
Cost of pneumococcal disease in the districts of Dafra, Do et Hounde of Hauts-Bassins, Burkina Faso.

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Economics of new vaccines introduction in Africa, AfHEA

Rabat, September 2016



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Summary

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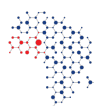
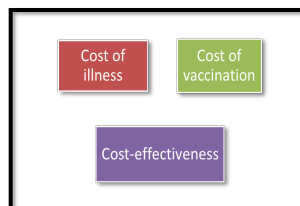


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Study Objectives

- To estimate **the costs of pneumonia and Sp meningitis** for the health system and families, prior and after PCV13 vaccine
 - **The cost of treatment, per case and total**
 - The cost of sequelae, per case and total
 - The burden of disease
 - The burden of sequelae
- To determine **PCV13 vaccination costs**
- To **model the cost-effectiveness of PCV vaccine**, with outcomes in terms of cost per death and DALY averted



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Methodology

- Ingredients approach
- Societal perspective (health system + households)
- Data collected mid 2015 for the period January-June 2015 (retrospective & prospective)
- Data collected via interviews based on four pre-defined **questionnaires**: households, health centers, laboratories, MoH.
- All questionnaires in French, plus households questionnaire also in Diouala
- Use of a tailor-made application in **tablets** for data entry 'at the spot'.
- **Extrapolation** of sample costs to regional & national costs using per capita average costs (to be done).

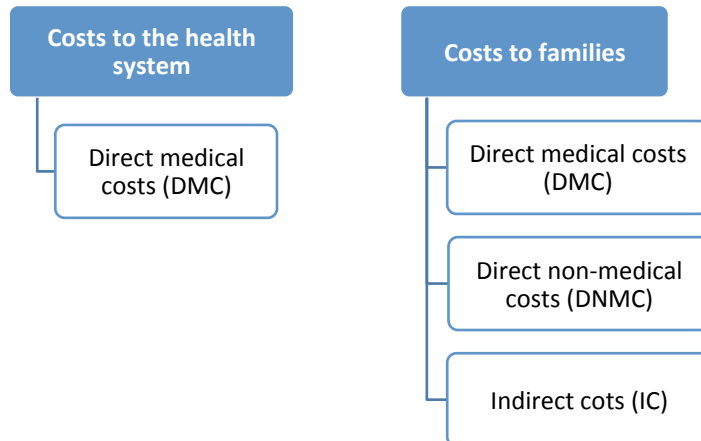


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Methodology: costs typology



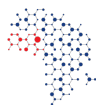
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Sample

- **Sample:** based on the three districts of Bobo-PREP:
- Dafra, Do and Hounde. Selection methods:
 - Purposely sampling: for region and districts and Mn cases.
 - Stratified-random for CSPS and PN cases.



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Sample

	Achieved	Target	Notes
Households DB	92	120	
Sp meningitis cases	28	60	All cases in the study districts & period
Pneumonia cases	64	60	
Health centers DB	29	25	
CSPS	26	21	
District Hospitals	3	3	
CHUSS	0	1	Authorization not granted

Data was also collected for laboratories and MoH administration, though it has not yet been included in the estimation



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Preliminary results

*Results presented here are only preliminary results.
data analysis is not yet completed*



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Costs to households

Table: Sp meningitis and pneumonia mean costs per case to households

	Mean household cost per case (\$)	Mean household cost per case (CFA)
Sp meningitis case	162	80 093
RU	149	73 666
URB	184	90 970
Pneumonia case	124	61 306
RU	81	40 046
URB	178	88 003
Average	135	66 744



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Costs to households (cont)

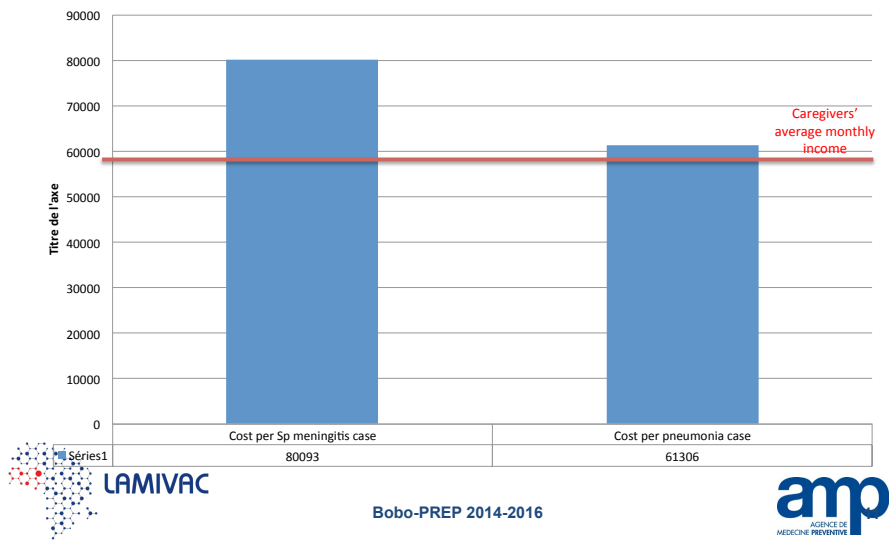
- Very high costs to households of pneumonia and Sp meningitis cases.
- On average, cost per case for households is higher for Sp meningitis than pneumonia.
- On average, urban costs are higher than rural, for both diseases.
- On average, the cost of Sp meningitis and pneumonia cases to households exceed the average monthly income of caregivers in sample = \$ 119 (58,930 CFA).



