

Lab-in-the-Field Experiments with Health Professionals in Burkina Faso:

The use of video vignettes to measure health worker knowledge, motivation and effort.

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Motivation

- Between 2011-2013, the government of Burkina Faso piloted a Performance-based Financing (PBF) operation to improve the coverage and quality of targeted maternal and child health services in 3 health districts.
- In collaboration with the Ministry of Health, a PBF impact evaluation was undertaken to test the impact of PBF on health facility output as PBF is extended to an additional 15 health districts.
- The impact evaluation focuses on outcomes at the facility level
 - Lab experiments complement this approach by focusing on individual behavior

Lab-in-the-Field: Overview (I)

- The lab experiments take a non-random sample of health professionals (doctors, nurses, and midwives) in Burkina Faso and randomly assign them to ten different treatments
- The Lab-in-the-field experiments mimic the RBF field treatments, but the unit of analysis is the individual
- Lab-in-the-field experiments measure:
 - Motivation (to serve the poor)
 - Ability (medical knowledge)
 - Effort

Lab-in-the-Field: Overview (II)

- The lab experiments focus on the impact of differing pay structures on the quantity and quality of health services for the poor
- The experiments test:
 - Impact of variable vs. fixed pay schemes
 - Impact of quantity and quality bonuses
 - Impact of the “Poor Bonus” utilized in the field

Lab-in-the-Field: Recruitment

- Recruitment: medical professionals attending training sessions for PBF were invited to take part in the lab activity (nearly all invitees participated)
 - Training sessions for PBF were conducted by the Ministry of Health, and provided details of the new payment structure
 - The lab experiments were conducted with health professionals that had not undergone training as of February 2014
- Each health facility in the region was expected to send at least one representative from the facility to attend the training sessions

Experiment Details (I)

- 1,029 health professionals from health facilities in five regions (Gourcy, Kaya, Koudougou, Nouna, and Ouahigouya) in Northern Burkina Faso
 - Nurses – 552
 - Midwives – 124
 - Doctors and other - 353
- Subjects participated in activity for 90 minutes on average, and were paid in cash towards the end of the activity
 - All activities were conducted in French
 - Average earnings: 6,000 CFA (\$12)
- Average age: 36 years old
- Gender: 59% female
- Average salary: 139,332 CFA per month (Approx. \$280)

Experiment Details (II)

- The following variables are measured during the course of the experiment:
 - Motivation towards serving the poor
 - Ability (medical knowledge)
 - Effort for the poor

Measuring Motivation (I)

- Problem: How do we measure motivation for serving the poor?
- Standard dictator game: measures pro-social preferences (e.g. altruism)
 - Subjects given a fixed sum and are asked whether they would like to donate some of the money to *an anonymous partner or charitable organization*
- Modified dictator game: measures preferences for serving the poor
 - Subjects given a fixed sum (2500 CFA: \$5) and are asked whether they would like to donate some of the money to *a wealthy school and/or a poor school*
 - Since the only difference between the two schools is wealth levels of the students (no other information is provided to the subjects), preferences for serving the poor is defined as the difference in giving between the rich and the poor school

Measuring Motivation (II)

Wealthy School (*Le Creuset Plus*)

