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ESTHER DUFLO: Good morning. So in terms of the video and also in terms of you guys, I'm going to start by finishing the supply of health here, but then when whatever time is left, I'll start with the gender and family. and that will be basically, probably what I have time to cover today, so really, the end of Ben's lecture. So that's a bit of a hodge podge, mixed mash lecture today that this is.

So where we left it last time is the idea that it's difficult for people to learn about health. Last time, we discussed the fact that self-limiting diseases are a problem and therefore, people also don't understand why a particular drug or compound treats them or doesn't treat them. In the lecture before that, we talked about externalities that makes it even harder to understand the impact of any drug that has extant, which is most drugs that have something to do with infectious diseases.

And the consequences of all that is that, indeed, the private health care, as Arrow intuited, could be of a very, very, very bad quality. Just to give you a sense of how bad it is, so in India, Jishnu Das and a group of people did a survey in several states, which we are going to use a lot today. And they found that 77% of private providers in rural areas have no medical degree whatsoever. 18% of them have some other degree than a medical degree. So 18% have a medical degree, but that's not like your regular med school, which is MBBS in India, the equivalent of an MD.

The rest have these BAMS, BIMS, BUMS, BHMS, which are some kind of alternative medicine or things like that. In the average village, there are 3.3 providers with no degree, less than 1 with some degree, and only 20% of the village have even one MBBS doctors. They are public providers who are more qualified and offer free services, but they have only 20% of the market share, up to 25% in villages where the primary health center is exactly located.

Another thing is these private doctors that have 80% of the market share, know very little, and to establish that, they use vignettes, which I'll describe in a moment, and they do even less, so there is what's called in the medical literature and know-do gap, which is the gap between what you know and what you do.

So how do we know what doctors know? So the way to do this that was pioneered by Jishnu Das and his group of colleagues is to use vignettes, very similar to what gets administered in board exams. If you have friends who took board exams for medicine, you are presented with some information about a patient.

The doctor is told that the patient who will follow instruction, they are given the standard tests, and then you pose as a doctor to ask questions. And then you're graded on whether you asked the right questions. And then you give an answer and you ask further questions. You come up with a diagnosis at the end. So you're also graded, of course, whether you got to the right diagnosis.

So here a woman, for example, a woman comes to the clinic with a child who has had diarrhea for the last two days. So the doctor must first ask about their stool, not stock, to figure out if she has dysentery, rather than a virus and check for signs of dehydration. In this particular vignette, it is not a bacteria, it is a virus. There is no need for antibiotic. The right treatment is oral rehydration solution. So they use that vignette. They've been used.

So that's Hammer and Leohnardt have pioneered the use of the vignettes and used them in a number of settings. They have an overview of their work in their journal of economics perspective from a few years ago. So what they do then is, they use item response theory to code the answer to the question to create an index of competence, which solve for the optimal weight to each question. So basically, you weight less the question that everybody gets right anyway. You get more the questions that are more weighted.

This is something, a technique that's coming from education. So for example, when you take the GRE, then graded according to item response theory, and then that's what is used to form your percentile ranks as opposed to just the whole score. So that's what they do here, so they create this index of competence.

And so here people are graded by competence, and you can see that if we rank people by competence, then we can start asking questions. You can then ask descriptive question for people ranked by competence. So it's saying, for example, that among the most competent doctors, for the diarrhea question, only 50% of them asked about the stools, whether there was blood or mucus in the stool, which would have helped them to determine if there is dysentery. And among the least competent, basically, none of them, a few percentage points even asked the question.

So that's an example. In some countries, doctors are better. So for example, in Indonesia, they ask-- so it depends on the thing. So check the fontanelle for dehydration, in India, no one asked that question. In Tanzania, they ask it more often. Whether there was fever, the question that asked enough, the frequency of the stool is a question that asks more.

For tuberculosis, do they ask the right questions? Fraction of the doctors that asked the right question in vignette, for the good doctors, it's very high. For anybody else, it's very low. That's for Indonesia. And I forgot to put what the question was, question A, question B was whether it was asked or not so.

There is a lot of variation, but the overall quality is very low. So what that says is that the doctor has to be more than median quality not to harm the patient with what they are doing. So if you remember the oath that the doctor take at the beginning of their career, do no harm, it's really not the case.

In India, when you compare where people rank in terms of performance, from the vignette point of view, the top qualified doctors are better than the public doctors, but the public doctors are much better than the quacks, the ones who don't have a diploma. So you would expect people should come to the public doctor, when there is one available. It is both free, and they are more competent. But yet they don't. And so why is that the case? And that's related, probably to what they do once you show up.

So how to find out. So the first method that they did is sent-- just leave someone in the clinic for some time and do direct observation of patients as they come. So it has the issue that people, the doctors might adjust their behavior to the fact that they have someone observing them. That doesn't seem to be much of a problem from descriptive data I'm going to show you in a minute. Even with someone present to observe them, they spend about 2 minutes with the patient. So if they do even less when they don't have someone, then maybe it's even less.

But even with that, even with someone observing them that don't seem to be. Either their best behavior is truly terrible, indeed, or they are not really on their best behavior. But there is another problem with this, which is that if you have someone sitting there observing the patient, that person doesn't know what the patient has. So they don't know what the right course of action would be.

And in addition, good doctors might attract a different mix of patients. So when you are sitting there observing what is going on, you're also sitting there, observing an endogenous response to an equilibrium where people have gone to that particular patient in ways that are, essentially, very, very difficult to control for.

So to address these issues, all of these issues, potential of social desirability, not knowing what the right course of action because you're not a doctor, you don't know the patient, and the potential endogenous sorting of patients that is hard to deal with, what that did is that they started sending a standardized patient. So that's the equivalent of an audit study. You might have seen this audit study in other fields like, for example, to know whether car salesmen might discriminate against Black people or against women, you can send a woman or a Black person to the used car lot and have them do negotiation and see whether they are given less time, they are given higher prices, or so on and so forth. So that's the idea of audit studies.

Audit studies have been used in various settings, including the labor market. And so here, the idea is to send a standardized patient who is afflicted by a particular ailment, that the advantage to know. Of course, the disadvantage is that they don't actually have that ailment. But goes and described his problems, so doctor, I woke up this morning with crushing chest pain and was feeling very anxious.

