

# LOOKING BACK WHILE MOVING FORWARD WITH ENTERIC FEVER SURVEILLANCE IN PAKISTAN.

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# Outline

- Overview
- SEAP sites
- Health care utilization survey
  - Defining catchment area
- SEAP II results
- Trends of AMR for typhoid
- Summary

# Overview of SEAP in Pakistan

## Phase 1

- Retrospective review of data
- AKUH
  - 2012-2014
- KGH
  - 2014

## Phase II

- Prospective study
- October 2016- September 2018
- AKUH, KGH, NICH, AKUH Lab Network

# SEAP II Pakistan Sites

## Aga Khan University Hospital

- Inpatient
  - Medical
  - Surgical
- Outpatient

## Kharadar General Hospital

- Inpatient
- Outpatient

## National Institute of Child Health:

- Surgical cases only
- AKUH Lab Network  
Blood Culture  
confirmed cases

# Phase II -Sites



**AKUH**



**KGH**



**NICH**



**Aga Khan University Laboratory Network**

# Enrollments



# Health care utilization survey: Catchment Areas

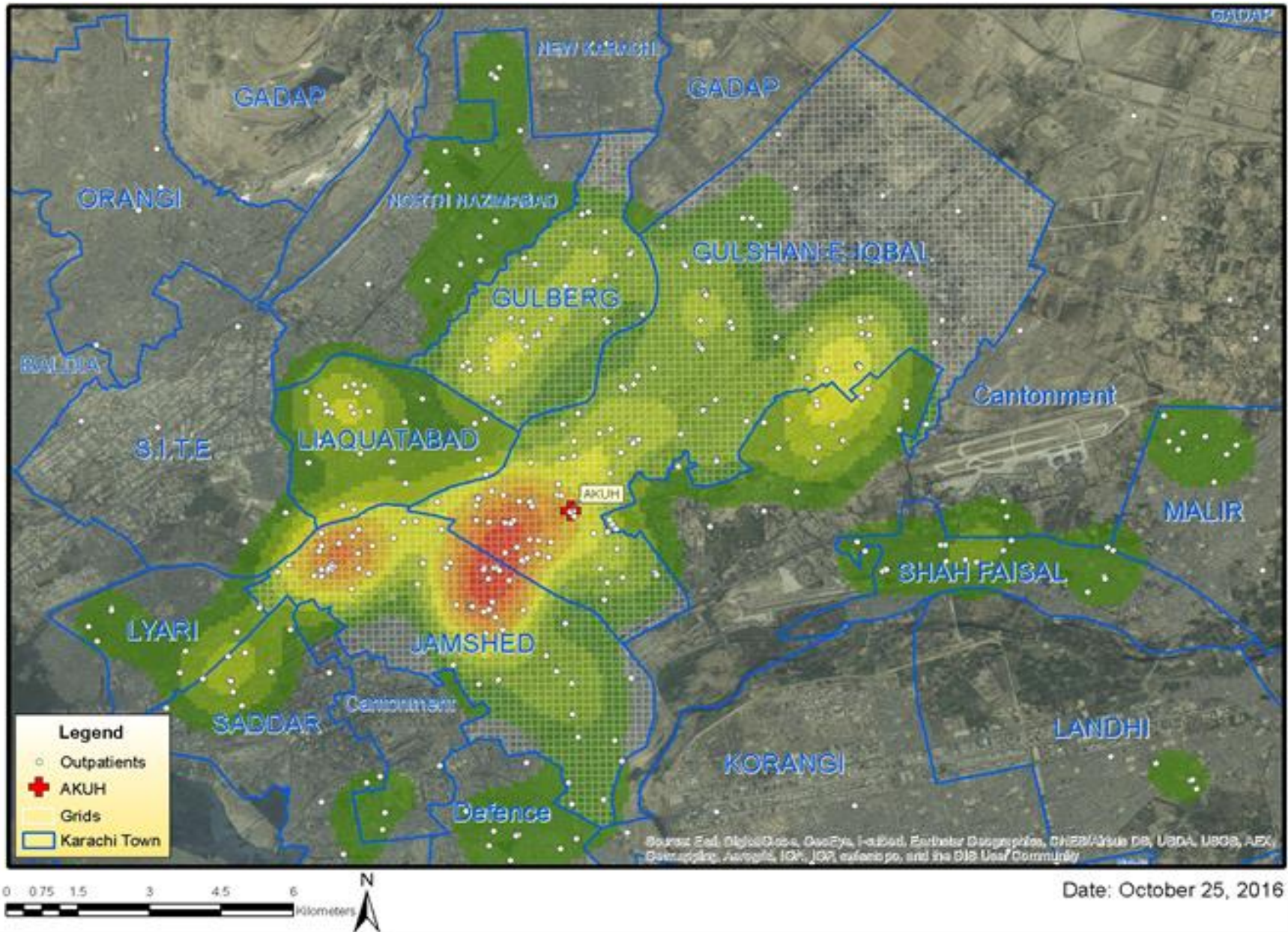
## **Aga Khan University Hospital (AKUH)**

