



Letter to the Editor

Comments on “Redefining vaccination coverage and timeliness measures using electronic immunization registry data in low- and middle-income countries”



Dolan and co-authors [1] present an interesting commentary on immunization “measures” using data from Electronic Immunization Registries (EIRs), a relevant topic as more low and middle-income countries (LMICs) are implementing such Registries [2]. While adding to the global discussion on EIRs is welcome, I offer some clarifications and additional information.

The EIR definition presented as “According to the Pan American Health Organization (PAHO) and WHO”, only reflects the PAHO definition [3,4]. Stating that “for aggregate [routine health information systems] RHIS data in LMICs, doses are counted if they are administered, regardless of their timing” is not quite accurate. Most LMICs calculate administrative coverage only considering doses up to a certain age, for example coverage for those recommended among children aged <12 months are often only counted if administered/recorded for children <1 year. In Table 1, the proposed measure for “dose validity” is missing to be more explicit about the minimum between-dose interval, which is key for immunity [5].

Without a clear definition of what an EIR is and its core functionalities, it can be difficult to classify different information systems for individual tracking of vaccinations. For example, direct data capture (i.e., without any paper recording) and an *online* system seems to be assumed as part of the EIR definition, particularly on the second paragraph [1]. Nevertheless, in several LMICs data collection still takes place in paper and data is entered into the “EIR” afterwards [3,4,6]. EIRs improving the “efficiency” in the capture and use of individual data is not a given and “efficiency” was not used in the citation provided [3]. If well designed and implemented, EIRs can potentially eliminate the need for numerous paper records (tally sheets, vaccination/health card, and paper registries), potentially reducing the time allocated to data recording [6]. However, high user workloads can be expected, particularly at roll-out as parallel reporting systems will likely exist, also, if workflows are not optimized, or the infrastructure (internet, electricity) or the capacity/motivation of health-workers to use the EIR is sub-optimal, it may add work and time [6]. In addition to the EIR challenges listed [1], others include generating and assigning unique IDs, implementing de-duplication routines and clear algorithms to manage persons who are to be excluded (e.g., deaths, persons who “have moved elsewhere”) [4]. Also, the accuracy of some of the measures presented, will not only depend on the appropriate recording of vaccine doses [1], but also on having accurate dates of birth. Several LMICs have incomplete civil and vital registration systems, though EIRs could potentially help [4,7].

Finally, some of the measures included [1] have already been proposed [4,8]. PAHO not only presents definitions, but also has provided guidance on their calculation and interpretation; adding also measures aimed at assessing data quality and others including “simultaneity” (co-administration of vaccines recommended at the same age); “complete series” (complete immunization for age according to national schedule) and “number of visits needed to complete the vaccination schedule” [8]. Coverage estimation by place of residence, as opposed to place of vaccination (the common assumption in RHIS) and type of provider (public vs private) are also measures useful to understand vaccine-seeking behaviors.

I join Dolan and co-authors, and many other immunization stakeholders, in advocating that, as more LMICs embark in developing and implementing EIRs, more needs to be done to document and properly evaluate approaches, readiness and experiences, and better use the data these Registries can produce [1,2,6].

The comments reflect those of the author alone and do not necessarily reflect those of the World Health Organization.

Declaration of Competing Interest

I have not conflict of interest to declare, except that I worked for the Pan American Health Organization between 2004 and 2015.

References

- [1] Dolan SB, Carnahan E, Shearer JC, Beylerian EN, Thompson J, Gilbert SS, et al. Redefining vaccination coverage and timeliness measures using electronic immunization registry data in low- and middle-income countries. *Vaccine* 2019;37(13):1859–67. <https://doi.org/10.1016/j.vaccine.2019.02.017>.
- [2] Report of Immunization and vaccines related implementation research advisory committee (IVIR-AC) meeting 2016. Session 9: Immunization E-Registries (IERs). Available at https://www.who.int/immunization/research/committees/ivir_ac/en/index4.html [accessed 11 May 2019].
- [3] Danovaro-Holliday MC, Ortiz C, Cochi S, Ruiz-Matus C. Electronic immunization registries in Latin America: progress and lessons learned. *Rev Panam Salud Publica* 2014;35(5–6):453–7.
- [4] Pan American Health Organization. *Electronic immunization registry: practical considerations for planning, development, implementation and evaluation*. Washington, D.C.: PAHO; 2017.
- [5] WHO recommendations for routine immunization - summary tables. Available at https://www.who.int/immunization/policy/immunization_tables/en/ [accessed 11 May 2019].
- [6] Immunization Data: Evidence for Action. A realist review of what works to improve data use for immunization, evidence from low- and middle-income countries. Seattle: PATH; Washington, DC: PAHO; 2019.
- [7] Corrêa G, Verstraete P, Soundardjee R, Shankar M, Paterson C, Hampton L, et al. Immunization programmes and notifications of vital events. *Bull World Health Organ* 2019;97(4):306–8. <https://doi.org/10.2471/BLT.18.210807>.
- [8] Pan American Health Organization. *Tools for monitoring the coverage of integrated public health interventions. Vaccination and deworming of soil-transmitted helminthiasis. Module 6: analysis of survey data and nominal [sic] registries*. Washington, D.C.: PAHO; 2017.

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