Then he answers the question, completes the basic exams that provided the recommend a treatment. So there are issues with that. Number one, is maybe it's not ethical to send a fake patient. So it's generally done in a context, where you're telling them that they might be unrolling your doctors. Tell them that they might be a standard patient at some point or another, which increases or you reveal yourself at the end, and you're asking, can I use the data from that.

The detection rates are actually low, despite that, and provider behavior seems to be consistent with believing the standardized patient. And they don't seem to come to the conclusion that the standardized patient is faking it. I don't know why all of my inverted commas became question marks. But in fact, the more they do with the patient, the more they are convinced that the standardized patient is real.

And they do even more compelling, there is one case of general patient, which is child diarrhea. Obviously, you cannot bring a child. So someone comes to the doctor and said there is a child in a village that has diarrhea, and then answers to all the questions that are given to them. So did you check the blood? Did you check the stool to see if there was blood or mucus. They can give an answer to that, and so on and so forth.

So the nice thing about this method, I mean, one of the nice things about this method, so you can combine standardized patient vignettes. So you get direct information about the know-do gaps. So you first send the standardized patient, then you go back to the doctor and say, hey, by the way, we had sent some standardized patient. Are OK for us to use this data? And if they are OK, they are given a vignette to answer.

So here are some data from the direct observation. Again, the doctors are classified by a third of how much effort to exert between low effort, medium effort, high effort. So in India, in Delhi, they spend about 3.8 minutes with the patient. They ask three questions. They give one exam, and they give about 2.6, which we can round up to 3 minutes. So it's a three, three, three-- 3 minutes, three questions, three medicines. It's easy to remember.

In Paraguay, they spend a little bit more time, 8 minutes. They ask more questions, and they give fewer medicine. And you can see, again, that the effort is related to the time that is being spent. In Germany, people spend closer to Paraguay. In Belgium, they spend 15 minutes with a patient. But the number for India are particularly extreme in terms of how low the effort is.

And then from the standardized patient, we can look at the type of treatment that is being given. So this is a standard patient, so you know what the correct treatment would be of a treatment. And you can see that in most - so this is various states in India and in China and Kenya. It's less than half the time, sometimes much less than half the time that you get the correct treatment that the standardized patient get the correct treatment for what they're presented with.

Even in cases like, for example, one of the cases is a woman with pre-eclampsia-- that's a pregnant woman who has, essentially, high blood pressure during pregnancy. It's a life-threatening condition. Even there, they don't get the correct treatment. So any correct treatment is the correct plus some more. Just to correct is even lower. A lot of people get overtreated, so they get medicine that they don't need for this particular case. Incorrect treatment is current.

One example of a treatment is antibiotic, so they think all the cases, none of these cases except possibly, the standard patient acquired antibiotic. And a lot of the cases, got it anyway, 68% in Patna, 55% in Kenya, 35% in Madhya Pradesh got an antibiotic that they didn't need.

The use of steroids is less popular, particularly, outside of India. But you can see that in Bombay, they are very popular. 20% of people who don't need steroid, the only indication for steroid here was the asthma case. Go back with steroid. Referral is rare from this first line doctor, you're hoping that they would refer, but [INAUDIBLE].

Another thing that you know from combining this vignette to the standardized patient is this evidence of this know-do gap. So if you use the same vignette, you can compare what they do because they are doing it on the vignette and what they actually do when the standardized patient is showing up at their doorstep. And you can see that there is always a know-do gap, that these are all the step, that they do more of the right thing, and they are more likely to get any correct treatment on the vignette than on the standardized patient.

And while the knowledge, as we saw before, increase with qualification, for example, the MD public, MD private untrained, public guy know more than the private guy. So what they know increases a lot with qualification. You can see it from a private trained know the most. Public trained knows a bit less. Private untrained knows the least.

But what they do, although there is the same U-shape pattern in this, that U-shape pattern is much flatter. So the know-do gap increases with qualification. The know gap increases with qualification, but the know-do gap also increases. And in fact, in a lot of cases, at the end of the day, the public providers don't do much better than the private provider because although they know much more, they're even farther from their front here.

So the know-do gap is a thing to keep in mind. It's not just about training and knowledge. It's about incentive to actually do what is appropriate. Yep.

AUDIENCE: When are the vignettes administered? So are they administered during the course that the doctors know [INAUDIBLE] day? Because one potential explanation you could think of is, I know what the right answer is in a fully, theoretical setup, but I'm dealing with many patients. I have a lot of demand on my time, so I just might not be able to--

ESTHER DUFLO: Attend to the thing. Yeah, it could be. If you spend 3 minutes, it's as much time as you have. So that's certainly one of the parameters is how much effort you're giving to each patient and to solving the problem that is in front of you. And the other, which we are going to spend a bit more time on is also, what are your incentive and some of how you're going to get paid.

So in particular, in a lot of settings, you're going to see an over application of various kind of medicine, and a lot of the payment model is that people are paid both for a fee for the visit, and then they are selling the medicine at the same time. So there is also an incentive that way, and that's true of the private doctor and also, of the public doctor, who actually-- and pay the fee for the visit, but can sell medicine on the side.

AUDIENCE: In terms of the patient, [INAUDIBLE] how they're going to differentiate between all the patients or providers.

ESTHER DUFLO: Yes, so the patient tend to know that the private provider are less qualified than the public provider. So that's the mystery of why they go anyways. And one of the resolution of that mystery, it might be there, which is although they are more qualified and they know more, they actually don't perform better in front of real patients.

AUDIENCE: This training they have, like one of these several degrees or I guess doing it, what is the best? Do we know what MBBS doctors do versus what is the max?

ESTHER DUFLO: That's MBBS. That's the best.

AUDIENCE: Or how do they do? What is the max do correctness?

ESTHER DUFLO: Yeah. So in a sense, you have it here ranked by-- so you would want to see-- we kind of have it here in the vignette. This is people ranked by performance, not ranked by MBBS, but ranked by performance. And you can see that, for example, it depends on the question, so they are ranked by how good they are.

