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# Estimating cost of dengue treatment: Khon-Kaen Hospital, THAILAND

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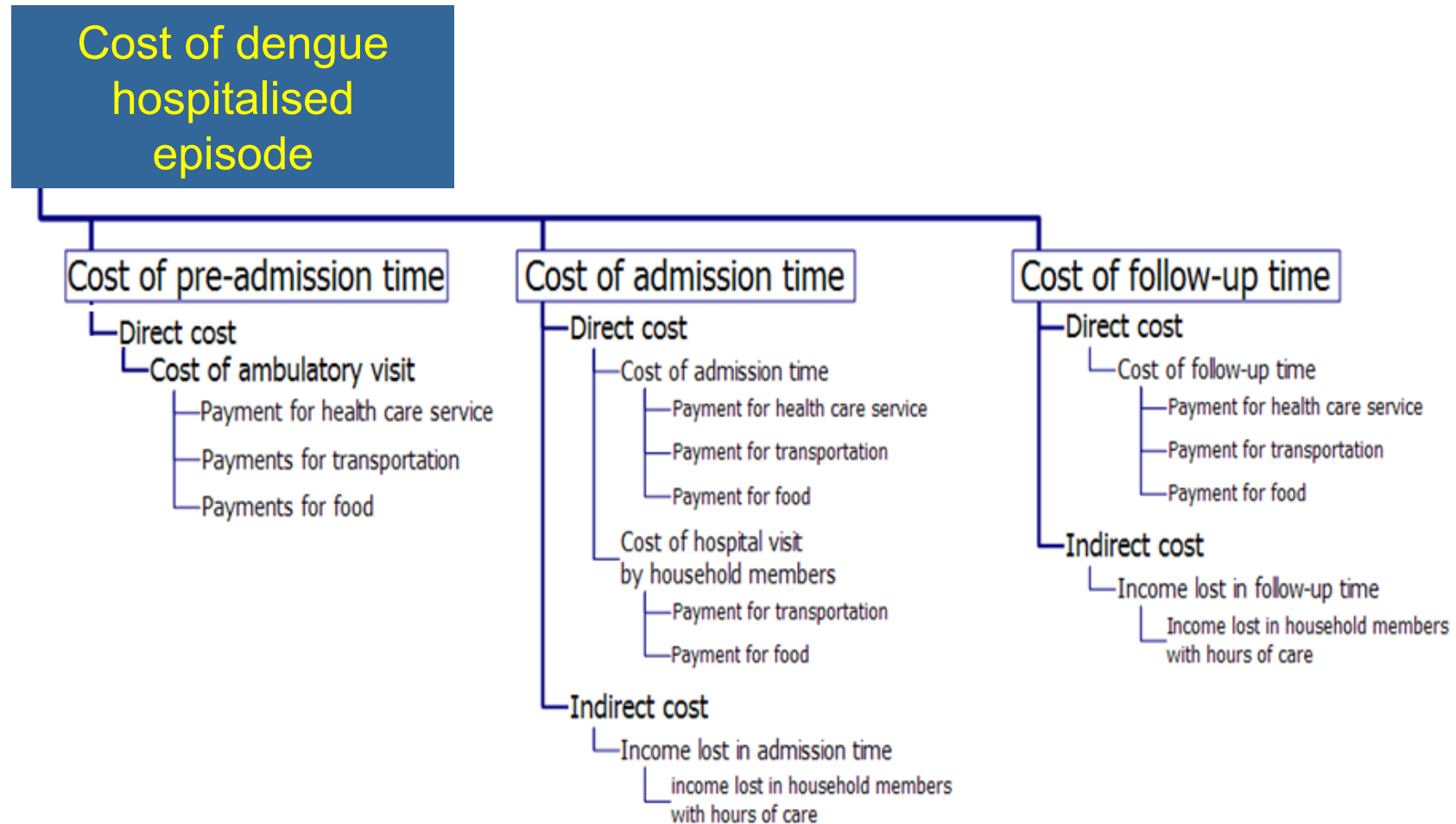
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# OBJECTIVE

To estimate the cost of dengue hospitalised episode in one selected province: Khon-Kaen Provincial Hospital



# Framework: Estimating cost of dengue hospitalised episode



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# DATA COLLECTION

- Subjects (or caregivers) interviewed once or twice about illness, treatment, and caregiver visits.
- Medical record extraction form
- Lab data collected from records or tests during the study.
- Information entered into customised Microsoft Access database.
- Data exported to Excel and SPSS, cleaned, aggregated by subject.



