Public Health Insurance in Low- and Middle-Income Countries
Part 2: Why Have Results Been So Uneven?

Pascaline Dupas, Princeton University
Radhika Jain, University College London

November 4, 2025

Institutional context

- Existing publicly provided healthcare in most LMICs
  - Tax-financed (+ fees), universal, free or heavily subsidized
  - In principle: Households already insured against health shocks
    - Public hospitals paid through budgets + salaries, performance rarely rewarded/penalized
  - In practice: Low quality, rationing $\rightarrow$ non-poor & many poor opt out, incomplete insurance

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- Public "health insurance"
  - May change public hospital financing to follow patients → change incentives
    - In practice: in many countries, incentives largely unchanged
  - Adds private network hospitals → major policy shift to contracting private sector for healthcare delivery → importance of prices, competition/markets

Insurance programs vary enormously in their design

- Key design elements:
  - Financing: taxes, premia, co-pays
  - Eligibility & enrollment: universal, poverty-targeted; automated, voluntary
  - Service coverage: secondary/tertiary hospital care, preventive/primary
  - Provider coverage: public, private; which private
  - Provider payments: design (budgets/salaries, fee-for-service, case-based, capitation, outcome-based); generosity

- Determine who gets care, how much and what type of care $\rightarrow$ fundamentally shape insurance effectiveness $\rightarrow$ may explain variation in impacts across contexts
- Large literature in HICs, global health literature; but relatively little research attention in development economics

Why Have Results Been So Uneven Across Programs?

- Barriers to take-up
- Determinants of quality, outcomes
  - Providers covered by insurance
  - Provider payments, strategic behavior
  - (Services covered)

Barriers to take-up

Barriers to take-up

- Two margins of "take-up": Enrollment; utilization conditional on enrollment
- Some factors can lower take-up despite people valuing insurance
  - Liquidity constraints, low awareness, administrative barriers
- Some factors can lower the *expected value* of insurance
  - $\uparrow$ costs / $\downarrow$ benefits: informal charges, limited coverage of hospitals & services (distance costs, uncertainty), claim denials, administrative hassles (opp cost of time)
  - May lower utilization once enrolled
  - If known ex ante $\rightarrow$ lower expected value $\rightarrow$ lower WTP, enrollment

Empirical evidence on barriers to take-up

- Evidence of factors limiting take-up despite people wanting insurance
  - **Liquidity:** Large ↑ in enrollment when liquidity constraints eased
    - CT equivalent to premium ↑ enrollment by 12pp (Malani et al, 2024)
    - Premium at harvest vs up front ↑ take-up by 67pp (Casaburi & Willis, 2018)
  - **Administrative:**
    - Very large effects of enrollment assistance (Capuno et al, 2016; Thornton et al, 2010)
    - Failure in *attempts* to enroll; registration assistance ↑ attempts by 24pp but success by only 4pp due to admin constraints (Banerjee et al, 2021)
  - **Information:** Small/no effects on enrollment in recent studies

Empirical evidence on barriers to take-up

- Evidence of other costs, factors
  - Full subsidy + registration assistance → (only) 56% attempted enrollment (Banerjee et al, 2021)
  - Substantial dropout when subsidies removed...but also among those who chose to pay full (Assuming et al, 2019; Banerjee et al, 2021; Thornton et al, 2010)
  - Difficulties in use after enrollment: admin/card hassles, denials, unauthorized charges (Akweongo et al, 2021; Banerjee et al, 2018; Dupas & Jain, 2023; 2024; Malani et al, 2024)
  - 91% aware, but only 6% know services and 50% providers covered (Dupas & Jain, 2023)
  - Large gender gaps in use, sensitive to charges, distance → costs lower utilization; HH valuation may be lower than socially optimal due to bias (Dupas & Jain, 2024)

Conclusions on barriers to take-up

- Administrative barriers (often designed to reduce inclusion errors) keep people out
- "Low awareness" is not just demand-side issue: eligibility, enrollment, hospitals/services covered are complicated, frequently changing
- Programs can be difficult and risky to use (denials, unexpected charges)!
- Benefit uncertainty may lower demand, especially among poor, risk-averse (Dercon et al, 2019)

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- Need to understand who is screened out; barriers may select on poverty, gender $\rightarrow$ affects incidence of subsidies
- Remains possible that people don't value these products; need more work to understand extent, reasons
- Program design (beyond premia, co-pays), supply side may contribute to low take-up

Insurance, quality, outcomes

Insurance can shape care quality, outcomes

- Insurance may shift patients into care
- Reallocate them across providers
- Change the quantity/kind of care received

- Net effect on outcomes depends on all three margins
- And, crucially, on provider quality

- Two important aspects of insurance design that shape quality received
  - Provider networks: quality of providers under insurance
  - Provider payments: effects on provider incentives, behavior $\rightarrow$ quality, outcomes

What do we know about quality?