And so the maximum for asking questions in the vignette is 45% for blood, and fontanelle is very low. So what you want is a summary of the correct treatment by ranking of standardized patient or by how good do they get with the standardized patient. They have an answer to this question. That's in the paper. I don't have it on the top of my mind, but that's a good question.

That's exactly what you do with this item response theory is trying to make them better as-- ranked them by how good they are and saying, how good is the best doctor? And that's where they have a summary of this. You need to be at least median to not hurt the patient.

So most people choose the private sector, despite that incorrect treatment cost the patient a lot of money. 70% of the cost of a visit in this study is the unnecessary treatment, the fact that they have to buy all these medicines they don't need. In Udaipur, where people are super, super poor, where we had done our health survey, 20% of the visits are to the public sector, which is free; 28% to the traditional healer, and the rest to the quacks.

In Madhya Pradesh, 89% of visits are to a private doctor; 83%, even if there is a trained MBBS, public doctor right in the village. So even with the MBBS public doctor, which is free in the village, people still go to a private doctor, including 77% to the unqualified private provider.

And so the idea of that the health sector should be mostly public because it's impossible to give quality, the first half is true. It's impossible to give quality, but the second is not true because most of the health care is delivered by private people. So why is that?

So in Madhya Pradesh, they did this effort of standardized patient, trying to represent the symptoms for three diseases. Those are the angina thing, they're like the heart attack, the asthma, and dysentery in a child, who is not there. Then they have a sample of about 1,000 visits, and they have public doctors who are moonlighting in the private sector.

So they can put a fixed effect for a sample that is both public and private and see whether they perform differently. And that gives some idea of how good, why it happened. So it's true in Madhya Pradesh, like in the data I showed you, that the public sector doctors are more likely to be-- doctor providers are more likely to have an MBBS degree.

This is a sample of public MBBS provider, that's their fixed point sample, so of course, all of them have an MBBS. But in the sample at large, a quarter of the public and less than 10% of the private providers have a degree. They know a bit more. This is from the vignettes, they know a bit more, but they do even less.

So this is the number of time they spent with the doctor. In the representative sample, they spent-- the private [INAUDIBLE] regression or private provider compared to public provider. They spend about 1.2 minutes, including case market district fixed effect 1.5 minutes more with the patient on a basis of a mean of 3.6% in the public.

They complete more, the private doctor complete more, the checklist items. So actually, even though they know less, they do more. And so their IFT score, means how good is their total management of this case in terms of asking the question is higher, even though, again, they are less likely to be qualified and they know more. That's true in the sample at large, and that's true with very similar numbers, in fact, when you compare among MBBS doctors who are all in the public sector, their behavior in private and public, which reflects this mix of incentives, time spent, and so on.

So that's a big underestimated of the difference in the service that someone can explain because this is conditional of being found. And in a lot of cases, the doctor is not even there, or the public facility is closed. As a result, they don't treat any better. If we compare whether the public people give the correct diagnosis or not, well, the private doctors are more likely to give a diagnosis.

And then condition and diagnosis, they are no worse. The private are no worse. And then there is no difference at all when we compare the behavior in the fixed effect sample. So even though, again, so that would explain why the people go to them. There is one difference between them, which is, it's that the private sector tend to avoid Medicaid. The private doctors tend to give more medicine, about one more, on average, on a mean of 3. Although that's not true in the dual practice sample.

So they don't do worse. They don't do better either. The private guys, they don't do worse, then they give a bit more medicine. So that would explain why people might continue going to the private sector, despite the fact that the private sector is not very good. They are treated better. The doctor will spend a few more minutes with him, ask them a bit more question.

At the end of the day, they don't treat them in a worse way. I mean, the treatment is bad, but it's bad also, in the public sector. And they give them some more medicine to buy, which is a waste from our point of view, but it's something that there is a demand for, for the reason we explained. People feel good if they can do something against their ailment, even if something in question is not really necessary.

So that's where we are. So compared to the Arrow situation, where you shouldn't have a private sector, you should have public sectors, because that's the only way to get good, quality medicine, or we have an awful quality, mostly delivered by the private sector. But whatever the public sector delivers is not much better. So what to do in front of this situation?

So this is a place where, compared to education where when I got to this point on the supply of education, I was able to share with you at least an idea of what's the main problem, what to do about it. I think this is a situation where in health, we haven't reached this point yet, where many things have been tried, which I'm going to briefly show you in each category, but there is, I think, much less of a consensus that anything, in particular, is a good thing or a bad thing or has been successful or not successful.

So that makes it exciting for a research topic, especially post COVID, where the health situation is even more important and urgent, interesting, and therefore, it's worth spending some time on it. So what can we do?

So option 1, which she was pushed by a colleague, Larry Summers, for some time, although I think he has somewhat moved on from that, is more of the same. Universal health care. Worldwide universal health care. So basically, spend more budget, make sure that each country have more budget to spend on the public sector. That seems like a terrible idea.

In the current situation, where absenteeism in public health facilities is 50%, even when you can get hold of someone, the treatment is there. It seems that pouring more money into the same system is unlikely to be super successful. I'm not going to spend much time on that. Although, that's in a sense, the status quo proposal in the international world is we just need to spend more money.

In fact, India did that. They went from spending about 2% of GDP on public health care to spending 10% of GDP with very little to show for it in terms of health care quality. So we'll move that aside.

Then you could try to make the public sector better by improving their incentives. I'll show you two papers showing that it seems difficult. We can try it, but it's difficult. Since this comes-- so that's one class of question, maybe you can do better than the papers I'm going to show you,

another class of solution is that you could say, well, since it all come from the consumers-- in fact, I had a discussion with one of you last week after presenting the Bjorkman and co paper on the medicine in Uganda, it's solution seems to be to provide more information to teach the people what is good drug and bad drug and what a good drug should do.

So basically, the idea is that since a lot of the root of the problem comes from the fact that people don't understand fully what makes you sick and what makes you heal and what to do about it, basically, try to make them more sophisticated. I'll show you one example of that.

And then the third is try to work with the private sector. However bad it is, it is there. It is here. It is available. Try to make it better in some sense. So I'll give you an example in each of the three categories. There are studies in each of the three categories.