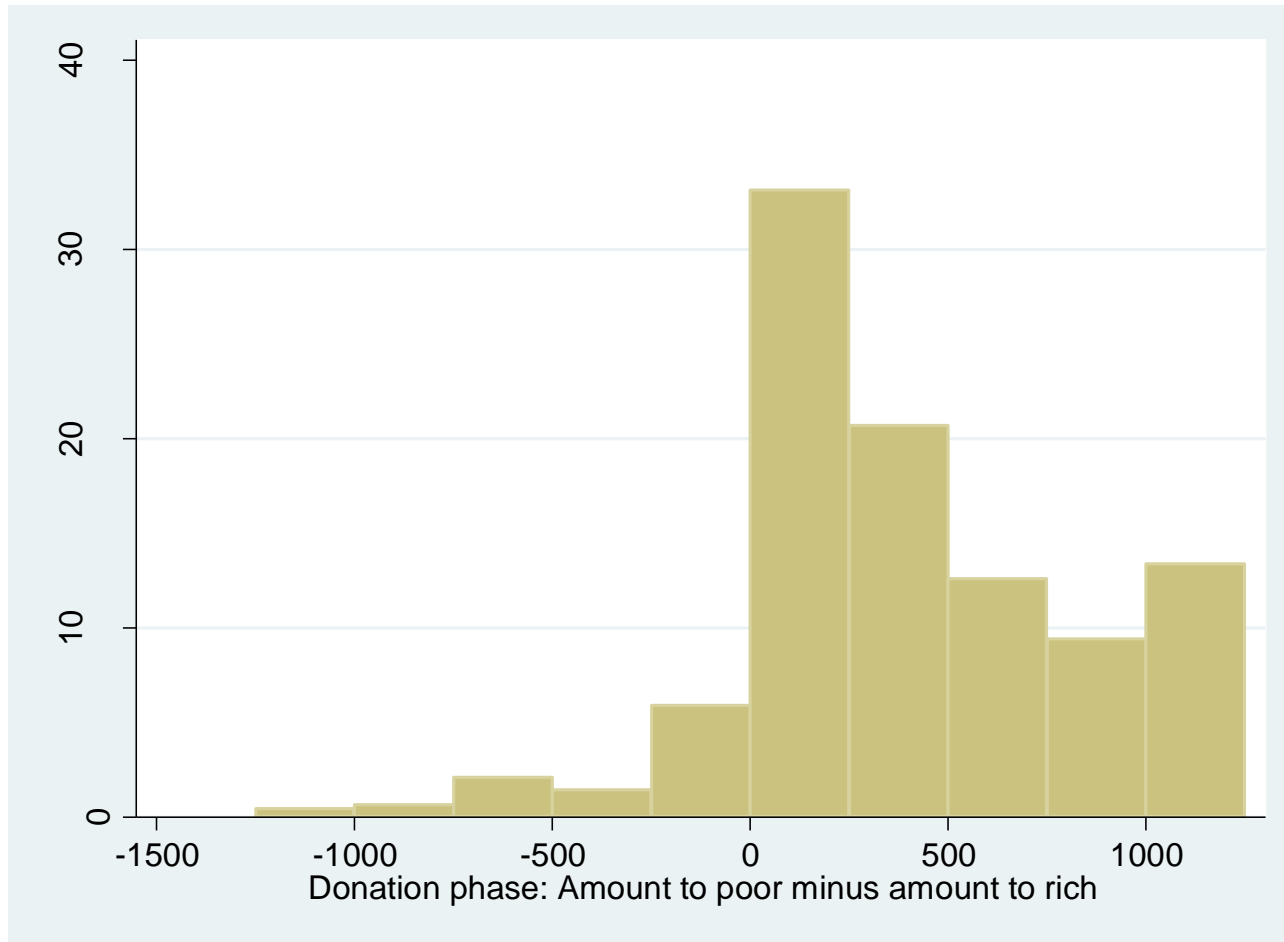


Poor School (*Gampela 3*)



Distribution of giving to poor school *less* giving to rich school

* 68% of the sample gave more to the poor school



Measuring Motivation (III)

- Modified dictator game measures general levels of pro-social preferences through total donations to the schools
 - In this case, however, pro-social preferences have both education and poverty components
 - The game distinguishes between preferences for the poor, and preferences for education by allowing different donations to the two schools, which differ in the income level of their students

Measuring Ability (I)

- Problem: How do we measure ability levels of health professionals?
- “Standard” effort tasks: measure ability levels in a given task by providing a piece rate that is a direct function of output
 - We take the same approach, providing subjects with a piece rate of 100 CFA (\$0.20) for each correct response on the Medical Real Effort Task (next page)

Excursion: A Medical Real Effort Task

- Problem: Need a task which requires effort and knowledge in a medical context.
- “Standard” approaches to measuring medical knowledge use survey vignettes on paper format, providing subjects with symptoms, and asking them to provide a diagnosis
- We take a similar approach, with videos presenting a patient with maternal/early childhood symptoms visiting the clinic
 - Subjects view the video and are asked to select the correct (1) diagnosis, (2) treatment, (3) follow up schedule, and (4) alternate treatment from a list

