



Enhancing adherence to ACTs purchased from drug shops: results from four intervention studies

Mon 7 Oct, 17:00-18:30

Chairs: Catherine Goodman and Kathleen Maloney

OVERVIEW

Patient adherence, the extent to which patients promptly and correctly take the full course of a drug, is a key component in ensuring drug effectiveness. Not only can incomplete dosage result in treatment failure, but it may arguably contribute to the spread of resistance. Artemisinin-based combination therapies (ACTs) are becoming more widely available in the private sector, especially in settings with ACT subsidy programmes. In many countries drug shops are a particularly important source of antimalarials. Monitoring and enhancing the use of privately purchased ACT is therefore essential, but until recently very little has been known about adherence in the private sector, its determinants and how it can be improved.

The objective of this symposium is to present and debate new results on patient adherence to ACT from four innovative studies that have implemented interventions to improve care in the retail sector in Africa.

Two studies report on the use of mobile phone text messages to improve adherence. Bruxvoort et al will present results from a cluster randomised controlled trial (RCT) in Tanzania using text messages to drug shop dispensers to improve advice provided to patients purchasing ACT. Goldberg et al report results from a study using text message adherence reminders to patients in Ghana. Two studies will present results from Uganda. Mbonye et al will report the findings of an RCT which introduced rapid diagnostic tests (RDT) to drug sellers. The second Ugandan study by Cohen et al explores the effects of both RDT introduction and enhanced packaging on patient adherence.

Discussions will focus on the implications of these studies for the appropriate role of the private sector in antimalarial distribution, and strategies that can enhance the quality of care provided to private sector customers.

1. Cluster-randomized trial of text message reminders of appropriate practices for dispensing artemether-lumefantrine to retail staff in drug shops in Tanzania: effect on dispenser knowledge and patient adherence

Presenter: Katia Bruxvoort

Team: Katia Bruxvoort^{1,2}, Charles Festo¹, Admirabilis Kalolella¹, Matthew Cairns², Peter Lyaruu¹, Mitya Kenani¹, S. Patrick Kachur³, Catherine Goodman², and David Schellenberg²

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Background: Patient adherence, the extent to which patients promptly and correctly take the full course of a drug, is a key component in ensuring drug effectiveness. As artemisinin-based combination therapies (ACTs) for malaria become more widely available in the private sector, there are concerns that patient adherence might be low due to insufficient or incorrect advice provided by dispensers with limited training. In this cluster-randomized trial in drug shops in southern Tanzania, we assess the effect of text message reminders to retail staff on advice to provide when dispensing artemether-lumefantrine (AL) on dispenser knowledge and patient adherence.

Methods: Of 82 randomly selected drug shops in Mtwara region, 42 were randomized for dispensers to receive text message reminders for 14 weeks consisting of 7 content components based on government training materials about dispensing AL at drug shops. No intervention was delivered in the control arm. Eligible patients who purchased AL at drug stores in the intervention and control arms were followed up at home a minimum of 68 hours after drug purchase; consenting patients or their caregivers were administered a detailed questionnaire about when and how each dose of AL was taken, and patients were asked to present their blister packs for a pill count. Following patient data collection, dispensers were interviewed regarding their knowledge of AL dispensing practices, and mobile phone usage and receipt of malaria-related messages.

Results: We interviewed 1476 patients and 112 dispensers from 76 drug stores. We report the effects of the intervention on dispensers' knowledge, the advice patients reported receiving from dispensers and the proportion of patients completing all doses within four days and those adhering to the correct timing of each dose.

2. The impact of text message reminders on adherence to antimalarial treatment in a randomized controlled trial in Tamale, Ghana

Presenter: Julia Goldberg, SM and Guenther Fink, PhD (*Harvard School of Public Health*)

Background: Poor adherence to artemisinin-based combination therapy (ACT) regimens for malaria could lead to drug resistance and pose a major threat to the sustainability of current anti-malarial efforts.

Research Question: We aimed to determine whether text message reminders increased adherence to antimalarial treatment regimens.

Methods: ACT vendors participating in the study distributed flyers advertising free mobile health information to patients receiving malaria medicine. Patients who enrolled themselves in the text messaging system based on the flyer were randomized with equal probability to the control group or the treatment group; those in the treatment group were further randomly assigned to receive either six short or six long reminder messages in 12-hour intervals. The main outcome was self-reported adherence based on follow-up interviews occurring three days after treatment initiation. The follow-up interview also included observed pill counts and household drug inventories as indicators of adherence.