So incentivize the public sector. So Abhijit, Rachel Glaser, and me did the first attempt there. On the heels of a successful project I had done with Rema Hannah of giving incentives to teacher to show up more regularly to their classes, which had been quite effective. We gave incentive, payment for their presence, and it worked. They came up.

So we tried to do something similar in the same setting in Udaipur for nurses, which were absent. And absenteeism rate was crazy high at the beginning. We had surveyed the health center for a year, once a week, and they were absent 70% of the time. And it was completely unpredictable when they were open. It's not that they were open every Monday, so you at least could come. It was just some from time to time, a nurse showed up and opened the center, so we tried and changed that.

So we did something, which you would characterize unambitious, which is we agreed with the government, something we did in collaboration with the government. The government told everyone in the place, treatment and control center, you have to be open, for sure, one day a week on Monday. Now, this is a new rule you cannot go to the field on that day. You have to be in your center. You cannot go to functions. You cannot go to training. You have to be there.

And so that was common for the treatment and control, and then what we did is that we put in place a system to monitor presence. This was before the time of easy fingerprint recognition, so we had to make up some system where they had to sign, stamp, and sign again something on the register to show that they were, in fact, present on that day. And then we sent a person to do some random checks.

We control the absent both on Monday and on other days, although the incentive was only based on Mondays. So what we find is that in treatment, initially, the absence rate really increased on Mondays and not as much on other days. So initially, by the way, there was a scope in this experiment, which is we didn't collect control data for some time. We started controlling control data after a few weeks.

So this is the control group, and when we have both, the control group is, indeed, lower than the treatment group, particularly, on Monday. Then over time, the treatment group is less and less and less and less and less there. In fact, the control group is more and more and more and more there so that at the end of the experiment, about a year into the experiment, the control group is doing better on Monday and on other days than the treatment group. So this is not what I would call a successful experiment, where we actually managed to worsen absenteeism in our centers, compared to the status quo situation.

So what happened? So I'll tell you what happened in the control group. I think what happened in the control group is that they progressively learned, this idea that you have to be open on Monday was new. And the message was progressively spreading. And so over time, the regular administration was putting some pressure on everyone to be there on Monday. They removed the training programs on Monday.

They told them that emission days have to be on other days than Monday, so all of that made its way, and the control group improved. Fine. So that makes sense for why this should have improved, but why did this go down, meanwhile, in the treatment group? It started quite high, and then it went down, even on Monday. In your opinion, what could have happened? Yeah.

AUDIENCE: Because they realized there were no consequences?

ESTHER DUFLO: Exactly. So they realized there wasn't any consequences. And how did that happen? Well, they started being present more, but they were still absent quite a bit. And then there were three categories-- you were is there a present day, an absent day, or an excuse day? And over time, what happens is that the bosses of these nurses, which are the doctors and the PhDs, converted all of the absent days into excuse days.

And they made all sorts of excuses for them, including that they were training, even though we knew there were no training on those days. But still, on the register, you had list of excuses. You had to do this, you had to do that, et cetera. So that, in fact, when you compare the official register, at the beginning, there is absence and very few exam days. And then overtime, there are no absences, and there are only exam days.

So the exam does increase enormously, the absence goes down, and that's why, finally, the treatment is worse than the control. So basically, they learned progressively that the rule is not enforced anyway, so there is no reason to bother. And the fact that the rules was very, very clear, which is your absence, the absence, if it's not excused, is going to take away from your salary, makes it even obvious that actually, the rule is not enforced. So there is a rule, but it's not enforced, so we are good to go.

Whereas in the control group, it's the normal thing in the bureaucracy, which is there is always this vague threat of punishment that might hold upon you, and you have no data to confirm, whether that vague threat or punishment is going to be carried out or not Yeah.

AUDIENCE: Do you know what they do when they don't show up to the office?

ESTHER DUFLO: What they do when they don't show up to the office? Yeah, they're home. These nurses, they are well-educated, they don't want to live in the middle of the village, they have kids that they send to school. So they live pretty far from their center, and to show up, they need to take a bus and all that. It's a hassle. So if you cannot show up, then why not?

And so that's basically what they are. They are home, they take care of their kids, et cetera. And once we had sent a clear message that going to office was not requirement of the job, then that makes it even more obvious. Yeah.

AUDIENCE: You said the control group doesn't have any data to know that they actually don't enforce it at the moment, but won't they just realize that they've been in some Mondays for this whole time and nothing has happened--

ESTHER DUFLO: But it's not as clear because the normal punishment in the absence of daily incentive is you might get sacked at some point. So there, they still have their supervisors that tell them if you don't show up on Monday, you might be sacked and all that, and so that's probably somewhere in the back of their mind. Whereas here, there is a pretty clear rule, which is if you don't show up on Monday, you're going to get pay deducted.

And then you can see that your pay is never deducted because the absence is very regular. Here, in the control group, they don't know. Nobody is measuring their absence, but there is irregular visits by supervisor. They don't know when the supervisor might show up. So that's the kind of disadvantage of having a clear rule that is not enforced, making it easier to understand what the incentives are. So I think this is what happened here.

But then the next question is, how could the government get away with not implementing their own rules? And one of the possible reasons is no one cares, because everybody has anywhere abandoned, and they are not giving up on the centers. Improving the quality of the centers not something that's very high on everybody's priority. And this is shown by the fact that it didn't bring back clients.

So at the beginning of the experiment, when the facilities were open more often, you could see whether more clients came. In a given day, when we did these visits, you see someone, one person, not even all the time. 0.74 clients in treatment facility when it's open, 0.81 clients in private facilities, so people don't care, but they have given up. And that's why we call the people putting a Band-Aid on the corpse because basically, the system, without any demand for that system in the first place, it doesn't really rise or bubble up to the level of priorities. Yeah.

AUDIENCE: I assume that we know that the relatives nearby the facilities knew of this new rule, and it be OK. This would be [INAUDIBLE], whether we know that.

