

The Impact of a TCV Mass Campaign on Typhoid Fever Cases and Antimicrobial Use in Harare, Zimbabwe

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5 December 2023

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THRU ZIM
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UNIT ZIMBABWE



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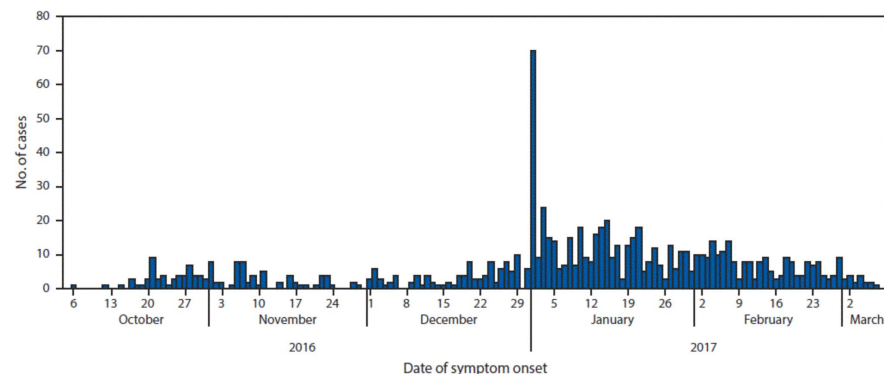


Biomedical Research
and Training Institute

Typhoid fever in Harare



- Seasonal typhoid fever outbreaks in Harare
- Main causes:
 - inappropriate disposal of sewage
 - contaminated communal boreholes
 - water shortages



Davis et al. MMWR 2018



TCV campaign in Zimbabwe



KUDZIVIRIRWA KWETYPHOID MUHARARE

25 Kukadzi - 04 Kurume 2019

- Muguta reHarare, chirwere chetyphoid chapararira munzvimbo dzakasiyana siyana kubvira musi wa 01 September 2018 uye chichiri kuenderera mberi.
- Bazi rezvehutano nekuchengetedzwa kwakanaka kwevana (MoHCC) nekanzuru yeguta reHarare vakabatana neWHO neUNICEF varikupa mushonga (vaccine) wekudzivirira typhoid munharaunda dzakaonekwa kuti dziripanjodzi yakakura, kubvira musi weMuvhuro 25 Kukadzi kusvika musi weMuvhuro 04 Kurume 2019.
- Kunzvimbo dzakaita se Budiriro, Glenview, Mufakose, Kuwadzana, Hopley, Glen Norah, Glen View, Dzivarasekwa ne Hatcliffe, mushonga uyu uchange uchibaiwa kubva pavana vane mwedzi mitanhatu (6 months) kusvika pamakore gumi ne mashanu (15 years) ekuberekwa.
- Nekuda kwekukura kwenjodzi iyi muMbare mushonga uyu uchange uchipihwa kubva pavana vane mwedzi mitanhatu (6 months) kusvika pane vane makore makumi mana nemashanu (45 years) ekuberekwa.

Mass vaccination campaign of children <15 years with the typhoid conjugate vaccine (TCV) in 9 suburbs in Harare

Number of people vaccinated and administrative coverage by age group and suburb during the TCV campaign—Harare, Zimbabwe, 2019.

	Target population	Number vaccinated	Administrative coverage (%)
Age group			
6 mo.–4 yrs.	114,388	82,768	72.4
5–15 yrs.	208,429	202,457	97.1
16–45 yrs. ^a	50,210	33,473	66.7
All	373,027	318,698	85.4
6 mo–15 yrs. by suburb			
Budiriro	46,876	37,322	79.6
Dzivarasekwa	27,399	27,944	102.0
Glen Norah	28,251	28,436	100.7
Glen View	43,961	38,756	88.2
Hatcliffe	17,533	14,879	84.9
Hopley	43,924	34,182	77.8
Kuwadzana	62,268	56,453	90.7
Mbare	31,159	24,760	79.5
Mufakose	21,446	22,493	104.9
All Suburbs	322,817	285,225	88.4

Poncin et al. Vaccine X 2022

^a Vaccination among this age group took place in Mbare suburb only.

