A community-randomised evaluation of the effect of IPTi on anti-malarial drug resistance in southern Tanzania

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Background: Intermittent Preventive Treatment in infants (IPTi) is the administration of sulphadoxine-pyrimethamine (SP) at 2, 3 and 9 months of age to prevent malaria. We investigated the influence of IPTi on drug resistance.Methods. Twenty-four areas were randomized to IPTi or no IPTi. Blood collected during representative household surveys at baseline, then after 15 and 27 months of implementation, was tested for SP and resistance markers.Results. The frequency of SP in blood was similar in IPTi and comparison areas at baseline and at 15 months. dhfr and dhps mutations were also similar at baseline then increased similarly in both arms after 15 months of SP-IPTi. First-line treatment switched from SP to artemether-lumefantrine before the final survey, when SP positivity fell among infants in comparison areas but increased in IPTi areas. This was accompanied by an increase in dhfr, but not dhps, mutations in IPTi areas (p=0.004 and p=0.18 respectively).Conclusions. IPTi did not increase drug pressure, or the selection on dhfr and dhps mutants, when SP was first line malaria treatment. Introduction of artemether-lumefantrine was followed by an increase in dhfr mutations, consistent with weak selection attributable to SP-IPTi, but not dhps, suggesting a fitness cost of this mutation.

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