

# EVALUATING THE RISK OF EXPERIENCING CATASTROPHIC EXPENDITURES FROM HOSPITALIZED PNEUMOCOCCAL DISEASE IN NEPAL

CRISTINA R. GARCIA<sup>1</sup>, DAGNA CONSTENLA<sup>1</sup>, ARUN SHARMA<sup>2</sup>, KRISHNA PRASAD BISTA<sup>2</sup>, LAXMAN SHRESTHA<sup>2</sup>  
1. INTERNATIONAL VACCINE ACCESS CENTER, JOHNS HOPKINS UNIVERSITY; 2. NEPAL PEDIATRIC SOCIETY

## INTRODUCTION

- When children are hospitalized due to pneumococcal disease, families may have to use savings, sell property, or even take out loans in order to pay for their hospital care. Additionally, their time spent away from production may impact negatively on their revenues.
- Out-of-pocket (OOP) healthcare spending has the potential to be catastrophic to households, potentially pushing households into poverty (Figure 1).
- Few studies globally have assessed the risks of experiencing catastrophic expenditures from hospitalized pneumonia, particularly in South Asia.
- Despite introducing the pneumococcal conjugate vaccine-10 (PCV-10) into the routine National Immunization Program in 2015, no information on the economic burden households bear, are available for Nepal.
- As part of a comprehensive PCV impact evaluation (PneumoNIA) program, we estimated the OOP health payments per pneumococcal events and the proportion of households experiencing catastrophic health expenditures (CHE) from hospitalized pneumonia, meningitis, and sepsis in Nepal. The results presented here are preliminary using data from the first month of data collection.

## METHODS

- In addition to resource utilization data (described in poster ISPPD-096), we prospectively gathered data on OOP expenditures from the hospitals that took part in the cost burden study described in poster ISPPD-096.
- OOP expenses incurred prior to hospitalization were collected from caregiver interviews within 24 hours of child's admission to hospital. OOP expenses incurred during hospitalization were collected from daily caregiver interviews.
- Data collection forms were piloted for 2 weeks, and full data collection began May 1, 2016. For a description of these forms refer to poster ISPPD-089.
- OOP expenditures included direct medical (e.g. per diem rate, lab tests, medications) and non-medical expenses (e.g. food, lodging, transportation) paid by the household less amounts paid or reimbursed by third party payers.
- Health expenditures were considered catastrophic when OOP payment exceeded
  - 10% of total household expenditures in a given period (e.g. year, month)
  - 40% of non-food expenditures in given period (e.g. year, month)
- All costs were converted to 2016 US dollars.

## RESULTS

- 155 caregivers were interviewed as of May 31, 2016, which included the pilot period and first month of full data collection (Table 1).
- The OOP expenses varied significantly by hospital and syndrome with children's caregivers from Dharan and Kanti Hospitals reporting the highest expenses, and meningitis and sepsis contributing the highest cost (Table 2).
- The largest proportion of OOP expenses were due to the cost of medicine (33-56%), food (11-22%), and transportation (13-19%) (Figure 2).
- OOP payments were considered catastrophic for 16.2-23.4% of pneumonia cases using both definitions for annual expenses. The proportion was higher for meningitis and sepsis, but the small sample size needs to be considered when interpreting these findings.
- The proportion of catastrophic expenditures increased to >80% for all syndromes when using monthly expenses in the catastrophic calculation, indicating the short term impact may be significant for households with limited savings and few assets.
- Using savings or existing income was the main source of payment for healthcare-related expenses. Borrowing money was the second source of payment (Table 1). For households that borrowed money, the amount ranged from \$268 - \$319 per event.

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FIGURE 1: Catastrophic Health Expenditures Framework