FIEBRE Study



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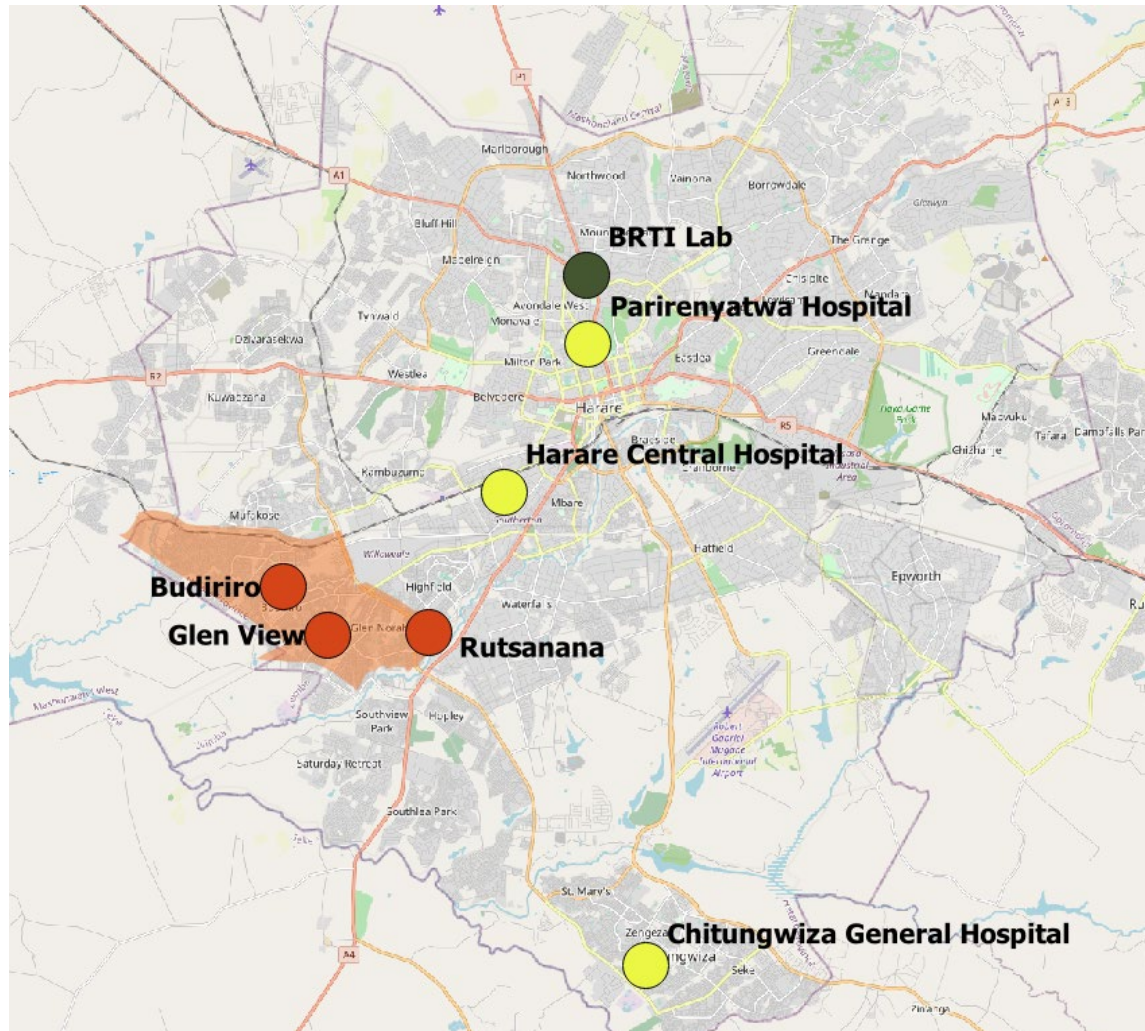
Febrile Illness Evaluation in
a Broad Range of
Endemicities (FIEBRE)



Recruiting adults and children ≥ 2 months presenting with fever at primary care clinics and hospitals in Harare

Broad range of diagnostic tests for bacteria, viruses, fungi and parasites

FIEBRE study clinics



Jul 2018 – Sep 2020:

