The Supply of Health Care

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14.771

Public or Private Health Care?

- Health care is a *credence good*, with substantial asymmetric information (Arrow, 1963): the provider knows more than the patient.
- Learning is very difficult
- Furthermore there are substantial externalities: Individuals will tend to have too low demands for some goods (prevention) and too high for some goods (antibiotics): They cannot be relied upon to chose outcome efficiently.
- For all these reasons: unregulated private health care will be tend to treat badly, and to over-provide medication

  It is the general social consensus, clearly, that the laissez-faire solution for medicine is intolerable–Arrow

Learning about the quality of health care one receives is very difficult

- Self-limiting diseases
- Externalities

Self Limiting Diseases

- A large fraction of self limiting conditions, that go away no matter what one does (e.g. the flu)
- In this condition if prior is that taking some medicine is good (and that the disease is not self limiting), and you take medicine, and you get better, Bayesian updating will continue to re-inforce your belief that taking this medicine was good: this kind of wrong beliefs will never be corrected
- Example 1: antibiotic and steroid use. In Udaipur, 60% of visit to a private doctor end up with a drip or a shot (Banerjee, Deaton, Duflo).
- Example 2: Counterfeit medicine for malaria

Bjorkman, Svensson, Yanakizawa-Drott, 2012 : Counterfeit Drug for Malaria

- In an environment where many people take malaria treatment even if they don't have malaria, considerable incentive to sell bad malaria medicine: usually you'll get away with it.
- BSY send "mystery shoppers" to buy anti-malaria drugs (ACT) at 99 markets in Uganda and then test them in the lab.
- They find that 37% of them sell counterfeit drugs.
- Price do not signal quality across different outlets within the same village.
- Proportion of counterfeit is increasing in share of "naive" consumers (who have miss-conception about what causes malaria). ▸ table

Bjorkman, Svensson, Yanakizawa-Drott, 2012 : Can good quality drive bad one?

- RCT: in half of the villlages, NGO comes in and introduces branded, high quality ACT, for cheaper price
- On average quality in shops increases and price decreases ▸ table
- However, less so in villages with more "naive" customers, where learning is harder ▸ table

Consequence: the private health care sector is really very, very bad

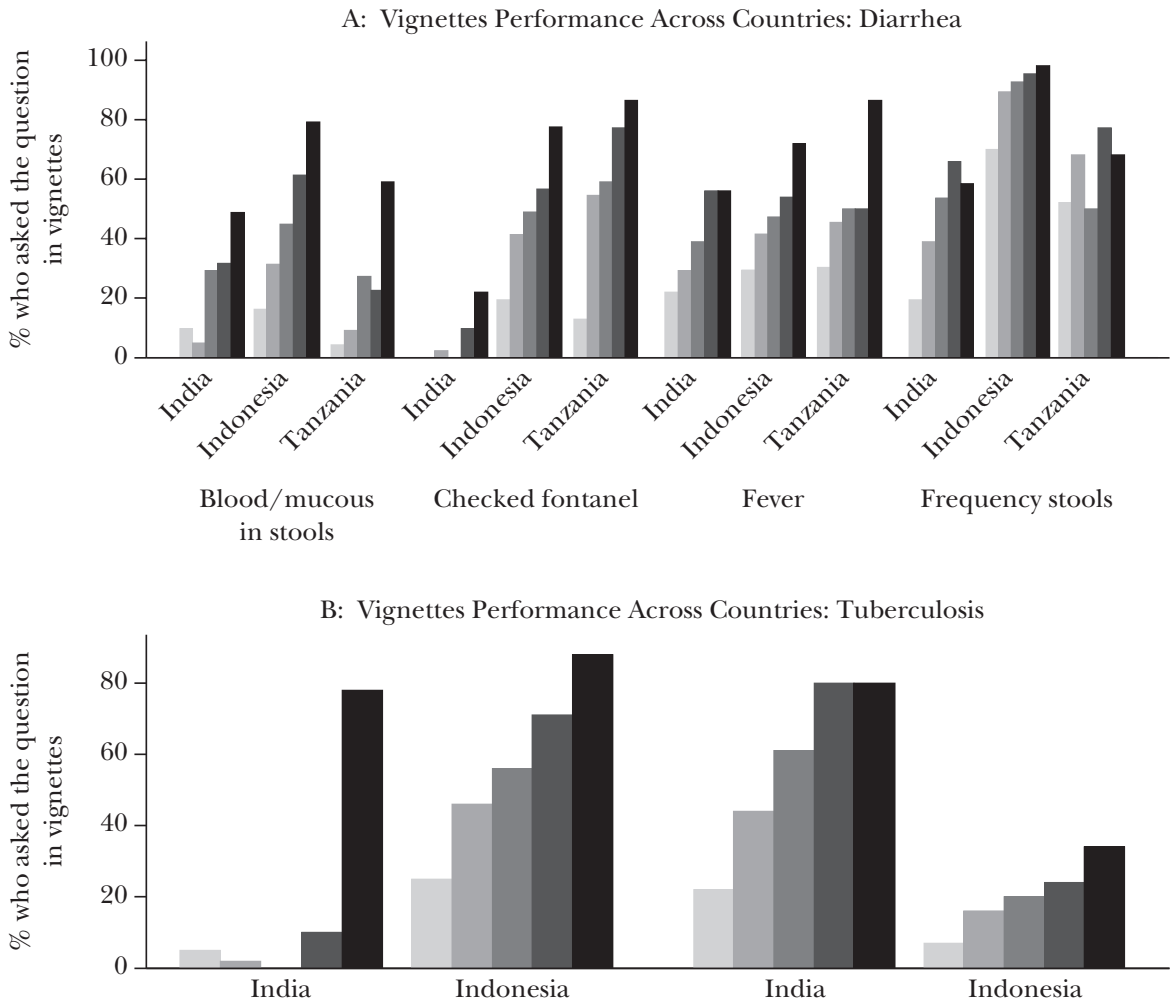
- India Das et al: 77% of private providers in rural areas have no medical degree,
- 18% have some other degree (BAMS, BIMS, BUMS, BHMS) and 4% have an MBBS degree (equivalent to MD in U.S.)
- Average village: 3.36 providers with no degree, 0.80 with some degree, 0.18 with MBBS
- Public providers more qualified, and offer free services, but have 20% market share, which increases to 35% in villages with a public primary healthcare center
- They know very little: Vignettes
- They do even less ("know-do" gap).

What do doctors know

- Vignette: standardized patient that is proposed to a doctor. doctor is told that the patient will follow instruction, and is given the standard tests.
- e.g. women comes to the clinic with a child who has a diarrhea for the least 2 days
  - Doctor must ask about stock to figure out if she has dysenthery or a virus, and check for sign of dehydration
  - In this case the right treatment is ORS
- Das, Hammer and Leohnardt have pioneered them and used them in a number of setting , very good overview in their JEP paper.
- code answer to questions and create an index of competence which solve for optimal weight of answer to each question assuming that there is one common "competence" dimension (item response theory)

Answer by competence

Figure 1
Performance Variation across Countries



Bottom line

- There is variation
- overall quality is very low: doctor has to be more than median quality not to harm the patient
- In india at the top, fully qualified private doctors are better than public doctor , but doctors in PHC know more than quacks.