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# DATA ANALYSIS

- Key formula.  
Total cost of resources- *Quantity x unit cost.*
- Quantity and unit cost can be obtained from separate data sources.
- Example 1: Hospital costs  
Hospitalisation cost- *length of stay x cost per day*
- Example 2: Lost time from self-employment or household activities  
Cost of lost time- *day lost x value per day*



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# CHARACTERISTICS OF THAILAND

Currency name	Baht
Exchange rate used	39.00
GDP, US\$/capita	2,750
GDP, I\$/capita	8,440
Ratio: GDP I\$ / US\$	3.07
Minimum daily wage, I\$ (US\$)	11.0 (3.6)
Cost per day of school, I\$ (US\$)	5.8 (1.9)



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# CHARACTERISTICS OF KHON-KAEN PROVINCE (STUDY SITE)

Population (millions)	1.70
Main year of recruitment for study	2005
Reported dengue cases in location	746
Children (0-14 yrs.), %	78%
Adults (15 plus yrs.), %	22%
Circulating dengue serotypes	1,2,3,4
Predominant	4
Unit costs in participating facilities	
Per inpatient bed day, I\$ (US\$)	263.9(86.0)
Per ambulatory visit, I\$ (US\$)	39.6(12.9)



# CHARACTERISTICS OF PARTICIPANTS

Number of participants	173
Urban residence, %	30%
Maximum level of education in household	
Primary school or less, %	49%
Secondary school, %	31%
Vocational, college, or more, %	20%
Dengue confirmed*, %	24%
Days of fever, mean $\pm$ SD	6.0 $\pm$ 3.5
Days of illness, mean $\pm$ SD	10.8 $\pm$ 5.0
Any bleeding, %	89%
Any leakage, %	66%





# UTILIZATION OF HEALTH SERVICES AND IMPACT PER DENGUE CASE BY STUDY SITE

Number of participants	173
Studying, %	100%
Working, %	0%
<b>Health services utilization</b>	
Ambulatory visits, mean $\pm$ SD	4.2 $\pm$ 2.0
Share in private sector, %	13%
Hospital days, mean $\pm$ SD	4.9 $\pm$ 3.3
Share in private sector, %	0%
<b>Household impact</b>	
School days lost, mean $\pm$ SD	5.5 $\pm$ 3.4
Borne by patient, %	100%
Work days lost, mean $\pm$ SD	3.9 $\pm$ 5.0
Borne by patient, %	0%
Total days affected, mean $\pm$ SD*	18.6 $\pm$ 10.4
Borne by patient, %	59%



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## MEANS ( $\pm$ STANDARD DEVIATIONS) OF COST COMPONENTS PER DENGUE CASE

### Direct cost, I\$

Medical cost	1,436 $\pm$ 902	82%
Non-medical cost	186 $\pm$ 129	11%
Sub-total	1,621 $\pm$ 998	92%

Indirect cost, I\$ 137  $\pm$  99 8%

### Grand total cost, hospitalized case

In I\$,	1,758 $\pm$ 1,079	100%
In US\$	573 $\pm$ 351	
In days of GDP/capita	76 $\pm$ 47	



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# CONCLUSIONS

- The economic cost of dengue per case is substantial
- The main component of the cost is the hospital care, paid largely by government
- As the patients were children, the indirect costs were relatively small
- Other studies that focused only on out of pocket costs to households gave substantially smaller numbers



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