Supplementary material

Appendix 1 – Definition of contaminants

Definition of contaminants

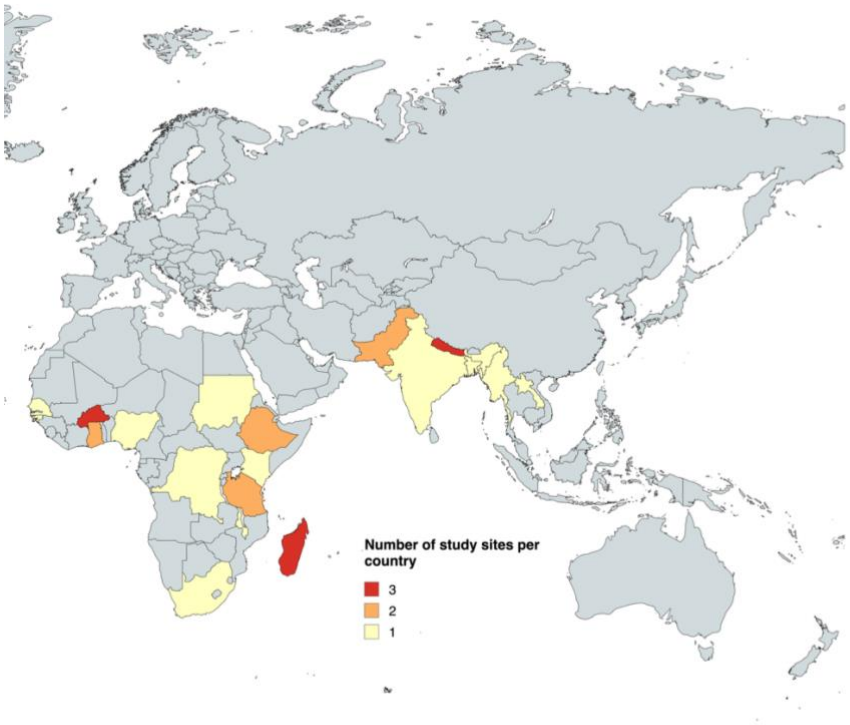
Bacillus species
Coagulase-negative *Staphylococcus*
Corynebacterium species (diphteroids)
Micrococcus species
Cutibacterium (previously *Propionibacterium*)
Alpha-haemolytic *Streptococcus* (other than *Strep. pneumoniae*)
Pseudomonas (other than *P. aeruginosa*)
Other environmental non-fermenting gram-negative rods

Appendix 2 – Eligible articles reporting on typhoid incidence

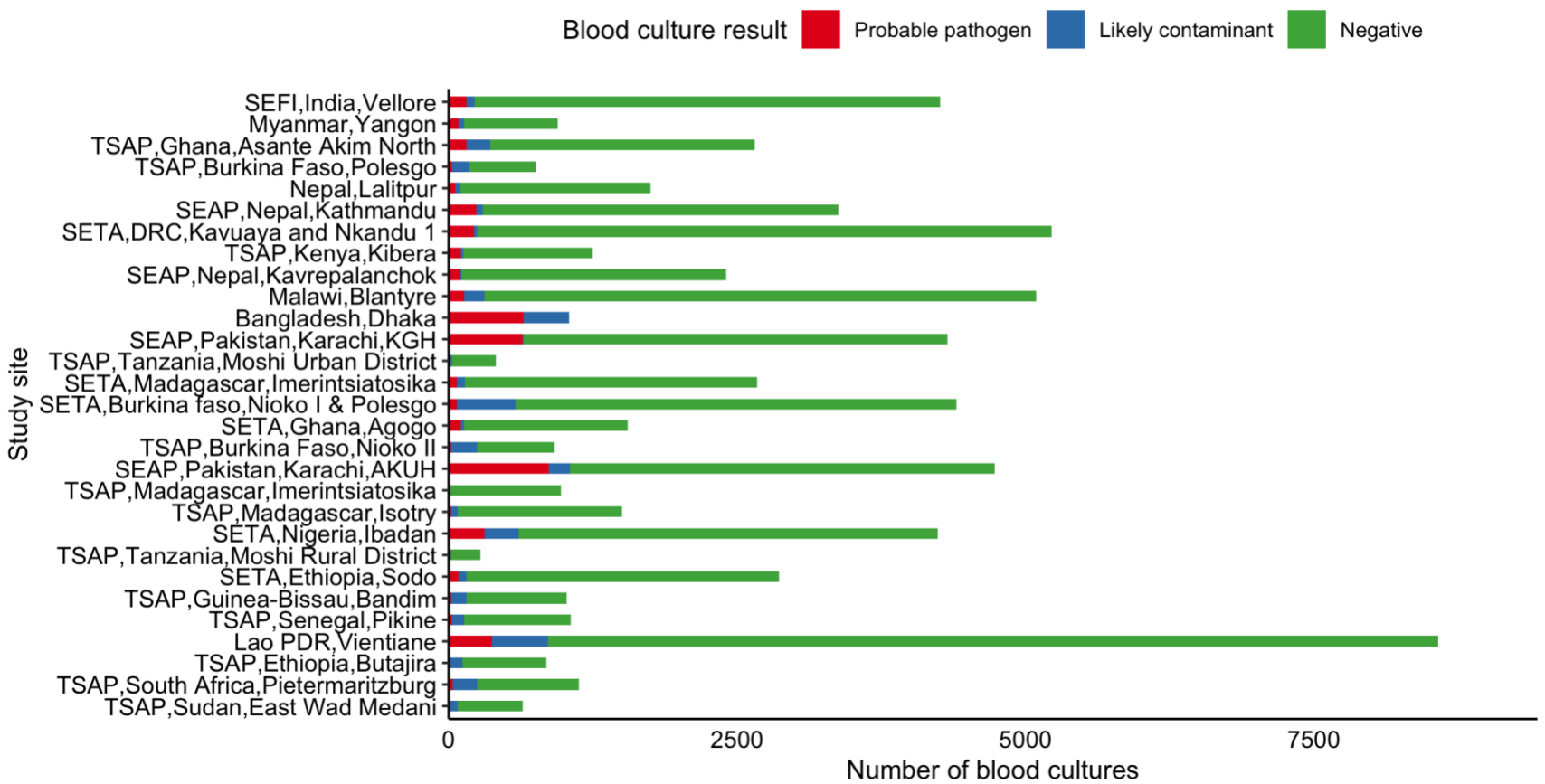
Citation	First author	Publication year	Title	Project	Notes
[1]	Chanthavilay	2020	Estimation of Incidence of Typhoid and Paratyphoid Fever in Vientiane, Lao People's Democratic Republic		Included
[2]	Cutting	2022	Facility-based disease surveillance and Bayesian hierarchical modeling to estimate endemic typhoid fever incidence, Kilimanjaro Region, Tanzania, 2007–2018		Not included because overlap with TSAP
[3]	Garrett	2022	Incidence of typhoid and paratyphoid fever in Bangladesh, Nepal, and Pakistan: results of the Surveillance for Enteric Fever in Asia Project	Surveillance for Enteric Fever in Asia Project (SEAP)	Data from study sites Pakistan and Nepal are included
[4]	John	2018	Estimating the incidence of enteric fever in children in India: a multi-site, active fever surveillance of pediatric cohorts	Surveillance of Enteric Fever in India (SEFI)	Data from study site Vellore included
[5]	Marks	2022	The Severe Typhoid in Africa Program: Incidences of Typhoid Fever in Burkina Faso, Democratic Republic of Congo, Ethiopia, Ghana, Madagascar, and Nigeria	Severe Typhoid in Africa Program (SETA)	Included: 5 study sites were not eligible as no typhoid incidence was reported. One study site Madagascar, Mahajanga was excluded because only <10 probable pathogens were isolated.
[6]	Marks	2017	Incidence of invasive salmonella disease in sub-Saharan Africa: a multicentre population-based surveillance study	Typhoid Fever Surveillance in Africa (TSAP)	Included
[7]	Meiring	2021	Burden of enteric fever at three urban sites in Africa and Asia: a multicentre population-based study	Strategic Typhoid Alliance across Africa and Asia (STRATAA)	Not included
[8]	Ng'eno	2023	Dynamic Incidence of Typhoid Fever over a 10-Year Period (2010-2019) in Kibera, an Urban Informal Settlement in Nairobi, Kenya		Not included because overlap with TSAP
[9,10]	Oo	2019	Incidence of Typhoid and Paratyphoid Fevers Among Adolescents and Adults in Yangon, Myanmar		Included, prevalence data abstracted from publication [10]