ESTHER DUFLO: So the rule was put on the centers, but you have to have some minimal level of credibility that, actually, it's going to be enforced, which nobody had any trust. If you watch on YouTube, there is Abhijit's movie on the health care, and they call the name of the disease. And there is a very funny sequence where we interview someone about a girl, about the interview someone, the girl about the center. And she just gives all sorts of excuses to them. And then finally, she said, well, she's never out there anyways.

So there is a pretty good understanding that that's the status quo. And you're right, there is a chicken and egg problem. The nurses are saying there's no point for me coming, nobody comes anyway. It's totally depressing to sit in my drab center with no medicine and no patients. And the patient said, why would I even go there when I can go to any of 10 private guy, who is unqualified, but not so much worse and at least is available. So reforming from the top without building a demand seems to be difficult. So that's that.

So hence, there is the other idea of building a demand, maybe starting from a system, which is less defunct in the first place, which it is in most countries in Africa. The centers are open. There is more life there. So there is a very nice paper by the same Bjorkman and Svensson of medicine, that's actually in earlier paper. Similar problems, so the absence rate in the health center is 47%.

I think it's not as bad in the sense that they are not different, and the centers are a bit larger. So there is always somewhere, but a lot of them are absent. The care is not great. So instead of using the top-down approach that we tried, they involve the community in monitoring the provider. So this was, at the time, this has slightly gone out of fashion.

But about 10 years ago, 15 years ago, in the World Bank, this was everything. There was a public service, the World Bank Annual Report on Public Service Delivery, which was all about power to the people empowering the people, et cetera, community empowerment. And this is one of the few attempts to really take this idea seriously to the field and test it.

So what they did is that they first went and collected their household survey with experience with people health facilities. Then they hired community-based organizations to facilitate three meetings-- a community meeting, a meeting at the health center, and an interface meeting involving both the nurses and the doctors and the people. They had to come up with an action plan about how to improve the situation and how the community member would come and do monitoring on the facilities, which is a bit worrisome, the Texas law of vigilantes coming to the facilities to monitor them, but it's probably not that sinister. So people volunteer to come and monitor that the nurses were there, and so on, and so forth.

The results were pretty great. This is impressive results. Absenteeism went down from 47% to 34%. People did come more, either as a result of absenteeism or perhaps declining or perhaps because, unlike in our case, there was this public meeting, so everybody knew it was supposed to be better. They still continued to use the traditional healer but, on balance, which is the key litmus test of this intervention being effective, under five mortality rate went from 144 per 1,000 to 9 per 1,000.

Even more remarkably, the same team did a follow up, maybe 10 years later, in the same facilities, and they still see impact. So I really believe that this intervention worked in this set of villages. That said, it is not really a replicable intervention. It is extraordinarily expensive to conduct all of these meetings. It has to be done just so.

Any attempt to replicate it in other contexts has not worked. I don't think this one was a fluke, but just because this one was particularly well done, nobody has managed to do it as well. So there is, for example a replication study by a political scientist. I think, also, in Uganda, trying to do just the same and not finding any effect, so they have a bit of a dispute with them where they're saying they didn't do just the same. It wasn't quite as good. But the point is that that's just so such an intense intervention that it's hard to replicate.

So what Bjorkman and Svensson did is that they tried a lighter version of this intervention, where they give the information to people on the facilities, but they don't have all of the community meeting. Actually, now I have a doubt which element they got rid of, whether it was the full survey or the community meeting. But anyway, some lighter version that they were hopeful would work out, and then it didn't work. They have no impact on it at all.

So their own effort, which has to be commended of realizing that that's a super nice proof of concept, but if you want to scale it up it has to be a little bit more manageable, the effort to make this more manageable have not worked out. So it's a nice proof of context, but it's not ready for primetime in terms of this is what we're going to scale up to improve the situation. So that's for reforming the public sector by providing incentive, either top down or bottom up.

Second class of things, could you just make the consumer more sophisticated, teach them exactly how things work. And so one example of that is a paper by Jessica Cohen, Pascaline Dupas, and Simone Schaner, where they basically create sophistication by introducing a rapid diagnostic tests for malaria that wasn't there before. So people can understand one of the people. This is in Kenya, where there is routine of treatment for malaria. In particular, people take this ACT, the new drug, even when they don't have malaria, so they are trying to test that.

But the first thing they do, as just background, so the ACT is this new item, is in combination therapy. It's effective today. All the anti-malaria medicine is not effective in Kenya anymore, and if this one is used too much, it's also going to become ineffective. This might all be solved if everybody get vaccinated against malaria, but at the time, there was no vaccines for malaria.

So what they did is first, replicating this study on subsidizing treatment, so I've shown you a graph where we subsidize preventive care, showing high elasticity. And here, you're finding that when you move from no subsidy to complete subsidy, people are more likely to take ACT when they have some subsidy. They are more likely to take any, and they are more likely to use their voucher, but the impact is much less big.

You go from a full subsidy to 80% subsidy. You get a 15 percentage point increase in take up. So there is an elasticity. It's not as brutal as for preventive care, and the problem is that it leads to the people that it convinced to take, we have the same issue as what was discussed for preventive care.

So people who get convinced to take the ACT anyways are the people who don't have malaria. So basically, people are able to predict relatively well whether or not they actually have malaria, and the people who think they have malaria could see quite strongly that malaria takes the pill regardless of the subsidy, but the people who don't wait to see.

So we can look at-- this predicted positivity is based on what the patient, could know about them-- their fever, shivering, by those kind of symptoms. They predicted to be positive, and this is compared to the 92% subsidy. So compared to the 92% subsidy when the subsidy is lower, people are more likely to be predicted positive for malaria when they take the medicine. So in other words, making it near free and there are people who think they don't have malaria, to do it anyways, to take the drug anyways.

And in fact, when you test them, so what they do is that they go to the facility, people who come and say, can I give you a test now? And they also find that compared to the 92% subsidy, compared to nearly full subsidy, people who had to pay more are more likely to, in fact, be positive for malaria. So here you find in the case of this curative care, you have this effect of the extra subsidy drawing in a lot of people who don't really need it, which we didn't find in the case of preventive care.

So that's 0.1. This is a little because what I want to talk to you is about testing. So the question is that, while we are in this world, where people basically overmedicate for malaria, on average, only 56% of people who test for malaria and have taken an ACT have malaria. That means 44% of people take an ACT, when they shouldn't, when it's not required.