Notes about cases

- The cases were created by Dr. Maurice Ye of the Nouna Health Research Center, with the guidance of the research team
 - Created a pool of 20 cases
- Focus on maternal and early childhood care
- Developed and tested with nurses at a nursing school in Ouagadougou
- Cases with adequate variation in responses were kept while others were replaced with new cases
- Multiple choice answers: each answer set had one correct response, two nearly correct responses, and two wholly incorrect responses, yielding additional variation

Example: English Transcript of Case

Good morning Doctor, I am here today because I am very worried about my child. He is about two years old. Over the past two weeks he has been suffering from seizures. He often loses consciousness, and has fevers and chills. I have tried to use cold packs to treat the fever but it is not making a difference at all. I am so worried because he is not eating at all. Just last night he vomited twice, even though he refuses to eat. I brought him here because his condition is really worrying me. His eyes are so pale, and he looks to be so very tired and exhausted. I don't understand what is happening to him, he has all the vaccines completed one year ago.

Sample Case



Case questions

1) What is the most probable diagnosis?

A	Sepsis	Almost
B	Bacterial meningitis	Almost
C	Severe malaria	Correct
D	Neonatal tetanus	Incorrect
E	Flu	Incorrect

2) What is the most appropriate treatment?

A	Ampicillin IV	Almost
B	Quinine IV	Correct
C	Erythromycin tablets	Almost
D	Diazepam IM	Incorrect
E	Paracetamol	Incorrect

3) When should you see the patient for a follow-up after the completion of the initial treatment?

A	3 days	Correct
B	7 days	Incorrect
C	3 weeks	Incorrect
D	30 days	Incorrect
E	Follow-up visit is not necessary	Incorrect

4) What is likely to be the best alternative treatment for the patient (for example, if the patient's condition does not improve)?

A	Ceftriaxon IM	Almost
B	Arthemeter IM	Correct
C	Gentamycin IM	Almost
D	Tetanus antitoxin serum IM	Incorrect
E	There is no alternative treatment	Incorrect

Notes about videos

- Each case consisted of a video lasting between 60-100 seconds
 - We had two types of cases: simple; and complex (more on this later) with simple cases lasting 60 seconds, and complex cases lasting 100 seconds
 - Every effort was made to keep the length of videos consistent across cases
- The videos use the same actress and the same set, and were shot and edited by renowned director Boubakar Diallo
- Care was taken to select an actress of neutral appearance in terms of ethnicity

