Testing the impact of antimalarial discounts on overtreatment in Mali

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Sector(s): Health

Fieldwork: Innovations for Poverty Action (IPA)

Location: Mali

Sample: 2055 patients across 60 public sector health clinics

Target group: Health care providers Adults

Outcome of interest: Malaria

Intervention type: Information

AEA RCT registration number: AEARCTR-0001707

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Research Papers: Does Patient Demand Contribute to the Overuse of Prescription Drugs?

Partner organization(s): Ministère de la Santé du Mali (Mali Ministry of Health), Economic and Social Research Council (ESRC)

In many countries, patients may seek and consume health treatment that they do not need. In Mali, researchers studied the factors driving overtreatment by varying patients' information about a discount on treatment for simple malaria and measuring take-up of treatment. Patient pressure on doctors in response to the discount led to excess prescription of antimalarials. By contrast, there was no evidence of doctors strategically using the vouchers to increase clinic revenue and direct patients toward expensive treatment options.

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A critical challenge for developing country health systems is to craft policy that gives individuals with curable diseases like malaria and pneumonia access to potentially lifesaving medical care, while preventing patients from consuming unnecessary medical treatment or getting treated for the wrong illness. Such overtreatment wastes scarce resources and health care subsidies, drains patients' time and money, and contributes to the rise of drug-resistant diseases.

The overtreatment issue is particularly salient where disease prevalence is relatively low, but access to low-cost medication is high. Most of the existing research focuses on doctor-driven reasons, including financial incentives to increase clinic revenues or lack of awareness of correct treatment protocols. However, over half the health providers surveyed during this study in Mali reported feeling pressure from patients to prescribe unnecessary medications. What, then, is the role of patient preference in overtreatment?

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The public healthcare system in Mali is organized around community-based primary health care centers (CSComs) that are managed by local health associations. Each local health association retains some revenue from sales of medications and other user fees, which can then be used to fund the clinic's operations, including end-of-year physician bonuses. Pharmacy sales often also directly fund staff salaries. Therefore, though doctors are salaried, they also have a direct incentive to generate revenue to fund the CSCom.

One of the most commonly-treated illnesses in these primary care centers is malaria. In Mali, malaria treatment guidelines state that patients should only be prescribed an antimalarial after testing positive for malaria. Uncomplicated malaria is treated with artemisinin combination therapy (ACT) tablets, which can be expensive for the average household. Despite these guidelines, overtreatment is widespread: at the beginning of this study, more than half of patients testing negative for malaria still received an antimalarial prescription.

A person doses out malaria medication.

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To understand whether overtreatment was driven by doctors or by patients, researchers tested the impact of patients and doctors knowing about malaria treatment discounts on antimalarial prescription rates. They worked with the Mali Ministry of Health to introduce vouchers that allowed patients to receive simple malaria treatment free of charge.

Before the intervention began, a subset of health workers from each of the 60 clinics were invited to a refresher training on malaria diagnosis and treatment. This ensured all clinics had providers who were aware that only patients who tested positive for

malaria should receive treatment.

Each of the 60 clinics where the intervention took place was randomly assigned to one of three days: a patient voucher, a doctor voucher, or a comparison day. Each day took place twice in one week for a total of six days per week. All vouchers provided a discount on the same treatment (artemisinin combination therapy for uncomplicated malaria) and required a doctor's signature and prescription to be valid.

- On *patient voucher days*, all patients who were visiting the health clinic were given a voucher for free treatment for uncomplicated malaria regardless of their health condition. While both patients and doctors were made aware of the option to receive free malaria treatment, patients could only redeem the voucher if their doctor prescribed treatment for uncomplicated malaria.
- On *doctor voucher days*, those same vouchers were available only for doctors to dispense at their discretion. Patients were not told of the discount unless the doctor prescribed treatment for uncomplicated malaria and gave them the voucher.
- On *comparison days*, no vouchers were provided.

The only difference between patient and doctor voucher days was that patients were aware of the discounts on patient voucher days, but not on doctor voucher days. Clinics were reimbursed for all medication redeemed via vouchers. Therefore, if antimalarial tablet prescription rates increased on patient voucher days relative to doctor voucher and comparison days, then pressure from patients to receive a prescription may be a driving factor behind overtreatment.

During the two weeks of the study, researchers collected details of all patients who came in seeking treatment for an acute illness, including symptoms, medications prescribed, and the actual medications they bought after the visit. They also visited some patients at home the next day to conduct a malaria test. Meanwhile, administrative data helped to quantify the impact of informing patients about vouchers on voucher redemption rates.

Researchers were very careful to prevent treatment without a prescription. For this reason, vouchers were signed by a doctor and verified by a research staff member. Consent procedure was also carried out, per a procedure reviewed by IRBs. This included a detailed protocol for how to interview people accompanying the patient, e.g. a parent or other family member. Staff or non-participants were unlikely to have been negatively affected by this experiment, and researchers took care not to cause negative consequences, e.g. for doctors. All provider behavior was recorded in de-identified form; even the knowledge tests did not ask training participants for their names.

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The study found that patient pressure on doctors in response to the discount led to excess prescription of antimalarials.

When patients were aware of the antimalarial tablet discount, they were more likely to be prescribed and to purchase malaria treatment. Patients were 35 percent more likely to redeem the vouchers on patient voucher days, when they knew that the treatment was free, than on doctor voucher days (35 percent of patients acquiring it on patient voucher days, versus 26 percent on doctor days). The extra demand was driven by patients with the fewest malaria symptoms. As a result, malaria-negative patients were much more likely to be treated on patient voucher days than on doctor voucher days. This suggests that over-prescription was driven by patient demand, as over-prescription was only present when patients knew about the subsidy.

There was no evidence of doctors strategically using the vouchers to increase clinic revenue by directing patients toward expensive treatment options. There were no significant differences in rates of the more expensive severe malaria treatment across patient and doctor voucher days, and there was no evidence that doctors used their knowledge about the voucher on doctor voucher days to increase prescriptions. Furthermore, doctors preferred to withhold treatment from low-risk cases they administered vouchers at their discretion but responded to patient demand for treatment when patients knew that treatment was free: patients at the lowest risk for malaria were 15 percentage points more likely to use the voucher on patient voucher days relative

to doctor voucher days. Among high-risk patients, the difference was 2 percentage points.