So they say, well, if we tested people for malaria, then maybe they wouldn't need to take the medicine if they didn't have it and we would have fewer. So what they offer is. And the problem is that-- and that's the source of the lack of sophistication here is not the patient's fault, is the fact that there exists no good tests, and the test that is proposed in the public health center has very high error rate of both Type 1 and Type 2, so they are not very discriminant, and people know that.

So here what they do is that they buy a bunch of rapid diagnostic tests, which are much better and can be administered at the pharmacy. So it's basically thinking of getting your COVID test, an antigenic COVID test, you get the response in 15 minutes. Then only you take the medicine once the Merck medicine will be approved. So here, same thing, but for malaria.

And what they find is that a lot of people are perfectly willing to try with the test. 20% of people, if they have to pay for it, and it goes to, on average, about 50% if it's subsidized. And if they have a higher predicted malaria, then they're more likely to take the test. So people seem to be happy to try. The problem is that they don't listen to the results.

So if the test is positive, everyone takes the drug. So that's good in that direction. If the test is positive, everyone takes the drug. But if the test is negative, the compliance is not taking ACT. And you can see that even with the lowest subsidy level, 80%, half the people do not take the medicine, half the people do, despite the fact that they just learned the second that they don't have malaria.

And if you subsidized them, then only 25% of them abstain to take the malaria medicine, so 75% of them take the medicine even though the test just told them that they don't have malaria. And it's not that they take the medicine and hide it, they take it and take it. So what's going on here? So that's the first problem.

The second problem is that it doesn't really help with targeting. Even after the ADT, the extra people who are drawn in to take the medicine, despite the fact that they just tested negative, are mostly the people who don't have malaria. So it doesn't really help with your missed and missing.

So what happened? What happened is that even this new shiny test is not trusted because and probably because the standard test has a lot of errors. And so people don't know if this one is really much better or it's new, and so they were happy to do it, but they prefer to rely on their intuition anyways.

And this shows how difficult it is, how to mistrust, make it difficult to introduce a new device that will help people to do better. And in fact, I was talking to a graduate student in Michigan a few weeks ago, who is doing a project on Nigeria, where they have made a huge effort to improve the supply chain for malaria medications. And now, they are pretty sure that the malaria medication they have everywhere is of good quality, but people do not believe it.

And they are trying to figure out how to increase the trust in the quality of the malaria medicine in a setting, where nobody trusts it in the first place. So that's an example of, I think, partially successful attempt, but not fully successful attempt of making consumer more sophisticated. I'm not saying this shows this is not a path, but it shows that there is more work to be done, maybe in conjunction with the supply chain effort, maybe you need to work at larger scale. I don't know. This remains quite open.

Last one is working with a private health provider. So this is a project, which was done by Abhijit, Jishnu Das, Reshma Hussam, who was a student here at the time, and Abhijit Chowdhury, who is a doctor in West Bengal. And what it did is that, so it was mainly the Abhijit Chowdhury is a very well-known liver specialist, but on the side of that, he has an NGO that provides health care to people in [INAUDIBLE], in a hospital there.

And what these people did, called The Liver Foundation, is that they set up together a training program for the health care for the private doctor, saying, look, they are going to be there anyways. People trust them, people go to them, and they have a smaller know-do gap than the public doctors. Can we just try to train them, both to recognize what they cannot deal with in triage and deal with a number of the medicines?

This is something that the medical profession absolutely hate. The idea that you would, in some sense, train and therefore, legitimate the quacks, so to speak, is something that is very, very, very unpopular with the regular medical profession, but they try it anyways. The main outcomes where quality of care as measured by the same standardized patient, as I showed you from Madhya Pradesh.

And what do they find? The result as presented in science, they published in science, so we have nice, compact presentation of results. So first of all, the training was free, but it was very demanding. It was over several weeks, et cetera. They went to a lot of cases, and it was a bit long, so people had to take half a day of work away.

So the attendance was only 56% on average. At the end of the day, they got nothing. They didn't even get a certificate because the medical profession hate the idea of certificates. So they could tell the patient have been trained, but they didn't have something to prove it.

And so 56% of people showed up, and on average, they trained better in the treatment group than in the control group, bridging about half the gap with the public sector. And those who managed to go all the way till the end, improved more. This is not experimental anymore. Unfortunately, the training had no impact on the avoidance of unnecessary antibiotics.

So what happened is that they performed, they identified better what the client has. They were more likely to provide correct treatment, but on top of that, they throw in some antibiotic as well to round up the visit.

So too, interesting to say what happened, what is interesting is that when you look at what they know, just from the vignette, they don't seem to know much more in treatment and in control, despite the fact that they've just been trained. But what happened is that they do more. So basically, the treatment helps bridge the know-do gap. They do more of what they know and so in the treatment, guys, complete my time in the checklist.

And what you see here is that, this is your correct treatment as a function of the number of checklist items you complete. And basically, the more items you complete in the checklist, the more you are likely to end up on the correct treatment. That's for a standardized patient. And that function didn't really change much in the treatment versus the control group.

So it's not that they changed their production function, it's just that the treatment moved this density to the right, so they just put a bit more either effort or just knowing this is what I have to do for this particular patient, not knowing, but actually doing it. So basically, the treatment reinforced for them the importance of actually doing what they were supposed to do. It didn't change their propensity to treat with medication, and that is almost surely because they are paid by a function of the number of medication they give, and therefore, this would have been a too expensive proposition to not throw in a few expensive proposition.

So to sum up, the private sector does provide low standard of care, the public sector as well. And on top of that, the public sector provides poor service, which is what people prefer, the private sector. Shutting down completely the unqualified private sector is the option that in a lot of cases, that's what the medical profession pushes, which is not realistic, not consistent with the number of doctors you can train in a particular year, and not consistent with the fact that doctors do not want to go in rural places. And therefore, unless you force them to go there, usually after medical college, most developing countries, you need to go for a year, but you would need to force people to go for 10 years, and nobody is very interested in that regulation.