[11]	Patel	2021	Safety and Efficacy of a Typhoid Conjugate Vaccine in Malawian Children	Typhoid Vaccine Acceleration Consortium (TyVAC) - Malawi	Data from the control arm included
[12]	Qadri	2021	Protection by vaccination of children against typhoid fever with a Vi-tetanus toxoid conjugate vaccine in urban Bangladesh: a cluster-randomised trial	Typhoid Vaccine Acceleration Consortium (TyVAC) - Bangladesh	Data from the cluster control arm are included
[13]	Shakya	2021	Efficacy of typhoid conjugate vaccine in Nepal: final results of a phase 3, randomised, controlled trial	Typhoid Vaccine Acceleration Consortium (TyVAC) - Nepal	Data from the control arm included
[14]	Yousafzai	2021	Effectiveness of typhoid conjugate vaccine against culture confirmed *Salmonella* enterica serotype Typhi in an extensively drug-resistant outbreak setting of Hyderabad, Pakistan: a cohort study		Not included.

Appendix 3 – Map of countries of the study sites of typhoid incidence and prevalence of community-onset bloodstream infections, published 2017-2024



Appendix 4 – Distribution of blood culture results across study sites, sorted from high typhoid incidence to low typhoid incidence study sites



SEAP, Surveillance for Enteric Fever in Asia Project (SEAP); SEFI, Surveillance of Enteric Fever in India; SETA, Severe Typhoid in Africa Program (SETA); TSAP, Typhoid Fever Surveillance in Africa.
Blood culture negative data were not available for Bangladesh, Dhaka.

Appendix 5 – Top five rank order probable pathogens isolated from bloodstream infections across study sites, sorted by highest typhoid incidence study site

Study site (Project, Country, Locality)	Reference	Number of probable pathogens	Top five rank order of probable pathogens: Isolate genus species (number of isolates)				
			1	**2**	**3**	**4**	**5**
Bangladesh,Dhaka	[12]	646	*S.* Typhi (544)	*S.* Paratyphi A (73)	*E. coli* (7)	*Salmonella* nontyphoidal serovars (5)	*Staphylococcus aureus* (4)
Lao PDR,Vientiane	[1]	375	*E. coli* (148)	*Klebsiella pneumoniae* (49)	*Staphylococcus aureus* (34)	*Salmonella* nontyphoidal serovars (23)	*S.* Typhi (20)
Malawi,Blantyre	[11]	137	*S.* Typhi (112)	*Salmonella* nontyphoidal serovars (12)	*Streptococcus pneumoniae* (4)	*E. coli* (3)	*Cryptococcus neoformans* (1)
Myanmar,Yangon	[9]	83	*S.* Typhi (33)	*E. coli* (19)	*S.* Paratyphi A (10)	*Klebsiella pneumoniae* (6)	*Staphylococcus aureus* (6)
Nepal,Lalitpur	[13]	57	*S.* Typhi (49)	*S.* Paratyphi A (4)	*E. coli* (2)	*Enterococcus* species (1)	*Staphylococcus aureus* (1)
SEAP,Nepal,Kathmandu	[3]	236	*S.* Typhi (174)	*S.* Paratyphi A (42)	*E. coli* (11)	*Klebsiella pneumoniae* (5)	*Aeromonas* species (1)
SEAP,Nepal,Kavrepalanchok	[3]	97	*S.* Typhi (75)	*S.* Paratyphi A (13)	*E. coli* (6)	*Enterococcus* species (1)	*Salmonella* nontyphoidal serovars (1)
SEAP,Pakistan,Karachi,AKUH	[3]	864	*S.* Typhi (716)	*S.* Paratyphi A (87)	*E. coli* (36)	*Salmonella* nontyphoidal serovars (4)	*Klebsiella pneumoniae* (3)
SEAP,Pakistan,Karachi,KGH	[3]	644	*S.* Typhi (637)	*E. coli* (2)	*S.* Paratyphi A (2)	*Enterobacter* species (1)	*Salmonella* nontyphoidal serovars (1)
SEFI,India,Vellore	[4]	156	*S.* Typhi (147)	*Salmonella* nontyphoidal serovars (2)	*S.* Paratyphi A (2)	*Streptococcus pneumoniae* (2)	*Enterococcus* species (1)
SETA,Burkina Faso, Nioko I & Polesgo	[5]	68	Staphylococcus aureus (29)	*E. coli* (11)	*S.* Typhi (11)	*Salmonella* nontyphoidal serovars (9)	*Citrobacter freundii* (2)
SETA,DRC, Kavuaya and Nkandu 1	[5]	218	*Salmonella* nontyphoidal serovars (144)	*S.* Typhi (51)	*E. coli* (16)	*Staphylococcus aureus* (3)	*Enterococcus* species (2)
SETA,Ethiopia,Sodo	[5]	81	Staphylococcus aureus (63)	*S.* Typhi (7)	*Pseudomonas aeruginosa* (4)	*Enterobacter cloacae* (2)	*Erwinia* species (2)
SETA,Ghana,Agogo	[5]	102	*S.* Typhi (60)	*Salmonella* nontyphoidal serovars (13)	*E. coli* (11)	*Staphylococcus aureus* (6)	*Streptococcus pneumoniae* (6)
SETA,Madagascar, Imerintsiatosika	[5]	72	*S.* Typhi (49)	Streptococcus pneumoniae (14)	*E. coli* (6)	*Staphylococcus aureus* (3)	*NA*
SETA,Nigeria,Ibadan	[5]	310	Staphylococcus aureus (180)	*S.* Typhi (65)	*Salmonella* nontyphoidal serovars (28)	*E. coli* (6)	*Candida albicans* (4)
TSAP,Burkina Faso,Nioko II	[6]	24	*Salmonella* nontyphoidal serovars (10)	*S.* Typhi (5)	*E. coli* (3)	*Enterococcus* faecalis (2)	*Aeromonas* species (1)
TSAP,Burkina Faso,Polesgo	[6]	27	*S.* Typhi (13)	*E. coli* (4)	*Salmonella* nontyphoidal serovars (4)	*Proteus mirabilis* (2)	*Pseudomonas aeruginosa* (2)
TSAP,Ethiopia,Butajira	[6]	12	*S.* Typhi (3)	*E. coli* (2)	*Leclercia adecarboxylata* (2)	*Staphylococcus aureus* (2)	*Streptococcus pneumoniae* (2)

