public health facilities. The creation of large numbers of additional primary health care facilities, including 13,000 health posts in rural communities, was temporally associated with improved access to prompt malaria case management, including parasitological confirmation and improved surveillance system completeness between 2005 and 2014. Of the 11,950,186 fever cases reported nationally from July 2012 to June 2013, 93% underwent laboratory testing. Of the 5,011,418 total malaria cases, 84% were parasitologically confirmed. Of the confirmed cases, 70% were due to *Plasmodium larviciding intervention falciparum* and 30% due to *P. vivax*. District level annual parasite incidence per 1000 population (API) from 835 districts was used to stratify the country into four distinct API strata: <1, 1-4.99, 5-99.99, and ≥100. Of the total 84.2 million Ethiopians, 33.6 million live in areas considered malaria free (API <1) and are not targeted for malaria vector control measures. About 50 million (60%) live in malaria transmission risk areas (API>1), generally located at elevations below 2,000 meters. Of those living in malaria risk areas, 14.3 million people (29%) live in high transmission areas (API≥100), 26.5 million (53%) live in moderate transmission areas (API 5-99.99) and 9.2 million (18%) in low transmission areas (API 1-4.99). High transmission areas were largely on the western border with South Sudan and Sudan, whereas large clusters of low transmission areas were concentrated in Somali and Oromia Regions. Identification of districts with API between 1-4.99 and mapping of these districts will inform the selection of low transmission districts or clusters of districts appropriate for additional pre-elimination and elimination activities.

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A CLUSTER-RANDOMIZED TRIAL OF TARGETED CONTROL TO ELIMINATE MALARIA IN CENTRAL SENEGAL: MAIN RESULTS IN YEAR 2

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Targetting ***foci*** of malaria transmission may be more effective in reducing transmission than if the same effort is expended in blanket control measures, and has the potential advantage of limiting selection for resistance. The purpose of this trial was to evaluate the extent to which a targetted malaria control strategy combining vector control with indoor residual spraying (IRS) and chemotherapy, delivered by district health staff to hotspot villages, can reduce the transmission of malaria in low endemic areas. The trial will also determine whether, as part of this strategy, chemotherapy should be delivered to all members of targetted communities (MDA, Mass Drug Administration) or only those who have been tested and are known to be infected (MSAT, Mass Screening and Treatment). In 30 clusters, all households in hotspot villages were targetted to receive IRS with Actellic 300CS in July, followed, in 15 clusters, by MDA with dihydroartemisinin-piperaquine (DHA-PQ) administered to all persons in the household in September and again in October. In the other 15 clusters, instead of MDA, all persons in the household were screened using a malaria RDT and those who tested positive treated with DHA-PQ. 10 clusters served as controls. Interventions were delivered over two years (2013 and 2014), and the primary outcomes were the incidence of malaria, and the prevalence of parasitaemia just after the main peak period of transmission, in year 2. In each intervention arm, about 80,000 persons were enrolled each month in each year. In 2014, parasite prevalence was 1% in September (cluster range: 0.05% to 5%), and 0.99% in October (cluster range: 0.03% to 5.2%). A survey was done four days after MDA and MSAT to assess adherence and to ask about side-effects. Side-effects were reported by 20% (117/599) in September and 15% (91/598) in October, but with excellent adherence to the regimen. Indirect effects of the interventions on transmission will be assessed by comparing between the trial arms the incidence of malaria in non-targetted areas in each cluster. Total effects (direct + indirect) will be evaluated by comparing overall incidence.

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THE COSTS AND COST-EFFECTIVENESS OF TWO SPATIALLY TARGETED, MULTI-COMPONENT MALARIA ELIMINATION STRATEGIES: RESULTS OF A LARGE THREE-ARM CLUSTER-RANDOMIZED TRIAL IN RURAL SENEGAL

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In areas of low and patchy transmission, it is hypothesized that targeting residual hotspots can cost-effectively eliminate malaria. We conducted a three-arm, cluster-randomized controlled trial in an area of low, patchy, and highly seasonal transmission in rural Senegal over two malaria seasons in 2013-14. Health posts (n=46) serving approximately 320,000 people were randomized into 40 clusters: one of two multi-component hotspot strategies (n=15 clusters each) or control (n=10 clusters). In both intervention strategies, hotspot villages were identified and community health workers (CHWs) offered residents indoor residual spraying (IRS) in July each year. In September and October, CHWs again conducted door-to-door visits in hotspot villages in the intervention arms; in one arm, they offered mass screening and treatment (MSAT) with rapid diagnostic tests (RDTs) and dihydroartemisinin-piperaquine (DHA-PQ) and in the second arm, they offered mass drug administration (MDA) with DHA-PQ. In all three arms, health promotion encouraged care seeking for fever and health posts provided enhanced case management, including RDT testing and for positive cases, treatment with antimalarials and provision of a long-lasting insecticide-treated bed net. Based on detailed micro-costing, we report the incremental financial and economic cost per recipient of each of the 6 intervention components: hotspot identification, promotion of care-seeking, IRS, MDA, MSAT, and enhanced case management. We use a decision analytical model to assess the cost-effectiveness of each of the three strategies from a societal perspective based on intention-to-treat including hotspot and non-hotspot villages and present the incremental cost per malaria case averted and per disability-adjusted life-year averted. We explore uncertainty with univariate and probabilistic sensitivity analysis illustrated with cost-effectiveness acceptability curves and the cost-effectiveness plane. The relative costs of the six malaria interventions and the efficiency of alternative elimination strategies constitute important considerations for policy makers.

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EFFICACY OF ACTELLIC® 300 CS (PIRIMIPHOS-METHYL) AFTER TWO YEARS OF INDOOR RESIDUAL SPRAYING IN SENEGAL

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In central-western Senegal, scaling-up of control measures has been effective in reducing malaria incidence, but additional measures are now required to eliminate the disease. However, widespread resistance to currently used insecticides threatens the effectiveness of bednet and IRS (Indoor Residual Spraying) programmes. In 2013 and 2014, as part of a large-scale cluster randomized trial of a targetted control strategy, we evaluated the duration of efficacy of Actellic® 300CS, a capsular