So what to do then? So mostly, there is lack of training in the private sector. We've seen that, but mostly, people don't even do what they know. And part of the problem is people don't necessarily trust them. They are skeptical of their advice. They know that they are not well trained. They suspect them to be corrupt, so they stay within their capacity as much as possible. So some certification and other help in building a reputation for being a good guy might help.

Some checklists. So I don't if you've seen, there is a book called *Checklist* or something like that, which is actually from a former doctor. The book is not just about doctor, but it started with applying checking in hospital. So even in the US, introducing checklists increases the quality of care a lot. You would think that for a lot of these cases, like a tool to build a checklist would help. I don't know if people have tried that.

And then not tying the revenue model with selling antibiotic would be good, and forcing some regulation might work well. Not the regulation saying cannot exercise, which is not possible, but you have to get a test on this vignette, and then you can get a certificate, which you can show on your window. So that would increase their training and their regulation.

Requiring them to attend training on basic patient safety to limit the damage they can make, for example, not sharing needles, sterilization, CPR, and the like. And involve them in public health campaign, because they are connected to the patient. So in fact, during the COVID crisis, there was an effort in West Bengal and maybe in other places as well. But in West Bengal there was an effort to include the unqualified local provider as first screening and first response to help people deal with COVID during the various several waves that India had. What it did, I don't know. I haven't seen the study yet, but there was actually one effort along these lines.

So that's what I had to say on the supply of health care. I'm happy to take questions, and then, otherwise, I can move on and complete what Ben didn't get to in his lecture. So yeah.

AUDIENCE: Can you say a little more about the medical college thing? Like in the US, it's like the restriction of doctor's writing or whatever it is? What is the situation in terms of access to medical education?

ESTHER DUFLO: Yeah. So like in the US, it's very restrictive. In the countries I know, it's very restricted and very competitive, so this is true in East Africa. It's true in Ghana. It's true in India. Partly for the same reason, which is the doctors have this way of enforcing their own reality, partly, also because it's hard to train doctors. And like training primary school teachers, that is relatively-- it's actually, very hard to train doctors.

And to train doctors, you also need doctors who are willing to train other doctors and taking some time off of being a doctor, and presumably good doctors, where they are both needed where they are, and they could make a lot of money, so that's basically a bind. So there is this kind of inherent limit, not just because of putting a cap, numerus clausus, that you find in rich countries, France has the same thing, but also, because of the technology of producing doctors who are highly qualified people who, therefore, have a lot of other possibilities. Very much like we discussed for the case of secondary school teacher, but even more.

Incidentally, this is something that it has a parallel in the US with the training of nurses. Where despite the fact that there is a shortage of nurses, there is a huge excess supply in the number of people who would like to be nurse, to apply for nursing degrees, who can't get to nursing schools. And one of the reasons why they can't get into nursing school is that there is nobody to teach them to be a nurse, because the nurses who are in exercise are required to actually be nurses.

And they can make much, much more money trying to be nurses or training to be teacher. So they need to be a reform of the teaching sectors for nurses in the US, and I think it's a little bit similar. There's the extra problem in India that all the nurses that are trained are then absorbed in the US, because it's one sector where at least pre-COVID, I don't know if they're being liberalized, but being an immigrant, immigrating to be a nurse was always very easy in the US. That puts one more set of pressure on the supply of qualified nurses in developing countries. And also, on the outside option, you're asking what does a nurse do?

Well, the people who are managing them perfectly know that the outside option is leaving and going somewhere else. And there is also, in this whether, that's the reason why nurses are treated well in India or in Uganda or elsewhere. Are we putting too much pressure on them, would actually they would just pack up and go to the US and make money.

Great. So that's the end of the health lecture. I'm saying that to the camera. I'm going to now move to talk about gender and the feminine. And I just looked at what Ben had time to cover, and I figured what would make sense is to-- I made my own slides, but cover some of the papers that were at the end of his slides and that he didn't have time to get to. So a very natural segue into talking about gender issues, which I'm going to do, then finish on Monday.

So you finished, last time, the lecture on talking about Chris Udry's paper, which is among the classic, showing that there is no efficiency in production. One more thing we could ask is whether there is efficiency in consumption. If households were able to insure each other with full commitment, that is they are able to-- if we had an efficient household model, efficiency requires that conditional on total household demand for eating, who gets what and what goods are being consumed and by whom, should be invariant of the actual variation because you know you're here for a long time.

So even if I like potatoes and you like beef, the consumption of potato and beef should remain relatively constant. Because it's not because I earn a bit more money this period, next time it's going to be, and we should be able to insure each other for this change. So the consumption of a particular commodity shouldn't depend on a shock that affects one person versus the other.

In other words, the shocks should affect the consumption of each individual goods only to the extent that they affect total consumption. So the household might not be able to ensure it's entire set of consumption. That, in turn, is going to have implication what they consume. For example, if they are very poor, at some point, they might eat mostly potatoes because they don't have money for beef, but that should only transit from, that should not be over and above the impact of total consumption on the demand for the various kind of foods.

So the consumption of the wife should not drop because of a particular blood draw and similarly, for the husband because they can enjoy each other later. So of course, you'll do much more of insurance in the spring semester. So it will become clear that it is correct, but the intrusion doesn't require that much.

So household members, able to insure each other against transitory shock, and the answer to that is no. So it's first, I want to go to an experimental paper, the paper by John Robinson. In fact, it was his job market paper when he was in Princeton, graduate student. And it was a graduate student paper, so it was not very big, but he had 142 married couples and followed them for eight weeks in Kenya.

And each week he met them and each individual in the couple had a 50% chance of receiving a 150 Shilling, equivalent to roughly 1 and 1/2 days income for men and one-week income for women, so something not irrelevant. So people received their payment, then both spouses knew what they had. And then what he did is that he got their data, very similar they did for their savings paper was basically-- in fact, same type of people doing cycle ratio of women selling on markets and stuff like that, this type of very regular work, did these diaries, And then he collected data on income and income shocks and labor supply from each member.

So the shocks are like textbook shock. They are random, they are transitory, because every day, there is a new lottery, and they are idiosyncratic. They should not affect the bargaining power of each person. They are also public, so there is no incentive to lie. It is not possible anyways. There is no moral hazard. There is no labor supply.