- Culture proven cases (approx. 60% )
- Three towns
  - Gulshan-e-Iqbal,
  - Jamshed, and
  - Gulberg

## **Kharadar General Hospital (KGH)**

- Febrile cases (approx. 60% )
- Three towns
  - Lyari town
  - Kharadar union council from Sadar town
  - Machar Colony and Baba Bhatt union council from Kemari Town

# AKUH Catchment Area

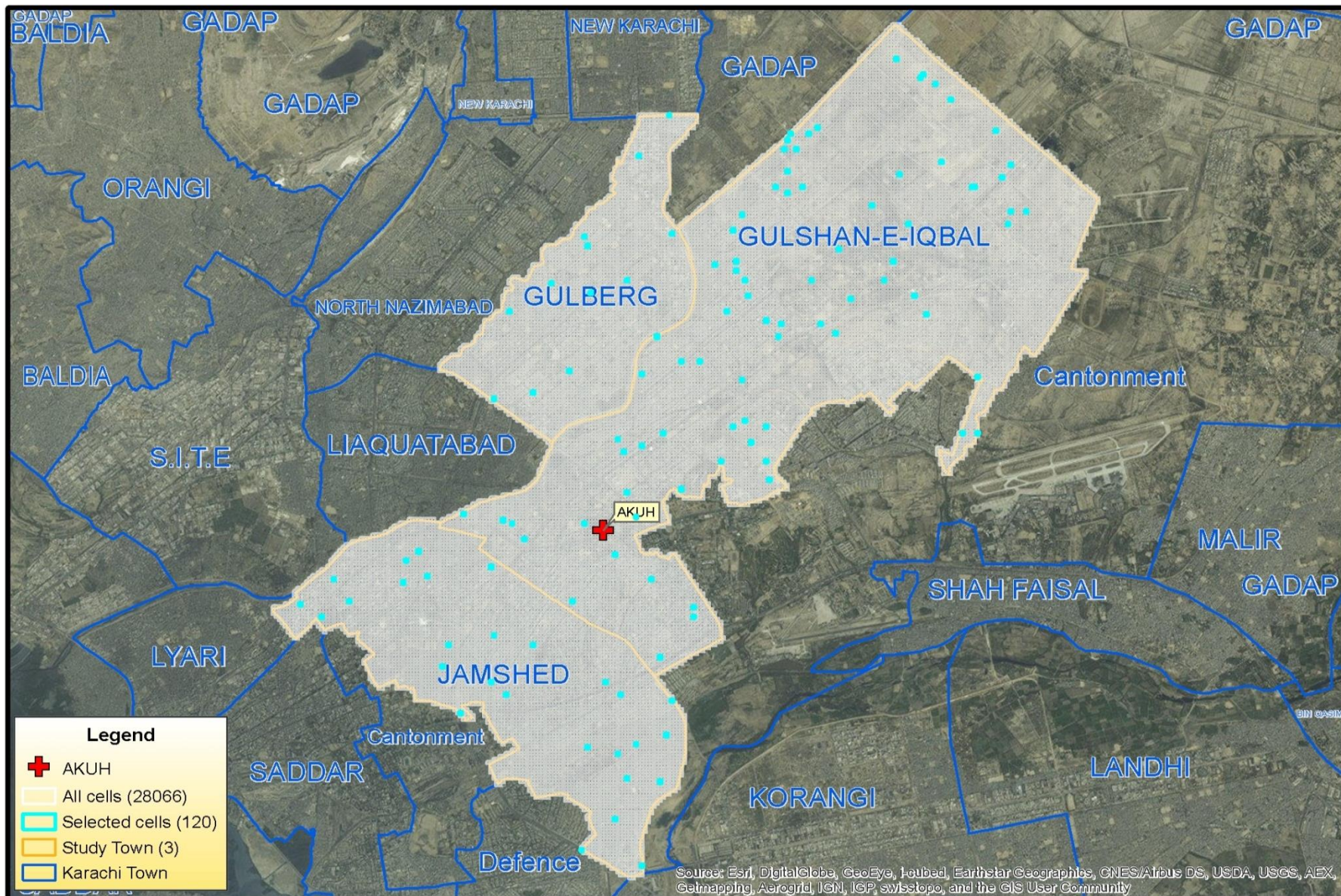




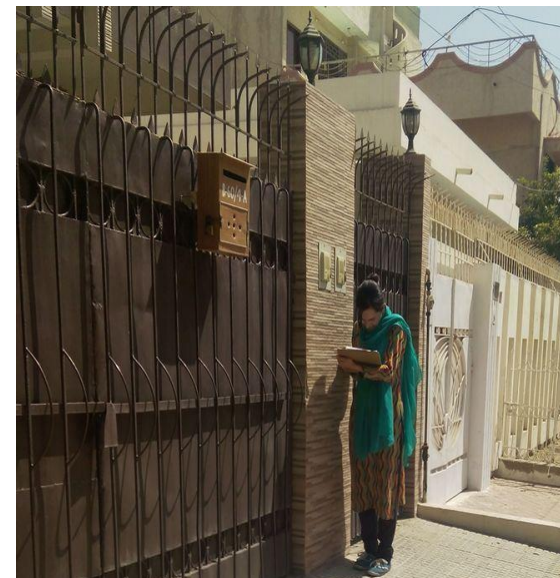
# KGH Catchment Area



# AKUH Catchment Area



# Health care utilization survey



# HCUS

S#	Town	Total Clusters	Total Households Approached for Interview	Households from where data collection completed	Number of Households refused for interview
1	Gulberg	14 Residential = 08 Non Residential = 04	174	130	44
2	Gulshan E Iqbal	80 Residential = 37 Non Residential = 43	574	491	83
3	Jamshed	28 Residential = 24 Non Residential = 04	565	496	69
4	Lyari	80 Residential = 53 Non Residential = 27	1072	1005	67
5	Kemari	40 Residential = 32 Non Residential = 08	264	260	4
	<b>Total</b>	<b>240</b> <b>Residential = 154</b> <b>Non Residential = 86</b>	<b>2649</b>	<b>2382</b>	<b>267</b>

# RESULTS

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# Enrollment Progress (October 17, 2016 – March 18, 2017)