What do doctors do: two methods

- Direct observations of medical practice
- Audit study: fake clients who are asking questions.
  - Standardized Patient (SP) visits healthcare provider and says: ?Dr., I woke up this morning with crushing chest pain and I was feeling very anxious?
  - Answers questions, completes basic exams and provider recommends a treatment
  - Low detection rates and show that provider behavior is consistent with their believing the SP
  - That is, providers do not come to the conclusion that the SP is ?faking it??in fact, the more they do with the patient, the more they are convinced that the SP has the condition that they are presenting with
- SP and vignette can be combined: SP first then vignette a little later

Direct observation

Table 2
International Comparisons of Effort

Country/Effort category	*Time spent*	*Questions asked of patient*	*Number of physical exams*	*(Total number of medicines given)*
Dehli				
Doctors who exert low effort	1.9	1.36	0.97	2.13
Doctors who exert medium effort	3.36	2.94	1.0	2.72
Doctors who exert high effort	6.15	5.32	1.37	3.05
All doctors	**3.80**	**3.20**	**1.09**	**2.63**
Paraguay				
Doctors who exert low effort	5.79	5.33	1.38	1.36
Doctors who exert medium effort	7.90	7.50	2.93	1.55
Doctors who exert high effort	11.34	11.91	3.64	1.65
All doctors	**8.33**	**8.23**	**2.65**	**1.52**
Tanzania				
Doctors who exert low effort (25^{th} Percentile)	3	2	0	N/A
All doctors	**6.32**	**3.96**	**1.51**	**N/A**
Germany	7.6	N/A	N/A	N/A
Spain	7.8	N/A	N/A	N/A
Belgium	15.0	N/A	N/A	N/A
United Kingdom	9.4	N/A	N/A	N/A

Patterns of treatment

Table 2: Patterns of treatment

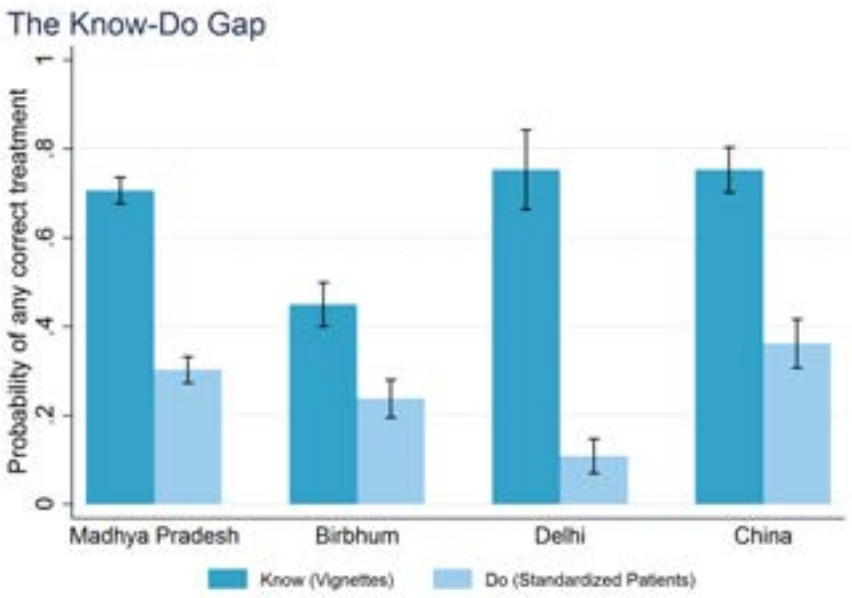
	(1) Any correct treatment	(2) Correct treatment	(3) Over-treatment	(4) Incorrect treatment	(5) Gave an antibiotic (excl. diarrhea)	(6) Gave a steroid (excl. asthma)	(7) Referred to another provider	(8) Number of cases
Madhya Pradesh	0.302	0.048	0.255	0.698	0.350	0.032	0.180	939
Birbhum	0.237	0.015	0.222	0.763	0.331	0.015	0.321	396
Delhi	0.108	0.008	0.100	0.892	0.540	0.092	0.104	250
Mumbai	0.292	0.033	0.258	0.708	0.566	0.198	0.086	1,583
Patna	0.310	0.051	0.259	0.690	0.679	0.096	0.057	1,019
China	0.361	0.237	0.124	0.639	0.512	0.000	0.191	299
Kenya	0.524	0.211	0.313	0.476	0.548	0.016	0.164	166

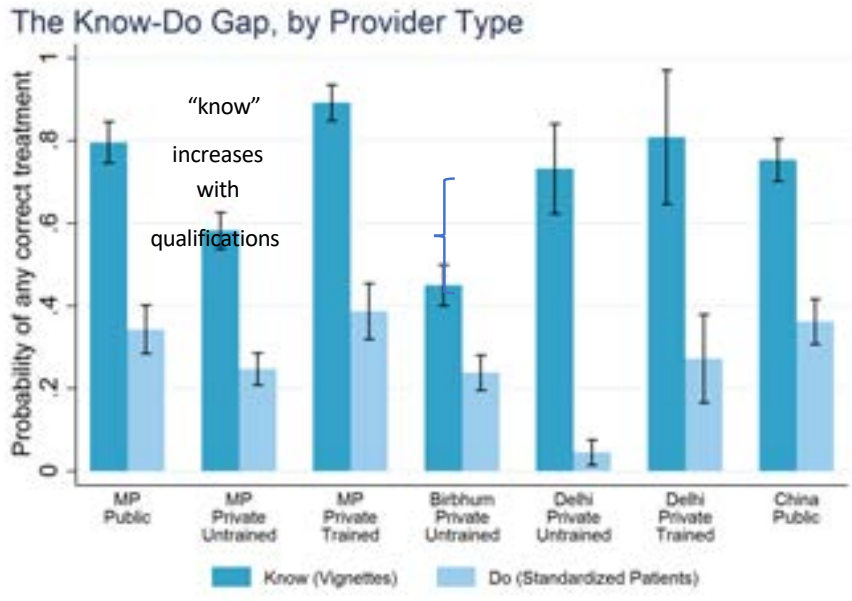
Notes: All figures are unweighted. In correct treatment definitions, referrals to a higher level of care alone are NOT considered the right treatment. The Birbhum data includes observations from the control group only.

Standardized Patients: Know-Do gap

Absolute "know-do" gap

- Medical vignettes are used to measure knowledge. Graph shows the know-do gap. Also shows that "know" increases with qualifications.





In *all samples*, in medical vignettes providers were much more likely to correctly manage a case relative to the audits

And yet, most people chose the private sector

- Incorrect treatment cost the patient a lot of money (about 70% of the cost of a visit is un-necessary treatment)
- E.g. in udaipur, even among the poorest group, only 20% of visit to public sector, 28% to traditional healers, and the balance to the quacks
- In Madhya pradesh, in Das et al, 89% of visits are to a private doctor, and 83% even if there is an available MBBS trained public doctor.
- 77% of visits are to unqualified private provider
- In Delhi on average there will be 70 private providers within a 15 minute walks.

Why? Das et al, AER 2016

- Audit studies: Standardized patients trained to accurately represent symptoms for 3 diseases (unstable angina, asthma and dysenthery in a child (who is not here).
- Then they performed 1,100 visits to different practices in the state of Madhya Pradesh
- Include a fixed effect exercise: patients with the same symptoms are sent to the public and private practices of doctors who have both (most public doctors have a private practice too)

Results

- Public sector doctors are better trained. ▸ Table
- And they know a bit more
- But they do even less ▸ Table
- (btw this is an underestimate of the difference in service because public sector nurses and doctors are absent a HUGE amount)
- And as a result they do not treat any better; possibly slightly worst. ▸ Table
- And also private doctors over-medicate, this is not true in the dual sample. ▸ Table

