WELCOME TO THE TRA 6 LECTURE SERIES
INNOVATION PATHWAYS TO SUSTAINABILITY

PERFORMANCE-BASED FINANCING IN HEALTH CARE: RECENT EVIDENCE AND NEW OPPORTUNITIES

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Performance-based financing in health care: Recent evidence and new opportunities

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Maternal mortality ratio, 2015

Maternal mortality ratio is the number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births. SDG Target 3.1 is to reduce global maternal deaths to less than 70 per 100,000 live births and all countries less than 140 per 100,000 live births.

Source: Our World in Data.
Quantity and quality of health care services are too low

Share of births attended by skilled health staff, 2017

The share of deliveries attended by personnel trained to give the necessary supervision, care, and advice to women during pregnancy, labor, and the postpartum period; to conduct deliveries on their own; and to care for newborns.

Source: UNICEF

Proportion of obstetric/newborn actions completed

- Takes pulse at initial exam: 18%
- Takes blood pressure at initial exam: 22%
- Wears sterile gloves for initial exam: 82%
- Takes vital signs after birth: 5%

Source: Our World in Data.

Health care matters for health outcomes

Proportion of deaths that are preventable or amendable to health care

- **Maternal**
  - Preventable: 50%
  - Amendable: 27%

- **Neonatal**
  - Preventable: 30%
  - Amendable: 43%

Source: calculated based on Kruk et al. 2018.
Even basic resources are scarce

Proportion of primary care facilities with key resources


Source: UNICEF Cambodia/2015/Ariel Hofher.
There is a know-do gap

Knowledge and practice of key obstetric/newborn actions

- Takes pulse at initial exam
- Takes blood pressure at initial exam
- Wears sterile gloves for initial exam
- Takes vital signs after birth

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>18%</td>
<td>28%</td>
</tr>
<tr>
<td>38%</td>
<td>50%</td>
</tr>
<tr>
<td>37%</td>
<td>57%</td>
</tr>
</tbody>
</table>


Behavior of same doctor in different settings (India)

<table>
<thead>
<tr>
<th></th>
<th>Public practice</th>
<th>Private practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>N patients per day</td>
<td>17</td>
<td>6</td>
</tr>
<tr>
<td>Time spent</td>
<td>1.56 mins</td>
<td>2.98 mins</td>
</tr>
<tr>
<td>Checklist items</td>
<td>18 %</td>
<td>28 %</td>
</tr>
<tr>
<td>Gave a diagnosis</td>
<td>38 %</td>
<td>50 %</td>
</tr>
<tr>
<td>Correct treatment</td>
<td>37 %</td>
<td>57 %</td>
</tr>
</tbody>
</table>

Note: number of patients observed by enumerators. Diagnosis and treatment for unstable angina and asthma standardized patients. Source: Das et al. 2016; MBBS doctor in primary care clinics in Madhya Pradesh.
Summary so far

1. Quantity and quality of health care are low but matter for outcomes
2. Many underlying reasons, from scarce resources to low effort
3. The know-do gap suggests that providers could do better
4. Providers also actually can do better if they have the right incentives

- Incentives are modifiable and therefore an appealing policy lever
- Paying for performance is also politically attractive
Performance based financing in health

- Financial incentives to increase quantity and quality of targeted services
  - Fee-for-service payments for verified delivery
- Added to existing systems
  - Supplemental financing; “contract-in” services from public providers

- Narrow view: solution to a fundamental principal-agent problem
  - Hard to observe what providers do in their clinics (asymmetric information)
  - PBF aligns provider incentives to policy objectives

- Broader view: part of a package of supply-side reforms
  - And maybe a catalyst for larger reforms
PBF within results-based financing

Source: Fritsche et al. 2014
Stereotypical PBF design in primary care

\[
\text{Bonus} = (\text{Quality index}) \times \sum (\text{number of units}) \times (\text{unit payment})
\]

- Paid to facilities, then split between facility and workers
- Assessed by district using checklist
- Reported by facility, verified by districts
- Sometimes modified, e.g., remoteness, equity
- Audited by independent entity

Bonus can be substantial, e.g., on average 25% of facility budget in Rwanda and 16% of nurse salaries in Burkina Faso.\(^1\)

Sources: \(^1\)Gertler and Vermeersch 2012, Steenland et al. 2017.
Quantity indicators
Average number: 18

<table>
<thead>
<tr>
<th>Clinical areas with most quantity indicators (top-5)</th>
<th>% per list (avg)</th>
<th>% of all bonus payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal care</td>
<td>27%</td>
<td>26%</td>
</tr>
<tr>
<td>Infectious Disease (mostly HIV/AIDS and TB)</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Newborn &amp; Child Care</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Family Planning</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Outpatient Consultation</td>
<td>9%</td>
<td>9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Common quantity indicators (top-3)</th>
<th>% of all indicators (avg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family planning methods used (any)</td>
<td>9%</td>
</tr>
<tr>
<td>Antenatal care consultation completed</td>
<td>8%</td>
</tr>
<tr>
<td>Normal deliveries by qualified staff at facility</td>
<td>6%</td>
</tr>
</tbody>
</table>