1924 participants with fever recruited

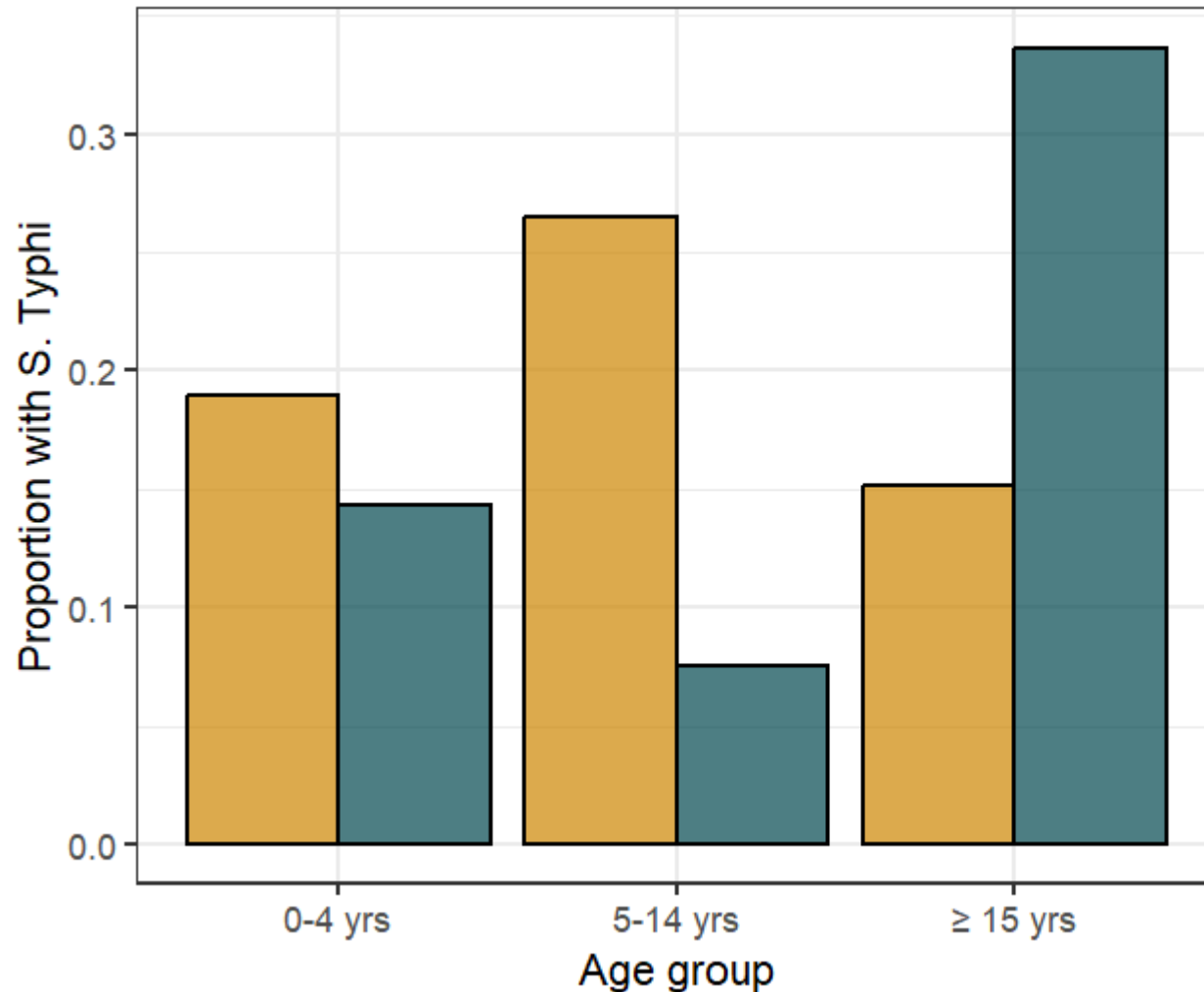
- 801 from 3 hospitals
- 1123 from primary care clinics
- **1 single blood culture collected**

Positive blood cultures for *S. Typhi*

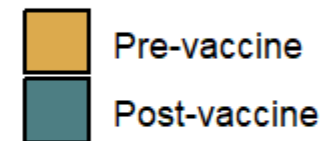


- 562 patients from one community with before & after data available
- Vaccination conducted only in children at coverage ~80%
- 132 (23.5%) positive blood cultures for *Salmonella Typhi*
 - Median age 21 years and 56% female
 - 37 in children & 95 in adults
 - 49 in the pre-vaccination period & 83 in the post-vaccination period
- Blood culture positivity for *Salmonella Typhi*
 - 17.9% in children
 - 26.8% in adults

