Vienna Evaluation Unit

MEDECINS SANS FRONTIERES

Chemical prevention of seasonal malaria in Niger

Executive Summary

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The Vienna Evaluation unit started its work in 2005, aiming to contribute to learning and accountability in MSF through good quality evaluations. The unit manages different types of evaluations, learning exercises, anthropological studies and organises training workshops for evaluators.
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Summary

Introduction

Chemical prevention of seasonal malaria (CPS) has been implemented in Niger since 2013, pursuant to the recommendations of the World Health Organization (WHO) and the national anti-malaria policy. It consists of a mass campaign involving the administration of curative doses of sulphadoxine-pyrimethamine (SP) and amodiaquine (AQ) to children between the ages of 3 and 59 months for three days, at 28-day intervals, between July and November.

In 2014, the target population – children from 3 to 59 months living in five health districts (HD) (Magaria, Madaoua, Bouza, Madaraounfa, and Guidam-Roumdji) spread over three regions of Niger (Zinder, Tahoua, Maradi) – was estimated at more than 447,500, which equals a 100% increase compared to 2013.

Particular emphasis was placed on simplifying procedures so as to reduce the cost of CPS without unduly affecting the quality of implementation. In addition, several innovative features were included such as the implementation of CPS at a health district-wide level, relying on the existing resources of the Ministry of Health, and integrating CPS into nutritional and vaccination activities.

The CPS medications, available in co-blister format combining SP and AQ, were distributed by more than 4,700 community officers overseen by 98 supervisors. These officers covered a set of 414 *sites fixes* and 111 *sites fixes avancés*. Finally, there were another 19 teams going from door to door. The first dose of medication was administered under supervision, while the other two doses were administered at home by community members. In 2014, a special effort was made to improve procedures for home administration of medication and to strengthen the follow-up on serious undesirable side effects.

Results

Between July and November 2014, 447,550 children were expected for CPS and an average of 477,059 children (106%) were registered at the distribution sites at each visit. Of these children, 470,112 (98.5%) actually received the CPS medications. These figures show a more accurate estimate of the target population compared to 2013 when only 138,792 children were expected, but an average of 224,897 children (162%) appeared at each CPS campaign visit.

Despite a better estimate of the target population, we find that the rate of administrative coverage remains difficult to evaluate. This coverage varied from 82% to 137% in 2014, with huge disparities between the various CPS visits and the various districts. Moreover, while the administrative coverage indicates that the coverage rate was highest on the fourth visit, the surveys of coverage show exactly the opposite. However, with a target coverage rate of 85%, the results of coverage surveys conducted by EPICENTRE or by MSF have demonstrated very satisfactory overall coverage in most HDs. Coverage rates under 85% have, however, been estimated on the second visit in the urban environment of the Guidam Roumdji HD and on the third visit in the Madaraounfa HD.

Fever in a child was the main criterion of exclusion from CPS and varied, on an overall basis, from 0.9% on the first visit to 2.2% on the fourth. The gradual increase in the exclusion rate is explained by an increase in cases of malaria, the fourth visit coinciding with the peak of malaria.

All in all, 42,338 undesirable side effects (SE) were reported during the four CPS visits, corresponding to roughly 2% of the children who received CPS, with little variation between visits. The percentage of SE reported increased slightly compared to 2013 (0.4-1.2%). This is probably due to better follow-up of SE in 2014. Three cases of serious SE were reported in all five HDs during the four CPS visits. These cases represent 0.16 serious SE per 100,000 children who received CPS, compared to 8 serious SE for 100,000 children who received CPS in 2013. The difference is mainly related to the clarification of the definitions of serious SE in 2014, but also to a review of the cases of serious SE reported after each CPS visit. It should be noted that during the four CPS visits, the most feared side effects of SP and AQ, such as toxic hepatitis, a serious skin reaction or agranulocytosis, were not reported.

The remarkable change in the home administration procedures for medicines in Magaria indicates that women are able to properly follow the instructions given if they are adapted to the local setting and are properly explained to the women. We also find that a practical demonstration at the distribution sites was a key tool for improving practices.

Moreover, the experience of the OCG in Magaria showed that the integration of distribution of Plumpy'Doz™ into the CPS circuit is feasible. However, this joint distribution created confusion in the community and was counter-productive for the distribution of CPS, resulting in a lower participation rate. The problems identified are related mainly to the different age segments in the two distributions and to the perception of Plumpy'Doz™ as a bonus, thereby raising the risk of a double dose of CPS medication. However, the experience of OCP in Madaraounfa showed that integrating CPS into the preventive packet, developed before the introduction of the CPS, seems not only feasible but also very well accepted by the population. In addition, locating activities within health facilities could make it easier to establish these activities permanently in the future.

The effectiveness of CPS was evaluated through an analysis of individual data collected from four sentinel sites in the 25 HDs of Magaria for all cases of fever in children less than 5 years old from the start of the CPS campaign until a month after the last CPS distribution.

Based on the method used to obtain a quick estimate of the effectiveness of vaccination, the overall effectiveness of CPS was 63%, with a tendency to decrease with each CPS visit (94%, 80%, 59%, 16%). The effectiveness of CPS in the 21 days following its distribution was estimated at 74% on average, with a decrease to 31% in the 7 days preceding the next CPS distribution. We attribute this decrease in effectiveness to increasing exposure to malaria at each CPS visit, but mainly to the type of quick tests used (HRPII), which can remain positive for more than a month after parasites are cleared from the blood. As data on resistance to SP and AQ are not available, it cannot be excluded that resistance was a contributing factor to the decreased effectiveness of CPS.

Conclusions

The results of this evaluation show that the implementation of CPS in the context of Niger was a success, even with a target population more than twice as large as the target population in 2013. However, we did not find the expected simplification of operating procedures that might result in a

reduction of human resources deployed and thereby in a considerable reduction of the cost of CPS. We wish to point out that to simplify the implementation of CPS in a concrete way, MSF should consider testing more "daring" operating procedures (e.g., the distribution of complete blister packs through the health structures), for example in areas where the population is already accustomed to CPS and follows this preventive strategy well.

MSF has shown the feasibility of combining CPS with other preventive strategies such as the distribution of Plumpy'Doz™, albendazole, impregnated mosquito nets, and routine vaccination.

We also find some improvement in the follow-up of SE compared to the year 2013. But despite preparatory work with the Direction de la Pharmacie, the involvement of the Ministry of Public Health is still minimal and pharmacovigilance remains one of the weak points of CPS implementation.

The evaluation of CPS effectiveness through the sentinel sites, based on the method used for a quick estimate of vaccine effectiveness, proved practical and useful in the setting of Niger. However, one of the major limitations of this method was the use of quick diagnostic tests for malaria (TDR) based on detection of the HRP2 antigen, which continues to remain positive for a long time after parasite clearance from the blood. The use of TDR based on the detection of pLDH, which becomes negative quickly after infection, will improve the interpretation of results at the sentinel sites in the future.