TSAP,Ghana, Asante Akim North	[6]	157	*Salmonella* nontyphoidal serovars (59)	*S.* Typhi (30)	*Klebsiella pneumoniae* (22)	*Streptococcus pneumoniae* (17)	*Staphylococcus aureus* (16)
TSAP,Guinea-Bissau,Bandim	[6]	20	*Salmonella* nontyphoidal serovars (8)	*Staphylococcus aureus* (4)	*S.* Typhi (3)	*Enterobacter cloacae* (2)	*Streptococcus pneumoniae* (2)
TSAP,Kenya,Kibera	[6]	107	*S.* Typhi (54)	*Staphylococcus aureus* (33)	*Streptococcus pneumoniae* (10)	*Salmonella* nontyphoidal serovars (6)	*E. coli* (4)
TSAP,Madagascar, Imerintsiatosika	[6]	10	*S.* Typhi (6)	*E. coli* (1)	*Salmonella* nontyphoidal serovars (1)	*Streptococcus pneumoniae* (1)	*Yersinia pestis* (1)
TSAP,Madagascar,Isotry	[6]	20	*Candida* species (6)	*Enterobacter cloacae* (3)	*S.* Typhi (3)	*Klebsiella oxytoca* (2)	*Enterobacter asburiae* (1)
TSAP,Senegal,Pikine	[6]	29	*E. coli* (9)	*S.* Typhi (7)	*Salmonella* nontyphoidal serovars (4)	*S.* Paratyphi A (3)	*Enterobacter cloacae* (2)
TSAP,South Africa, Pietermaritzburg	[6]	36	*Staphylococcus aureus* (10)	*Streptococcus pneumoniae* (7)	*E. coli* (5)	*Cryptococcus neoformans* (4)	*S.* Typhi (2)
TSAP,Sudan, East Wad Medani	[6]	11	*E. coli* (3)	*Staphylococcus aureus* (3)	*Proteus mirabilis* (2)	*Enterococcus casseliflavus* (1)	*Pasteurella pneumotropica* (1)
TSAP,Tanzania, Moshi Rural District	[6]	11	*E. coli* (4)	*S.* Typhi (3)	*Clostridium* species (1)	*Salmonella* nontyphoidal serovars (1)	*Staphylococcus aureus* (1)
TSAP,Tanzania, Moshi Urban District	[6]	15	*S.* Typhi (6)	*E. coli* (5)	*Proteus mirabilis* (1)	*Salmonella* nontyphoidal serovars (1)	*Streptococcus pneumoniae* (1)

SEAP, Surveillance for Enteric Fever in Asia Project (SEAP); SEFI, Surveillance of Enteric Fever in India; SETA, Severe Typhoid in Africa Program (SETA); TSAP, Typhoid Fever Surveillance in Africa.

Appendix 6 - Metrics from sentinel bloodstream infection stratified by hospitalisation status, 2017-2024

Study site	Hospital admission	Number of *S.* Typhi among probable pathogens (%)	Rank order of *S.* Typhi	*S.* Typhi prevalence / *E. coli* prevalence (ratio)	*S.* Typhi prevalence / 'stably endemic organisms'* prevalence (ratio)
Bangladesh,Dhaka [12]	no	522/621 (84.1)	1	522/7 (74.6)	522/13 (40.2)
Bangladesh,Dhaka [12]	yes	22/25 (88.0)	1		
Lao PDR,Vientiane [1]	yes	20/375 (5.3)	5	20/148 (0.1)	20/191 (0.1)
Malawi,Blantyre [11]	yes	12/14 (85.7)	1		
SETA,Burkina faso,Nioko I & Polesgo Marks, 2024 #595}	yes	1/1 (100)	1		
SETA,DRC,Kavuaya and Nkandu 1 [5]	yes	10/22 (45.5)	1	10/6 (1.7)	10/6 (1.7)
SETA,Ethiopia,Sodo [5]	yes	1/13 (7.7)	4		1/10 (0.1)
SETA,Ghana,Agogo [5]	yes	21/40 (52.5)	1	21/2 (10.5)	21/9 (2.3)
SETA,Nigeria,Ibadan [5]	yes	26/118 (22)	2	26/5 (5.2)	26/57 (0.5)
TSAP,Burkina Faso,Nioko II [6]	no	5/23 (21.7)	2	5/3 (1.7)	5/4 (1.3)
TSAP,Burkina Faso,Nioko II [6]	yes	0/1 (0)			
TSAP,Burkina Faso,Polesgo [6]	no	13/27 (48.1)	1	13/4 (3.3)	13/4 (3.3)
TSAP,Ethiopia,Butajira [6]	no	3/10 (30)	1	3/2 (1.5)	3/5 (0.6)
TSAP,Ethiopia,Butajira [6]	yes	0/2 (0)			0/1 (0)
TSAP,Ghana,Asante Akim North [6]	yes	30/157 (19.1)	2	30/7 (4.3)	30/40 (0.8)
TSAP,Guinea-Bissau,Bandim [6]	no	2/15 (13.3)	3		2/5 (0.4)
TSAP,Guinea-Bissau,Bandim [6]	yes	1/5 (20.0)	3		1/1 (1)
TSAP,Kenya,Kibera [6]	no	54/107 (50.5)	1	54/4 (13.5)	54/47 (1.1)
TSAP,Madagascar,Imerintsiatosika [6]	no	6/10 (60.0)	1	6/1 (6)	6/2 (3)
TSAP,Madagascar,Isotry [6]	no	3/20 (15.0)	3		3/2 (1.5)
TSAP,Senegal,Pikine [6]	no	5/15 (33.3)	2	5/6 (0.8)	5/6 (0.8)
TSAP,Senegal,Pikine [6]	yes	2/14 (14.3)	4	2/3 (0.7)	2/3 (0.7)
TSAP,South Africa,Pietermaritzburg [6]	yes	2/36 (5.6)	5	2/5 (0.4)	2/22 (0.1)

TSAP,Sudan,East Wad Medani [6]	no	0/11 (0.0)		0/3 (0)	0/6 (0)
TSAP,Tanzania,Moshi Rural District [6]	no	1/4 (25.0)	3	1/1 (1)	1/2 (0.5)
TSAP,Tanzania,Moshi Rural District [6]	yes	2/7 (28.6)	2	2/3 (0.7)	2/4 (0.5)
TSAP,Tanzania,Moshi Urban District [6]	no	2/5 (40.0)	1		2/1 (2)
TSAP,Tanzania,Moshi Urban District [6]	yes	4/10 (40.0)	2	4/5 (0.8)	4/5 (0.8)

CI, confidence interval; NA, not available; SETA, Severe Typhoid Fever Surveillance in Africa; TSAP, Typhoid Fever Surveillance in Africa Program. *Stably endemic organisms were defined as *E. coli*, *S. pneumoniae,* or *S. aureus*.