So you would expect complete sharing if the household was consumption efficient. And surprisingly, you don't, which is, people who get more money, they spend more. So when men get more money, also when a respondent gets more money-- it is now the men. If it's the respondent who get more money, they consume more on private good. And nothing else, basically.

So they consume nothing else really change. So when they have money, when they get 1 Shilling more, they spend about 0.19 Shilling in total and all on private consumption. And for women, they don't do so much, so private consumption, like newspaper, snacks, bottled sodas, that kind of things. So women don't do that, but they buy themselves a lot of medical expenses, medical stuff.

I know you might wonder, but they just got 1 Shilling. What happened to the rest? And the rest is saved, which makes a lot of sense, but it's not saved in the public way for the household. So you can see that it's saved total, but it's saved mostly in private-- I'm looking for the private note. It's saved mostly private vehicles. So they don't save in the form of their bank account, et cetera. They save basically, each under their own mattress.

So when people get a shock, men save about 0.8 of it, and the rest is spent on themselves. Women save less of it. The rest is spent a little bit more or spread across things. In fact, they do buy some more food. They buy medical expenses, a little bit on the kids, so that's not consistent with--

And the men spend nothing-- when the spouse get more money, they get nothing. They don't transfer the money to the spouse, at least women transfer a bit of their money to the spouse. Men don't. But on the other hand, if their spouse give them money, they receive money, they give them lower transfers.

So women and men behave a little bit differently, with women doing more of the shared things, but both of them basically save the majority of the money under their own private mattress, which is not what would be expected, given the efficient household model. So we already saw that they were not efficient in production, they are not efficient in consumption. So this is an experiment that is more experiment.

Chris Udry and I have a paper famously unpublished. I can tell you one day what happened to that paper and why it's still a working paper. Maybe one day we'll publish it. It's in Cote d'Ivoire. It's the first paper I wrote after graduating, started a completely brand new paper I wrote after graduating, so to tell you it's old. And it uses the fact that women and men tend to grow different crops on their different farms.

So you've already seen that in the Udry paper that they grow on different farms, but on top of that, they grow different crop. So they are women crop, men crop, and then yams. So yams are male crops, but they have to be used for feeding people, either by being directly eaten or by being sold to buy food. And there is a very, very strong social norm in this direction.

So in Cote d'Ivoire, we know what people produce and so you can compute proxies for mail. You don't know what every individual produce, but you know what the households produces and how much money they make from their different crops. So you can compute proxies for male income, female income, and yam income by aggregating crop income across the different crops, knowing that probably the way that it's done in practice is different from the--

So this Cote d'Ivoire survey is a panel. In fact, it's an overlapping panel there are three years of it, but people are appearing there in year 1 and 2 are in year 2 and 3. So for each household, we stack the two, so for each household, we see them twice. We look at the change in their income from one year to the next, and then we predict. So this done in an OLS. It's done in a two-state least square, but imagine for the sake of pedagogy that we use predicted income.

So we predict for each person how much better they are doing year 2 compared to year 1, the difference in year 2 income to year 1 income, for female income, male income, and yam income, and we run a regression of the change in consumption on the predicted female income, male income, and yam income.

So the question is, in a power efficient model, would we expect any difference between beta, gamma, and delta, potentially? So we look at consumption of various goods, so we're going to look at food, private expenditure, public expenditure. Well, I would normally wait, but it's 11:55, so you're saved by the bell.

You would because there might have different time pass. So for example, if a lot of the male income is coffee and the fact that you get good income today is probably a good prediction that you'll to get, again, good income tomorrow because that means your trees are doing well. And if the women are producing vegetable, this is perennial. This may be less information in.

So we know that from the savings group that people should save transitory income and consume permanent income. So to the extent that there is different income process for these three groups, we might expect a different effect on Total consumption, and therefore, we might expect different impact on individual goods consumption.

So what this suggests is that the consumption of any particular goods should change, but only to the extent that total expenditure change. So you want to run the same regression with total expenditure as the dependent variable and then calculate this ratio, and basically, they should be equal. And I'm sure there is a match, should we now decide to publish this paper. Instead, we would do GMM or some fancy thing like that, which would come to that.

Which is basically saying, well, if female income, as a coefficient on total consumption, that is larger than male income, then it should also have a larger effect on everything else, but that's it. So all these ratios should be the same, and they're not is the conclusion. They are not at all. So the male income, yam income, female income is dependent on totally different ways and in ways that is consistent with the income are being sent to the various streams of income are being kept separate and being sent under various purpose.

I'll just show you one slide. So these are all of the coefficients themselves. Total expenditure. Female income is slightly more responsible to female income than to non-yam and to yam income. That's just what it is. But then if you're looking at the various goods, for example, the goods that are prestige goods, so these are stuff that people buy for themselves, like ceremonial clothes and that kind of things, are being spent, not that yam income has no impact on that. It's each individual income, female and males, both spend a lot of-- have a large propensity to spend out of female income.

Now, if you look at the yam income, it's being spent on staple more than anything else. You might think it makes sense because they just eat the yam they have there. But it is also spent on stuff that's not a staple, but that's common goods, and in particular, education. So people spend their yam income on education and on staple. They spend their private income on prestige good. Women spend a lot of their income on food.

Of course, they grow vegetables, so maybe that's correlated to the farming gets to market difference, but they also buy meat, they buy processed food, and in general, the purchased food only responds to the female income and not to the male income. So that's consistent with it is a job of the woman to put food on the table. So when their income goes up, food goes up, and the main income is not being channeled to this. So that's another example in real life, non-experimental real life example of the failure to do household optimization, and therefore, it doesn't seem to be that it's an efficient household model.

So where does that leave us? And that's why I wanted to finish that today. That leaves us to, well clearly, the efficient household model is not a very good model of the family. So a lot of the modern literature on the family and on gender economics is about trying to understand what is going on, whether families are in any way different than a random collection of individuals that just met a minute ago, and if so, in what way.

And what are the barriers that stand between the household and efficiency? Information, trust, social norms, and so on and so forth. So that's what I'll do on Monday and with an emphasis on women labor supply, which is a big policy area in its own right Thank you.