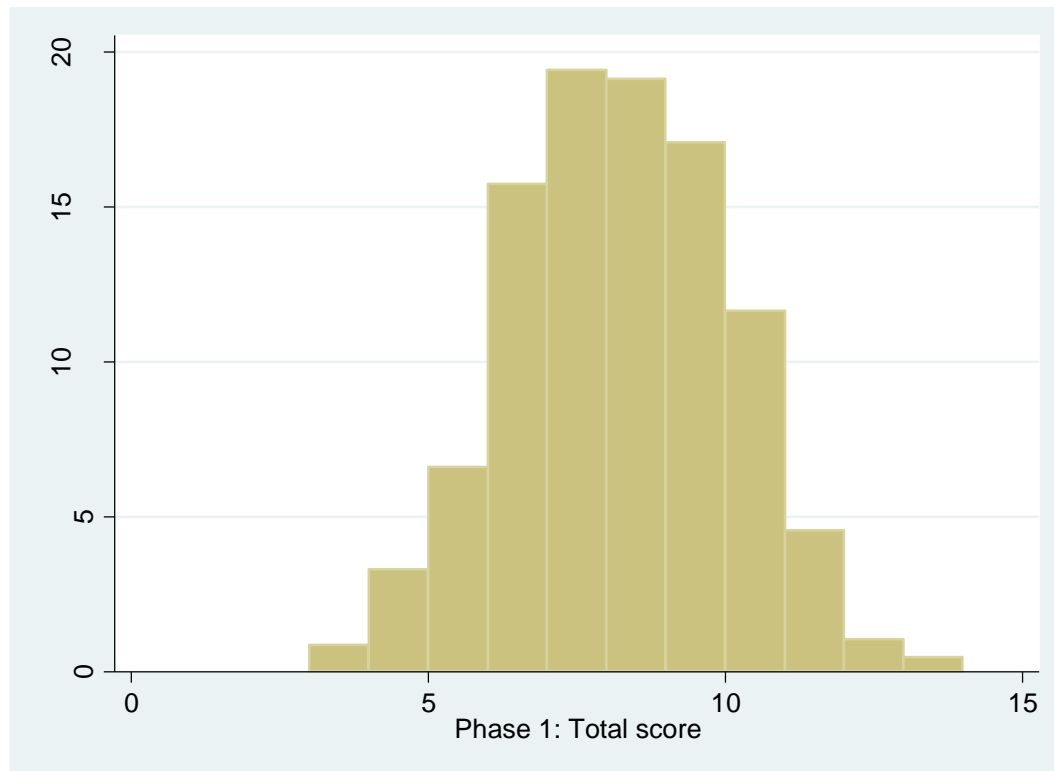
Video vignettes used in other surveys

- Video vignettes designed to be culturally appropriate for Francophone Africa (country and ethnically neutral).
- Beyond the lab-in-the field experiment, have been used in baseline health facility surveys for the impact evaluation in PBF in the Republic of Congo and soon in Cameroon and Chad.
- Video vignettes embedded in tablet based questionnaire.

Measuring Ability (II)

- Subjects were given 4 cases in the same sequence to diagnose and treat
- Subjects could take as long as they like to respond to the questions
- Subjects were asked to provide responses to the following questions for each case:
 - What is the most likely diagnosis?
 - What is the most appropriate treatment?
 - When would you prefer to see the patient again after the initial treatment?
 - What is the best alternative treatment for the patient (if, for example, the patients condition does not improve)?
- Each correct response earns 100 CFA (\$0.20) for the subject

Distribution of ability measure scores (maximum score = 4 question X 4 cases = 16)



Measuring Effort for the Poor (I)

- Problem: How do we measure effort exerted on behalf of the poor?
- Little guidance in the literature, most studies focus on general effort (see Ken Leonard's work in Tanzania)
- We address this by splitting the cases into two types, with "rich" patients and "poor" patients
 - Each case has a "rich" and "poor" patient version

“Rich” vs. “Poor” patients

- There are a number of differences between rich and poor patients designed to mimic reality
 - Poor patients are dressed poorly (next slide)
 - Poor patients have more symptoms (i.e. cases are more complex)
 - Poor patients are less articulate (i.e. cases take longer)

Two types of cases (I)

Rich Patient



Poor Patient



Sample Case Video (Rich v. Poor)

Rich Patient



Poor Patient



Measuring Effort for the Poor (II)

- At the beginning of the task, subjects are informed about the task particulars, including how they will be paid
- They are informed that they will have a finite amount of time (11 minutes) to diagnose and treat as many cases as they can
- Subjects are told that they can choose any case from the case menu, which contains two types of cases:
 - Type X Cases (corresponding to Rich patients)
 - Type Y Cases (corresponding to Poor patients)

Measuring Effort for the Poor (III)

- Subjects are informed that type Y cases will take longer (i.e. the videos are longer), and are more complex
- Diagnosing and treating the patients matters: for each correct response, the schools earn 100CFA (\$0.20)
 - Correct responses for Type X cases yield donations to the wealthy school (Le Creuset Plus)
 - Correct responses for Type Y cases yield donations to the poor school (Gampela 3)
- The treatments simply vary the pay structure of the subjects

Case Menu Screenshot

Temps restant en secondes 640

Cas de Type Y Charité: École B	Cas de Type X Charité: École A
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y1	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X1
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y2	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X2
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y3	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X3
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y4	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X4
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y5	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X5
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y6	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X6
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y7	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X7
-- La longueur approximative de la vidéo: 100 seconds -- Difficulté du cas : Complexe Commencer cas: Y8	-- La longueur approximative de la vidéo: 60 seconds -- Difficulté du cas : Simple Commencer cas: X8

