



Antimicrobial resistance among *Salmonella* Typhi and Paratyphi A isolates – Preliminary results from the Surveillance for Enteric Fever in Asia Project (SEAP)

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11th International Conference on Typhoid & other Invasive Salmonellosis
March 26-28, 2019| Hanoi, Vietnam



Slide 1

DK(3) I would move this logo down under your name. You are presenting the overall SEAP data from three countries. but you are affiliated with AKU.

Date, Kashmira (CDC/DDPHSIS/CGH/GID), 3/23/2019

Background

- Typhoid and Paratyphoid A are one of the most common bacteremic illnesses in South Asia
- Growing resistance or reduced susceptibility to antibiotics limit the treatment options
- SEAP is a multi-country prospective surveillance study for enteric fever and antimicrobial resistance (Pakistan, Nepal, Bangladesh)

Slide 2

DK(2 I would only keep the logo in the first and last slide.
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Objective

To identify antimicrobial resistance in *Salmonella* Typhi and Paratyphi isolates to different antibiotics

Methods

- Hospital and laboratory based surveillance
 - ✓ Inpatient
 - ✓ Outpatient
 - ✓ Laboratory network
 - ✓ Surgical cases

Study duration and setting

- Duration: September 2015 – Jan 2019
- Nepal & Pakistan all age, Bangladesh pediatric population

Eligibility Criteria

Inclusion Criteria

- A patient presenting to an outpatient department with a self-reported history of fever for ≥ 3 consecutive days and living in the defined catchment area
OR
- A patient admitted to the hospital with a clinical suspicion or a confirmed diagnosis of enteric fever at any time during hospitalization
OR
- A patient with blood culture positive for *Salmonella* Typhi or Paratyphi
OR
- A patient with “non-traumatic ileal perforations”, even in the absence of laboratory confirmation
AND
- A patient (or parent/guardian) willing and able to provide informed consent

Exclusion Criteria

- Refusal to provide sample for blood culture or informed consent not provided

Case definitions

- **Suspected Case:** Illness in a patient presenting to the hospital outpatient clinic or admitted to the hospital with the inclusion criteria or a provisional or discharge diagnosis of enteric fever; negative blood cultures or blood cultures were not obtained.
- **Laboratory-confirmed Case:** Illness in a patient with isolation of *Salmonella* Typhi or Paratyphi A, B or C from blood culture.