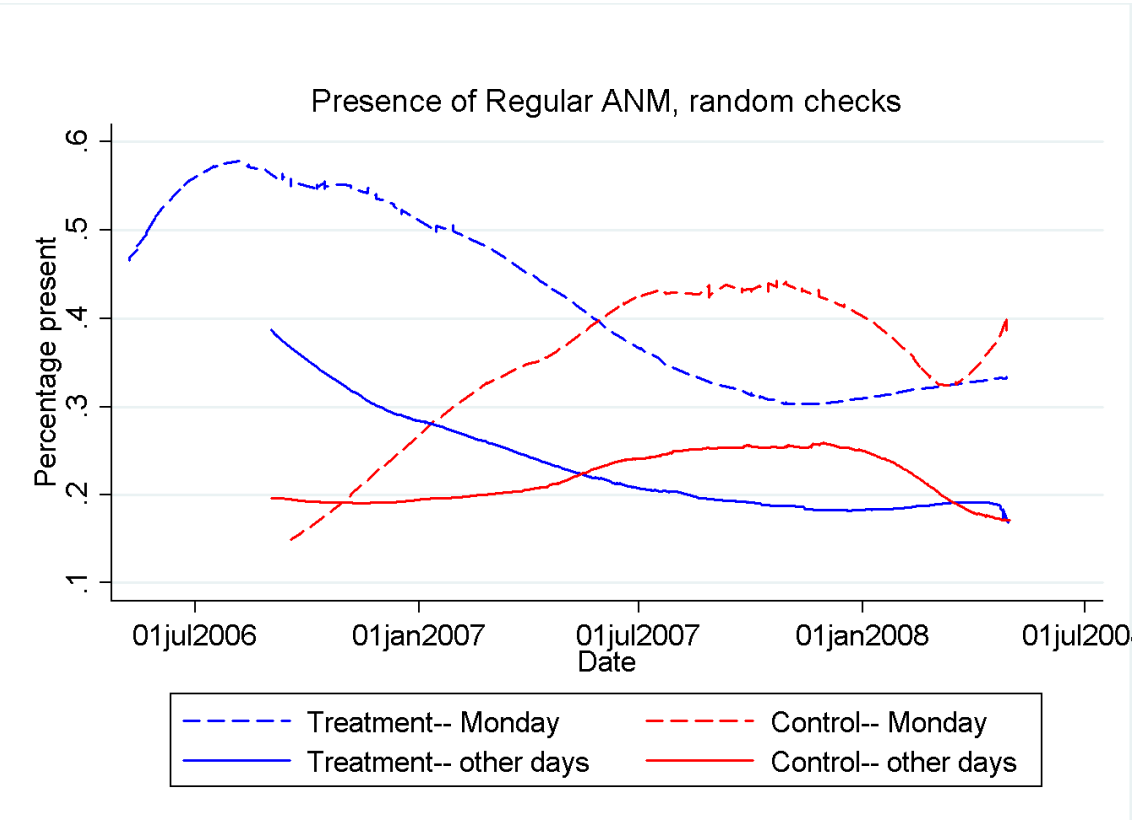
What to do?

- More of the same (Summers call for "universal health care"). Terrible idea.
- Try to incentivize the public sector: Banerjee et al; Svensson et al.
- Try to make consumers more sophisticated: Cohen-Dupas-Schaner
- Try to work with the private sector: Das et al

Incentivize the public sector?

- Banerjee et al: Incentive to nurses who are punished if they are absent.
- Bjorkman and Svensson: power to the people.

Banerjee et al: main finding



What happened?

- early on nurses showed up more
- but some were still absent and they realized that they could be marked “exempt”
- they came even less.

Demand for Health and Political Commitment

- How could the bureaucracy get away with not implementing its own rules?
- One possible answer: no political will, because there is no demand for incremental changes in public health care.
- One symptom: even during the six months where attendance was higher in treatment group, usage of the facility remained very low:
  - On average 0.74 client seen in treatment facility, when facility is open.
  - On average 0.81 client seen in control facility, when facility is open.
- It is possible that a system imposed from the top without any grass root demand cannot be sustained.

Power to the people: Improvement in Health through grassroot mobilization (Bjorkman, Svensson)

- An interesting contrast is provided by an experiment in Uganda.
- Problems are very similar (e.g., absence rate in health center: 47%)
- Instead of a top down approach, they involved the community in monitoring the providers.
- Intervention started with a household survey to collect data on experience with public health facilities.
- Then, community organizations facilitated three meetings: a community meeting, a meeting at the health center, and an interface meeting.
- The outcome of these meetings was an action plan on how to improve the situation, and how the community members would monitor the facilities.

Power to the people: Results

Results ▸ Figure:

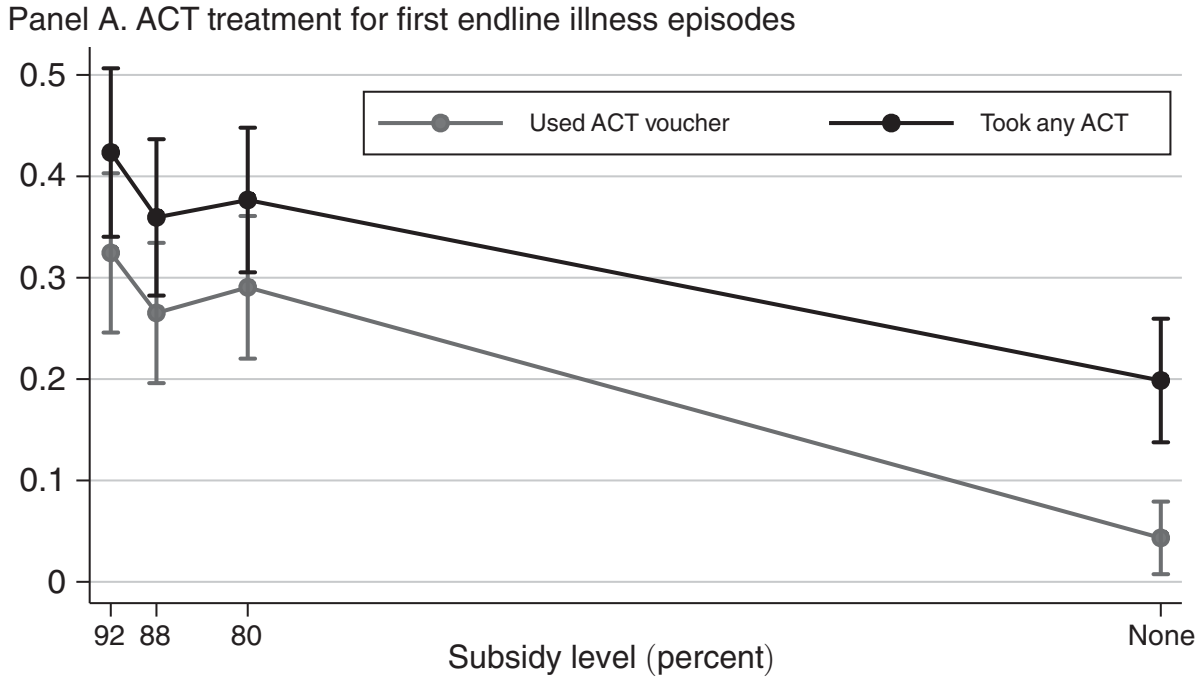
- Community became more involved in monitoring health workers.
- Health workers were more present.
- Health utilization improved in some respects.
- Health outcomes improved.
- Problem: an extremely expensive interventions that could never really be replicated (a cheaper one without the detailed report card but with all the mobilization produced no effect)

Make consumers more sophisticated: Do rapid diagnostic test improve targetting?

Cohen-Dupas-Schaner: give people free access to a good testing technology.

Setting: Malaria medicine in Kenya.

Subsidy to ACT leads to more treatment (though elasticity is less than for preventive health)



But even more overtreatment...

TABLE 3—IMPACT OF RETAIL SECTOR ACT SUBSIDY ON ACT TARGETING

	Actual malaria status (1)	Predicted positivity (2)	Predicted positivity (3)
A. ACT subsidy = 88 percent	0.187**	0.112***	0.111**
	(0.081)	(0.042)	(0.053)
B. ACT Subsidy = 80 percent	0.182**	0.107**	0.040
	(0.084)	(0.043)	(0.052)
p-value: A = B = 0	0.038**	0.012**	0.104
p-value: A = B	0.955	0.906	0.179
DV mean (ACT 92 percent, no RDT)	0.563	0.424	0.422
Observations	190	189	178
Data source	Admin.	Admin.	Endline

Notes: The omitted category is the 92 percent ACT subsidy group. Sample in columns 1 and 2 include all first ACT voucher redemptions among households selected for a surprise RDT and no RDT voucher (in column 2, one observation has a missing value for predicted malaria positivity). Sample in column 3 includes all endline first illness episodes treated with ACTs among households not selected for a surprise RDT and not selected for an RDT voucher. Robust standard errors (clustered at the household level in the endline data) are in parentheses.