Note: across 37 indicator lists for 25 PBF schemes in 20 countries.
Source: Gergen et al. unpublished.
## Quality indicators

Average number: 125

<table>
<thead>
<tr>
<th>Quality indicators for maternal, neonatal and child health (top-2)</th>
<th>% of schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antenatal Care</strong></td>
<td></td>
</tr>
<tr>
<td>ANC register or form is correctly completed</td>
<td>44%</td>
</tr>
<tr>
<td>Weighing scale available and calibrated at zero</td>
<td>38%</td>
</tr>
<tr>
<td><strong>Maternity Care</strong></td>
<td></td>
</tr>
<tr>
<td>Analysis of 5–20 (randomly selected) partographs</td>
<td>72%</td>
</tr>
<tr>
<td>All deliveries are carried out by qualified personnel</td>
<td>59%</td>
</tr>
<tr>
<td><strong>Newborn and child health</strong></td>
<td></td>
</tr>
<tr>
<td>Vaccination record available and completed</td>
<td>56%</td>
</tr>
<tr>
<td>Baby height and weight scale available and in working condition</td>
<td>44%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of quality indicator</th>
<th>% of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>80%</td>
</tr>
<tr>
<td>Process</td>
<td>19%</td>
</tr>
<tr>
<td>Outcome</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Note: across 68 quality checklists for primary and secondary care in 28 countries.
Source: [Josephson et al. 2017](#).
More than just incentives

<table>
<thead>
<tr>
<th>Problem</th>
<th>PBF lever</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under-funded sector</td>
<td>Increased efficiency and budget allocation</td>
</tr>
<tr>
<td>Deficient infrastructure</td>
<td>Support upfront facility improvements</td>
</tr>
<tr>
<td>Lack of equipment &amp; supplies</td>
<td>Bonus can be used flexibly</td>
</tr>
<tr>
<td>Low autonomy</td>
<td>Facilities decide how to improve, spend bonus</td>
</tr>
<tr>
<td>Little supervision</td>
<td>District must visit to verify/assess performance</td>
</tr>
<tr>
<td>Little guidance on priorities</td>
<td>Clear list of target services and measures</td>
</tr>
<tr>
<td>Low accountability</td>
<td>Tie payments to actual work &amp; improve data</td>
</tr>
<tr>
<td>Low wages</td>
<td>Bonus to individual health workers</td>
</tr>
<tr>
<td>Low motivation</td>
<td>Bonus tied to performance</td>
</tr>
</tbody>
</table>
Rapid expansion of PBF

• Early PBF programs in Haiti, Cambodia, Rwanda

• Influential trial of Rwanda’s national program in mid-2000s

• Health Results Innovation Trust Fund (HRITF) at World Bank from 2007
  • $500m + $2.2bn in concessional loans
  • Supports programs in 28 countries

• HRITF has a mandate to evaluate and generate knowledge
  • Many pilots are implemented as randomized trials
  • About two dozen own impact evaluations, including qualitative studies

Source: RBF Health website as of Feb 2021, excl. Argentina, Haiti.
### Diverse set of pilots

#### Examples of PBF pilots supported by HRITF

<table>
<thead>
<tr>
<th>Country</th>
<th>Study arms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroon 2012</td>
<td>1. PBF</td>
</tr>
<tr>
<td></td>
<td>2. Unconditional financing + enhanced supervision and monitoring</td>
</tr>
<tr>
<td></td>
<td>3. No extra financing + enhanced supervision and monitoring</td>
</tr>
<tr>
<td></td>
<td>4. Business as usual</td>
</tr>
<tr>
<td>Rwanda 2006</td>
<td>1. PBF</td>
</tr>
<tr>
<td></td>
<td>2. Unconditional financing</td>
</tr>
<tr>
<td>Zambia 2012</td>
<td>1. PBF + equipment</td>
</tr>
<tr>
<td></td>
<td>2. Unconditional financing + equipment</td>
</tr>
<tr>
<td></td>
<td>3. Business as usual</td>
</tr>
<tr>
<td>Zimbabwe 2011</td>
<td>1. PBF + no user fees for targeted services</td>
</tr>
<tr>
<td></td>
<td>2. No user fees for targeted services</td>
</tr>
</tbody>
</table>

Source: [Bauhoff and Glassman 2017](https://example.com)
What to expect

Effect on what?
• PBF may impact many things, not just the targeted indicators

What kind of effects?
• Conceptually ambiguous effects on targeted and non-targeted services

Context matters
• Barriers to implementation & improvements

Compared to what counterfactual?
Mixed evidence

“Overall, [PBF] is likely to have **some positive effects:**

- it may lead to increased uptake of some health services,
- better structural quality of care, and
- strengthen the availability of resources and of management autonomy in healthcare organizations.

