

# Safe Food, Fair Food for Cambodia Cost of hospitalization for foodborne diseases

SFFF Cambodia Taskforce and Stakeholder Meeting Siem Reap, 24-25 October 2019



















### **OUTLINE**

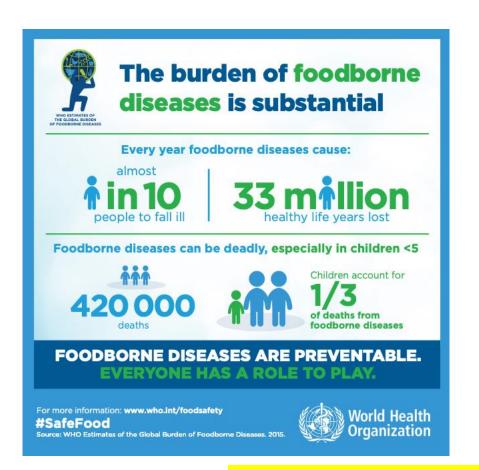
- 1. Background and Aims
- 2. Research methods
- 3. Results
- 4. Next steps
- 5. Conclusions

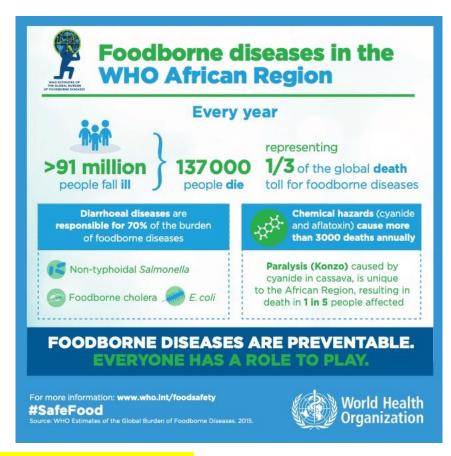






#### THE GLOBAL BURDEN OF FOODBORNE DISEASE







The most frequent causes of foodborne illness were diarrhoeal disease agents









### INTRODUCTION

Cambodia: Few studies

- The cases of diarrhoea: >> *E. coli* and rota virus → Often foodborne.
- In adults, Salmonella
- Salmonella spp in adult: 44 fold higher, 2013: 2007
- Salmonella paratyphi caused 85% diarrhoea during 2013-2015 compared to 25.5% in 2008-2012.
- Most of microbial agents which cause diarrhoea: resistant to antibiotics
- The prevalence of the diseases: the tendency of increasing of the treatment cost over the years







### **COST OF ILLNESS ANALYSIS?**

- Cost-of-Illness (COI) studies aim to identify and measure all the costs of a disease
- COIs estimate the economic burden of a specific disease to a society ≈ the savings that could be done if the disease were to be eradicated
- The most developed cost estimation strategies and data sources relate to estimating:
  - direct health-sector costs and
  - indirect costs associated with a sick persons' lost earnings (productivity losses)

This study aims to estimate the costs of hospitalization for foodborne diseases in selected health facilities in the country.









### **MATERIALS AND METHODS**

Analytical framework	Details
Design	A facility-based cost-of-illness study
Study perspective	Societal perspective using retrospective approach
Epidemiological approach	Prevalence-based study
Sources of data for direct costs	Selected health facilities in Cambodia
Indirect cost estimation methods	Human capital approach





Study setting			
Level	Health facility visited		
National	NPH: National Pediatric Hospital KH: Kossamak Hospital		
Provincial/refe rral	<ul><li>Siem Reap</li><li>Siam Reap provincial hospital (Regional Hospital)=CPA3</li></ul>		
District	<ul> <li>Phnom Penh</li> <li>SRH: Samdeach Or Referral Hospital=CPA1=Ruessei Kaev (Samdeach Or Referral Hospital)</li> <li>DRH: Dangkor Referral Hospital=CPA1</li> <li>MRH: Meanchey Referral Hospital=CPA1=Chbar Ampov (Meanchey Referral Hospital)</li> <li>Sen Sok Referral Hospital=CPA1</li> <li>Pou Senchey Referral Hospital=CPA1</li> <li>Angkor Chum Referral Hospital=CPA1</li> <li>Sotr Nikum Referral Hospital=CPA2</li> </ul>		
Commune health center (MPA)	<ul> <li>Tuol Kouk Health Center</li> <li>Teuk Thla Health Center</li> <li>Steung Meanchey Health Center</li> <li>Samraong Kraom Health Center</li> <li>Ponhea Pon Health Center</li> <li>Boeng Thom Health Center</li> <li>Anlong kngan Health Center</li> </ul>		



Selection	of
cases	

- The data collection: January 2018 and July 2019
- Using hospital medical records
- All suspected cases of foodborne diarrhoea as diagnosed by doctors

Data collection

**Direct medical costs:** 

The costs relating directly to the patients while undergoing

medical care:

Diagnostics procedures, lab test, medicine, medical consumables, capital costs, overhead, admin and overhead/

facility costs.