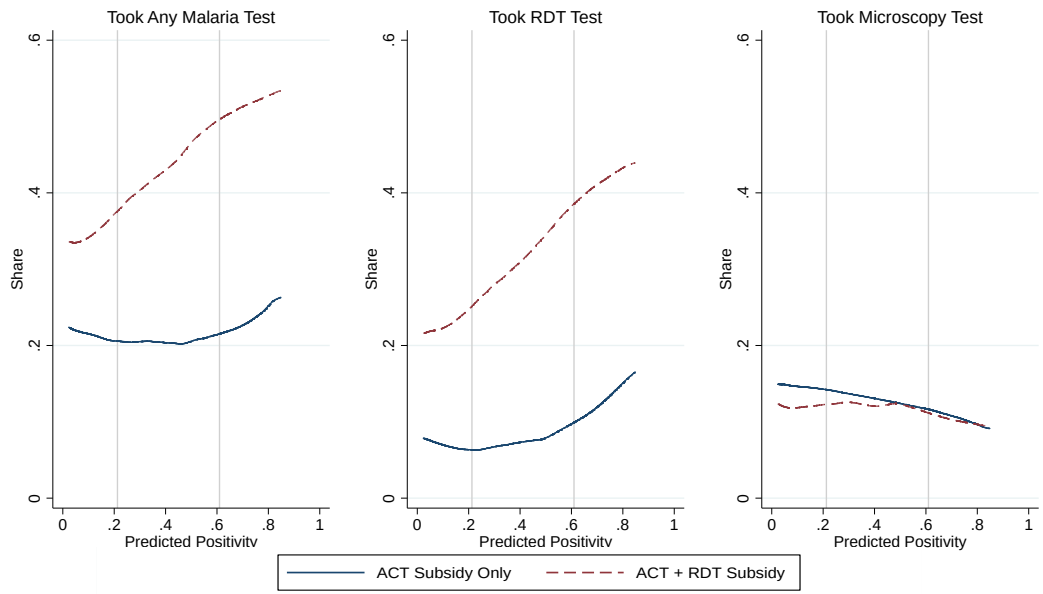
***Significant at the 1 percent level.

**Significant at the 5 percent level.

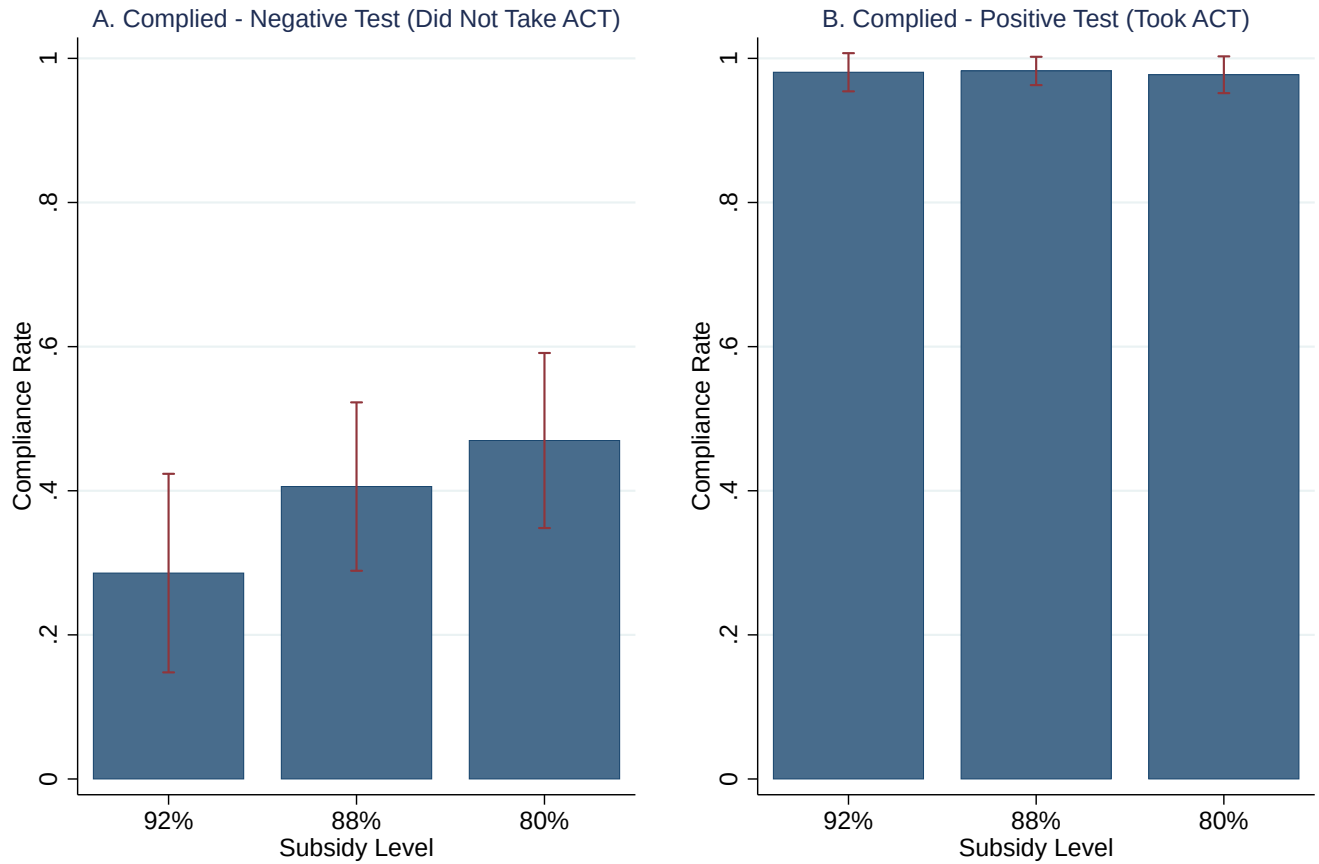
*Significant at the 10 percent level.

Impact of access to a reliable testing technology

- Part of the problem is people may not know if they have malaria or not and no easy way to know... (testing is bad), so in doubt they treat.
- Solution: subsidize rapid diagnostic test (RDT) at pharmacy
- People are very willing to experiment with RDTs



Problem: Compliance with RDT Results is Imperfect



Does not appear to be hoarding: 13.95% of endline episodes that took RDT reported no ACT, vs. 13.5% in admin data

RDT Subsidy Only Has Marginal Impact on Targeting

	Sought Care at Drug Shop	Positive Surprise Test:	
		Care Seekers	ACT Takers
A. Across all ACT Subsidy Levels			
RDT Subsidy	0.033*	0.018	0.092***
	(0.019)	(0.038)	(0.037)
DV Mean (ACT 92%, No RDT)	0.442	0.556	0.563
N	2609	870	790

RDT Subsidy Only Has Marginal Impact on Targeting

	Sought Care at Drug Shop	Positive Surprise Test: Care Seekers	Positive Surprise Test: ACT Takers
A. Across all ACT Subsidy Levels			
RDT Subsidy	0.033*	0.018	0.092***
	(0.019)	(0.038)	(0.037)
B. By ACT Subsidy Level			
RDT Subsidy 92% ACT Sub	0.028	0.142**	0.182***
	(0.036)	(0.068)	(0.068)
RDT Subsidy 88% ACT Sub	0.054	-0.038	0.040
	(0.033)	(0.061)	(0.060)
RDT Subsidy 80% ACT Sub	0.017	-0.056	0.050
	(0.032)	(0.066)	(0.065)
DV Mean (ACT 92%, No RDT)	0.442	0.556	0.563
N	2609	870	790