Appendix 7 – Association of metrics from bloodstream infections from sentinel sites with typhoid incidence by meta-regression and univariate ordinal regression analysis, 2017-2024

	Meta-regression for log typhoid incidence estimate	Univariate ordinal regression analysis for low, medium and high typhoid incidence estimate levels[±]
Metrics of sentinel bloodstream infection	**Beta (95%CI)**	**OR (95%CI)**
Each 1% increase in prevalence of *S.* Typhi among probable pathogens (n=29)	0.05 (0.03-0.07)	1.08 (1.04-1.17)
Each increase in rank order of *S.* Typhi among probable pathogens (n=28)	-0.97 (-1.39- -0.55)	0.24 (0.07-0.55)
Log *S.* Typhi to *E. coli* ratio (n=25)	0.86 (0.62-1.10)	2.91 (1.49-7.43)
Log *S.* Typhi to 'stably endemic organisms' ratio *(n=29)	0.84 (0.62-1.06)	3.75 (1.81-10.7)

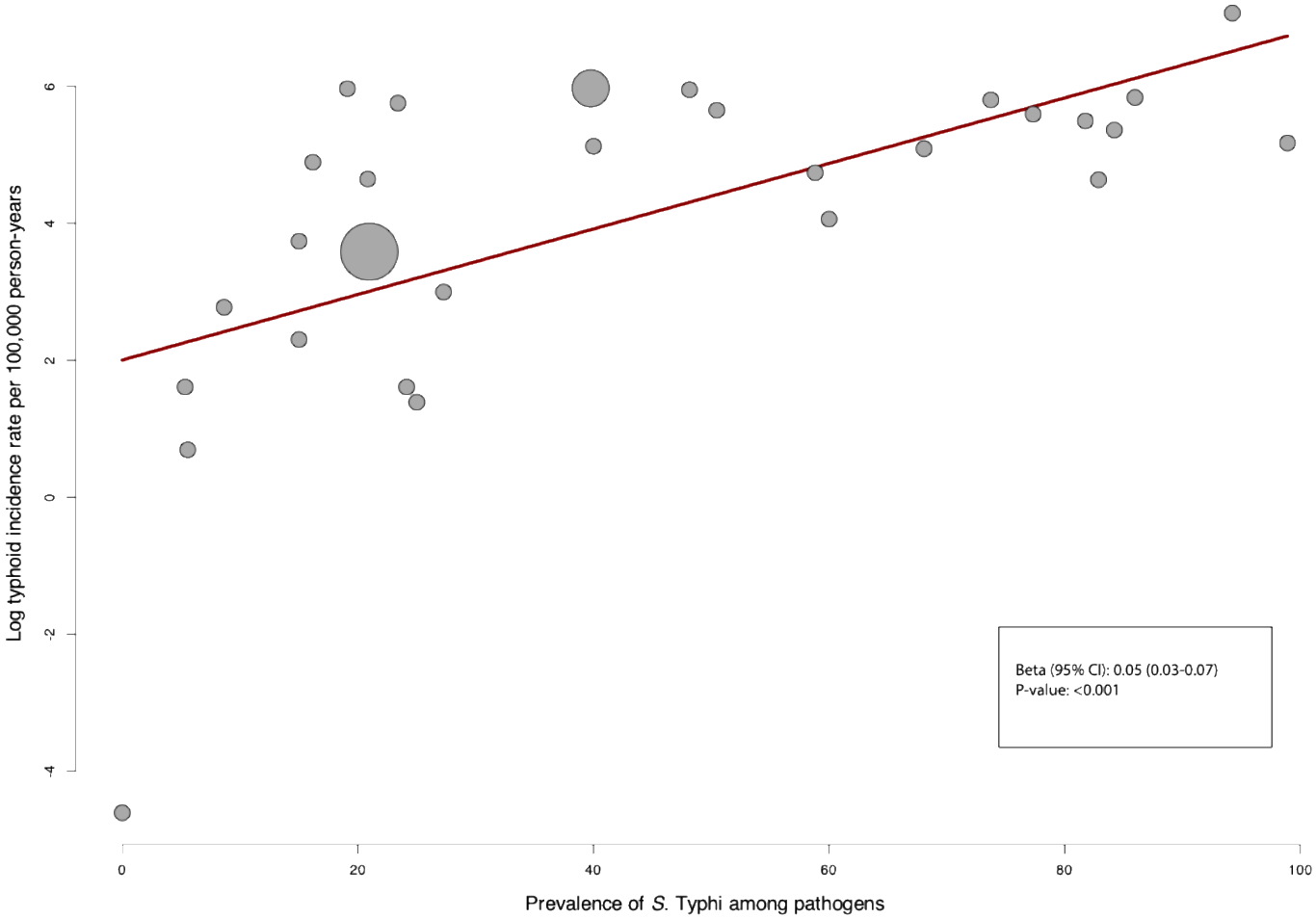
OR, odds ratio

± Low typhoid incidence (<10/100,000 person-years); medium typhoid incidence (10-100/100,000 person-years); high typhoid incidence (>100/100,000 person-years)