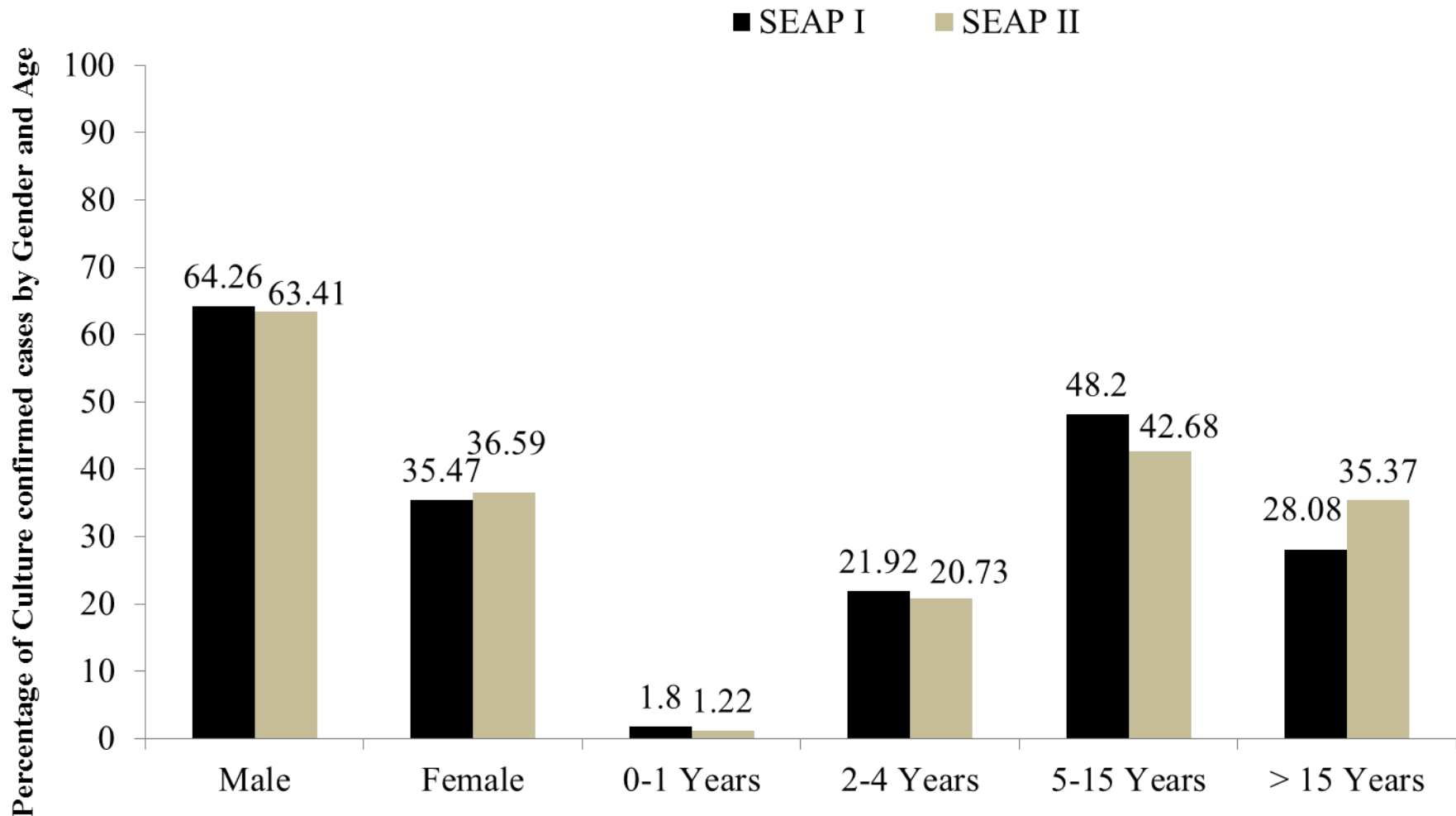
## SEAP II Overall Enrollment Status

Site	Location	Total Enrollments	Total BLCS Positive
AKUH	OPD	365	37
	IPD	173	16
	Surgical Ward	1	0
	Hospital Lab	27	27
	<b>Sub Total</b>	<b>566</b>	<b>80</b>
KGH	OPD	34	0
	IPD	144	2
	<b>Sub Total</b>	<b>178</b>	<b>2</b>
NICH	Surgical Ward	10	0
	<b>Sub Total</b>	<b>10</b>	<b>0</b>
<b>Total</b>		<b>754</b>	<b>82</b>