Treatments (Set 1)

- Flat Pay treatment: Subjects are given 4000 CFA (\$8)
- Output-based Pay treatment: Subjects are paid 650 CFA (\$1.30) per case diagnosed and treated (independent of accuracy)
- Outcome-based Pay treatment: Subjects are paid 8,000 CFA (\$16) times their accuracy rate
 - Accuracy rate: total number of correct responses divided by total number of questions addressed

Treatments (Set 2)

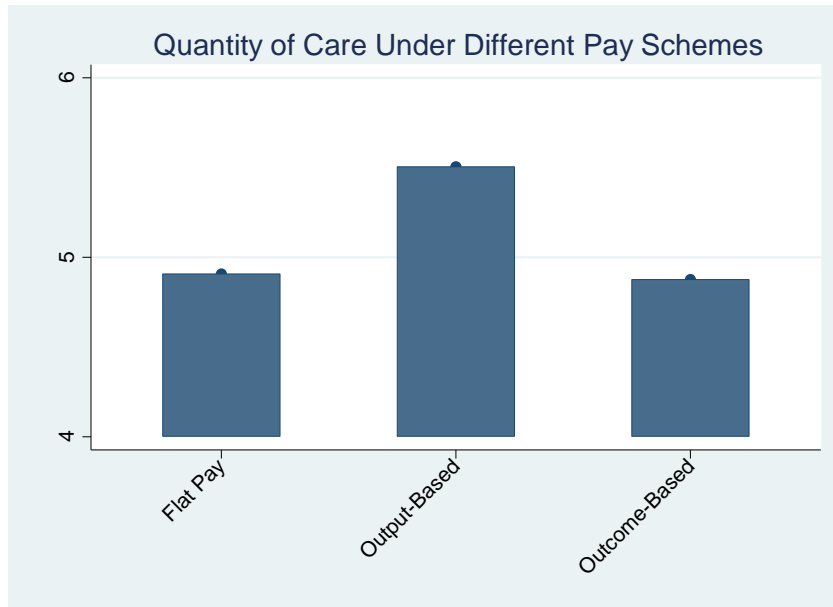
- Output-based bonus: Flat pay treatment (8000 CFA) + 100 CFA (\$0.20) per case diagnosed and treated
- Output-based and outcome-based bonuses: Output based bonus + 1300 CFA (\$2.60) multiplied by the accuracy rate

Treatments (Set 3)

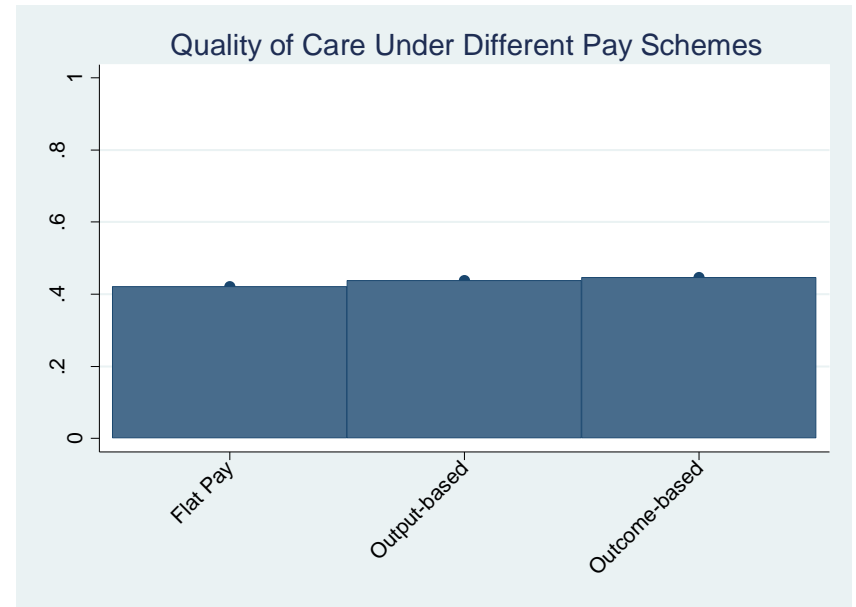
- Poor Bonus 1: Output-based bonus + 100 per POOR case diagnosed and treated
- Poor Bonus 2: Output-based and Outcome-based bonuses + 100 per POOR case diagnosed and treated