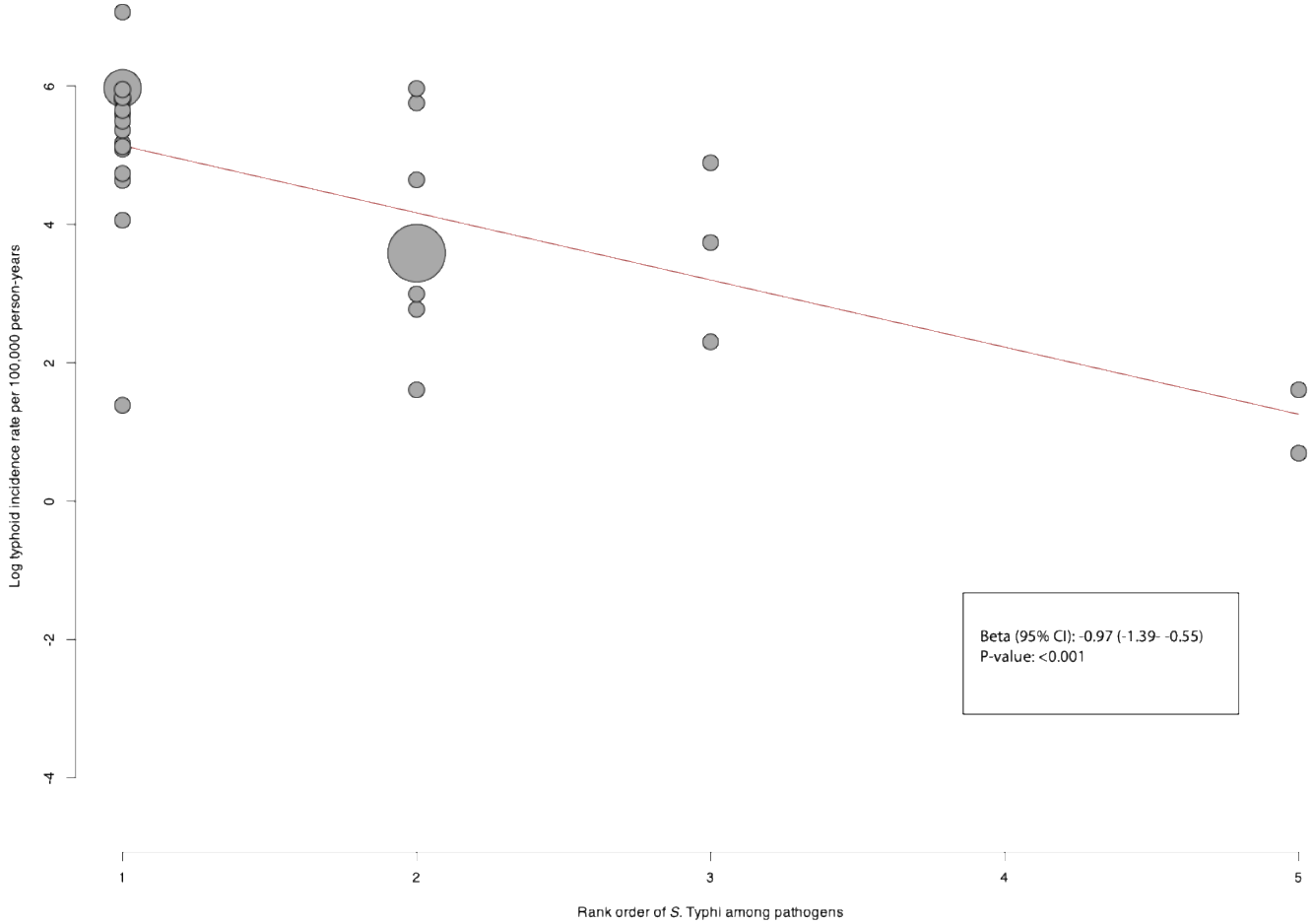
*Stably endemic organisms were defined as *E. coli*, *S. pneumoniae,* or *S. aureus.*

Appendix 8 – Bubble plots of meta-regression of metrics from sentinel blood stream infections with log typhoid incidence (A, prevalence of *S.* Typhi among probable pathogens; B, rank order of *S.* Typhi among probable pathogens; C, ratio log *S.* Typhi to *E. coli* ratio; D, log ratio *S.* Typhi to 'stably endemic organisms' ratio)

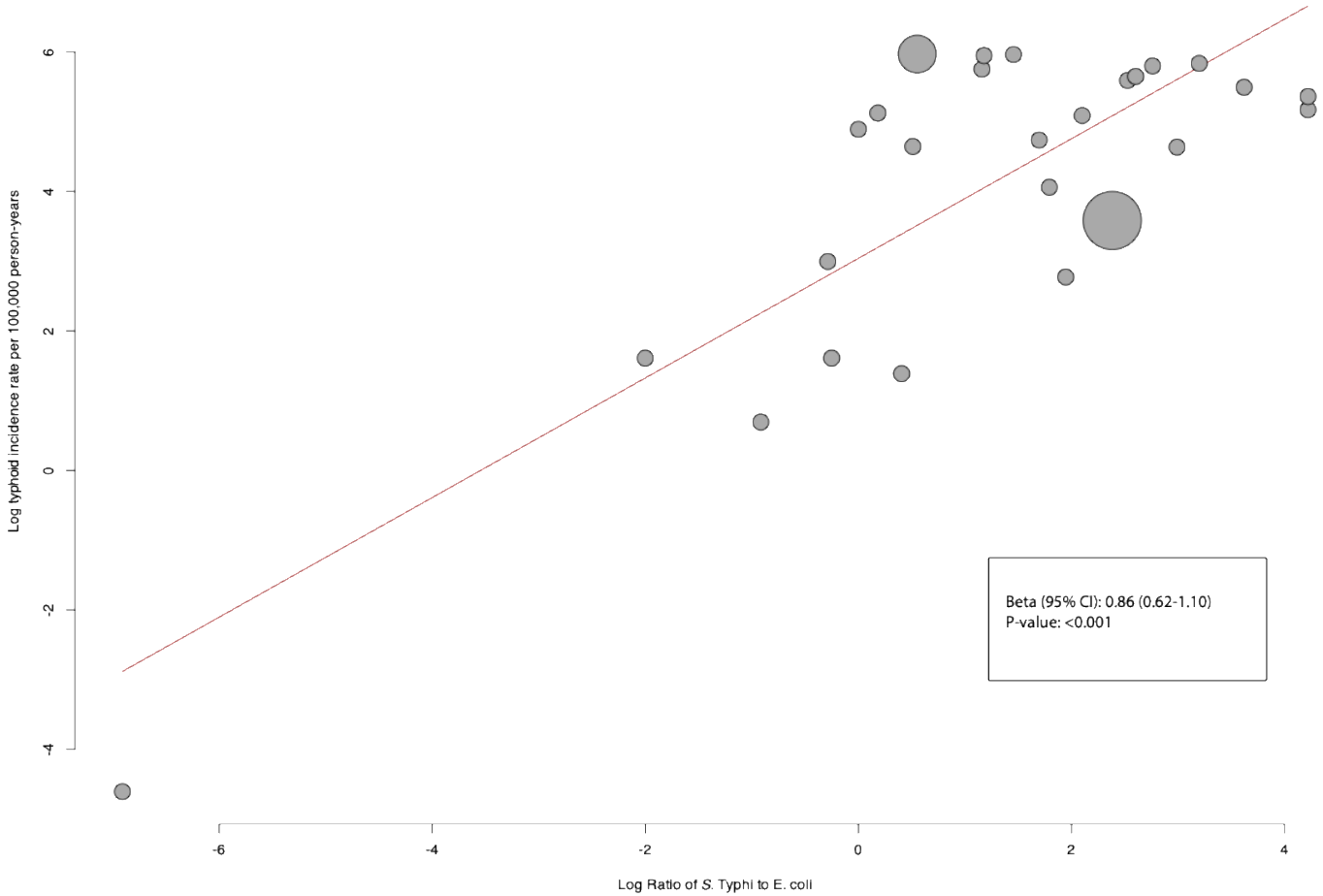
A:



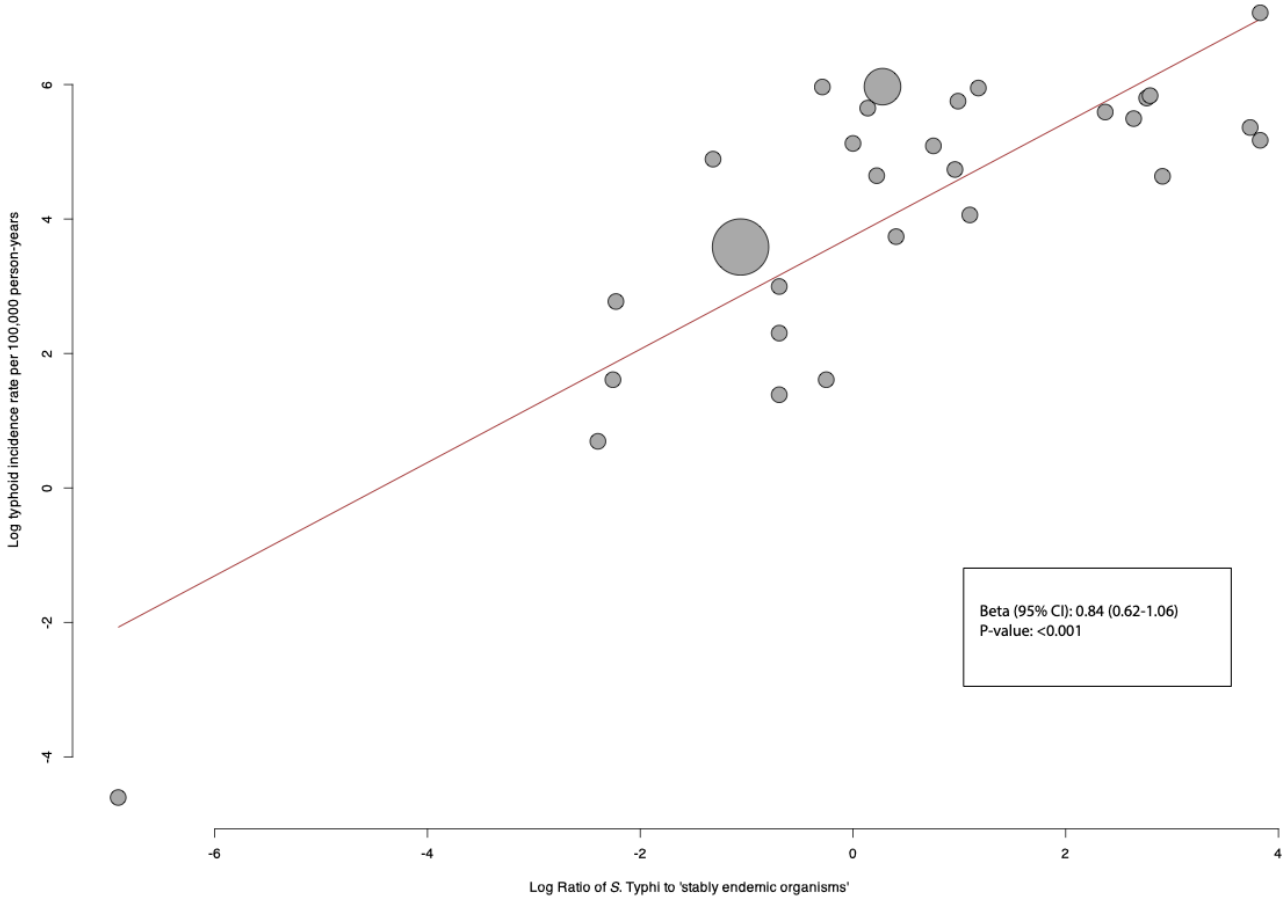
B:


Log typhoid incidence rate per 100,000 person-years
6
4
2
0
-2
-4
1
2
3
4
5
Rank order of S. Typhi among pathogens
Beta (95% CI): -0.97 (-1.39- -0.55)
P-value: <0.001

C:


Log typhoid incidence rate per 100,000 person-years
6
4
2
0
-2
-4
-6
-4
-2
0
2
4
Log Ratio of S. Typhi to E. coli
Beta (95% CI): 0.86 (0.62-1.10)
P-value: <0.001

D:


Log typhoid incidence rate per 100,000 person-years
6
4
2
0
-2
-4
-6
-4
-2
0
2
4
Log Ratio of S. Typhi to 'stably endemic organisms'
Beta (95% CI): 0.84 (0.62-1.06)
P-value: <0.001

Appendix 9 – Summary of model comparisons for metrics of bloodstream infections of sentinel sites for typhoid incidence level in ordinal regression analysis, 2017-2024

Models were compared using the likelihood ratio test and the AIC. Model selection was based on model performance, parsimony, and ease of implementation.

Model 1 Prevalence of *S.* Typhi of probable pathogens
Model 2 Rank order of *S.* Typhi
Model 2b Prevalence of *S.* Typhi of probable pathogens and rank order of *S.* Typhi
Model 3 Log ratio of *S.* Typhi to *E. coli*
Model 3b Prevalence of *S.* Typhi of probable pathogens and log ratio of *S.* Typhi to *E. coli*
Model 4 Log ratio of *S.* Typhi to 'stably endemic organisms'
Model 4b Prevalence of Typhi of probable pathogens and log ratio of *S.* Typhi to 'stably endemic organisms'

	P-value	AIC	Decision
Model 1 vs Model 2	0.33	37.4 vs 39.0	Keep model 1
Model 1 vs Model 2b	1	37.4 vs 38.5	Keep model 1
Model 1 vs Model 3	1	37.4 vs 38.5	Keep model 1
Model 1 vs Model 3b	0.16	37.4 vs 37.4	Keep model 1 based on parsimony
Model 1 vs Model 4	<0.01	37.4 vs 34.5	Keep model 4
Model 4 vs Model 4b	0.85	34.5 vs 36.4	Keep model 4

AIC, Akaike Information Criterion

Final model: model 1 (prevalence of *S.* Typhi of probable pathogens as sole predictor) was selected based on parsimony and ease of calculation, since calculation of ratios and log transformation is a complicating factor for policy makers.