Effects on health, equity, provider satisfaction, facility governance, procedural aspects of quality of care and financial access for users are **uncertain.**

Probably limited to no negative distorting unintended effects.

Source: Diaconu et al. 2020 Cochrane review
Other findings

• Impact most likely on services that can be influenced, e.g., via outreach\(^1\)

• Suggestive evidence of improved access for households
  • Patients less likely to skip the local primary care clinics for hospitals\(^2\)
  • Quicker to seek care in emergencies\(^3\)
  • In some cases, improved access for poorer groups\(^4\)

• Workers are generally satisfied – but not always\(^5, 6\)
  • PBF offers direction, nudges, feeling of recognition, extra income\(^7\)
  • Risk of frustration due to unmet expectations & how bonus is distributed\(^8\)

• Limited evidence on comprehensive set of outputs, incl. non-targeted services
• Need more evidence on effect heterogeneity

Sources: \(^1\)RBF Health, Basinga et al. 2011; \(^3\)Chinkhumba et al. 2017; \(^4\)Skiles et al. 2013; \(^5\)Lohmann et al. 2020; \(^6\)Gergen et al. 2018; \(^7\)Lohmann et al. 2018; \(^8\)Zitti et al. 2021.
Costs and cost-effectiveness

• Per-capita expenditure for PBF between $6-10\textsuperscript{1, 2}

• Incremental cost per additional facility-based birth $94-261 in TZ\textsuperscript{3}

• Cost per DALY averted varies wildly; could be borderline cost-effective\textsuperscript{1, 6}

• PBF may not be relatively cost-effective and can be “not the best use of funds”\textsuperscript{5}

<table>
<thead>
<tr>
<th>Economic cost during implementation</th>
<th>TZ 2012\textsuperscript{3}</th>
<th>MW 2014\textsuperscript{2}</th>
<th>AF 2010\textsuperscript{7}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incentives</td>
<td>15%</td>
<td>51%</td>
<td>63%</td>
</tr>
<tr>
<td>Management/admin</td>
<td>28%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Data generation</td>
<td>37%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verification</td>
<td>13%</td>
<td></td>
<td>21%</td>
</tr>
</tbody>
</table>

• Methods and use of cost-effectiveness analyses in complex settings\textsuperscript{4}
• What services/indicators should be included in PBF?
• How to reduce costs?

Sources: \textsuperscript{1}Diaconu et al. 2020; \textsuperscript{2}De Allegri et al. 2019; \textsuperscript{3}Borghi et al. 2015; \textsuperscript{4}Chi et al. 2018; \textsuperscript{5}Zeng et al. 2018; \textsuperscript{6}Chinkhumba et al. 2020; \textsuperscript{7}Salehi et al. 2020.
Some success factors for PBF

- Adequate time and resources to design and implement the scheme
- Availability of key resources (infrastructure, equipment, HR)
- Organizational and staff capacity
- Adequate supervision and training
- Conducive facility leadership/management
- Timely payments
- Clear communication about scheme

Revisions, long-term effects and sustainability

• PBF programs need to adapt over time
  • Programs seem to expand, e.g., use more quality indicators of same type\textsuperscript{1}

• In Rwanda, successful scale-up & additional impacts in medium-term\textsuperscript{2}

• Some evidence that ending PBF could be detrimental
  • Removing PBF bonus can reduce motivation and lead to staff exits
  • Effect may be larger than an equivalent reduction in fixed salary\textsuperscript{3}
  • But temporary incentives might lead to persistent productivity effects\textsuperscript{4}

How should PBF be revised, e.g., incentives, indicators, operations?
How to anticipate and plan for transition issues?

Sources: \textsuperscript{1}Josephson et al. 2017; \textsuperscript{2}Ngo and Bauhoff 2021; \textsuperscript{3}Lohmann et al. 2019; \textsuperscript{4}Celhay et al. 2019.
Broader impacts on health systems

• Concern that PBF is distracting and absorbs scarce attention/resources\(^1\)
  • Also, lack of domestic ownership

• Or maybe PBF is a catalyst for change?\(^3\)

Sources: \(^1\)Paul et al. 2018; \(^2\)Meessen et al. 2018.
Some remaining questions

• What PBF designs and implementations work well?
  • And in what settings?

• What is it about PBF that generates improvements?
  • Do we need financial incentives and at what level?
  • Same effects with simpler approaches, like enhanced financing?
Opportunities for applied research

• There lots of PBF pilots with rigorous evaluation designs
  • Replicate and extend pilot studies using secondary data
  • Large scope for implementation science

• PBF generates lots of useful routine data
  • Track performance and quality of care; design/target additional interventions

• Room to improve operations
  • Develop ways to reduce costs, e.g., for routine reporting and verification
  • Enable new indicators, e.g., `outcome’ quality via automated patient surveys
  • Introduce priority setting for scheme design and revisions
Thank you

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