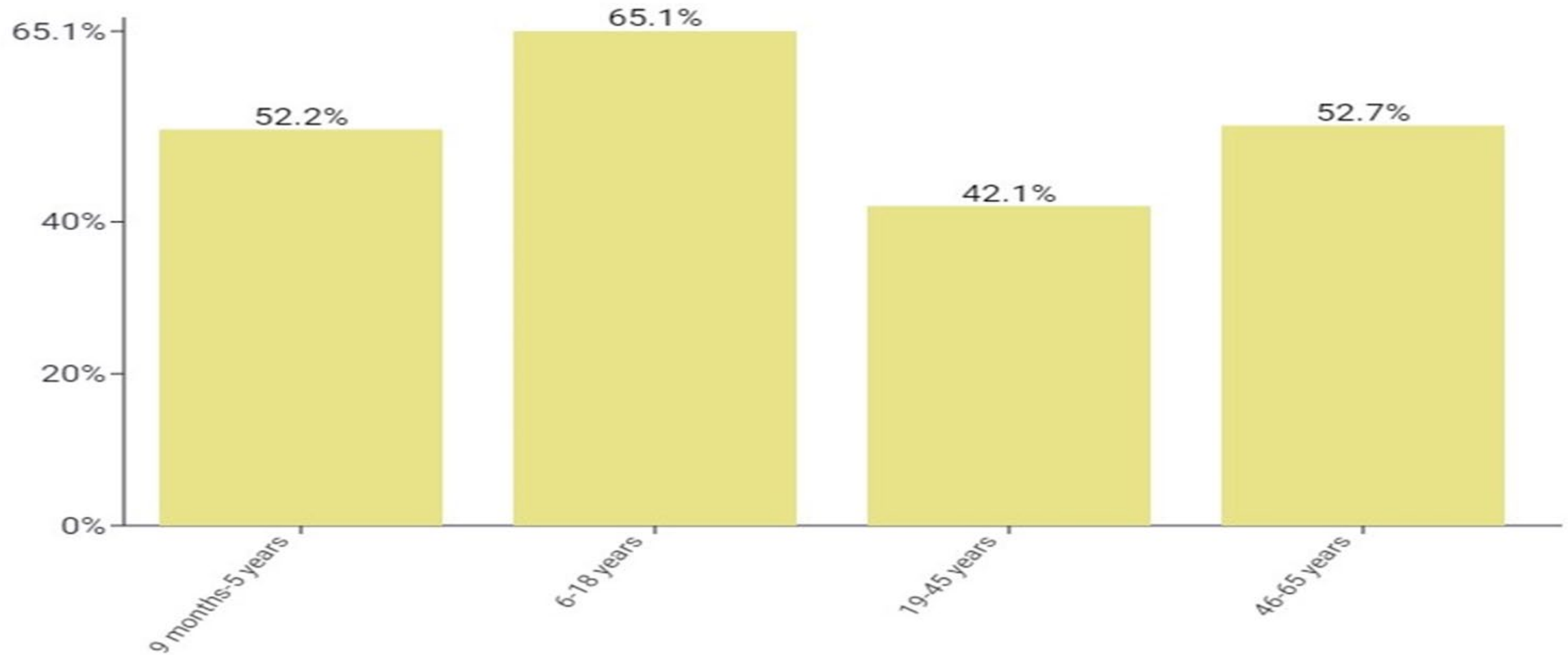


# Vaccination Coverage

Subdivision	Number Vaccinated	Adverse Events	Target Population	Percentage Vaccinated
Macuata	32,012	3	67,839	47.2%
Cakaudrove	19,567	3	34,394	56.9%
Bua	8,364	-	16,415	51.0%
Taveuni	9,692	1	14,677	66.0%
	69,635	7	133,325	52.2%