Explanation

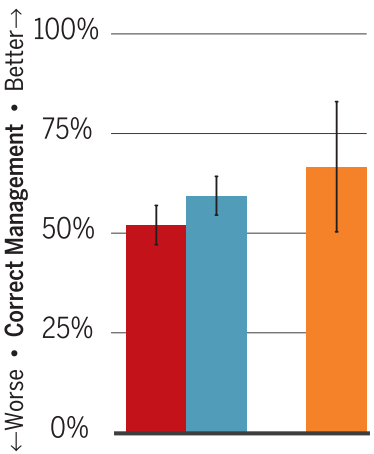
- The test is not trusted:
  - The standard test has lots of errors
  - This one is new and probably unknown quantity....
- Miss-trust makes it very difficult to accept the new test

Working with private health providers: Banerjee et al, 2015

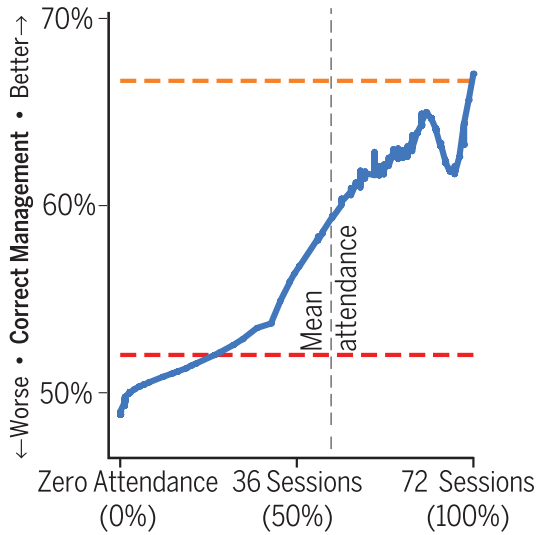
- 304 providers in a rural district of West Bengal (out of 360 approached) randomly assigned to either control or treatment: 9 months module with 72 sessions (cost of 175 dollars).
- Emphasis was placed on basic medical conditions, triage, and avoidance of harmful practices, accompanied by frequent patient simulations
- Trainees were tested but did not receive a certificate upon completion
- Main outcome: quality of care as measured by the same three SP as in Madhya Pradesh

Results

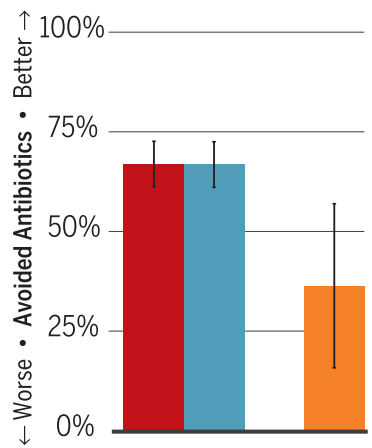
Despite 56% mean attendance, trained informal providers correctly managed more cases, closing half the gap with the public sector.



Providers who completed the full training course correctly managed cases as often as public-sector doctors.



However, training had no impact on the avoidance of unnecessary antibiotics.



Control: Untrained Informal Trained Informal Benchmark: Public Sector

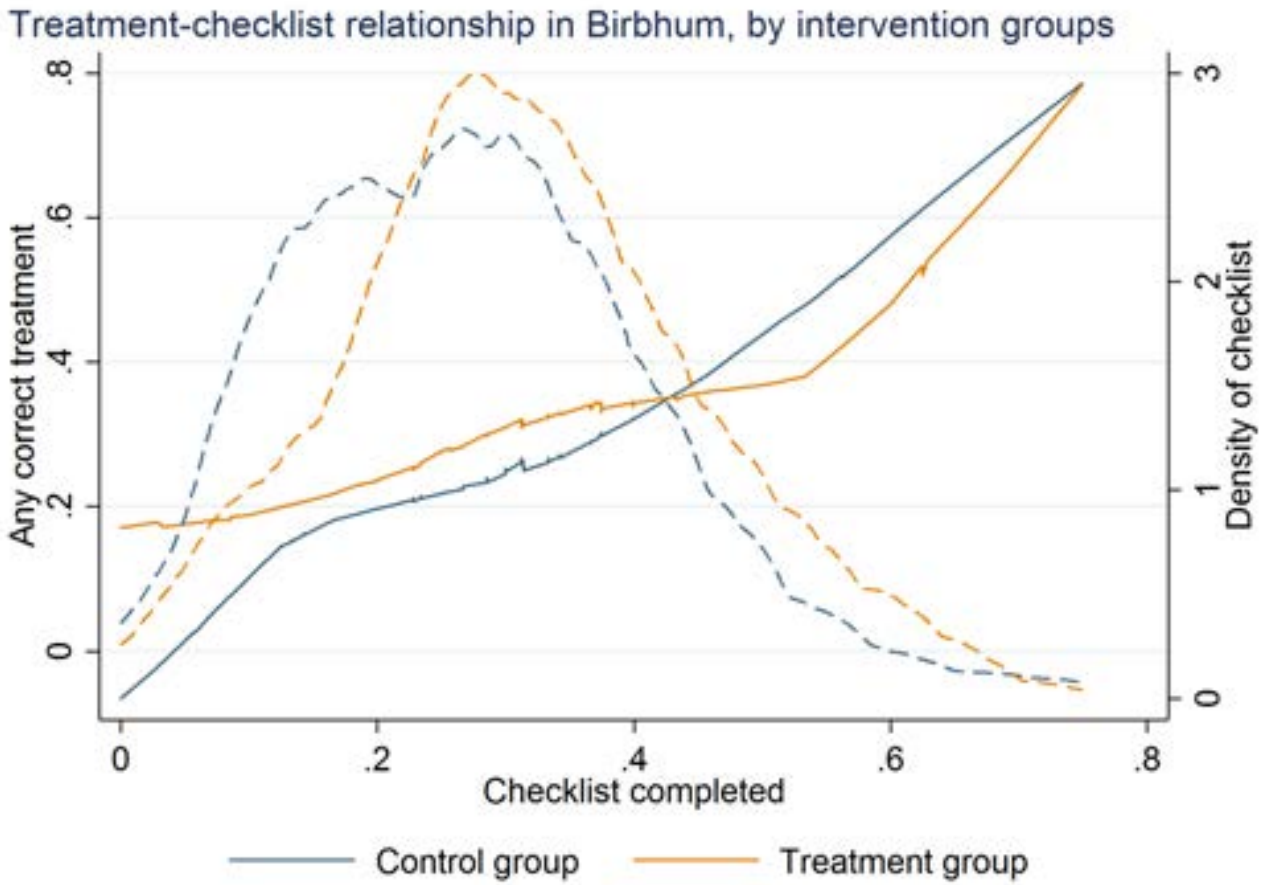
It is not that they know more but that they do more of what they know

Table 10: Effect of treatment on the Use of Knowledge

	(1)	(2)	(3)
	ITT estimates Checklist in SPs		
	Control	Treatment	Both
Checklist in vignettes	0.167	0.560***	0.173
	(0.145)	(0.135)	(0.140)
Treatment group x Checklist in endline vignettes			0.396**
			(0.195)
Treatment group (1=yes)			-0.045
			(0.042)
R2	0.063	0.147	0.122
Number of observations	393	391	784
Mean of checklist in SPs: Control group	0.202	.	0.202
Mean of checklist in SPs: Treatment group	.	0.214	0.214

Note: Robust standard errors clustered at the facility level are in parenthesis. Observations are at the interaction level and correspond to SP visits. All multiple regressions include a constant, case and block fixed effects, not show for brevity. * significant at 10%, ** significant at 5%, *** significant at 1%.