Impact of TCV vaccination



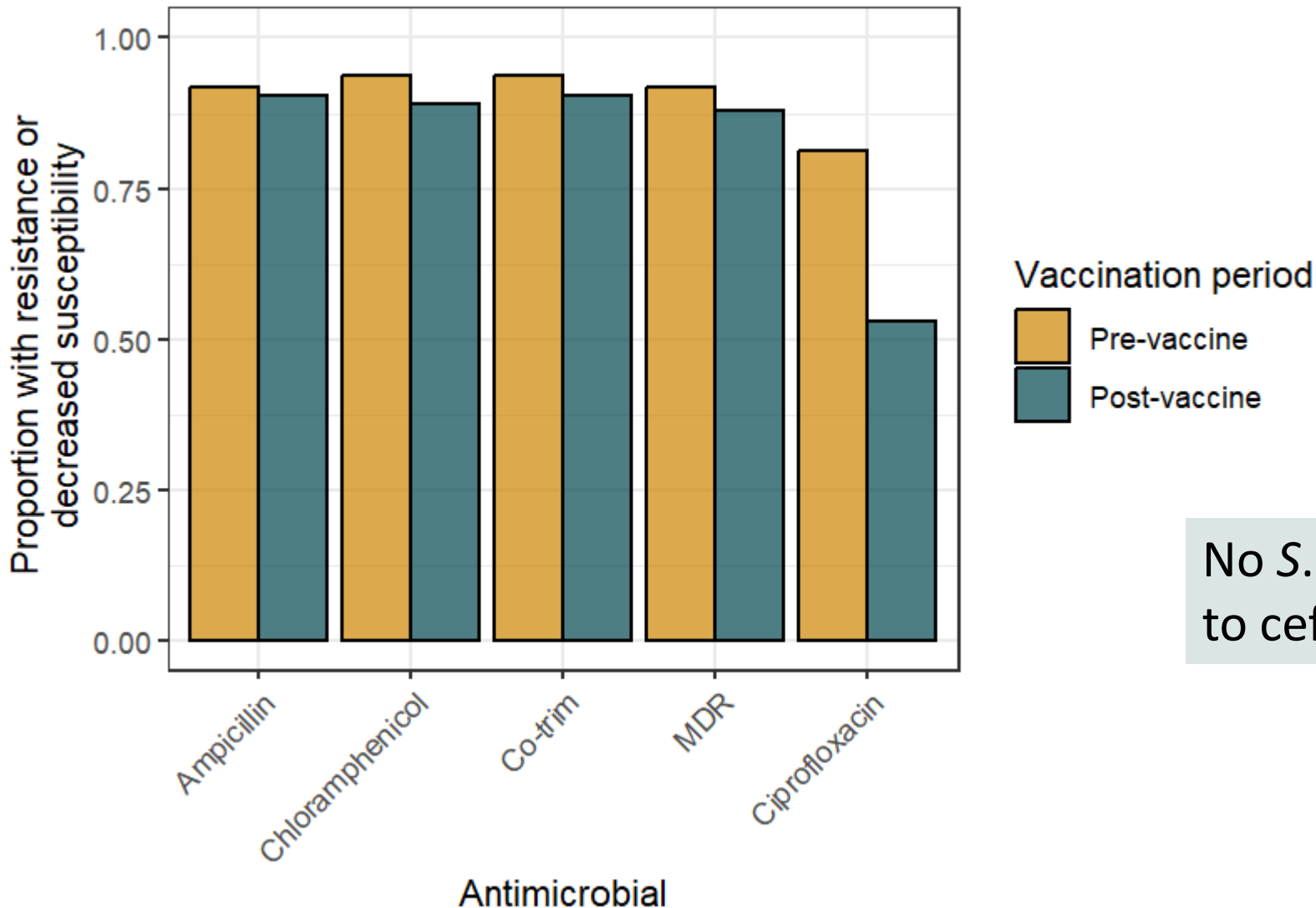
Vaccination period



Vaccine status among those with typhoid in the post-vaccine period

- 0-4 year-olds: 3/4 not vaccinated
- 5-14 year-olds: 3/4 not vaccinated & 1/4 unknown status

