Cross-border epidemiological data integration and harmonization – Application to malaria in the cross-border area between French Guiana and Brazil
Emmanuel Roux, Raphael Saldanha, Christovam Barcellos, Théophile Mandon, Margarete Do Socorro Mendonca Gomes, Emilie Mosnier, Basma Guarmit, Jean-Christophe Desconnets

To cite this version:
Emmanuel Roux, Raphael Saldanha, Christovam Barcellos, Théophile Mandon, Margarete Do Socorro Mendonca Gomes, et al.. Cross-border epidemiological data integration and harmonization – Application to malaria in the cross-border area between French Guiana and Brazil. Latin America and the Caribbean Scientific Data Management Workshop, Apr 2018, Rio de Janeiro, Brazil. hal-02541501

HAL Id: hal-02541501
https://hal.archives-ouvertes.fr/hal-02541501
Submitted on 16 Apr 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Cross-border epidemiological data integration and harmonization
Application to malaria in the cross-border area between French Guiana and Brazil

Emmanuel Roux1, Raphael Saldanha2, Christovam Barcellos2, Théophile Mandon1, Margarete do Socorro Mendonça Gomes3, Emilie Mosnier4, Basma Guarmit4, Jean-Christophe Desconnets4

Context

- Malaria: 216 million cases and 445 thousand deaths worldwide in 2016 (WHO, 2017)
- Between 2000 and 2015, 58% and 37% decreases of the mortality and incidence rates, respectively

Target: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Cross-border malaria considered as a “Major obstacle for malaria elimination” [Wangdi et al., 2015]

Study Region

Data flow

Objectives and challenges

- Integrate and harmonize automatically and regularly malaria cross-border epidemiological data
- Disseminate indicators and data in an interpretable way for specialists, health actors and population

In fine, this should conduct to

- Provide a unified vision of the epidemiological cross-border situations
- Participate to define concerted, targeted and effective control actions for disease elimination

Technological choices

- Multi-platform Extract Transform Load (ETL) tools (TALEND®)
- Harmonization rules based on expert knowledge in epidemiology and parasitology
- Web services for data online publication
- Web application (R-Shiny) for online data visualization

Ethical considerations

- Exploitation and dissemination of anonymized data
- Temporal and spatial aggregation of the data for public user profile
- Authorization of the Commission Nationale de l'Informatique et des Libertés (CNIL) for personal data automatic processing and data transmission to a foreign country (ongoing request No. 2135463)

Cross-border related issues

- Socio-demographical and environmental contexts that vulnerablize local populations
- High mobility of pathogen-carrying populations
- Patient follow-up difficulties (situations of illegality, auto-medication, …)
- Different strategies and means of surveillance, prevention and control of diseases between countries
- Lack of international cooperation: Few regular exchange of comparable data and information between countries

How to ensure cross-border epidemiological data interoperability on an ongoing basis?

Funding

Brazilian Climate and Health Observatory [Barcellos et al., 2016] (Cross-border sentinel site [Roux et al., 2014])