Movement along the curve



To sum up

- The private sector provides very low standards of care
- The public sector as well, unfortunately
- And poor service which is why so many prefer the private sector
- Shutting down the unqualified private sector is an option MCI and others routinely push
  - Not realistic
  - Not consistent with the number of medical colleges
  - Not consistent with the resistance to draconian regulations to send doctors to remote areas

What then?

- Lack of training in the private sector is a problem
- But mostly people don't do even what they know
- The problem is that patients are skeptical of their advice
  - Know that they are not well-trained
  - Suspect of corruption
- So they stay within their capacity
- Some certification/other help in reputation building will help a lot
- Along with some technology to help them follow a checklist
  - Builds good practice
  - Gives them credibility (may be show the patient what the checklist says?)
- Other problem is revenue model is tied with selling antibiotics/medication: no incentive to reduce that.

Enforce some regulation

- Enforce the laws about who can prescribe sophisticated antibiotics and steroids
- Require the unqualified providers (may be qualified as well) to take a test every x years to get a certificate they can display
- Require them to attend trainings on basic patient safety
  - No sharing needles/proper sterilization
  - CPR
  - Etc.
- Involve them in public health campaigns on maternal and child health, NCDs, TB
- They are by far the most connected to patients

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Naive consumers lead to more bad quality

Table 5. Misconceptions about Malaria and Drug Quality

	Panel A: Expectations of quality in drug shop			Panel B: Actual quality in drug shop			
Dependent Variable:	Believes drug shop sells fake drugs, dummy			Drug shop sells fake drugs, dummy		Share of drugs that are fake	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Naive household, dummy	-0.061**	-0.063**	-0.077**				
	(0.030)	(0.029)	(0.030)				
Naive households, share of village				0.811**	1.226**	0.426***	0.590**
				(0.320)	(0.489)	(0.146)	(0.229)
Radio ownership		-0.060	-0.022		0.987		0.266
		(0.036)	(0.040)		(0.781)		(0.368)
Television ownership		-0.023	-0.016		0.478		-0.323
		(0.047)	(0.043)		(1.555)		(0.684)
Electricity		0.054	0.042		-0.360		0.261
		(0.043)	(0.037)		(1.213)		(0.550)
Number of u5 children in HH		-0.023*	-0.011		-0.404		-0.301*
		(0.013)	(0.013)		(0.310)		(0.153)
Muslim HH		-0.020	-0.015		0.866		0.127
		(0.030)	(0.032)		(1.066)		(0.431)
Secondary education		-0.055**	-0.050*		0.341		0.483
		(0.027)	(0.028)		(0.667)		(0.348)
Tertiary education		-0.086*	-0.077*		-0.887		-0.802
		(0.043)	(0.043)		(2.504)		(1.072)
Log(Number of households in village)					-0.080		-0.081
					(0.128)		(0.067)
Number of drug shops in village					0.003		0.007
					(0.046)		(0.020)
Observations	1435	1435	1435	57	57	57	57
R-squared	0.004	0.015	0.106	0.064	0.135	0.047	0.143
Unit of Analysis	HH	HH	HH	Drug shop	Drug shop	Drug shop	Drug shop
Village FE	No	No	Yes	No	No	No	No
Dep. Var. Mean	0.27	0.27	0.27	0.37	0.37	0.19	0.19

Panel A: Household data from all villages at baseline. *Naïve household* is a dummy equal to one if the female head falsely believes malaria can be caused by eating, drinking, and direct contact with someone who has malaria. The control variables and expectations of quality use the same definitions as in table 4. Panel B: Drug shop level data from control villages. The dependent variables measure fake drugs, defined as having failed the Raman Spectroscopy authencity test. The control variables are the village means from the baseline data. Robust standard errors in parentheses, clustered at the village level in all regressions. *** 1% , ** 5% , * 10% significance.

Good quality drives bad one out

Table 6. Treatment Effect: Quality in Drug Shops

Dependent Variable:	Drug shop sells fake drugs, dummy		Share of sold drugs that are fake	
	(1)	(2)	(3)	(4)
NGO sells drugs	-0.197**	-0.212**	-0.108*	-0.126**
	(0.094)	(0.103)	(0.056)	(0.051)
Radio ownership		0.973		0.346
		(0.870)		(0.438)
Television ownership		0.220		-0.316
		(0.931)		(0.461)
Electricity		0.032		0.133
		(0.722)		(0.382)
Number of u5 children per HH		0.037		-0.027
		(0.300)		(0.141)
Muslim HH		-0.109		-0.347
		(0.593)		(0.272)
Secondary education		-0.249		0.304
		(0.753)		(0.419)
Tertiary education		-0.137		-0.077
		(1.720)		(0.927)
Log(Number of households in village)		-0.013		0.000
		(0.100)		(0.057)
Number of drug shops in village		-0.026		-0.027
		(0.040)		(0.023)
Observations	93	93	93	93
R-squared	0.074	0.103	0.085	0.134
Unit of Analysis	Drug shop	Drug shop	Drug shop	Drug shop
Dep. Var. Mean in Control Villages	0.37	0.37	0.19	0.19

NGO sells drugs is a dummy variable equal to one if there is a door-to-door NGO distributor selling

But harder with more naive consumers

Table 9. Heterogeneous Effects on Drug Quality: Misconceptions about Malaria

Dependent Variable:	Drug shop sells fake drugs, dummy		Share of drugs that are fake	
	(1)	(2)	(3)	(4)
Naïve households * NGO sells drugs	1.79**	2.26**	1.46*	1.86**
	(0.81)	(0.94)	(0.85)	(0.72)
NGO sells drugs	-0.78**	-0.93***	-0.60**	-0.73***
	(0.31)	(0.34)	(0.29)	(0.25)
Naive households	0.78*	1.12***	0.43**	0.70***
	(0.40)	(0.41)	(0.19)	(0.20)
Observations	93	93	93	93
R-squared	0.14	0.19	0.16	0.24
Unit of Analysis	Drug shop	Drug shop	Drug shop	Drug shop
Controls	No	Yes	No	Yes
Dep. Var. Mean in Control Villages	0.37	0.37	0.19	0.19

NGO sells drugs is a dummy variable equal to one if there is a door-to-door NGO distributor selling authentic ACT drugs in the village, and zero otherwise. *Naïve households* is the share of households in the village at baseline that falsely believe malaria can be caused by eating, drinking, and direct contact with someone who has malaria. The control variables are the same as in table 6. Robust standard errors in parenthesis, clustered at the village level. *** 1% , ** 5% , * 10% significance.

TABLE IV

EXPERIMENTAL SOCIAL EFFECT ESTIMATES

	Dependent variable: Child took deworming drugs in 2001				
	(1)	(2)	(3)	(4)	(5)
Explanatory variables:					
# parent links with children in early treatment schools (Groups 1 and 2, not own school)	−0.031**	−0.040**			−0.002
	(0.014)	(0.017)			(0.018)
# parent links with children in early treatment schools		0.017			
* Group 2 school indicator		(0.029)			
Proportion direct (first-order) parent links with children in early treatment schools			−0.098**		
			(0.045)		
# parent links with children in early treatment schools, with whom respondent speaks at least twice/week				−0.030**	
				(0.016)	
# parent links with children in early treatment schools, with whom respondent speaks less than twice/week				−0.033	
				(0.033)	
# parent links with children in Group 1, 2, or 3 schools, not own school, with whom respondent speaks at least twice/week				0.008	
				(0.012)	
# parent links with children in Group 1, 2, or 3 schools, not own school, with whom respondent speaks less than twice/week				0.026	
				(0.027)	
# parent links with children in early treatment schools					−0.0062*
* Respondent years of education					(0.0032)
# parent links with children in Group 1, 2, or 3 schools, not own school	0.013	0.012	−0.006		−0.014
	(0.011)	(0.017)	(0.009)		(0.014)
# parent links with children not in Group 1, 2, or 3 schools	−0.007	−0.008	−0.005	−0.007	−0.008
	(0.007)	(0.009)	(0.007)	(0.007)	(0.011)
# parent links, total	0.019***	0.029***	0.021***	0.018***	0.013
	(0.005)	(0.007)	(0.007)	(0.005)	(0.008)