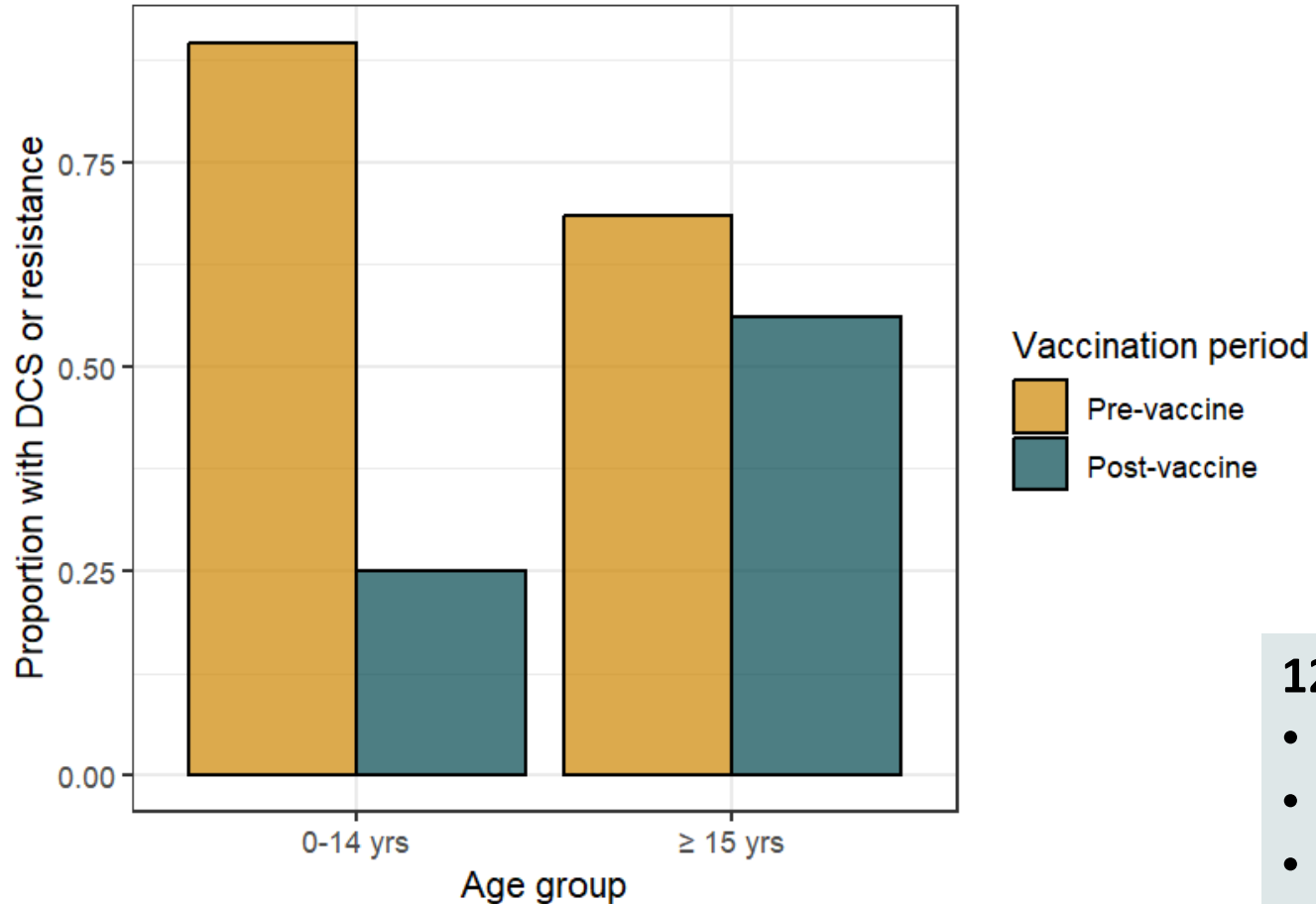
Antimicrobial susceptibility testing



No *S. Typhi* isolates were resistant to ceftriaxone or azithromycin

MDR = resistance to amoxicillin + chloramphenicol + co-trimoxazole 8

Decreased ciprofloxacin susceptibility according to age



DCS: decreased ciprofloxacin susceptibility

129 with MICs for ciprofloxacin determined

- 45 susceptible
- 76 DCS
- 8 ciprofloxacin MIC >1

Antimicrobial prescriptions in primary care



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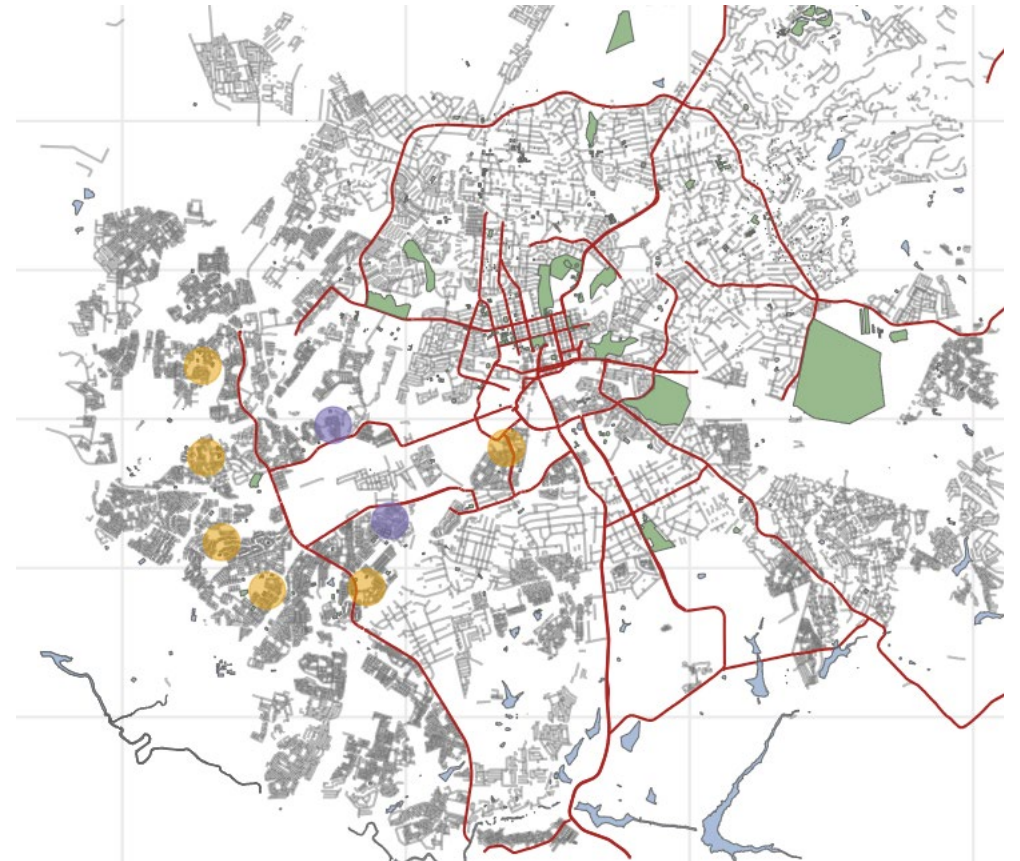