Preliminary Results (Set 1): Output-based pay schemes work in increasing output, while outcome-based pay schemes do not have an impact

Quantity of Care



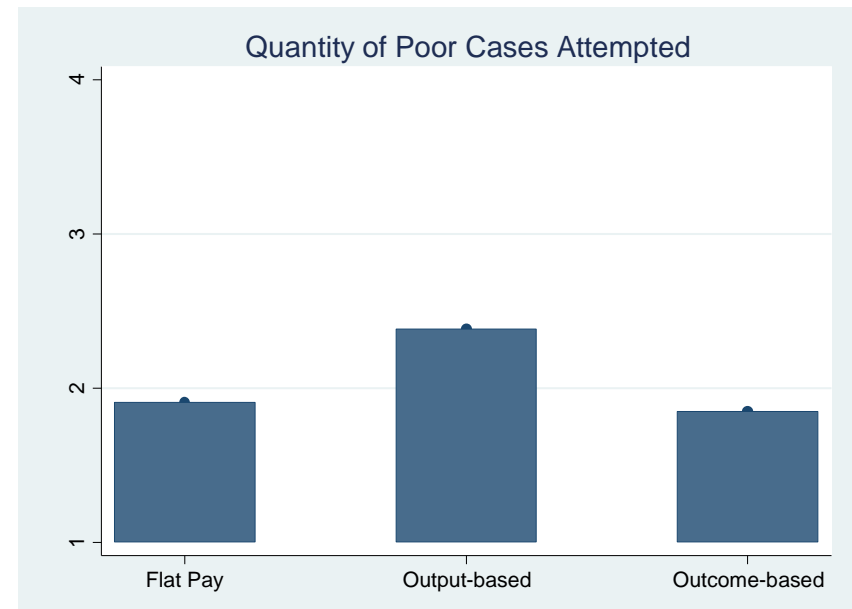
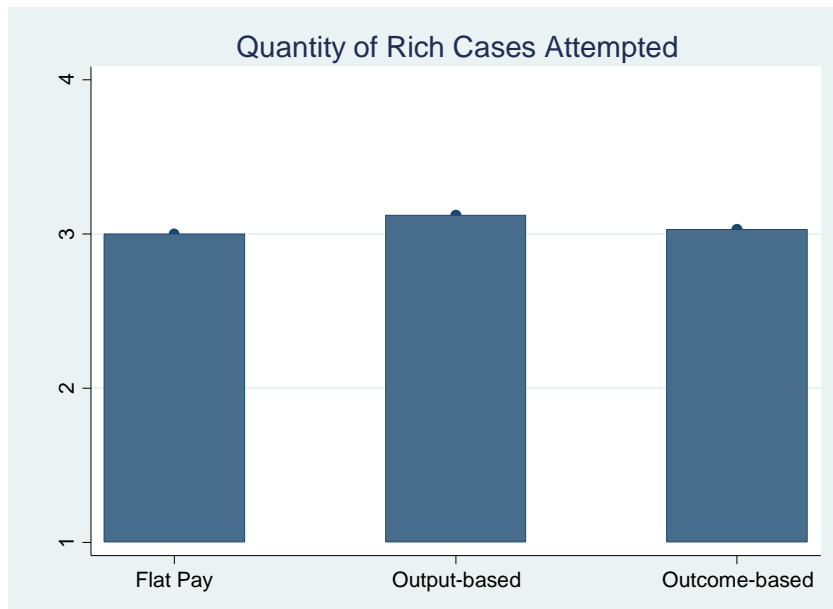
Quality of Care



Importantly, output-based pay schemes increase effort in poor cases rather than in rich cases

Rich case output

Poor case output



More to come!