Antimicrobial susceptibility testing

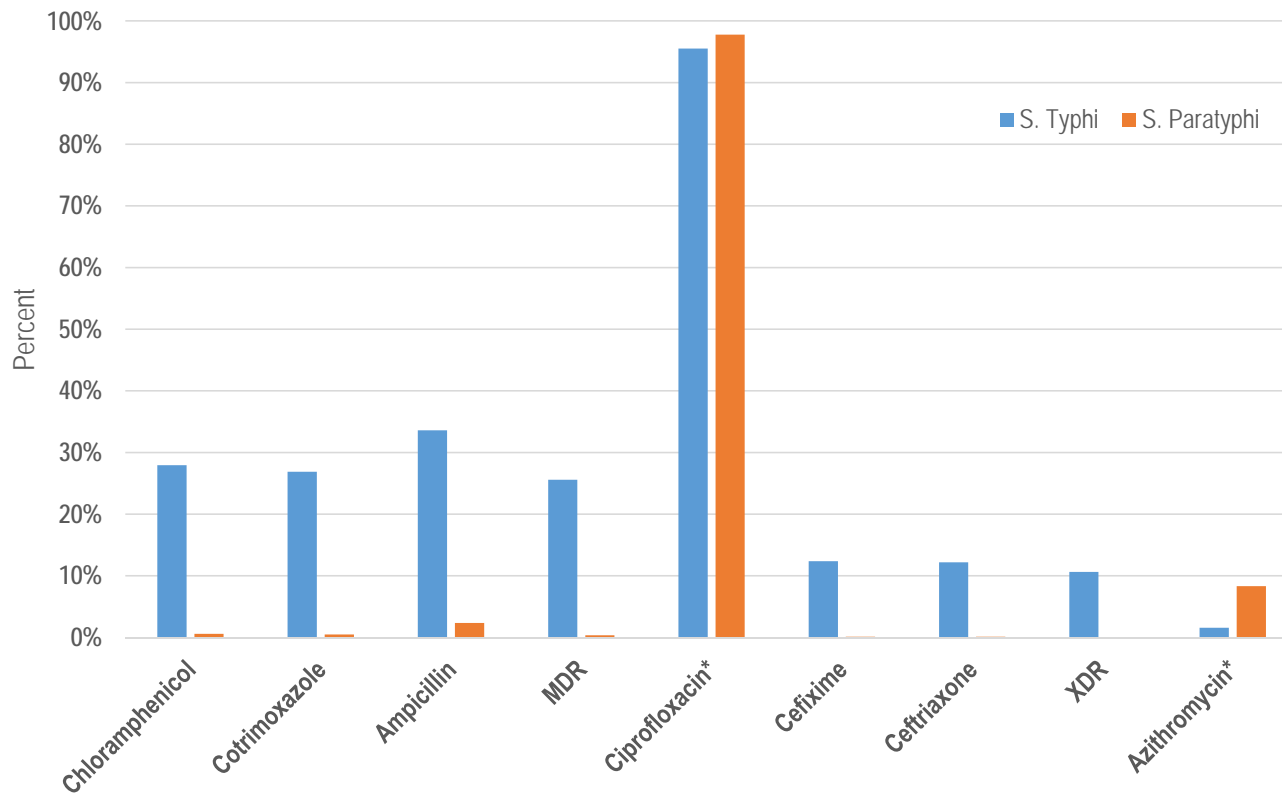
- Identification of *S. Typhi* and *Paratyphi*
- AST performed through disc diffusion using latest CLSI guidelines
 - ✓ Ampicillin
 - ✓ Chloramphenicol
 - ✓ Co-trimoxazole
 - ✓ Ciprofloxacin
 - ✓ Ceftriaxone
 - ✓ Azithromycin

Definitions

- MDR = resistance to Ampicillin, Co-trimoxazole and chloramphenicol
- XDR = MDR plus resistance to flouoroquinolone (ciprofloxacin) and cephalosporin (ceftriaxone)
- Flouoroquinolone resistance

Results

Resistance of S. Typhi and Paratyphi isolates, September 2015- January 2019 (n=6,126)

