

Cross-border epidemiological data integration and harmonization – Application to malaria in the cross-border area between French Guiana and Brazil

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The number of malaria cases drastically dropped worldwide between 2000 and 2015, with 58% and 37% decreases of the mortality and incidence rates, respectively. Such a success conducted, in 2015, the statement of an ambitious target in the framework of the Sustainable Development Goals of the United Nations: “By 2030, end the epidemics of [...] malaria [...]”. However, several obstacles make actually such a target difficult to reach. First, malaria is still highly present worldwide, with 216 million cases and 445 thousand deaths worldwide in 2016 (WHO, 2017). Secondly, local recrudescence of cases have been noticed in 2016 and 2017, especially in the Americas. Particularly, Brazil notified 174,522 cases between January and November 2017, i.e. 56690 cases more than for the same period in 2016, representing a 48% increase (PAHO, 2018). Moreover, specific contexts favour the maintenance of foci of intense transmission. Particularly, “cross-border malaria” is considered as a major obstacle for elimination. In fact, on either side of the border, different public policies and different strategies and means of surveillance, prevention and control of diseases coexist, without regular exchange of comparable data and information, within socio-demographical and environmental contexts that already vulnerabilize the local populations. Such a situation prevents to have a shared and unified vision of the epidemiological cross-border situations and, consequently, to define concerted (between the border countries), targeted and effective control actions.

“Transform malaria surveillance into a core intervention” is one of the three pillars on which the Global Technical Strategy of the World Health Organization (WHO) bases the actions towards the disease elimination. However, surveillance remains a challenge in cross-border contexts due to above mentioned issues, making necessary the harmonization of data types and formats, nomenclatures and concepts used by each country.

The border between French Guiana and Brazil is typical of the above described cross-border contexts. Systematic, regular and perennial information and data exchange related to malaria cases does not exist yet. Consequently, a cross-border malaria surveillance system has been built, in the framework of the Brazilian Climate and Health Observatory. It is based on the existing country-specific surveillance systems: the Epidemiological Surveillance System for Malaria (SIVEP-Malária) in Brazil and the epidemiological surveillance system of the department of Delocalized Centres for Prevention and Care (CDPS) of the Cayenne hospital, French Guiana. It relies on expert knowledge in parasitology, epidemiology, national surveillance systems and informatics in order to specify data transformation rules leading to cross-border harmonized information. Nomenclatures chosen satisfy as far as possible international standards. Extraction, Transform and Load (ETL) tools were used in order to implement the rules and build a database containing harmonized information and shared by the two countries. Data visualisation tools implemented within the R-Shiny programming environment permit to disseminate the harmonized epidemiological indicators online, both temporally (time-series) and spatially (maps). Eventually, this system aims at being operationally implemented, for use for research works, epidemiological surveillance and general public information.

The poster will present the societal and scientific issues involved in establishing a permanent data flow. The technological choices made to implement it, as well as illustrative examples of harmonized data and indicators will be presented and discussed. Eventually, some perspectives will be drawn.

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