Setting: Primary healthcare clinics in Harare

Approach: data from clinic registries on acute outpatient consultations

Period of data collection: Jan 2016 – Dec 2021

Data collected

- Demographics: age, sex
- Diagnosis
- Treatment prescribed
- Hospital referral



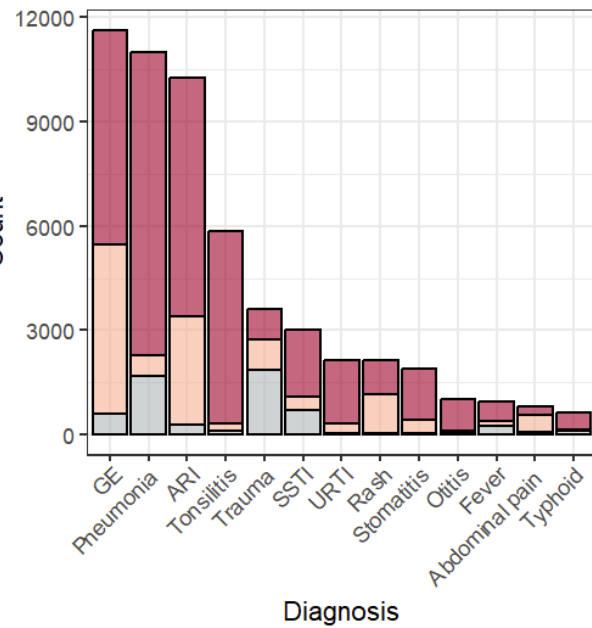
Antimicrobial prescriptions in primary care



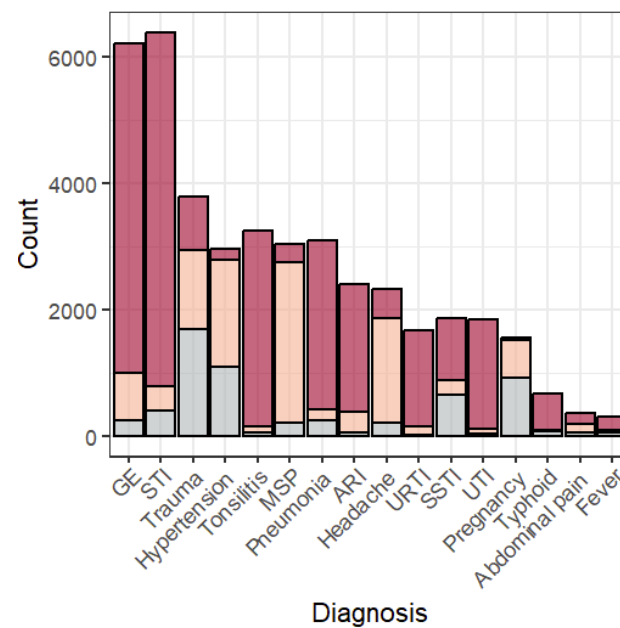
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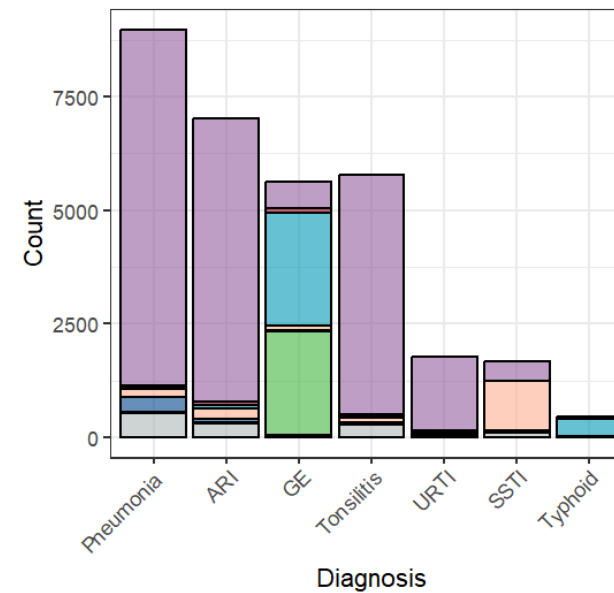
Children (<15 years)



