Rewarding Provider Performance to Enable a Healthy Start to Life: Evidence from Argentina's Plan Nacer

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• What is Plan Nacer?
  – Origins and Objectives
  – Financing Mechanism
  – Implementation & Definition

• Evaluation
  – Objectives and Methods
  – Data
  – Results

• Summary
What is Plan Nacer?

Origins and Objectives
Plan Nacer: Origins and Objectives

• 2002-03 financial crisis
  – 40% loose jobs & insurance
  – Switch to under-resourced public sector

• Improve maternal and child health
  – For the Uninsured
  – Access and quality of care
What is Plan Nacer?

Financing Mechanism
Financing Mechanism

National Government

Enrollment

Provincial Governments

Pay for performance

Health outcomes (tracers)

Fee for service

Health facility decides on the use of funds

Umbrella Agreements

Third Party Audit

Performance Agreements

Third Party Audit
What is Plan Nacer?

Implementation & Definition
Phased Clinic Enrollment into Plan Nacer

Quarter c.d.f. Normal c.d.f.
Definition: Enrollment

Two levels of enrollment:

• Clinic enrollment
  – The clinic signs an agreement with the province and bills services to Plan Nacer

• Patient enrollment
  – The mother and child enroll in the Plan Nacer Roster
Evaluation

Objectives and Methods
Objectives and Methods

To measure the impact of a clinic enrolling in Plan Nacer on outcomes of:

✓ All patients
  Method: Diff in Diff
Objectives and Methods

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✓ All patients
  Method: Diff in Diff

✓ Patients enrolled in Plan Nacer: Beneficiaries
  Method: Diff in Diff with Instrumental Variables
Objectives and Methods

To measure the impact of a clinic enrolling in Plan Nacer on outcomes of:

✓ All patients
  Method: Diff in Diff

✓ Patients enrolled in Plan Nacer: Beneficiaries
  Method: Diff in Diff with Instrumental Variables

✓ Patients not-enrolled in Plan Nacer: Non-Beneficiaries
  Method: Diff in Diff with Instrumental Variables
Evaluation

Data
Birth Certificate Data

• Universe of births in public hospitals
  – 7 northern Provinces during 2004-2008
  – Digitalized over 300,000 records
    • Mother: DNI, address, birth date, Tetanaus, C-Section
    • Baby: Birth weight, APGAR, Neonatal mortality

• Very large sample sizes
• Can measure rare outcomes
  • Low Birth weight
  • Neonatal mortality
Match Birth Certificate Data To...

- Plan Nacer Beneficiary Roster
  - Using DNI

- Clinic used for prenatal care, using
  - Plan Nacer administrative data
  - “Remediar” pharmaceuticals program
  - Geocoding

- Clinic’s effective date of participation in Plan Nacer Effective
  - Date of first bill to Plan Nacer
# Outcome Indicators

<table>
<thead>
<tr>
<th>Prenatal care</th>
<th>Sample Size</th>
<th>Mean for 2004-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of prenatal care visits</td>
<td>228,656</td>
<td>4.563</td>
</tr>
<tr>
<td>Tetanus toxoid vaccine</td>
<td>108,535</td>
<td>0.786</td>
</tr>
<tr>
<td>C- section</td>
<td>282,042</td>
<td>0.235</td>
</tr>
</tbody>
</table>
## Outcome Indicators

<table>
<thead>
<tr>
<th>Birth outcomes</th>
<th>Sample Size</th>
<th>Mean for 2004-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth weight (in grams)</td>
<td>274,078</td>
<td>3,277</td>
</tr>
<tr>
<td>Low birth weight (&lt;2,500 grams)</td>
<td>274,078</td>
<td>0.07</td>
</tr>
<tr>
<td>APGAR score at 5 minutes &gt; 6</td>
<td>248,840</td>
<td>0.982</td>
</tr>
</tbody>
</table>
# Outcome Indicators

<table>
<thead>
<tr>
<th>Mortality</th>
<th>Sample Size</th>
<th>Mean for 2004-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal mortality per 1,000 live births</td>
<td>131,943</td>
<td>8.28</td>
</tr>
</tbody>
</table>
Evaluation

Results
Mean Birth Weight by Beneficiary Status Over Time
Plan Nacer Increases Beneficiary Prenatal Care Use

Number of Prenatal Care Visits

- Control: 4.4
- Beneficiaries: 5.9
- Nonbeneficiaries: 3.6
Some Negative Spillover to Non-Beneficiary Prenatal Care Use

Number of Prenatal Care Visits

- Control: 4.4
- Beneficiaries: 5.9
- Nonbeneficiaries: 3.6
Plan Nacer Increases Beneficiary Prenatal Care Quality

Control: 0.78 0.75
Beneficiaries: 0.84 0.8
nonbeneficiaries: 0.78 0.75

Tetanus  Vaginal Delivery
No Spillover to Non-Beneficiary Prenatal Care Quality

Control

Beneficiaries

Nonbeneficiaries

Tetanus

Vaginal Delivery
Plan Nacer Reduces Beneficiary Low Birth Weight

Control: 0.073
Nonbeneficiaries: 0.073
Beneficiaries: 0.059

0.073 0.059 0.073
No Spillover to Non-Beneficiary
Low Birth Weight

- Control: 0.073
- Beneficiaries: 0.059
- Nonbeneficiaries: 0.073
Plan Nacer Reduces Neonatal Mortality

Overall Neonatal Mortality
- Control: 0.0095
- Beneficiaries: 0.0025

Neonatal Mortality of LBW Babies
- Control: 0.062
- Beneficiaries: 0.029
How Plan Reduced Neonatal Mortality

• Neonatal mortality mostly from LBW babies

• Lower by
  – Preventing LBW
  – Better care for LBW babies

• Find
  – 54% of reduction from preventing LBW
  – 46% from better care for LBW babies
## Plan Nacer: Cost Effectiveness

<table>
<thead>
<tr>
<th></th>
<th>Lower bound</th>
<th>Point estimate</th>
<th>Upper bound</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neonatal deaths averted</strong></td>
<td>117</td>
<td>733</td>
<td>1,349</td>
</tr>
<tr>
<td><strong>Low-birth weight babies averted</strong></td>
<td>171</td>
<td>1,071</td>
<td>1,970</td>
</tr>
<tr>
<td><strong>Plan Nacer DALYs saved</strong></td>
<td>4,064</td>
<td>25,401</td>
<td>46,738</td>
</tr>
<tr>
<td><strong>Cost per DALY saved</strong></td>
<td>$5,086</td>
<td>$814</td>
<td>$442</td>
</tr>
<tr>
<td><strong>Annual real GDP per capita 2005–08</strong></td>
<td>$6,075</td>
<td>$6,075</td>
<td>$6,075</td>
</tr>
</tbody>
</table>
Summary

• Positive impact on birth outcomes
  – More prenatal care
  – Better birth outcomes & less neonatal mortality
  – No negative effect on Non-Beneficiary outcomes

• Cost effective

• Strong coverage and quality of basic data (i.e. birth records, patient’s hospital form, vital stats)
  • Use these data for IE whenever possible
The end