- Huge range, from "mom and pop hospitals" to large, multi-specialty hospitals
- Average quality is low, substantial variation across providers
  - 2–4x higher post-operative mortality in LMICs; 10-60% correct knowledge, treatment across conditions; low safety compliance; huge variation (ASOS, 2018; Bedoya et al, 2023; Das & Do, 2024; Di Giorgio et al, 2020; GlobSurg Collaborative, 2021; King et al, 2021)
- Patients do perceive and respond to technical quality...but imperfectly
  - Correlation between prices, market share and quality is positive but weak (Daniels et al, 2022; Wagner et al, 2023); perceptions of quality inaccurate (Siam et al, 2019)
- Improving hospital quality and outcomes has been hard
  - Evidence from management support, bundled accreditation + mentoring + loans, checklists, clinical support, inspections (ASOS-2 Study; Bedoya et al, 2023; Contreras Loya, 2022; Dunsch et al, 2022; King et al, 2021; Semrau et al, 2017)
  - Some improvements in compliance but effects on outcomes unclear (power is a concern)

Provider coverage under insurance and quality

Provider networks determine care quality accessed

- Insurance typically includes:
  - All public providers: often low quality (Das et al, 2016)
  - Private providers based on "structural" quality: weakly associated with outcomes (Daniels et al, 2024)
  - Rarely explicitly based on quality
- Network provider quality matters, both relative to no care & uninsured care
- Extensive margin effects not obvious: If overall quality low, $\uparrow$ care $\neq$ better outcomes (Powell-Jackson et al, 2015)
- Given quality variation across providers ($+$ imperfect patient information) $\rightarrow$ *which* facilities are covered, how patients reallocate matters for outcomes
  - Coverage shifts where people go (Gruber et al, 2014; Powell-Jackson et al, 2015; Thornton et al, 2010); limited evidence on how this changes care quality received

Provider networks can also change provider quality

- Direct effects of patient flows to covered providers
  - Increased volumes, revenues $\rightarrow$ potential for quality investments, economies of scale, specialization etc $\rightarrow$ improved outcomes (Gruber et al, 2014; Gruber et al, 2023)
  - But if supply constrained, financing doesn't follow volume (often in public sector) $\rightarrow$ overcrowding, worse outcomes (Andrews & Vera-Hernandez, 2024)

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- Broader changes through competition, market responses
  - Competition under fixed prices can improve quality (Gaynor et al, 2016)*; if financing follows patients, who can assess quality
  - Insurance-driven investments in public sector could ↑ competition, positive spillovers on private (Andrabi et al, 2024; Jimenez-Hernandez and Seira, 2022)...or market segmentation (Atal et al, 2024)
  - But no evidence specific to insurance in LMICs on any of this

*But theory unclear when both prices and quality market-determined (Gaynor, Ho, & Town, 2015)

Much more research needed on insurance coverage, quality, markets

- Provider network choice affects quality...may be a policy lever
  - Selective contracting could shape quality accessed; incentivize improvements (Bedoya et al, 2023)
- But depends...
  - Whether government can assess (outcome-relevant) quality better than markets
  - Tradeoffs between network restriction and access?
  - Medium-/long-run GE effects
- Excluding worst performers may be a starting point

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- Overall, very limited evidence on
  - (Utilization-weighted) quality outside vs within insurance
  - Whether markets reward quality; descriptive evidence on prices, quality, market share
  - Dynamic effects of insurance coverage on markets

Provider payments, incentives, and outcomes

Provider payments, incentives, and outcomes

- Recall: Major change in insurance is contracting of private providers
  - Access; market incentives $\rightarrow$ effort, quality
  - But profit-motivated $\rightarrow$ may prioritize revenue over social welfare
  - Payments, oversight are key levers for shaping incentives