The formula to calculate the predicted probabilities is presented below:

$$P\,(\text{Incidence}) = \text{low}) = \frac{1}{1+e^{-(LP1)}}$$

$$P\,(\text{Incidence}) = \text{medium}) = \frac{1}{1+e^{-(LP2)}} - \frac{1}{1+e^{-(LP1)}}$$

$$P\,(\text{Incidence}) = \text{high}) = 1 - \frac{1}{1+e^{-(LP2)}}$$

LP refers to the linear predictor in a proportional odds logistic regression model. The LPs for the thresholds are defined as follows:

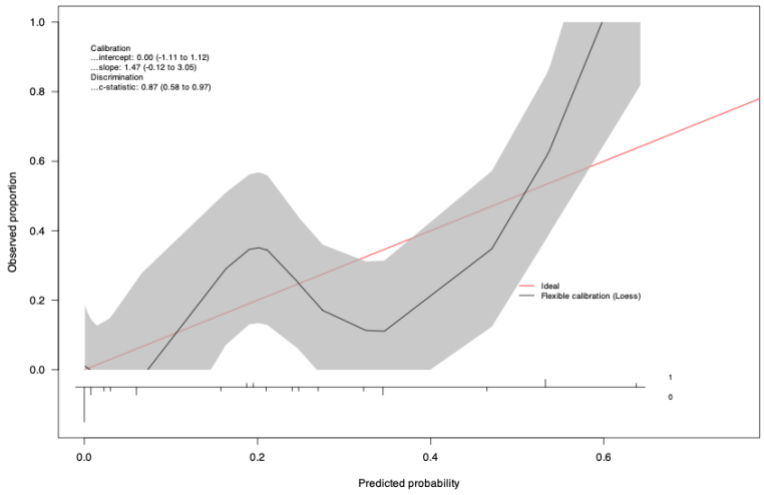
LP_1 (low vs. medium or high): LP_1 = 0.5846 (Intercept) - 0.0813 * prevalence of *S.* Typhi of pathogens

LP_2 (low/medium vs high): LP_2 =2.3051 (Intercept) - 0.0813 * prevalence of *S.* Typhi of pathogens

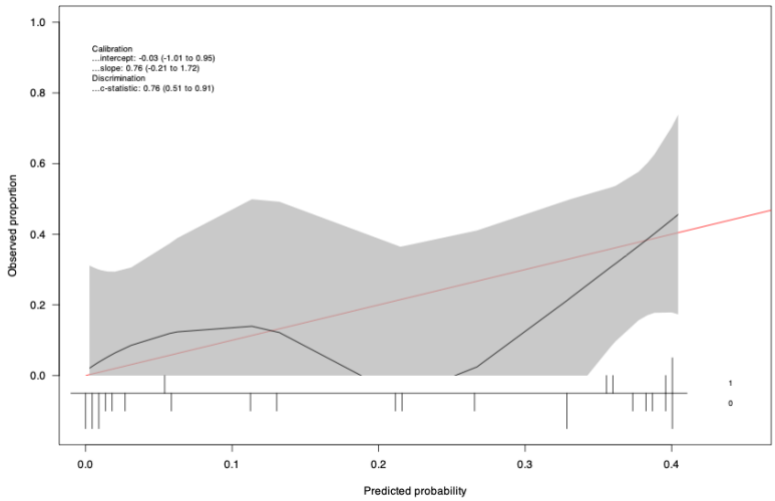
LP_3 (high vs medium/low): $LP_{3=}$ -2.3051 (Intercept) + prevalence of *S.* Typhi of pathogens

Appendix 10 – Calibration plots: predicted probability vs observed proportion of the model for typhoid incidence level, 2017-2024

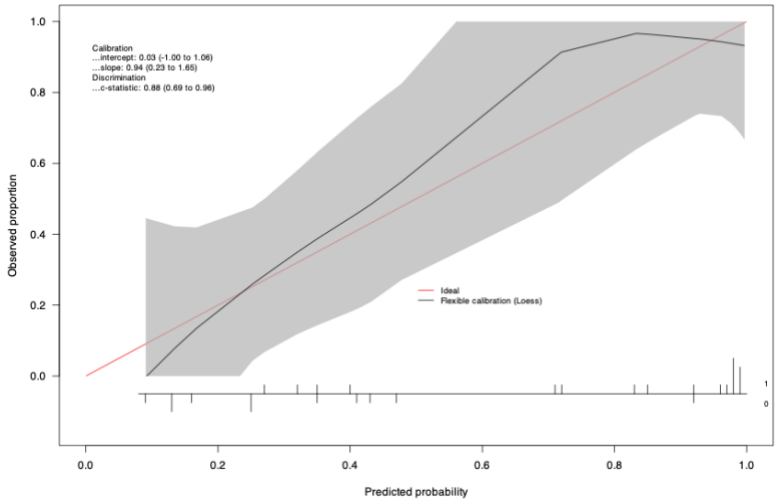
Low typhoid incidence vs medium and high typhoid incidence



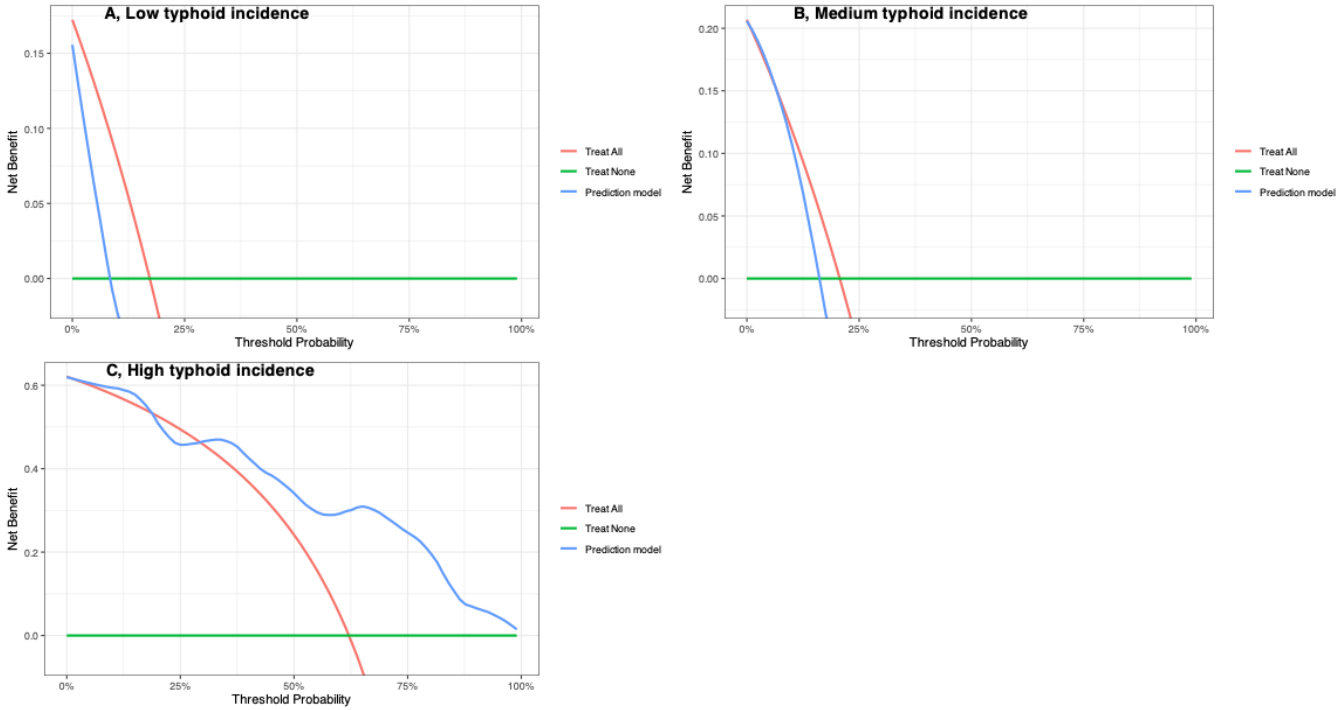
Medium typhoid incidence vs low and high typhoid incidence