Results: Overall, text message reminders increased the odds of adherence by 21% from a baseline of 61.5% in the control group, but this increase was not statistically significant (adjusted OR 1.211, 95% CI [0.939 to 1.563], p-value 0.141). Larger effects were observed for the short reminder message (adjusted OR 1.385, 95% CI [1.006 to 1.906], p-value 0.046) while the long message did not have a statistically significant impact on adherence (adjusted OR 1.080, 95% CI [0.796 to 1.466], p-value 0.621). Self-reported adherence was associated with a decreased likelihood of still feeling sick (adjusted OR 0.676, 95% CI [0.514 to 0.889], p-value 0.005).

Conclusion: The results of this study suggest that short text message reminders can increase adherence to ACT regimens.

3. Patient adherence to ACT: Findings from a cluster randomised trial introducing rapid diagnostic tests into the private health sector in Uganda.

Presenter: Sham Lal

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Private sector providers in developing countries are often the first and sole source of treatment for those living in malaria endemic countries. Global subsidy programmes such as the *Affordable Medicines Facility - malaria* aim to increase the availability of artemisinin-based combination therapies (ACTs) in the private sector and thus reach these underserved populations. There is limited evidence on patient adherence to a full treatment course of ACTs provided by private sector retailers. Poor adherence to treatment regimens could result in sub-therapeutic drug concentrations, delay recovery and encourage parasite resistance.

A cluster randomised trial was undertaken in Uganda to compare the effects of introducing malaria rapid diagnostic tests (mRDT) with a presumptive diagnosis on patient outcomes, including appropriate ACT prescription consistent with RDT results by the drug shop vendor, and patient adherence to ACTs. The trial was situated in a malaria endemic region where 65 shops in urban and rural localities were recruited. Drug shop vendors in each diagnostic arm received a comprehensive training package over the course of one week, including how to receive patients, record keeping, stock control, dosing of ACTs according to age and communication skills. The mRDT shops received additional training on how to conduct mRDTs and interpret them. A random sub-sample of 522 patients consulting all shops for a history of fever were identified from DSVs' registers and followed up at home four days after consultation. Semi-structured household interviews captured information on patient demographics, education, treatment seeking, knowledge of malaria, referral and adherence to ACT. The level of patient adherence to treatment was measured through a self reported description on how the tablets were taken and the presence or absence of pills in the blister pack. A blood sample was also taken to measure the concentration of lumefantrine at day 4 using high-performance liquid chromatography. This talk will highlight the successes and challenges of measuring adherence, the effect of diagnostic testing on patient adherence to ACTs compared with a presumptive diagnosis, and patient level factors affecting adherence.

4. Can specialized packaging and malaria rapid diagnostic tests increase patient adherence to over-the-counter artemether-lumefantrine?: Evidence from a randomized controlled trial in Central Uganda

Presenter: Jessica Cohen

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Background: As the sale of artemisinin-based combination therapies (ACTs) for malaria in drug shops becomes increasingly common, strategies to ensure patient adherence (timely completion of the full, appropriate dose) are urgently needed. Drug shop attendants may not convey accurate or complete information to patients about how to take ACTs and the importance of finishing the full dose. Even if instructions are given patients may forget or misunderstand how to take the medication. In this randomized trial in drug shops in Central Uganda, we explore two strategies to increase patient adherence to over-the-counter artemether lumefantrine (AL): specialized packaging and malaria rapid diagnostic tests (RDTs).

Methods: The study took place in the district of Luwero, Uganda between November 2010 and August 2011. A baseline survey was conducted with 2641 households in the catchment areas of nine drug shops. Households were given purchase ID cards, enabling the purchase heavily subsidized AL at the participating drug shops. Every day, study staff brought a stock of AL to each shop. The type of packaging for the AL in each shop on each day was randomly assigned ahead of time but study staff, shop attendants and patients were blinded to the assignment until the day of sale. A randomly selected subset of the households was also offered an RDT when they came to the shop to purchase AL. A subset (85%) of the enrolled sample were randomly assigned to be followed-up with at home (after purchasing ACTs) to measure adherence, assessed through observation of blister packs or self-report.

Results: Nearly 42% of households purchased subsidized AL from study shops at least once, with a total of over 2500 redemptions. Among those followed up with at home, only 5% were lost to follow-up and 85% of cases included a blister pack observation. We report the impact of each package type on whether the patient completed the full dose and on the number of doses remaining, as well as patient awareness of proper dosing. We also report the impact of being given an RDT on adherence. Endline survey results explore potential reasons for non-adherence.