Comparison of cost of illness of extensively drug-resistant (XDR) vs. non-XDR typhoid fever in Pakistan: policy implications for typhoid vaccine

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Outline

- Background
- Objectives
- Methodology
- Results
- Way forward

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Background

- Pakistan is low Socio- economic country with high burden of infectious diseases

- Also lack the facilities for treatment of infectious diseases are scarce in Pakistan

- A novel S. typhi has emerged in Hyderabad which is resistant to 5 classes of drugs and known as extensively drug resistant S. typhi

- This has further decreased the options available to treat the typhoid and cost of treatment has rised

Background

- SEAP (Surveillance for Enteric Fever in Asia Project) is the project

- running in Karachi and reporting the rate of XDR typhoid increasing in the city

- This was the first time a large number of XDR cases were reported from the region

Objective of the study

- Compare the cost of illness of blood culture-confirmed XDR vs. non-XDR typhoid fever cases from SEAP in Pakistan

Methodology

- Study Design
  - Cross sectional study
- Study period
  - September 2016-July 2018

- Study setting
  - Not for profit Tertiary care hospital
  - Not for profit secondary hospital
  - Inpatient (all age patients)

Methodology

- Sample Size
  - 260 patients with culture proven S. typhi

- Variables
  - Direct medical expenses: out of pocket treatment (including medicine, diagnostics and hospital stay)
  - Direct non-medical expenses: out of pocket spending on transportation (to and from hospital), food and lodging for the patient and his/her caregivers
  - Indirect cost
    - Cost spent in-terms of productivity loss (school days, work days and sick leave days lost by the patient)

Methodology

- Inclusion criteria
  - Culture proven of S. typhi irrespective of sensitivity
  - Those who have no co morbidities
  - Given written informed consent

- Data sources and data collection
  - telephonic interviews with patients immediately after enrollment
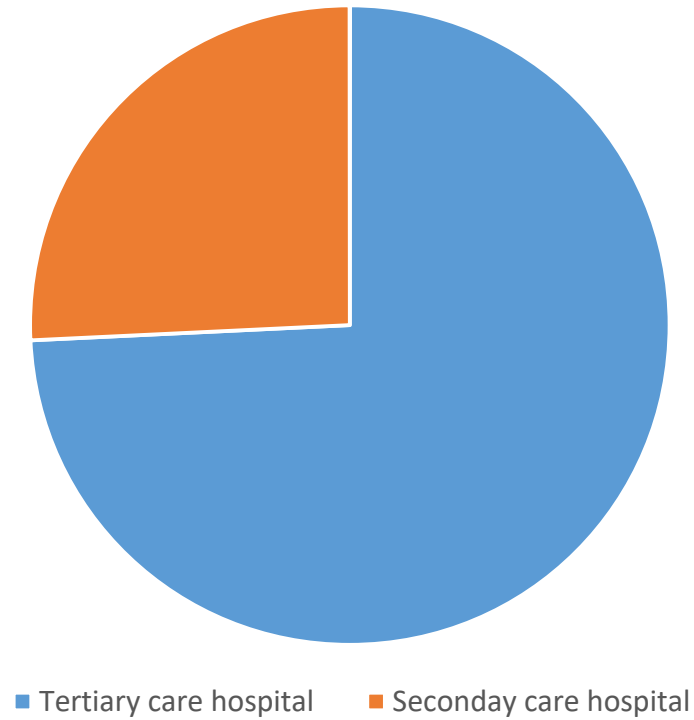   - 6 weeks follow up

Methodology

- Data analysis plan
  - Data cleaning and analysis were done on STATA

Results

Patients visiting the health facilities

■ Tertiary care hospital   ■ Seconday care hospital

Results

Median dollars spent on direct medical expenses (medicine, diagnostics, laboratory, hospital stay) (2016 USD)

Hospital (in Patient)	XDR typhoid patients	Non XDR typhoid patients
Tertiary care hospital	573	157
Secondary care hospital	94	42

Results

Median dollars spent on direct non medical expenses (transportation, food, and lodging) (2016 USD)

Hospital	XDR typhoid patients	Non XDR typhoid patients
Tertiary care hospital	10	8
Secondary care hospital	4	3

Results

Median productivity loss (school days, working days, and sick leave days lost) incurred by the patient

Hospital	XDR typhoid patients	Non XDR typhoid patients
Tertiary care hospital	20	14
Secondary care hospital	15	12

Way forward

- Preparedness for emergency medical responses
  - Budget impact and fiscal space
    - Vaccination , targeted/universal, source of financing
  - Economic epidemiology
    - Behavioral aspects of medication adherence, irrational use of medicine and quackery
  - Cost of vaccine
    - Vaccine plus cold chain, management and training
- Household resources
  - Catastrophic health shocks and affordability
  - Access related issues

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