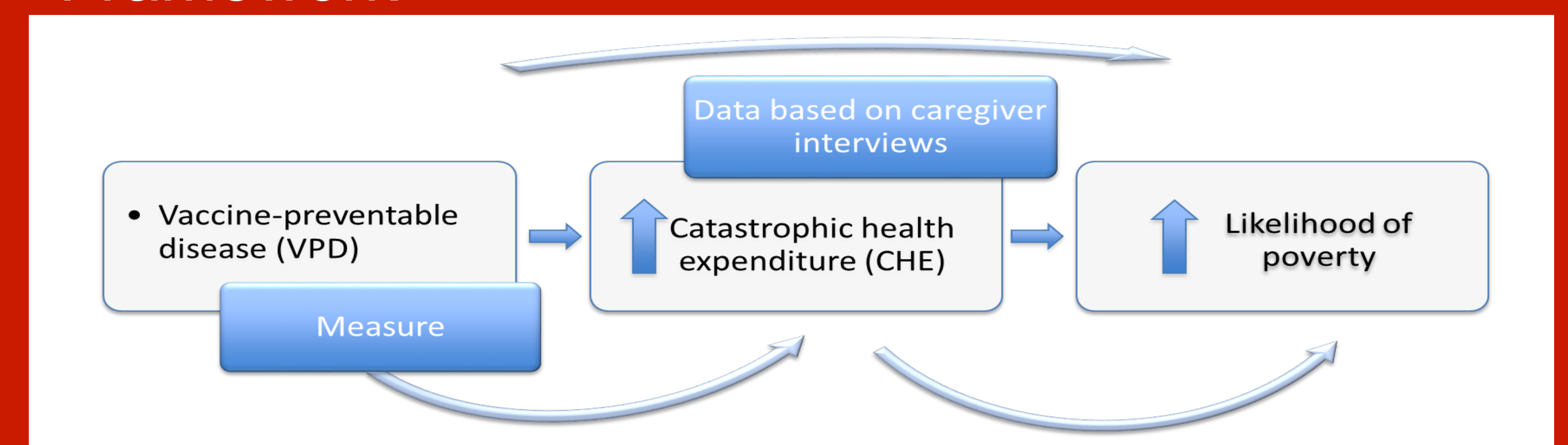


TABLE 1: Characteristics of Households at Risk for Catastrophic Health Expenditures

	Pneumonia (N=121)	Meningitis (N=6)	Sepsis (N=28)	Total (N= 155)
<b>Health Insurance Coverage</b>				
None (%)	102 (89.5)	6 (100.0)	24 (96.0)	132 (91.0)
National/Government (%)	10 (8.8)	0 (0.0)	1 (4.0)	11 (7.6)
Private (%)	2 (1.8)	0 (0.0)	0 (0.0)	2 (1.4)
<b>Average Household Income (SD)</b>	\$3389.37 (\$5803.69)	\$3820.95 (\$3981.47)	\$3471.81 (\$3035.11)	\$3420.97 (\$5327.63)
<b>Average Annual Expenses (SD)</b>	\$7,773.15 (\$3,3827.07)	\$3,143.26 (\$2,586.66)	\$3,001.07 (\$3,118.95)	\$6,731.87 (\$29,957.41)
Food (SD)	\$1,135.61 (\$777.78)	\$1,004.86 (\$446.60)	\$1,171.14 (\$904.61)	\$1,126.97 (\$788.81)
Non-Food (SD)	\$6,637.54 (\$33,838.88)	\$2,138.40 (\$2,613.97)	\$1,829.93 (\$2,912.27)	\$5,594.90 (\$29,964.44)
<b>Source of Payment for Healthcare-related Expenses</b>				
Income/Savings (%)	94 (77.7)	3 (50.0)	18 (64.3)	115 (74.2)
Selling Assets (%)	1 (0.8)	0 (0.0)	0 (0.0)	1 (0.6)
Borrowing (family/friends) (%)	23 (19.0)	2 (33.3)	2 (7.1)	27 (17.4)
Loans (bank/money lender) (%)	7 (5.8)	2 (33.3)	5 (17.9)	14 (9.0)

SD: Standard deviation

## CONCLUSION

- Hospitalized pneumonia, meningitis, and sepsis represent a significant economic burden to households paying OOP, resulting in a higher proportion of households facing catastrophic expenditures.
- Further analyses into reasons patients leave against medical advice and coping strategies will be explored in subsequent analyses as these strategies may further push households into poverty.
- Understanding the main sources of OOP expenditures can inform health system reform policy decisions.
- By preventing pneumococcal disease, PCV has the potential to reduce the risk of poverty by averting catastrophic health expenditures.

TABLE 2: Estimated Out-of-Pocket Expenditures FIGURE 2: Distribution of Out-of-Pocket Expenses per Syndrome

	Pneumonia (N=121)	Meningitis (N=6)	Sepsis (N=28)
<b>Total Out-of-Pocket Costs (SD)</b>	\$140.97 (\$237.22)	\$237.22 (\$173.83)	\$214.69 (\$350.27)
BPK Dharan Hospital	\$176.12	\$148.03	\$46.24
Kanti Hospital	\$182.46	\$382.16	\$234.19
Nepalgunj Hospital	\$89.83	--	\$55.21
Patan Hospital	\$97.45	\$70.15	--
Tansen Hospital	\$77.98	\$58.67	--
<b>% Catastrophic Expenditures</b>			
OOP >10% Annual Total Household Expenses (95% CI)	23.4% (16.4-32.3)	50.0% (14.6-85.4)	24.0% (10.9-44.8)
OOP >40% Annual Non-Food Expenses (95% CI)	16.2% (10.4-24.4)	50.0% (14.6-85.4)	48.0% (29.2-67.4)
<b>Average Amount Borrowed (SD)</b>	\$296.53 (\$393.96)	\$267.50 (\$153.71)	\$319.44 (\$260.30)

SD: Standard deviation; CI: 95% Confidence Interval