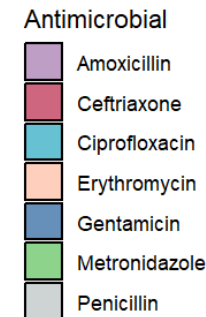
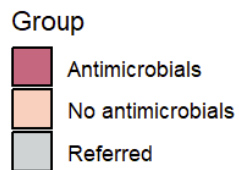
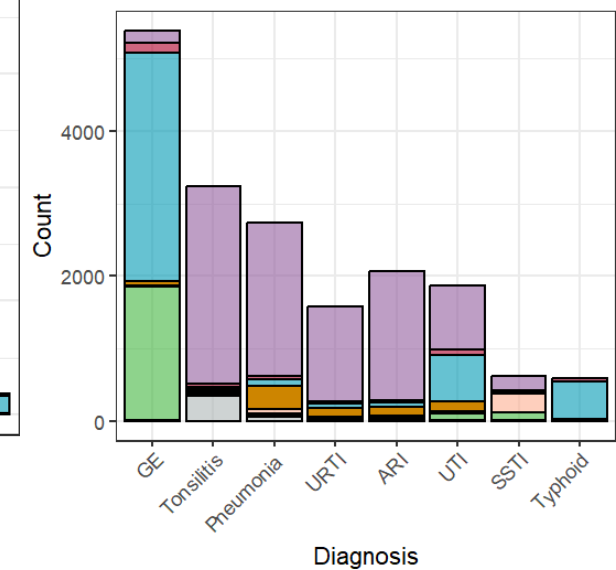
Adults



Children <15 years



Adults



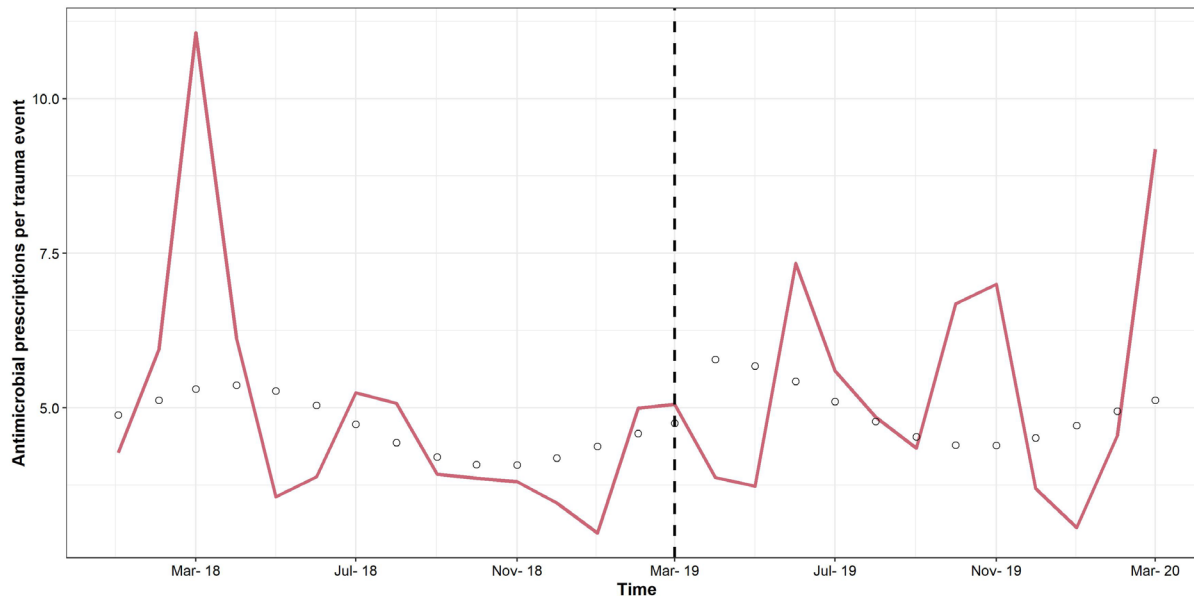
Antimicrobial prescriptions in children from vaccinated communities