TABLE VI

EFFECTS ON DEWORMING ATTITUDES AND KNOWLEDGE

	Estimate on # parent links with children in early treatment schools	Estimate on # parent links with children in early treatment schools whose children received deworming	Estimate on # parent links with children in early treatment schools with whom respondent spoke about deworming	Mean dep. var.
	Experimental	Nonexperimental	Nonexperimental	
Dependent variable:				
Panel A: attitudes				
Parent thinks deworming drugs	0.017**	0.009	0.009**	0.12
"not effective"	(0.007)	(0.009)	(0.004)	
Parent thinks deworming drugs	−0.007	0.042**	0.040***	0.43
"very effective"	(0.010)	(0.013)	(0.007)	
Parent thinks deworming drugs	0.000	0.004	0.003*	0.04
have "side effects"	(0.003)	(0.003)	(0.002)	
Parent thinks worms and schisto.	−0.001	0.001	−0.006*	0.92
"very bad" for child health	(0.006)	(0.008)	(0.003)	
Panel B: knowledge				
Parent "knows about ICS	0.004	0.054***	0.055***	0.70
deworming program"	(0.011)	(0.014)	(0.011)	
Parent "knows about the effects	−0.001	0.055***	0.039***	0.68
of worms and schistosomiasis"	(0.013)	(0.014)	(0.009)	
Number of infection symptoms	−0.029	0.078***	0.076***	1.8
parents able to name (0–10)	(0.025)	(0.029)	(0.015)	

Table 2: Characteristics of providers and practices where SPs were administered

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Representative sample (3 districts)			Representative sample of Public MBBS providers (5 districts)			
	Public	Private	p-value of (1)-(2)	All public	Non-dual public	Dual public	p-value of (5)-(6)
Panel A: Provider characteristics							
Age of provider	46.92	43.51	0.10	44.52	44.74	44.43	0.89
Is male	0.86	0.96	0.02	0.87	0.96	0.84	0.10
More than 12 years of basic education	0.58	0.52	0.48	0.64	0.52	0.69	0.09
Has MBBS degree	0.25	0.07	0.00	1.00	1.00	1.00	
Has alternative medical degree	0.11	0.21	0.18	0.00	0.00	0.00	
No medical training	0.61	0.68	0.42	0.00	0.00	0.00	
Number of practices	1.14	1.07	0.21	1.83	1.16	2.13	0.00
Tenure in years at current location	15.22	13.70	0.42	6.15	5.11	6.56	0.28
Panel B: Clinic characteristics							
Dispense medicine	1.00	0.81	0.00				
Consultation fee (Rs.)	3.65	51.24	0.00	3.75	3.15	3.92	0.00
Number of patients per day (self reported in census)	28.06	15.74	0.00	31.85	31.30	35.00	0.74
Number of patients per day (from physician observations)	5.72	5.75	0.98	16.04	13.72	16.86	0.31
Electricity	0.94	0.95	0.93	1.00	1.00	1.00	
Stethoscope	0.97	0.94	0.47	1.00	1.00	1.00	
Blood pressure cuff	0.83	0.75	0.34	1.00	1.00	1.00	
Thermometer	0.94	0.92	0.64	0.97	0.94	0.98	0.20

Table 3: Effort in the public and private sectors

	(1)	(2)	(3)	(4)	(5)	(6)
	Representative sample			Dual practice sample		
	Time Spent (mins)	Percentage of checklist items	IRT score	Time Spent (mins)	Percentage of checklist items	IRT score
Panel A: SP and case fixed effects						
Is a private provider	1.222***	6.758***	0.512**	1.471***	8.888***	0.729***
	(0.250)	(2.488)	(0.211)	(0.267)	(1.762)	(0.178)
R-squared	0.305	0.160		0.237	0.219	
Number of observations	662	662	233	331	331	138
Mean of public	2.388	15.287		1.562	17.677	
Mean of private	3.703	22.302		2.965	28.223	
Mean of sample	3.603	21.764		2.274	23.030	
Panel B: SP, case and market/district fixed effects						
Is a private provider	1.486***	7.352***	0.608**	1.475***	8.882***	0.729***
	(0.244)	(1.948)	(0.273)	(0.259)	(1.762)	(0.180)
R-squared	0.391	0.259		0.258	0.233	
Number of observations	662	662	233	331	331	138
Panel C: SP, case and market/district fixed effects						
Is a private provider	1.246***	5.999**	0.500*	1.452***	9.414***	0.770***
	(0.319)	(2.338)	(0.301)	(0.268)	(1.827)	(0.190)
Has MBBS	-0.156	3.285	0.043			
	(0.568)	(2.940)	(0.257)			
Has some qualification	-0.131	2.518	0.157			
	(0.299)	(1.716)	(0.151)			

Panel C: SP, case and market/district fixed effects						
Is a private provider	1.246***	5.999**	0.500*	1.452***	9.414***	0.770***
	(0.319)	(2.338)	(0.301)	(0.268)	(1.827)	(0.190)
Has MBBS	-0.156	3.285	0.043			
	(0.568)	(2.940)	(0.257)			
Has some qualification	-0.131	2.518	0.157			
	(0.299)	(1.716)	(0.151)			
Age of provider	-0.004	-0.046	0.000	0.005	-0.064	0.004
	(0.012)	(0.071)	(0.008)	(0.015)	(0.102)	(0.101)
Gender of provider (1=Male)	0.653	-0.949	0.212	-0.077	-1.383	-0.288
	(0.544)	(3.529)	(0.327)	(0.386)	(2.639)	(0.309)
Patient load during visit	-0.096*	-0.144	0.082**	-0.106*	-0.283	0.013
	(0.052)	(0.554)	(0.040)	(0.062)	(0.424)	(0.517)
R-squared	0.399	0.259		0.275	0.233	
Number of observations	638	638	221	302	302	126

Table 4: Diagnosis in the public and private sectors (unstable angina and asthma cases only)