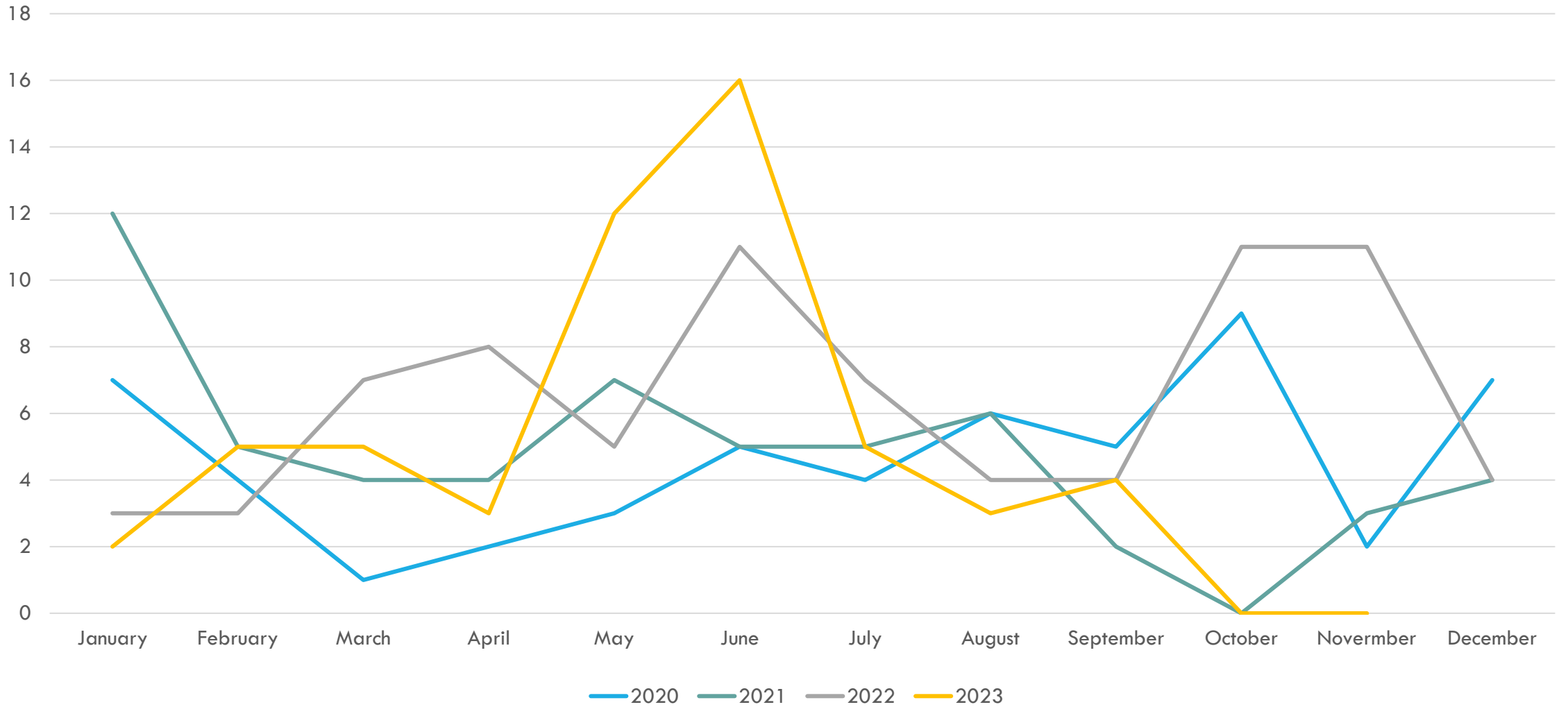
# Vaccination by Age Group

Percentage of population vaccinated by age group, Northern



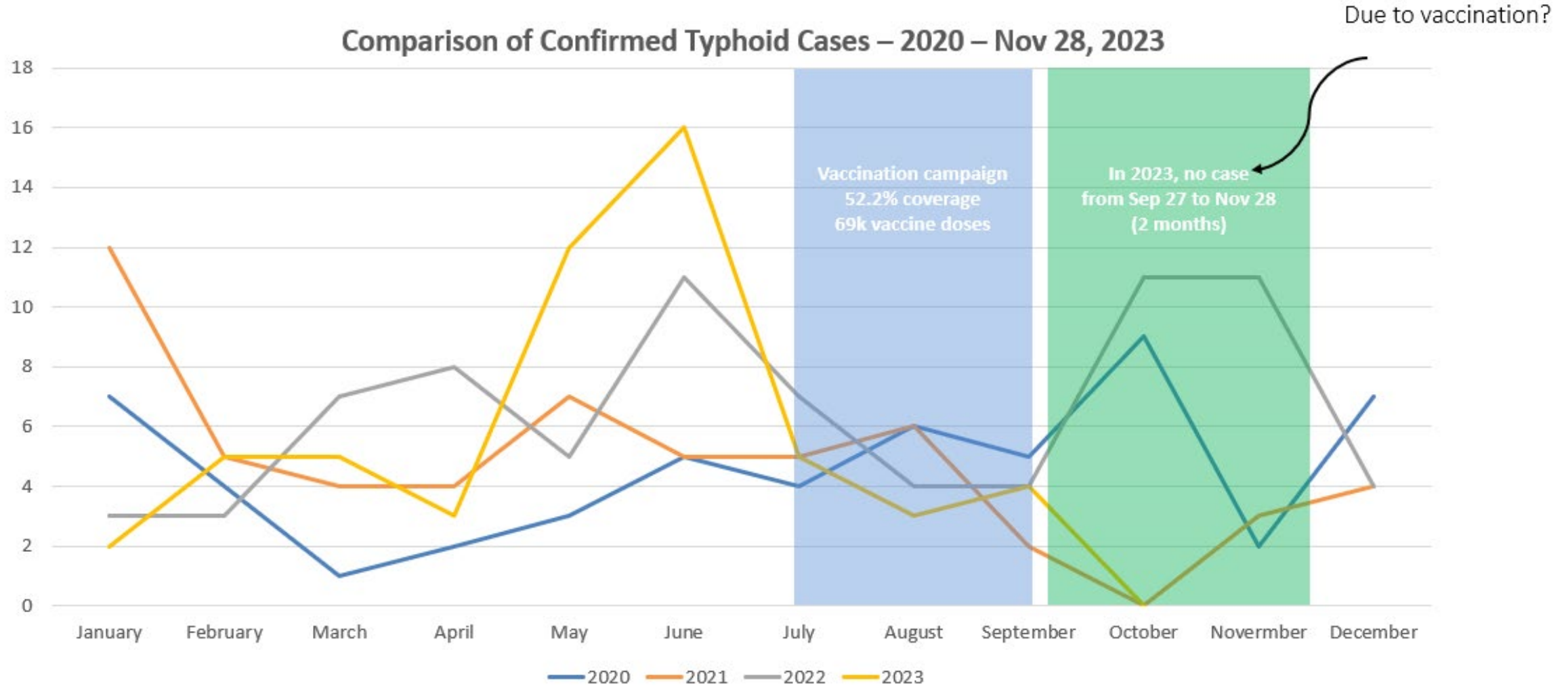
# Confirmed Typhoid Cases Graph

Comparison of Confirmed Typhoid Cases – 2020 – Nov 30, 2023





# Confirmed Typhoid Cases Graph



# Conclusion

- island-wide typhoid vaccine roll-out project, including:
    - mass vaccination using TCV
    - clinical surveillance
    - environmental surveillance
  - improved surveillance system has accelerated detection of cases and outbreaks and increased number of identified asymptomatic shedders (?)
  - mass vaccination achieved:
    - >50% coverage with regional differences
    - almost 70'000 doses given, no safety issue!
- if successful in reducing typhoid burden,  
we hope this project will pave the way for a national introduction in the main island of Fiji

# Next Steps

- Vaccinate birth cohort and offer vaccine in health centers
- Survey on reasons for refusal
- Case-control study for effectiveness





# Ty-FIVE Consortium



## Funding:

Korean Support Committee (KSC)

Bill & Melinda Gates Foundation

UNICEF (in kind): ES lab containers

## IVI team in Fiji

- Dr Alumita Vuakanisakea (Project Lead)
- Orisi Cabenabatua (Laboratory Officer)
- Matelita Buli (Clinical Surveillance Nurse)
- Komal Aswhini (Project Administrator)