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Cost of Sp meningitis and pneumonia to households exceeds caregivers' mean monthly income



Health service utilization: consultations and hospitalization days

- On average, Sp Meningitis patients stay longer at hospitals but pneumonia patients have more consultations.
- On average, Sp meningitis patients had three consultations, and stayed 7 days hospitalized.
- On average, pneumonia cases had 4 consultations and stayed 4 days at hospitals
- This data covers all the patients included; outliers have not been excluded.

Table: Average number of consultations and hospitalization days

	Sp meningitis (n=28)	Pneumonia (n=64)	Average
Moyenne de No. consultations	3	4	4
Moyenne de No. days hospitalizations	7	4	5

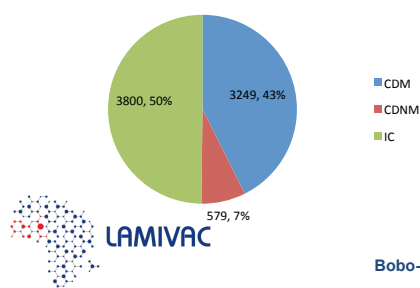
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Distribution of households costs by type

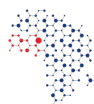
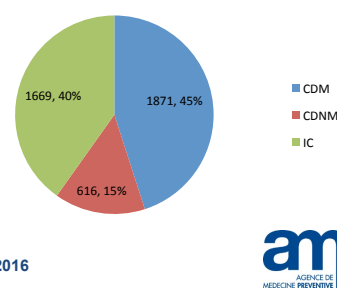
- DMC and IC are the biggest expenses, taking nearly half of the total cost each.
- DNMC are relatively more important for Sp meningitis than for pneumonia

Figures: Distribution of SAMPLE costs per Pneumonia case and per Sp meningitis case to households among DMC, DNMC and IC

Cost of pneumonia case to HH



Cost of Sp meningitis case to HH



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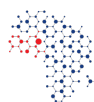


Cost estimation

- Outliers have not been excluded from the preliminary analysis
- Exchange rate 1\$ = 494,4 in 2014 (WDI)

Direct Medical Costs

- Several patients reported tariff exemption when they exercised activity within the health facility, or they exchange for providing some services, or they were unable to pay or other reasons not specified, particularly in rural centers
- Cost of consultations include also other consultations of traditional practitioners and sometimes at the private sector. This makes the cost go high.
- Patients were asked to show their payment receipts, but sometimes they were not available.



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Cost estimation (cont.)

Direct Non-Medical Costs

- Costs of funerary car from health facility are included as DNMC
- Costs of food is excluded because of data restrictions

Indirect Costs

- Revenue lost for people age 16 and older, without top age limitation
- IC proportionally to monthly income estimated by the family with help from the interviewer, and the number of days lost



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Cost estimation (cont.)

Indirect Costs (cont.)

- The cost of only one caregiver is taken into account.
- IC from patients or caregivers is 0 when they declare they did not loose any day of work, or they did not loose any revenue, or if their revenue would be 0 because they do not exercise any activity (ie. unemployed, retired, children)
- No economic cost is assigned to school days lost
- Unknown salaries given the value of the minimum salary = 57\$ (28 578 CFA) (1 299 CFA for 8 hours * 22 working days), for farmer, housewife, domestic worker, gold searcher, are estimated as the minimum wage for farmers when they declare that the disease (as patients or caregivers) impede them from conducting their usual activities. This was not done for the unemployed declaring they were not conducting productive activities.



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Challenges

- Project funding interrupted before concluding the analysis.
- Insufficient number of Sp meningitis cases in the three districts.
- Difficulties to obtain data from tertiary hospital and laboratory.
- Difficulties to locate the households due to insufficient address details → we engaged the community health agents
- Problems with Application in tablets led to use also questionnaires in paper.
- Receipts were sometimes presented, but not always



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Lessons learnt

- Prospective studies are challenging as the number of cases and geographic distribution fluctuates, but retrospective ones face difficulties in household identification.
- Household's indirect costs are significant, and in contexts of informal employment, methodology matters.
- Beauty of primary data collection: stories behind numbers. Combination of economic and anthropology studies.



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Acknowledgements

- Bobo-PREP team, field team: supervisor, data manager and interviewers.
- Gavi for funding the Bobo-PREP project



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