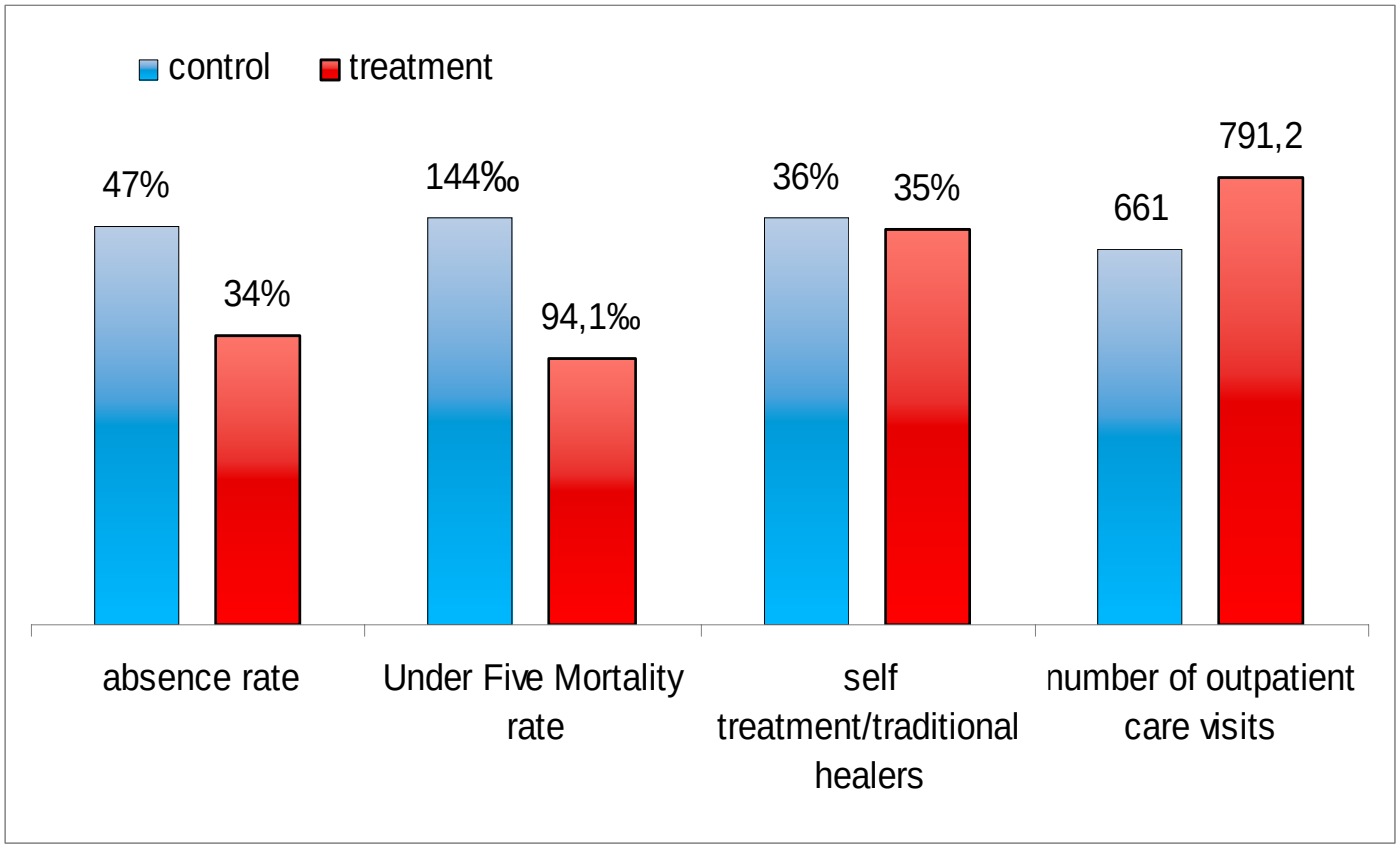
	(1)	(2)	(3)	(4)	(5)	(6)
	Representative sample			Dual practice sample		
	Gave diagnosis	Correct diagnosis (conditional)	Correct diagnosis (unconditional)	Gave diagnosis	Correct diagnosis (conditional)	Correct diagnosis (unconditional)
Panel A: SP and case fixed effects						
Is a private provider	0.168***	-0.014	0.016	0.095	-0.050	0.018
	(0.052)	(0.057)	(0.022)	(0.068)	(0.105)	(0.053)
R-squared	0.130	0.121	0.075	0.130	0.114	0.054
Number of observations	440	178	440	201	88	201
Mean of public	0.263	0.150	0.039	0.380	0.395	0.150
Mean of private	0.431	0.135	0.058	0.495	0.380	0.188
Mean of sample	0.418	0.135	0.057	0.438	0.386	0.169
Panel B: SP, case and market/district fixed effects						
Is a private provider	0.188***	-0.019	0.023	0.089	-0.067	0.018
	(0.072)	(0.093)	(0.031)	(0.069)	(0.109)	(0.054)
R-squared	0.218	0.301	0.145	0.149	0.176	0.066
Number of observations	440	178	440	201	88	201
Panel C: SP, case and market/district fixed effects						
Is a private provider	0.149*	-0.046	0.031	0.083	0.005	0.037
	(0.081)	(0.111)	(0.035)	(0.072)	(0.122)	(0.058)

Table 5: Treatment in the public and private sectors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Representative sample						Dual practice sample					
	Correct treatment	Palliative treatment	Unnecessary treatment	Correct treatment only	Antibiotic	Number of medicines	Correct treatment	Palliative treatment	Unnecessary treatment	Correct treatment only	Antibiotic	Number of medicines
Panel A: SP and case fixed effects												
Is a private provider	0.052	-0.038	0.061	-0.008	0.016	0.972***	0.138**	-0.113*	-0.014	0.018	-0.119*	0.064
	(0.045)	(0.056)	(0.072)	(0.023)	(0.062)	(0.279)	(0.064)	(0.061)	(0.051)	(0.025)	(0.068)	(0.182)
R-squared	0.260	0.215	0.066	0.044	0.079	0.087	0.270	0.306	0.107	0.025	0.114	0.128
Number of observations	440	440	440	440	440	440	201	201	201	201	201	201
Mean of public	0.211	0.526	0.737	0.026	0.263	2.092	0.380	0.630	0.830	0.020	0.480	2.800
Mean of private	0.270	0.496	0.808	0.017	0.279	3.097	0.554	0.475	0.842	0.040	0.386	2.950
Mean of sample	0.266	0.498	0.802	0.018	0.278	3.021	0.468	0.552	0.836	0.030	0.433	2.876
Panel B: SP, case and market/district fixed effects												
Is a private provider	0.051	0.040	0.095	-0.020	0.086	0.894***	0.140**	-0.116*	-0.014	0.017	-0.121*	0.052
	(0.059)	(0.068)	(0.070)	(0.026)	(0.069)	(0.234)	(0.064)	(0.061)	(0.050)	(0.026)	(0.068)	(0.181)
R-squared	0.384	0.350	0.233	0.255	0.239	0.289	0.294	0.312	0.166	0.039	0.130	0.155
Number of observations	440	440	440	440	440	440	201	201	201	201	201	201
Panel C: SP, case and market/district fixed effects												
Is a private provider	0.101	0.060	0.066	-0.005	0.112	0.638**	0.160**	-0.095	-0.014	0.017	-0.100	0.045
	(0.071)	(0.080)	(0.075)	(0.027)	(0.080)	(0.284)	(0.068)	(0.064)	(0.057)	(0.028)	(0.071)	(0.192)
Has MBBS	0.309***	0.246**	-0.132	0.106**	0.267***	-0.397						
	(0.087)	(0.100)	(0.089)	(0.051)	(0.086)	(0.352)						
Has some qualification	0.088	0.086	0.029	-0.001	0.099	-0.116						
	(0.057)	(0.066)	(0.054)	(0.014)	(0.063)	(0.241)						
Age of provider	-0.001	-0.001	-0.002	-0.000	-0.000	-0.012	-0.002	-0.007*	0.001	-0.002	-0.001	-0.019*
	(0.002)	(0.003)	(0.002)	(0.000)	(0.003)	(0.010)	(0.004)	(0.004)	(0.003)	(0.001)	(0.004)	(0.011)
Gender of provider (1=Male)	0.133	-0.118	-0.068	0.001	-0.029	-0.128	0.049	0.097	0.111	0.007	0.152	0.285
	(0.098)	(0.122)	(0.091)	(0.033)	(0.132)	(0.332)	(0.100)	(0.090)	(0.081)	(0.038)	(0.100)	(0.290)
Patient load during visit	-0.008	-0.017	0.007	-0.001	-0.008	0.009	0.001	0.005	0.014	-0.004	0.002	0.076*
	(0.010)	(0.011)	(0.008)	(0.001)	(0.008)	(0.045)	(0.015)	(0.014)	(0.017)	(0.003)	(0.016)	(0.040)
R-squared	0.406	0.370	0.253	0.278	0.272	0.293	0.273	0.316	0.180	0.053	0.159	0.180
Number of observations	423	423	423	423	423	423	183	183	183	183	183	183

Notes: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Robust standard errors clustered at the market level are in parenthesis. All regressions include a constant. Observations are standardized provider-patient interactions. Market fixed effects are used for the representative sample, and district fixed effects for dual practice sample. In columns (6) and (12) the dependent variable is total number of medicines recommended to the patient (dispensed and/or prescribed).

Community-level Monitoring in Uganda: Results



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