# Cases of Ileal Perforation

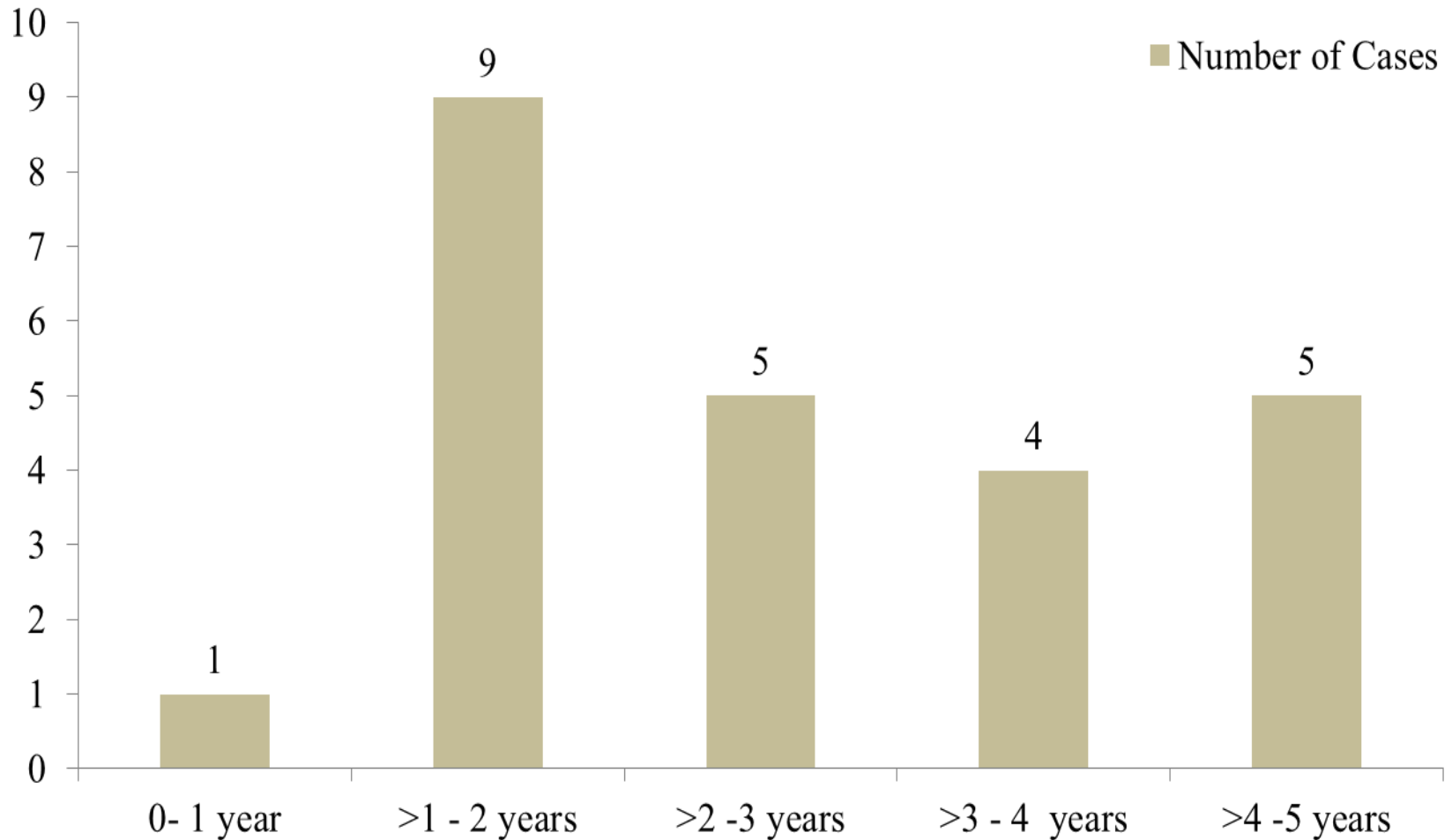
Case #	Site of Enrollment	Age	Gender	Outcome
1	NICH	12 years	Female	Recovered
2	NICH	5 years	Female	Recovered
3	NICH	7 years	Female	Died
4	NICH	7 years	Male	Recovered
5	NICH	5 years	Male	Recovered
6	NICH	12 years	Male	Recovered
7	NICH	7 years	Male	Recovered
8	NICH	12 months	Male	Recovered
9	NICH	8 years	Male	Recovered
10	NICH	4 years	Female	Recovered
11	AKU	15 years	Male	Recovered