Provider payments, incentives, and outcomes

- Recall: Major change in insurance is contracting of private providers
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  - Payments, oversight are key levers for shaping incentives
- Most programs use administered (govt-set) prices
- Getting prices "right" is hard: large theoretical & empirical literature on trade-offs, gaming in HICs (Gruber, 2022; McClellan, 2011)
- Substantial additional challenges in LMICs:
  - Limited data on hospitals, costs, patients, outcomes → limits cost/risk-adjustment, monitoring, rewarding outcomes
  - Limited resources for oversight, enforcement → huge scope for gaming, misbehavior

Case-based payments - increasingly common in LMICs

- Fee-for-service: provider bills separately for everything

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- Fee-for-service: provider bills separately for everything
- Case-based: Fixed prices for predefined diagnosis/procedure that cover all costs (fees, room, consumables...)
  - Aim: share financial risk with provider $\rightarrow \uparrow$ efficiency, $\downarrow$ overprovision, control costs
    BUT:
  - Incentives to cut necessary costs $\rightarrow$ turn away costly patients, skimp on care
  - Affect service volumes, composition $\rightarrow$ overprovide better-paid services, underprovide others
  - If weak enforcement, prices below marginal cost $\rightarrow$ hospitals may share costs, risks with patients (balance billing); with monopoly power $\rightarrow$ cash markups
- Capitation: Fixed payment for all services for given period

Provider payment design: Examples

- India, Ghana, Indonesia use case-based payments for hospital care
- Indonesia uses capitation for primary care; Ghana uses FFS for medicines

498	Normal Delivery	Obstertics and Gynaecology	3500
499	Casearean delivery	Obstertics and Gynaecology	6500
500	Destructive operation	Obstertics and Gynaecology	7500
501	Laprotomy for ectopic repture	Obstertics and Gynaecology	8500
502	Low Forceps+ Normal delivery	Obstertics and Gynaecology	5500
503	Low midcavity forceps + Normal delivery	Obstertics and Gynaecology	5500
504	Lower Segment Caesarean Section	Obstertics and Gynaecology	6900
505	Manual removel of Plecenta for outside delivery etc.	Obstertics and Gynaecology	2500
506	Nomal delivery with episiosty and P repair	Obstertics and Gynaecology	5100

Rajasthan, India, "Packages" (in 2017)

Normal delivery = USD40

G-DRG Revised Tariffs 2022 **Version 2.0** TARIFF FOR CHAG PRIMARY CARE HOSPITALS (Catering Inclusive)

G-DRG	OBSTETRICS AND GYNAECOLOGY	TARIFF (GH₵)
OBGY24A	Partial Vaginectomy	589.67
OBGY25A	Polypectomy (Avulsion)	383.78
OBGY26A	Hysteroscopy	273.20
OBGY27A	Correction of Malposition of Uterus	521.78
OBGY28A	Vulvectomy	731.08
OBGY29A	Instrumental delivery	292.51
OBGY30A	Internal Podalic Version with Breech Extraction	296.27
OBGY31A	Destructive Delivery	326.79
OBGY32A	Caesarean Section	693.24
OBGY34A	Spontaneous Vaginal Delivery with or without Episiotomy	287.13
OBGY35A	Cervical Cerclage suture	355.83
OBGY36A	Myomectomy	692.51
OBGY38A	Post Partum Haemorrhage	291.62
OBGY39A	Wertheim's Operation	1,096.07
OBGY40A	Eclampsia	319.61

Ghana "DRGs"

Normal delivery = USD26

Provider payment design: Examples

- Tanzana NHIF uses administered fee-for-service: Predefined price schedule with fixed fees for out-patient consultations, in-patient admissions, ICU; 311 investigations; 721 medicines...

Price Schedule for Investigations			
S/n	Item Code	Item Name	Price
1	5001	A&B Scan (Eye)	20,000
2	5002	Adenosine Diaminase (ADA) - Pleural Fluid CSF	13,000
3	5003	AFB Staining	5,000
4	5004	Albumin/Globulin Ratio	5,000
5	5005	Aldolase	14,000
6	5006	Aldosterone	14,000
7	5009	Alpha Feto Protein (AFP Tumor Marker)	45,000
8	5011	Ambulatory Blood Pressure Monitoring (24Hrs)	15,000
9	5014	Ankle/Brachial Index Measurement	3,000
10	5374	Ante + Retrograde - Urography	80,000
11	5016	Anti Cardiolipin Levels	10,000
12	5018	Anti Phospolipid Antibody	10,000
13	5017	Anti -Scleroderma-70	15,000
14	5020	Antibody Level Differentiation (IgG, IgA, IgM)	15,000
15	5019	Anti-Double Stranded DNA	15,000
16	5021	Anti-Hyaluronidase	15,000