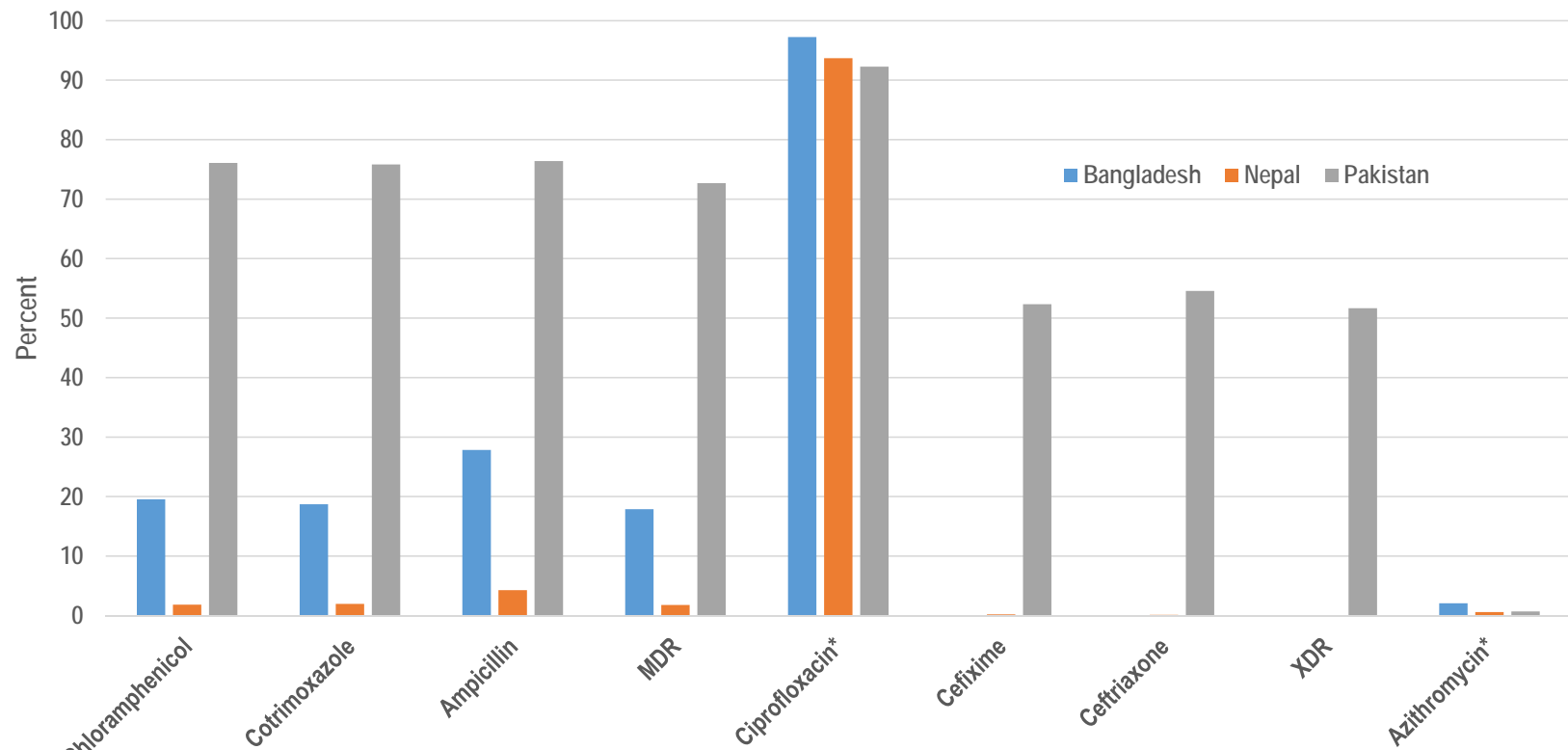


* Reduced susceptibility

** MDR = Multi-Drug Resistant--Resistant to Ampicillin, Chloramphenicol, and Cotrimoxazole

*** XDR = Extensively Drug Resistant--MDR + Resistant to Ciprofloxacin and Ceftriaxone

Resistance of *S. Typhi* isolates by country, September 2015- January 2019 (n=6,126)