# Comparison of Demographic Data

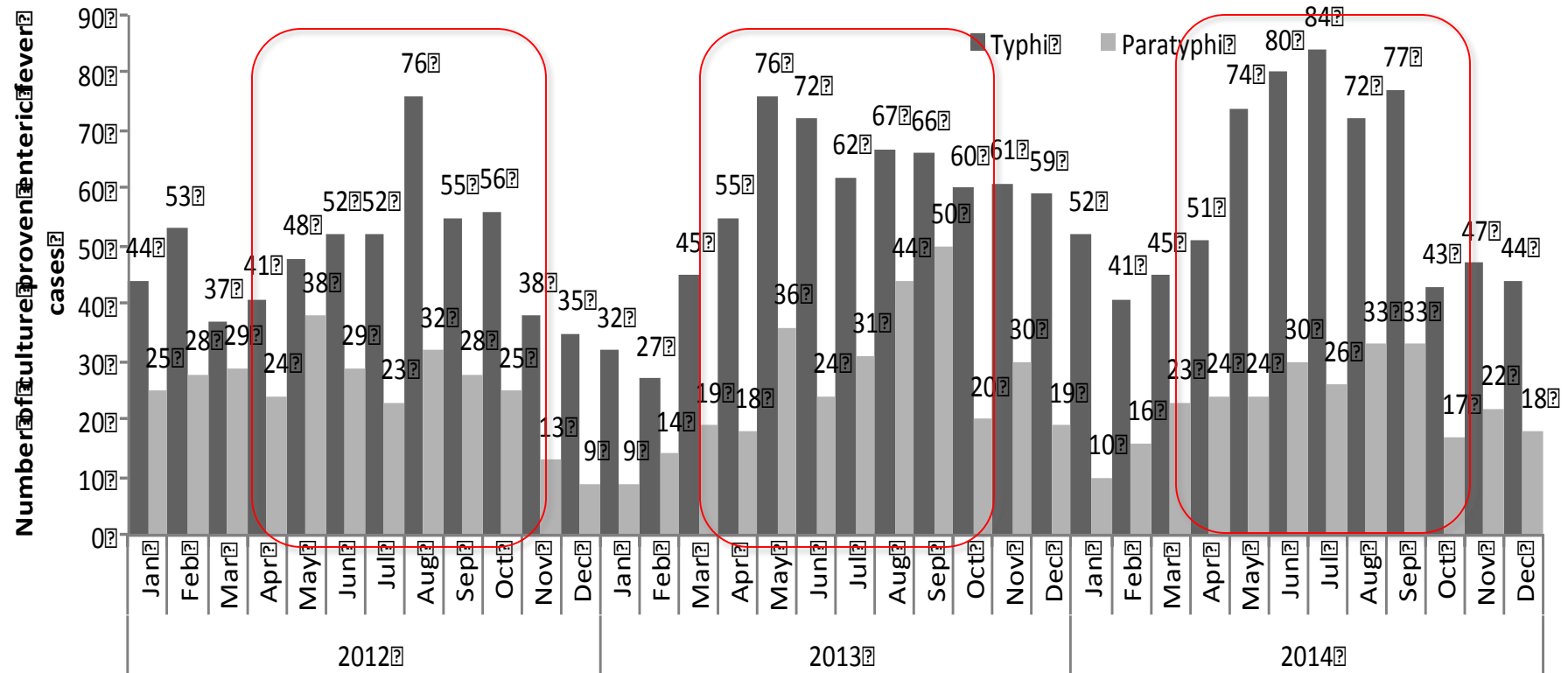




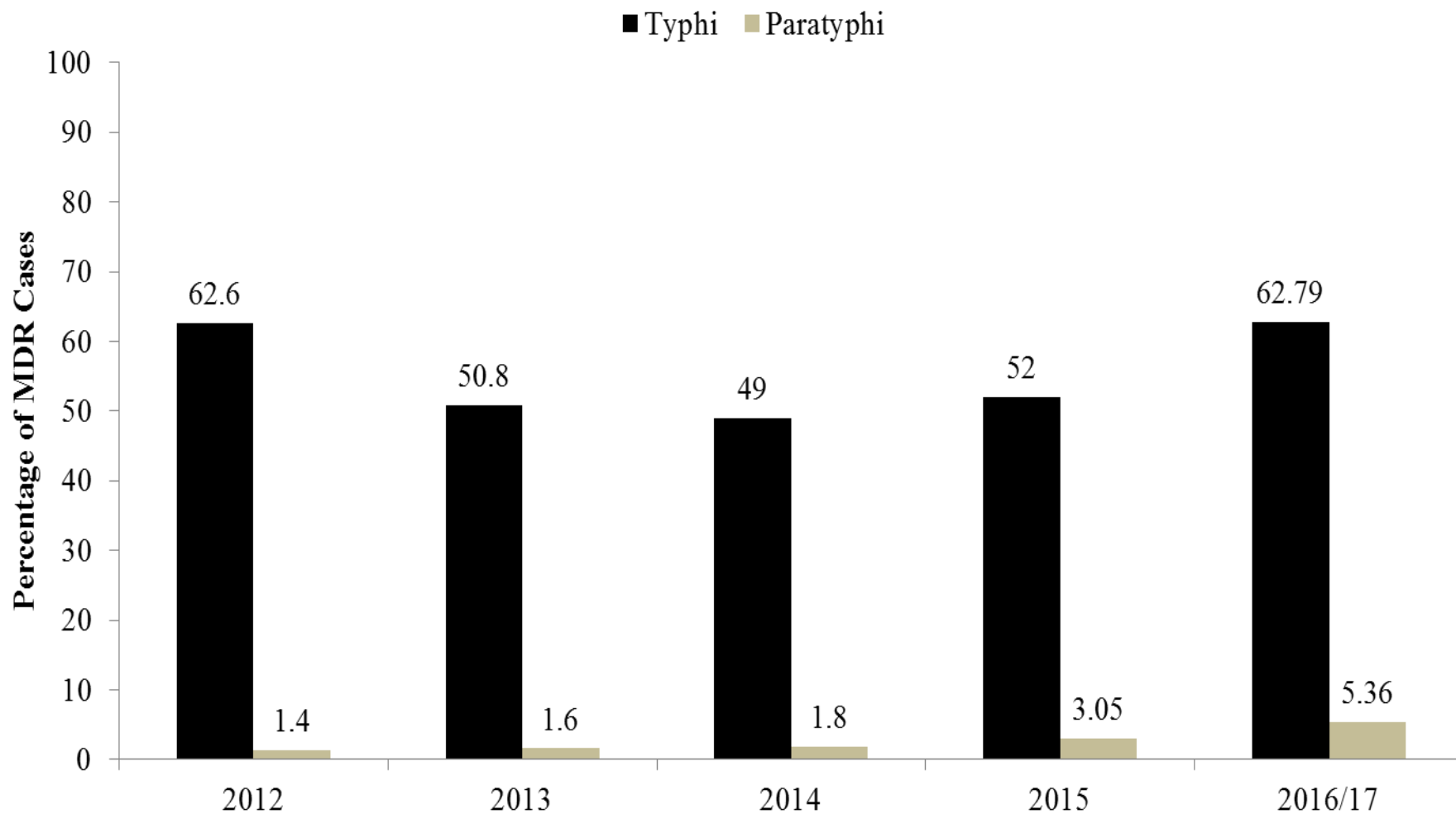
# Cases amongst children 0-5 Years



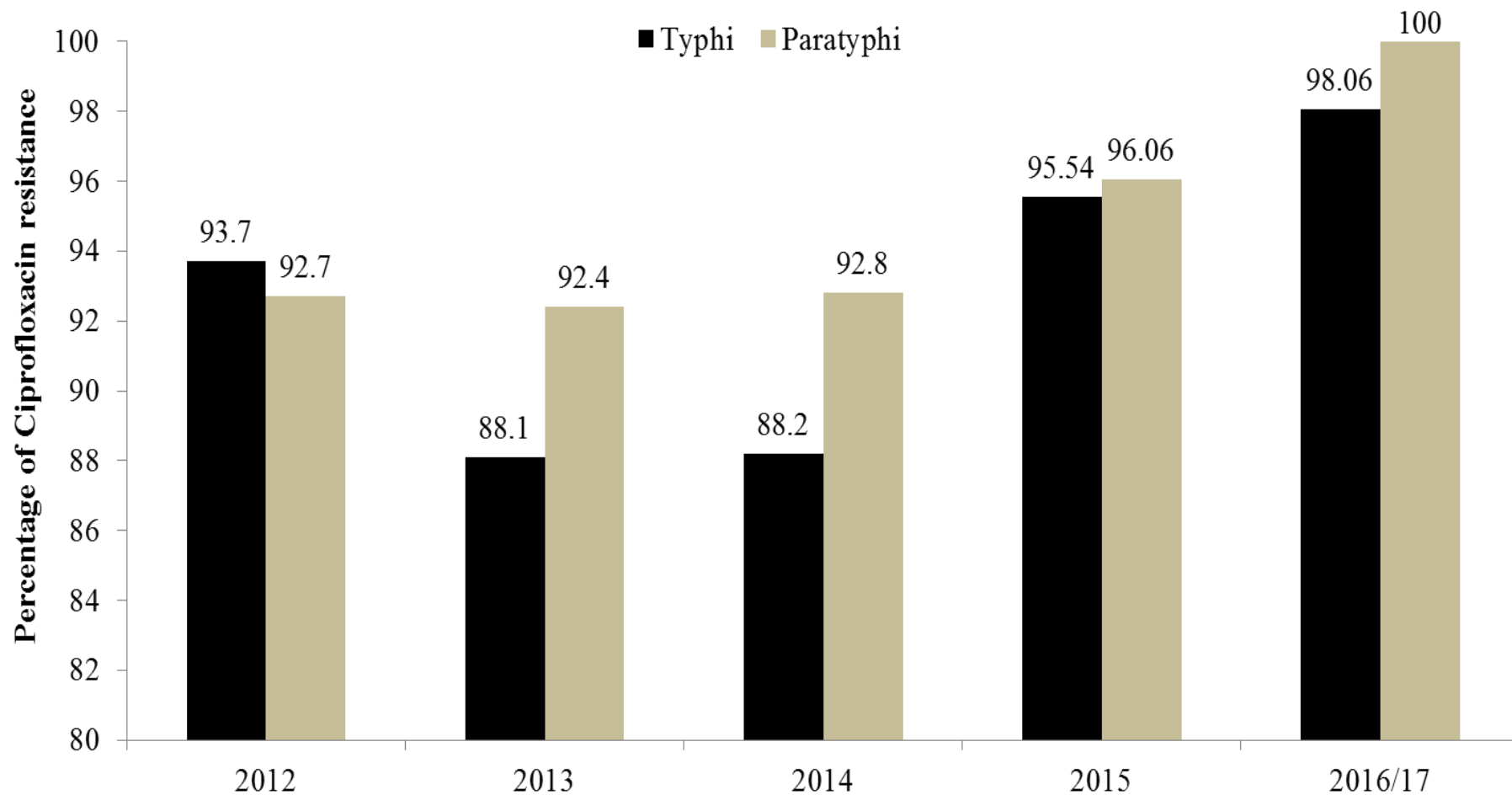
# Seasonality of Typhoid in Pakistan



# Trends of MDR Cases 2012-2017



# Trends of Ciprofloxacin Resistance Cases 2012-2017



# Summary

- Typhoid fever is endemic in the region
- High rates of MDR and fluoroquinolone resistance
  - Narrow therapeutic options
- High rates of intestinal perforations
- 80% of the cases are *S. Typhi* , even a monovalent vaccine will have an impact on disease control in Pakistan



# Acknowledgements

- Sabin Vaccine Institute
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- Scientific Advisory Process for Optimal Research on Typhoid (*SAPORT*)
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  - Dr Saqib Qazi
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