Introduction

There is increasing interest in the use of malaria rapid diagnostic tests (RDTs) in the private retail sector in malaria endemic countries, including pharmacies and drug stores where a high proportion of people with suspected malaria seek care.

Here we consider the introduction of RDTs in private drug stores and pharmacies in a setting with an existing (hypothetical) private sector ACT subsidy, and explore the impact of a range of factors on the cost-effectiveness of such an intervention against a baseline of no RDT availability in these outlets.

Summary of private sector intervention modelled

- Introduction of RDTs with a 50% subsidy, with ACTs subsidised at baseline.
- Initial treatment (i.e. treatment received with no test, positive test, or negative test), adapted from Cohen et al. 2015 (Uganda) – see Fig. 1. There are few other published private retail sector studies with usable data for parametrisation of treatment received by test type.
- The analysis currently assumes no change in treatment seeking across sectors.

Methods

We have developed a cost-effectiveness decision tree model based on care seeking pathways for non-severe febrile illness for all age groups, from initial fever to final health outcome. Model parameterisation has drawn on recent published and unpublished data, including RDT uptake, test accuracy, and the effect of test results on treatment choice. The model generates final health outcomes in terms of disability adjusted life years (DALYs) across different levels of parasite positivity among treatment seekers. 3

Summary of private sector intervention modelled

- Introduction of RDTs with a 50% subsidy, with ACTs subsidised at baseline.
- 3-4 day workshop training and ongoing monitoring.
- 40% uptake of RDTs 2
- Initial treatment (i.e. treatment received with no test, positive test, or negative test), adapted from Cohen et al. 2015 (Uganda) – see Fig. 1. There are few other published private retail sector studies with usable data for parametrisation of treatment received by test type. 3

The analysis currently assumes no change in treatment seeking across sectors.

Preliminary Findings

Figure 2 – Mean cost per febrile person at drug store / pharmacy

The high relative cost of further care is primarily due to the high cost of inpatient care for the minority of patients who seek this following the development of severe disease. High patient direct out of pocket (OOP) costs are primarily due to the proportion of patients seeking further outpatient care outside of the public sector.

Summary

- These results draw on a single study for the parameterisation of the impact of RDT use in drug shops and pharmacies on the type of treatment received. Figures 3 and 4 demonstrate the sensitivity of cost-effectiveness to changes in ACT use with a positive test.
- The model contains many other sources of uncertainty that impact upon cost-effectiveness, including the number of febrile patients seen per outlet in a day, parasite positivity, RDT uptake, and the probability that malaria becomes severe upon treatment failure or no treatment.
- These preliminary results should therefore be interpreted with caution and will be strengthened as other studies report on similar variables in the private retail sector.

Next steps:

- Enhanced modelling of uncertainty, including interrelationships between parameters, via probabilistic sensitivity analysis.
- Adoption of a cross-sectoral approach, to explore the impact of variations in treatment seeking behaviour on the cost effectiveness of this intervention and other possible interventions in different sectors.

Figure 3 – One-way deterministic sensitivity analysis – 5% parasite positivity

Figure 4 – One-way deterministic sensitivity analysis – 50% parasite positivity

Source: Cohen et al, 2015

* Minimum value not shown as Baseline dominates