



The disconnection between the Brazilian health information system and the cases of mercury exposure in Amazon

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To the editor

The health information system (HIS) is a well-designed mechanism to gather, process and disseminate information about health (Yusof et al., 2008) and to monitor disease (Sligo et al., 2017). In Brazil, there are six different information systems: of mortality, of live births, of basic health attention, of national program of immunisation, of notifiable grievances (diseases, injuries and events) and of environmental health. All systems work together in order to promote health and prevent diseases and are subjected to the Ministry of Health (Carvalho et al., 2017).

Our attention has been drawn to the deficiency in the information system responsible for notifiable grievances (System for Reporting of Notifiable Conditions (SINAN)) in the notification of human mercury intoxication (ICD-10: T56.1) (World Health Organization, 2016) in Brazil. Based on the information provided by this system, from 2006 to 2014, 220 cases of exogenous mercury intoxication occurred in the country. Most of these (41%) occurred in São Paulo State and a considerable amount (24%) in Paraná State. Other states also presented notification for exogenous mercury intoxication: Espírito Santo, Pernambuco, Minas Gerais, Rio de Janeiro, Distrito Federal, Tocantins, Bahia, Ceará, Acre, Mato Grosso do Sul, Paraíba, Alagoas, Mato Grosso and Goiás (Brasil, 2015).

What caught our attention was the absence of notifications for exogenous mercury intoxication from Amazonas State, Pará State, Roraima State, Amapá State, Maranhão State and Rondônia State. All of these are located in the Amazonian region where cases of human mercury intoxication have otherwise been reported (Câmara, 2017; Khoury et al., 2013; Maria et al., 2017; Marques et al., 2007).

Reading the SINAN guidelines,¹ concepts such as exogenous intoxication; toxic agent; phase of intoxication; phase of exposure; phase of toxicokinetic; phase of toxicodynamic; clinical phase; periods and types of intoxication are clearly defined. According to the guidelines, exogenous intoxication (ICD10: T65.9) (World Health Organization, 2016) was defined as “a set of harmful effects represented by clinical or laboratorial manifestations that reveals the organic imbalance produced by the interaction of one or

more toxic agents.” Moreover, the guidelines suggest actions that need to be seriously considered by academics and scientists: the obligation for physicians and other health professionals to notify the information system about the existence of patients who present with exogenous intoxication (suspect or confirmed cases). Additionally, the system allows educational institutions (public or private), centres of hemotherapy, laboratory units, research institutions or any citizen to communicate the occurrence of an exogenous intoxication (Brasil, 2017). The notifications are reported to health facilities, namely notification units. Health professionals or others who wish to notify a case of exogenous intoxication report cases to a notification unit. The notification units are responsible for updating the SINAN system weekly (Ministry of Health Government Ordinance Number 204, from 17 February, 2016).

Recently, we performed a systematic review of mercury exposure in Amazon. Our work included 11,827 subjects who had been investigated for mercury exposure (exogenous intoxication) (Castro and Lima, 2018). Our results showed that all the populations that were studied presented mean levels of mercury on hair above $6 \mu\text{g.g}^{-1}$. Based on the data presented above, we observed a gap between research data and the health information system, which poses several questions: Why is the Brazilian SINAN unable to report the mercury intoxication that occurs in Amazon? Where is the reporting gap? Is the information system the problem? Is the absence of notification by researchers/academia the problem?

We need to strengthen the mesh between research and reporting to the HIS in order to promote health for mercury exposure populations that live in Amazon. Furthermore, mercury is a global problem. As a signatory to the

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Accepted for publication January 20, 2019.

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Minamata Convention (United Nations, 2013), Brazil should identify and correct the barriers in the inter-sectorial approach in order to comply with the agreement.

The authors recommend that:

- Researchers who study mercury exposure in Amazon should adhere to the national SINAN guidelines;
- Public funding for research of mercury exposure in Amazon should require that the approved projects follow the national SINAN guidelines.


Acknowledgement

The authors thank the Evandro Chagas Institute for supporting open access publication.

Authors' contribution

NSSC and MOL contributed equally for the present article. Both authors made substantial contributions to conception and design, analysis and interpretation of data. Both authors have been involved in drafting the manuscript and revising it critically for important intellectual content. Both authors have given final approval of the version to be published. Both authors participated sufficiently in the work to take public responsibility for appropriate portions of the content. Both authors agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Note

1. Available (in Portuguese only) at <http://portalquivos.saude.gov.br/images/pdf/2017/outubro/06/Volume-Unico-2017.pdf>

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