- Pranit Kapoor (Environment Surveillance Lead)
- Mishal Naidu (Laboratory Officer)
- Aseri Bale (Laboratory Officer)
- Rahul Pasad (Data Manager)
- Ashweeni Kumar (Vaccination Nurse)
- Pranay Reddy (Laboratory Assistant)
- Luke Rawalai (Risk Communication Officer)

## IVI team in Seoul

- Dr. Florian Marks (co-Principle Investigator)
- Dr. Raphael 'Rafi' Zellweger (IVI lead, Principle Investigator for Environmental Surveillance)
- Hea Sun Jenny Joh (Researcher)
- Jinhui Hong (Project Manager)
- Hwayoung Kim (Project Administrator)
- Juyeon Park (Statistician)
- Hyoryoung Lee (Statistician)
- Jae-woong Lee (Data Management)
- Alyssa Cho (Associate Researcher)

## Murdoch Children's Research Institute (Melbourne)

- Prof. Kim Mulholland (co-Principle Investigator)

## Peter Doherty/University of Melbourne

- Prof. Dick Strugnell
- Dr. Aneley Getahun

## Fijian Ministry of Health

- Dr. Rachel Devi, Head of Family Health
- Dr. Tiko, Head of Northern Health Division
- Dr. Daniel, Senior Medical Officer, FCDC
- Dr. Rafai, Head of Research, Innovation & IT
- Mr. Vimal Deo, Chief Health Inspector
- Dr. Aalisha Sahukhan, Head of Health Protection

## Imperial College London

- Prof. Nick Grassly
- Dr. Christopher Uzzell

## University of Washington, Seattle, USA

- Prof. J. Scott Meschke
- Dr. Jeff Shirai
- Dr. Nicolette Zhou
- Dr. Nicola Beck

# Thank you! Questions?