→ Hospital Data: Med. Record + Patient interview

Direct non-medical cost:

Patient and their caregiver costs of travels, food, accommodation, and other related costs:

→ Patient interview

**Indirect costs**: Productivity losses of the patients and/ or their caregivers.

→ Patient interview



### **Analysis**

- Case descriptive and characteristics
- Cost descriptive:
  - Direct medical cost, direct non-medical cost, and indirect cost (in USD)
- Analysis:
  - Comparison between type of healthcare facilities
  - Comparison between diagnosis cases







### **Results: Characteristics of patients of the study**

Parameters	National	Referral	Regional	Com.	Overall
	Hospitals	Hosp.	Hosp.	Clinics	
Number of patients	44	60	100	62	266
Gender:					
• Men [n (%)]	21 (47.7)	16 (26.7)	35 (35)	27 (43.5)	99 (37.2)
• Women [n (%)]	23 (52.3)	44 (73.3)	65 (65)	35 (56.5)	167 (62.8)
Average of age [year]	18.19	29.5	39.5	N/A	32.1*
Average of length of stay	2.36	1.83	3.5	1	2.34
[day)					
Patient diagnosis:					
• Food poisoning [n (%)]	27 (61.4)	36 (60.0)	0	2 (41.9)	65 (24.4)
• Acute diarrhea [n (%)]	17 (38.6)	21 (35.0)	100 (100)	60 (58.1)	198 (74.4)
• Typhoid [n (%)]	0	2 (3.3)	0	0	2 (0.8)
• Chronic diarrhea [n (%)]	0	1 (1.7)	0	0	1 (0.4)











## Cost of per episode of hospitalization of FBD by group of health facilities

Cost	National	Referral	Regional	Communi	Overall
	Hospital	Hospital	Hosp.	ty Clinic	(n=266)
	(n=44)	(n=60)	(n=100)	(n=62)	
Direct medical cost					
Amount [usd]	125.77	9.42	27.85	4.19	34.38
Direct non-medical cost					
Amount [usd]	40.64	8.36	26.33	0.30	18.58
Indirect cost					
Amount [usd]	21.43	6.38	10.89	3.08	9.80
Total cost [usd]	185.88	24.16	65.07	7.57	62.76







# Direct cost of per episode of hospitalization of FBD

by patient	s '	•	•		
	National	Referral Hospital	Regional	Community	Overall
Cost	Hospital	(n=60)	Hospital	Clinic	(n=266)

%

22.9

30.0

0.0

10.18

0.0

37.0

100

(n=100)

usd

16.9

9.75

1.43

6.35

2.09

17.90

54.18

(17.57)

%

31.19

19.00

2.64

11.72

3.84

33.04

100

(n=62)

usd

1.21

2.98

0

0.30

0

0

4.49

(4.49)

%

27.6

66.4

0

6.7

0

0

100

%

32.6

31.1

1.4

9.3

2.8

22.8

100

usd

17.26

16.45

0.75

4.97

1.50

12.06

52.90

(26.70)

by patients						
	National	Referral Hospital	Regional	Comm		
Cost	Hospital	(n=60)	Hospital	Clin		

usd

4.08

5.33

0.0

1.81

0.0

6.56

17.78

(11.97)

%

35.2

39.2

0.8

7.7

2.6

14.0

100

(n=44)

usd

58.64

65.84

1.29

12.74

4.32

23.31

166.4

0

(73)

**Direct medical cost** 

Medicine

**Direct non-medical** 

**Accommodation** 

Lab

**Travel** 

Meal

**Total direct cost** 

(Daily average direct

**Hospital charge** 

## Cost of per enisode of hospitalization of ERD by main

diagnosis					
Cost	Food Poisoning	Acute Diarrhea & others	Overall		
	(n=65)	(n=201)	(n=266)		

29.30

(58.7)

12.09

(24.2)

7.68

(15.4)

49.88

(100)

35.74

34.38

(55.1)

18.58

(29.8)

9.80

(15.7)

62.76 (100)

26.70

36.97

(54.3)

20.79

(30.5)

10.39

(15.3)

68.15

(100)

24.09

**Direct Medical Cost** 

Amount [usd]

(% total cost)

**Direct Non-Medical cost** 

Amount [usd]

(% total cost)

Amount [usd]

(% total cost)

Total Cost [usd, (%)]

**Average Daily Total Cost [usd]** 

**Indirect Cost** 



### Limitation

- Not counting government contribution for hospitalization cost in public hospital
- Not counting capital cost: med staff salary and overhead: due to lack of access to data & hospital filing problem

### **Conclusion**

- Cost of hospitalization of FBD in Cambodia is relatively high: 62 USD/case.
- The attention should be paid more on prevention program: such as ensuring food safety in all food value chain through improving public knowledge and awareness.







### **Next steps**

- Shared with hospitals
- Publication







## FEEDIFUTURE

The U.S. Government's Global Hunger & Food Security Initiative

www.feedthefuture.gov