High typhoid incidence vs low and medium typhoid incidence



Appendix 11 – Decision curve analysis of the prediction model for typhoid incidence level, 2017-2024



Appendix 12 - Simulated predicted probabilities for range of prevalence of *S.* Typhi among probable pathogens for typhoid incidence levels according to the final model

Prevalence of *S.* Typhi among probable pathogens, %	Predicted probability for low typhoid incidence site, %	Predicted probability for medium typhoid incidence site, %	Predicted probability for high typhoid incidence site, %	Suggested interpretation for typhoid incidence
1	62.3	27.9	9.8	Low
5	54.4	32.5	13.0	Low
10	44.3	37.3	18.4	Low
15	34.7	40.1	25.2	Medium
20	26.1	40.3	33.6	Medium
25	19.0	37.7	43.2	High
30	13.5	33.1	53.3	High
40	6.5	21.5	72.0	High
50	3.0	11.7	85.3	High

Appendix 13 - Metrics from sentinel bloodstream infection calculated for *S.* Paratyphi A and non-typhoidal *S.*, 2017-2024

Study site: Project, Country, Locality (reference)	Paratyphoid A incidence estimate per 100,000 person-years (95% CI)		Number of *S.* Paratyphi A among probable pathogens (%)		Rank order of *S.* Paratyphi A	*S.* Paratyph*i* A / *E. coli* (ratio)		*S.* Paratyphi A/ 'stably endemic organisms'* (ratio)	
Lao PDR,Vientiane [1]	1	(0-1)	2/375	(0.5)	21	2/148	(0.0)	375/191	(0.0)
Nepal,Lalitpur [13]	33	(12-72)	4/57	(7.0)	2	4/2	(2.0)	57/3	(1.3)
SEAP,Nepal,Kathmandu [3]	81	(56-118)	42/236	(17.8)	2	42/11	(3.8)	236/11	(3.8)
SEAP,Nepal,Kavrepalanchok [3]	46	(34-62)	13/97	(13.4)	2	13/6	(2.2)	97/7	(1.9)
SEAP,Pakistan,Karachi,AKUH [3]	23	(19-29)	87/864	(10.1)	2	87/36	(2.4)	864/39	(2.2)
SEAP,Pakistan,Karachi,KGH [3]	1	(1-1)	2/644	(0.3)	3	2/2	(1.0)	644/3	(0.7)
SEFI,India,Vellore [4]	8	(1-44)	2/156	(1.3)	3	2/0	-	156/3	(0.7)

AKUH, Aga Khan University Hospital; CI, confidence interval; KGH, Kharadar General Hospital; SEAP, Surveillance for Enteric Fever in Asia Project; SEFI, Surveillance of Enteric Fever in India; *Stably endemic organisms were defined as *E. coli*, *S. pneumoniae,* or *S. aureus*.

Study site: Project, Country, Locality (reference)	Non-typhoidal salmonella incidence estimate per 100,000 person-years (95% CI)		Number of non-typhoidal salmonella among probable pathogens (%)		Rank order of non-typhoidal salmonella	Non-typhoidal salmonella. prevalence / *E. coli* prevalence (ratio)		Non-typhoidal salmonella prevalence / 'stably endemic organisms' prevalence * (ratio)	
TSAP,Burkina Faso,Nioko II [6]	237	(178-316)	10/24	(41.7)	1	10/3	(3.3)	24/4	(2.5)
TSAP,Burkina Faso,Polesgo [6]	431	(162-1147)	4/27	(14.8)	3	4/4	(1.0)	27/4	(1.0)
TSAP,Ethiopia,Butajira [6]	0		0/12	(0.0)	-	0/2	(0.0)	12/6	(0.0)
TSAP,Ghana,Asante Akim North [6]	742	(631-873)	59/157	(37.6)	1	59/7	(8.4)	157/40	(1.5)
TSAP,Guinea-Bissau,Bandim [6]	37	(24-57)	8/20	(40.0)	1	8/0		20/6	(1.3)
TSAP,Kenya,Kibera [6]	32	(14-70)	6/107	(5.6)	4	6/4	(1.5)	107/47	(0.1)
TSAP,Madagascar,Imerintsiatosika [6]	9	(2-50)	1/10	(10.0)	3	1/1	(1.0)	10/2	(0.5)
TSAP,Madagascar,Isotry [6]	0	(0-0)	0/20	(0.0)	-	0/0		20/2	(0.0)
TSAP,Senegal,Pikine [6]	5		4/29	(13.8)	3	4/9	(0.4)	29/9	(0.4)

TSAP,South Africa,Pietermaritzburg [6]	0		0/36	(0.0)	-		0/5	(0.0)		36/22	(0.0)	
TSAP,Sudan,East Wad Medani [6]	0	(0-0)	0/11	(0.0)	-		0/3	(0.0)		11/6	(0.0)	
TSAP,Tanzania,Moshi Rural District [6]	7	(2-23)	1/11	(9.1)	4		1/4	(0.3)		11/6	(0.2)	
TSAP,Tanzania,Moshi Urban District [6]	19	(5-64)	1/15	(6.7)	4		1/5	(0.2)		15/6	(0.2)	

CI, confidence interval; TSAP, Typhoid Fever Surveillance in Africa Program. *Stably endemic organisms were defined as *E. coli*, *S. pneumoniae,* or *S. aureus*.

	Meta-regression for log non-typhoidal *S.* incidence estimate	**Univariate ordinal regression analysis for low, medium and high non-typhoidal *S.* incidence estimate levels±**
Metrics of sentinel bloodstream infection	**Beta (95%CI)**	**OR (95%CI)**
Prevalence of non-typhoidal *S.* among probable pathogens (n=13)	0.2 (0.08-0.33)	1.12 (1.03-1.26)
Rank order of non-typhoidal *S.* among probable pathogens (n=9)	-0.98 (-2.7-0.73)	0.43 (0.12-1.18)
Log non-typhoidal *S.* to *E. coli* ratio (n=11)	1.16 (0.68-1.63)	3.95 (1.32-30.6)
Log non-typhoidal *S.* to 'stably endemic organisms' ratio *(n=13)	1.23 (0.76-1.69)	3.40 (1.35-18.7)

OR, odds ratio

± Low incidence (<10/100,000 person-years); medium incidence (10-100/100,000 person-years); high incidence (>100/100,000 person-years)

*Stably endemic organisms were defined as *E. coli*, *S. pneumoniae,* or *S. aureus*.

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