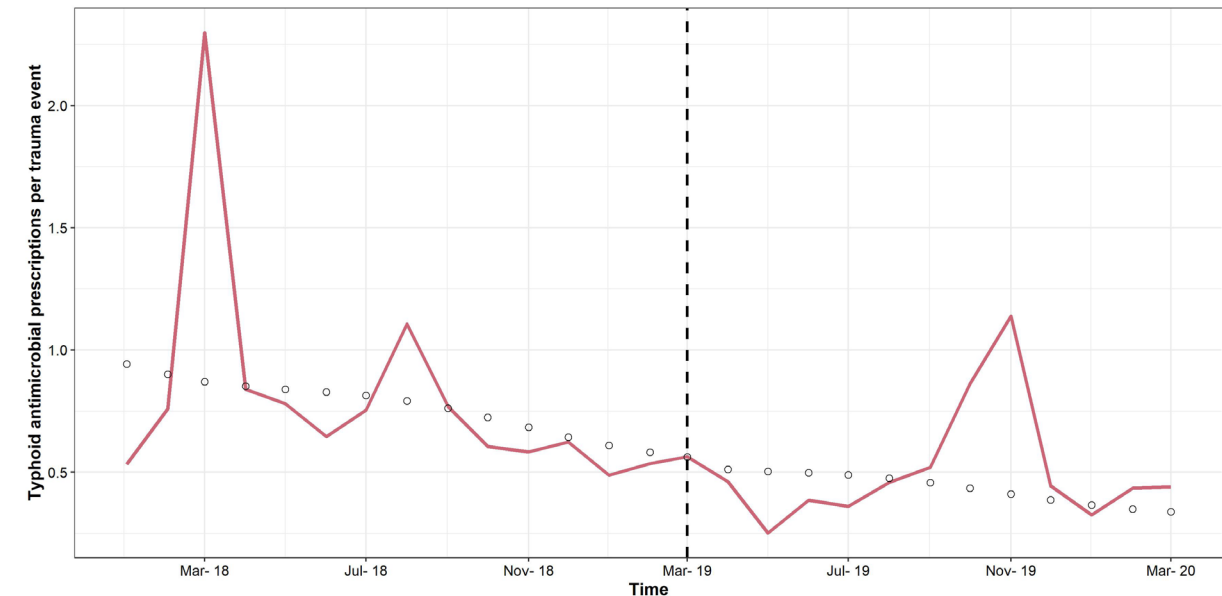
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Any antimicrobials



Antimicrobials used for typhoid



Circles represent fitted values from a multivariable model (time, seasonality, vaccination)

Conclusions



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- Vaccination led to a reduction of typhoid fever cases among children presenting to primary healthcare
- High number of cases identified post-vaccination campaign (mostly adults)
- Vaccination with TCV did not influence antimicrobial prescriptions overall or of those used for typhoid
- Lack of effect on prescribing likely due to factors such as access to safe water, appropriate sewage disposal, health care and diagnostic availability

TCV in Zimbabwe



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Together We Can
Take on Typhoid

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In May 2021 Zimbabwe was the second country to introduce TCV in the national immunization programme for children at 9 months

Typhoid conjugate vaccine arrives in Zimbabwe

Posted on May 25, 2021 by Elayna Oberman, PATH

www.coalitionagainststtyphoid.org

Acknowledgements



LSHTM

Katharina Kranzer
Rashida Ferrand
David Mabey
Heidi Hopkins
Justin Dixon

BRTI

Tsitsi Bandason
Rudo Chingono
Fadzaishe Mhino
Beauty Makamure
Joseph Chipanga

University of Sheffield

Tom Darton
Carlos Suligoy

Harare City Health

Prosper Chonzi
Kudzai Masunda
Doctors & nurses from Polyclinics

Ben Amos

James Usher
John Crump

Hospitals of Harare & Chitungwiza NMRL

