A Perverse ‘Net’ Effect: The Impact of Health Insurance on the Use of Insecticide-Treated Bednets in Ghana

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- Negative Effects of Development Programs
- Often overseen

**Theory of Change:**

_Sometimes People Behave in Strange Ways._

*Introspection is not enough to develop these theories*
- *Is the health domain immune to moral hazard?*

- *There is always a trade-off*

*People do strange things*
“We have mosquito nets but we don't use them. If you are insured it is easier to go to the hospital (in case of malaria). Why would you spend 8 Cedis to get a bednet while you can spend 2 Cedis to go to the hospital.”
“But not only in Ghana”
Ex-Ante Moral Hazard

• Until now downplayed in the literature on health insurance
• Evidence almost exclusively relies on developed countries
Malaria is the leading cause of mortality and morbidity in Ghana (DHS 2008). Estimates of reductions in child mortality as a result of ITN use range from 20% to 60% (Binka et al. 1996; D'Alessandro et al. 1995; Phillips-Howard et al. 2003). Karlan and Appel (2011) recommend scaling up the free distribution of insecticide-treated bednets.
- Leading cause of mortality and morbidity
- 38% of outpatient visits
- 43% of deaths of children under five
• Very Effective (Binka et al., 1996; Gimnig et al., 2003)
• Free Distribution is more effective (Cohen and Dupas, 2010, QJE)
• Micro-Credit not very effective (Tarozzi et al., 2011, AER)
• Trust in health providers is key for use of bednets in Ghana (De Hoop and Van Kempen, 2011)
Data:

Panel Data among 400 households in 11 villages in the Brong-Ahafo Region

September 2007 and September 2009

Estimation Strategy: Double-Difference Propensity Score Matching and Double-Difference Regression Analyses
Perceptions about causes of malaria and perceived effectiveness of bed nets (2009)

<table>
<thead>
<tr>
<th>Uncomplicated malaria is caused by (multiple answers possible):</th>
<th>Uninsured mean (A)</th>
<th>Insured mean (B)</th>
<th>p-value (A-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquito bites</td>
<td>0.956</td>
<td>0.942</td>
<td>0.517</td>
</tr>
<tr>
<td>Standing in sun for too long</td>
<td>0.946</td>
<td>0.866</td>
<td>0.007</td>
</tr>
<tr>
<td>Drinking unclean water</td>
<td>0.934</td>
<td>0.825</td>
<td>0.001</td>
</tr>
<tr>
<td>Eating sweets</td>
<td>0.567</td>
<td>0.468</td>
<td>0.053</td>
</tr>
<tr>
<td>Witchcraft</td>
<td>0.268</td>
<td>0.131</td>
<td>0.001</td>
</tr>
</tbody>
</table>

“Bed nets are effective in preventing uncomplicated malaria”
(1 = Strongly disagree, .., 5 = Strongly agree) 3.890 3.937 0.618
The National Health Insurance Scheme

• Objective (2003)
  – Access + Quality + financial protection

• Financing
  – Annual progressive premium \([GH\text{c}7.2 - GH\text{c}48] / \text{adult}\)

• Benefit Package
  – Both in(out)patient health care + ‘essential drugs’
  – 95% of the common health problems
  – Malaria fully covered ........(direct cost)
• Different Indicators

• 1. Bednet Ownership
• 2. Bednet Use
• 3. Self-treatment of bednet with insecticides
Compare individuals (or households) that would have a **similar chance of participation** given their observable characteristics (e.g. age, family size, education level, wealth, etc.)
Results: fixed effect

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Bed net ownership (dummy)</th>
<th>Bed net ownership (per capita)</th>
<th># of members who slept under ITN</th>
<th># of members who slept under self-treated net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance</td>
<td>-0.016 (0.045)</td>
<td>-0.050 (0.038)</td>
<td>-0.077 (0.145)</td>
<td>-0.196** (0.085)</td>
</tr>
</tbody>
</table>

Panel B: Robustness check (among sub-sample of those who owned bed net in both rounds)

| Insurance |  | -0.069 (0.183) | -0.248** (0.120) |
Effects on other Indicators:

- NHIS has a positive impact on self-reported fever incidence
- NHIS has a positive impact on the self-reported number of days missed due to poor health

Adverse Selection and/or Ex-ante Moral Hazard?
Preventive Efforts:

National Health Insurance Scheme increases preventive checks for pre-and post natal care (Mensah, Oppong, and Schmidt 2010)

These costs are covered under the National Health Insurance Scheme.
• External Validity of Distributing Bednets??
• Time-Inconsistent Preferences??
• Impact on health care utilization positive??
• Different policies in areas with insurance and without insurance??
• Co-financing
• But how about pro-poor insurance?
• Do not focus on health care utilization?
• Unintended Consequences are Important
• Look creatively at theory of change
• Not only Implementing Agency