Diagnostic tests price list

No.	Item Code	Product Description	Level	Strengths, Formulation	Unit of Measure	Unit Price
1. ANAESTHETICS AND ANTIDOTES						
1	11001	Lidocaine	B	Gel 2%,5%	Tube	4,200
2	11002	Lidocaine	A	Injection (Hydrochloride) 1%, 2%	Vial	2,723
2. ANALGESICS, ANTIPYRETICS, NON-STEROIDAL ANTI-INFLAMMATORY MEDICINES (NSAIMs)						
2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIMs)						
3	11005	Acetyl salicylic Acid	A	Solid oral dosage form:300mg	Tablet	24
4	363083	Dexketoprofen	S	Solid Oral Dosage Forms: 25mg	Tablet	858
5	11006	Diclofenac	A	Injection: 25mg/ml in 3ml	Vial	195
6	11007	Diclofenac	C	Solid oral dosage form:(sodium) 50 mg	Tablet	20
7	11009	Diclofenac	C	Solid oral dosage form (Potassium): 50mg	Tablet	1,676
8	11010	Diclofenac	C	Solid oral dosage form (SR): 100mg	Tablet	148
9	11014	Ibuprofen	A	Solid oral dosage form: 200mg	Tablet	31
10	363084	Ibuprofen	A	Solid oral dosage form:400mg	Capsule	380
11	11015	Ibuprofen	A	Oral liquid: 100mg/5ml in 100ml	Bottle	1,932
12	11018	Ketoprofen	S	Solid Oral Dosage Form: 50mg	Tablet/Capsule	309
13	363085	Ketoprofen	S	Solid Oral Dosage Form:75mg	Tablet/Capsule	528

Medicine price list

Provider strategic responses can shape insurance effectiveness

- FFS: encourages overprovision; insurance exacerbates this (Lu, 2014)
- Evidence exploiting variation in case-based price changes (Jain, 2021)
  - Service volumes, composition/complexity respond to prices; both needed and unnecessary $\rightarrow$ prices affect care
  - Non-compliance: substantial OOP charges; (only) partly compensating for low admin prices
  - Also evidence of coding manipulation
- $\downarrow$ relative price diffs $\rightarrow$ $\downarrow$ coding manipulation in Indonesia (Chalkley et al, 2022)
- Improving govt ability to detect & $\downarrow$ overprovision, OOP charges, fraud very difficult (Dupas, Jain, & Shang, ongoing)

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- Switch from FFS to (effectively much higher) capitation in public hospitals $\rightarrow \uparrow$ service volumes, outcomes $\rightarrow$ implies rationing previously (Gruber, 2014)
- Suggestive provider-driven $\uparrow$ in preventive care under capitation (Miller et al, 2013)

Service coverage and outcomes

Service coverage may also shape outcomes

- Most programs define set of services covered ("health benefits package")
  - In theory: Prioritizes cost-effective, high burden care given budget
  - In practice: Rationale unclear; historically/politically driven

- Many programs cover only curative/hospital care, not preventive/primary care
  - Logic: Already covered by subsidized public sector...but people overwhelmingly eschew it
  - Hospital care more important for financial risk protection
  - But preventive / primary care important for outcomes; effective use of subsidies
- Programs with proven effects on outcomes typically cover preventive care
- Links to payment design - capitation designed to encourage prevention

- Gaps in coverage $\rightarrow$ benefit uncertainty, denials...

Conclusion and areas for research

- Insurance design fundamentally shapes insurance effectiveness: eligibility, enrollment, services covered, providers covered, provider payments
- Implementation quality, supply side matter for impacts but understudied

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- How (poor) design and implementation affects take-up, incidence of insurance benefits
- Provider strategic responses to insurance expansion, payment design - entry, participation, patient selection, quality, OOP charges, billing... - and implications for insurance effectiveness
- Healthcare and insurance through the lens of markets
- Effective design & oversight mechanisms to limit gaming given severely limited resources

- Very hard to study but crucial!