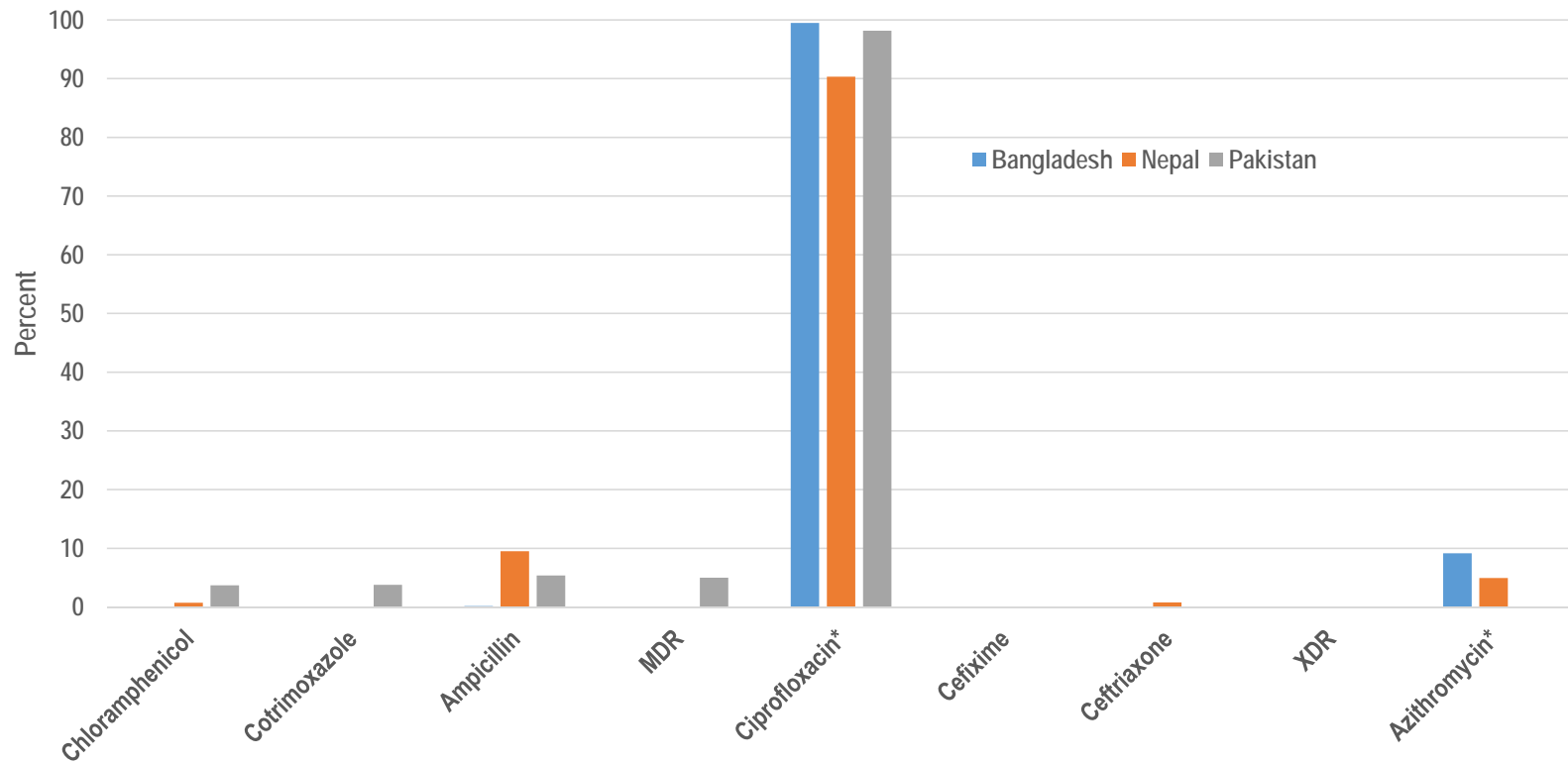


* Reduced susceptibility

** MDR = Multi-Drug Resistant--Resistant to Ampicillin, Chloramphenicol, and Cotrimoxazole

*** XDR = Extensively Drug Resistant--MDR + Resistant to Ciprofloxacin and Ceftriaxone

Resistance of *S. Paratyphi* isolates by country, September 2015-January 2019 (n=855)

