The AMFm in Ghana: Knowledge Influences Adherence to Recommended Retail Prices of Antimalarials

Amusui JH1, Owusu-Dabo E2, Diap G2, Ansong D3, Blay-Nguah S3, The Independent Evaluation Team4, Virnig B5
1Kumasi Center for Collaborative Research in Tropical Medicine, Ghana; 2Drugs for Neglected Diseases initiative, Geneva, Switzerland; 3Komfo Anokye Teaching Hospital, Ghana; 4London School of Hygiene and Tropical Medicine - UK, ICF International - USA; 5University of Minnesota SPH, Division of Health Policy and Management, USA

BACKGROUND
The Affordable Medicines Facility - malaria (AMFm), hosted by the Global Fund to Fight AIDS, Tuberculosis and Malaria, was initiated in 2010 as a 2-year pilot in 7 countries aimed at increasing availability, reducing prices, and increasing market share and use of quality-assured artemisinin-based combination therapies (QAACTs). The AMFm comprised price reductions through negotiations with ACT manufacturers; high level subsidizing of QAACTs; and supporting interventions (SIs) to facilitate the subsidy reaching end-consumers. A widely publicized logo depicting a green leaf was used to make the co-paid QAACTs easily identifiable, along with a recommended retail price (RRP) of USD 0.96 in Ghana. One way recommended retail pricing is believed to act is by influencing the behavior of both retailers and consumers. Based on the assumption that consumers suffer from "loss aversion", correctly set RRPs contribute to setting some kind of ceiling of consumers’ willingness to pay which is recognized by retailers, thereby constraining pricing. Thus for RRPs to be effective, achieving high levels of awareness for both consumers and retailers is critical. Findings from the Global Fund-commissioned Independent Evaluation (IE) of the AMFm showed that knowledge of the RRP among retailers in Ghana was high (84%), and corresponded with a very narrow interquartile price range for co-paid QAACTs and a median price just below the RRP among private sector outlets. However, factors accounting for the correlation between knowledge of the RRP and the actual retail price remain unexplored.

STUDY OBJECTIVES
To explore outlet characteristics and other factors associated with private for-profit sector outlets stocking some (at least 1) co-paid QAACTs and stocking all available co-paid QAACTs at or below the RRP of USD 0.96. And to explore whether there is a significant association between knowledge of the RRP and adherence to it (see figure 1).

METHODS
Data source: The AMFm IE endline survey (2011). Shapefiles & other GIS data on districts in Ghana obtained via ESRI’s GeoCommons platform. P. falciparum malaria prevalence by district obtained from the 2010 posterior predictive distribution model estimates produced by the Malaria Atlas Project.

Data management: 545/648 private sector outlets (84.1%) met the inclusion criteria; stocked some co-paid QAACTs. Survey data on outlet location layered on map of Ghana using ArcMap v10.2. Data on P. falciparum malaria prevalence by district was merged with the survey data using “spatial join” feature in ArcMap.

Main outcomes: 1) Outlet stocked at least one co-paid QAAT at or below the RRP (yes/no), and 2) All co-paid QAACs stocked at or below the RRP (yes/no).

Main predictor: Survey respondent knew there was a RRP for the co-paid QAACTs. An outlet was important if it to be USD 0.96

Other variables: Factors and outlet characteristics potentially associated with QAACT pricing, variables reflecting outlet sophistication, size, and stocking practices.

Analyses:
- Endline survey weights accounting for complex IE survey design (Stata’s suite of survey data commands using the svy prefix)
- χ² tests to assess statistical significance of unadjusted relationships between pricing adherence outcomes and independent variables
- Multivariate logistic regression and post-estimation (Stata’s margins command)
- t-tests to investigate urban/rural and epidemiologic zone difference in mean malaria prevalence (Pfpr)

RESULTS
Knowledge of the RRP was a strong predictor of the outcomes. Noteworthy is the difference in predicted probability of stocking some co-paid QAACTs at RRP between those who had knowledge and those who did not, which was 49%, while for those outlets stocking all at RRP, the difference was 26%. The "difference-in-differences" of 23 percentage points indicates that aside from knowledge, there are other important factors to consider if improvements in adherence to the RRP are desired. Malaria prevalence was a strong predictor of having some co-paid QAACTs at RRP only after adjusting for knowledge and other variables. Further statistical probing suggests that the association between prevalence and stocking some co-paid QAACTs at RRP was being "negatively confounded" by knowledge. Many more outlets stocked some co-paid AL over ASAQ (93 % vs. 46%). The median prices per treatment of co-paid ASAQ and AL in our sample were significantly different at USD 1.25 and USD 0.94 respectively (p=0.004). We also found a bias in favor of adult formulations for AL and pediatric formulations for ASAQ. It is therefore not surprising that the type of co-paid QAACTs being stocked (ASAQ or AL, adult or pediatric) in an outlet were important factors associated with the outcomes.

SUMMARY OF RESULTS AND CONTEXT
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CONCLUSIONS
Our study shows that retailer’s adherence to the RRP for co-paid QAACTs can be high when knowledge about the RRP is present. Information on the AMFm subsidy needs to be disseminated to retailers with greater focus on those areas of high malaria prevalence, such as the northern savanna zone. All recommended policy interventions should be coupled with regular monitoring of prices and other indicators in the market in order to accurately measure the trend of the effects of the interventions.