**The effects of medicines availability and stock-outs on household’s utilization of health care services across six district councils in Dodoma region, Tanzania**

**Authors**: August Kuwawenaruwa\*1, 2, 3, Kaspar Wyss2, 3, 4, Karin Wiedenmayer4, 5, Emmy Metta1, 6, Fabrizio Tediosi2, 3

\* Corresponding Author

**Author Affiliations**

1. Ifakara Health Institute, Plot 463, Kiko Avenue Mikocheni P.O. Box 78 373, Dar es Salaam, Tanzania. Telephone: +255 222 774 714, Fax: +255 222 771 714
2. Swiss Tropical and Public Health Institute (Swiss TPH), Basel - Switzerland
3. University of Basel, Basel - Switzerland
4. Swiss Centre for International Health (SCIH), Basel - Switzerland
5. Health promotion and System Strengthening (HPSS), Dodoma, Tanzania.
6. Muhimbili University of Health and Allied Sciences (MUHAS), School of Public Health and Social Sciences (SPHSS), Dar es Salaam, Tanzania

Email: August Kuwawenaruwa (AK) [ajoachim@ihi.or.tz](mailto:ajoachim@ihi.or.tz); Kaspar Wyss [kaspar.wyss@swisstph.ch](mailto:kaspar.wyss@swisstph.ch); Karin Wiedenmayer [karin.wiedenmayer@swisstph.ch](mailto:karin.wiedenmayer@swisstph.ch); Emmy Metta [emetta2000@gmail.com](mailto:emetta2000@gmail.com) ; Fabrizio Tediosi [fabrizio.tediosi@swisstph.ch](mailto:fabrizio.tediosi@swisstph.ch)

**Abstract**

**Background**

Availability of quality medicines in the provision of health care service is an integral part of universal health coverage (UHC). Countries have been undertaking various health financing reforms among else to address shortage of medicines at points of health service delivery, including scaling up of community health insurance and public-private partnerships to improve availability and access to quality medicines and pharmaceutical services in underserved areas. This study assesses the effects of medicines availability and stock-outs on health care utilization across six district councils in Dodoma region, Tanzania.

**Methods**

A cross sectional study was carried out across district councils of Dodoma region in May 2017, including a household survey and a health care facility survey. A total of 109 public primary health facilities (11 health centres and 98 dispensaries) were surveyed and 1469 households within the health facility catchment areas were interviewed. Household data was merged with health facilities details using global positioning system (GPS) coordinate with the aid of STATA software version 13.0 to create a geo-dataset. We generated an index for medicines availability as mean scores across eighteen tracer medicines for each health care facility surveyed. Descriptive analysis and multivariate logistic regressions models were used to assess the effects of medicines availability and stock-outs on utilization patterns.

**Results**

Availability of medicines over three months February – April 2017 was above 70% across districts for most of the medicines assessed with few like ferrous salt and folic acid which availability was below 55%. We found evidence suggesting positive association between household health care utilization and medicine availability index. Regression analysis on the health care utilization showed the following positive associations: medicine availability index (odds ratio – OR, 2.818; 95% CI: 1.09-7.25; p < 0.05), households residing less than five kilometres from the health facility (OR, 1.594; 95% CI: 1.06-2.39; p < 0.05), those receiving health care education (OR, 2.667; CI: 1.39-5.10; p < 0.05) and patients reporting less than sixty minutes waiting time (OR, 1.703; 95% CI: 1.11-2.60; p < 0.05).

**Conclusion**

This study has shown that availability of most tracer medicines is relatively good, with frequent stock-outs of a few medicines and variation across level of care as well as across district councils. This highlights the need to improve medicine supply management along the supply chain from facility to national level. This includes quantification and timely ordering at health facility and performance of the MSD in fulfilling orders.

**Keywords**: medicines availability, health care utilization, Dodoma, Tanzania