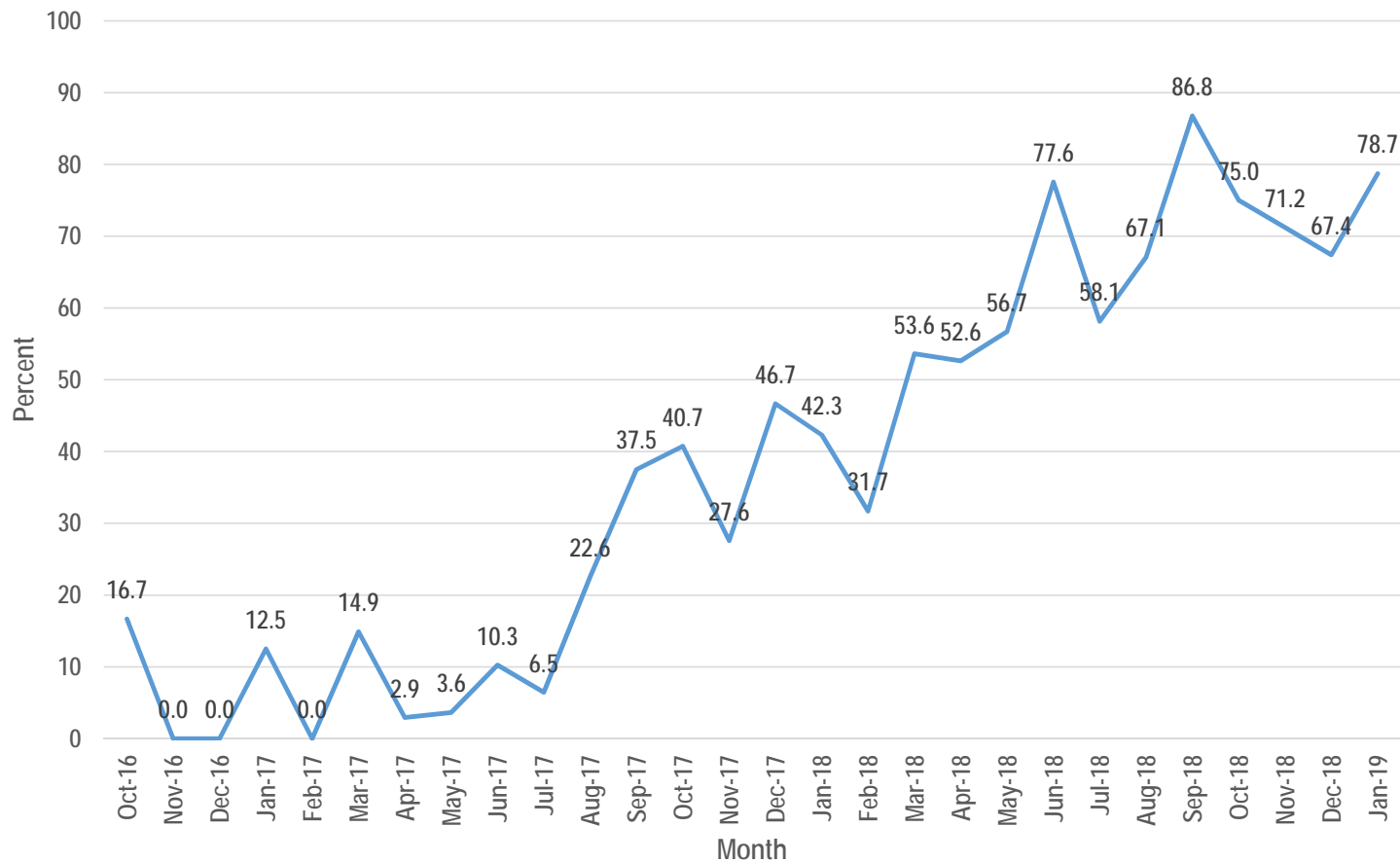


* Reduced susceptibility

** MDR = Multi-Drug Resistant--Resistant to Ampicillin, Chloramphenicol, and Cotrimoxazole

*** XDR = Extensively Drug Resistant--MDR + Resistant to Ciprofloxacin and Ceftriaxone

Trend of ceftriaxone resistance *S.Typhi* isolates in Pakistan, 2017 – January 2019 (n=1,252)



Conclusion

- Reduced susceptibility to fluoroquinolone among *S. Typhi* and Paratyphi A in all three countries
- Resistance to ampicillin, cotrimoxazole and chloramphenicol is relatively lower in Nepal and Bangladesh as compared to Pakistan
- Ceftriaxone resistance is rapidly increasing in Pakistan
- Emergence of reduced susceptibility to azithromycin in Bangladesh

Acknowledgements

Site PIs

- Jason Andrews, Stanford University
- Farah Qamar, Aga Khan university
- Samir Saha, CHRF

Collaborators

- Ashraf Memon from KGH
- Khalid from KGH
- Nasir Saddal from NICH
- Saqib Qazi from AKUH
- Seemin Jamali from JPMC

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- Denise Garrett
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- Ashley Tate (CDC)

Bill & Melinda Gates foundation

Partner Hospitals in Pakistan, Nepal and Bangladesh

DK(10)

Thank You

Slide 18

DK(10 I added this slide. here you should add back the SEAP logo and logos of all the site partners.
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CLSI cut-off points for AMR

S#	Drug Name	Sensitive	Intermediate	Resistant
1	Ceftriaxone	≥ 23	20 to 22	≤ 19
2	Cefixime	≥ 19	16 to 18	≤ 15
3	Ciprofloxacin	≥ 31	21 to 30	≤ 20
4	Ampicillin	≥ 17	14 to 16	≤ 13
5	Chloramphenicol	≥ 18	13 to 17	≤ 12
6	Cotrimoxazole	≥ 16	11 to 15	≤ 10
7	Azithromycin	≥ 13	N/A	≤ 12
8	Imipenem (If Ceftriaxone Resistant)	≥ 23	20-22	≤ 19

Slide 19

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