

System Design Barriers to HIS Data Use in Low and Middle-income Countries: A Literature Review

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Manish Kumar¹ and David Gotz²

¹MEASURE Evaluation, University of North Carolina at Chapel Hill, manishk@email.unc.edu

²School of Information and Library Science, University of North Carolina at Chapel Hill, gotz@unc.edu

Summary

The ability of low and middle-income countries (LMICs) to monitor and measure their progress toward sustainable development health goals is dependent on design, implementation and use of a robust national health information system (HIS). Improved health system performance is directly linked with the use and quality of routine data in a country's HIS. However, studies have reported several types of barriers that hamper data quality and data use in a national health system of LMICs. To better understand these barriers, we have conducted a systematic review of the scientific literature. The objective of this literature review was to synthesize and summarize the system design-related research and implementation gaps affecting data quality and data use in decision-making. The review made an effort to answer two key questions: (i) what does the published literature tell us about HIS design barriers to data use in LMICs? (ii) What, if any, are the main research and implementation gaps?

The review methodology included a two-pronged search strategy. Under the first strategy, electronic searches were performed in the *PubMed*, *Web of Science*, *Embase*, and *Global Health* scientific databases. After removing duplicates and papers with no abstract, a total of 307 abstracts (Appendix I) were selected for detailed review. The second search strategy involved consultation with an expert from the MEASURE Evaluation project who has extensive experience on routine data use issues in LMICs. Based on the consultation with the expert and a review of abstracts from the electronic search, a total of 18 papers were selected for full-paper review (Appendix II).

This report provides a comprehensive bibliography of the references identified through the literature review. Future work will include an analysis of these findings and a discussion regarding any implications to HIS data use and design.

Appendix I. Publications identified from electronic search for review

- (1) Typhoid fever surveillance and vaccine use, South-East Asia and Western Pacific Regions, 2009-2013. *Weekly Epidemiological Record* 2014;89(40):429.
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Appendix 2. List of publications selected for full-paper review

#	Title	Authors	Journal/ Publication
Papers recommended by expert			
1	Improving the use of health data for health system strengthening	Tara Nutley and Heidi W. Reynolds	Glob Health Action 2013, 6: 20001 - http://dx.doi.org/10.3402/gha.v6i0.20001
2	Evidence for Health II: Overcoming barriers to using evidence in policy and practice	Anne Andermann, Tikki Pang, John N. Newton, Adrian Davis and Ulysses Panisset	Health Research Policy and Systems (2016) 14:17 DOI 10.1186/s12961-016-0086-3
3	A systematic review of barriers to data sharing in public health	Willem G van Panhuis, Proma Paul, Claudia Emerson, John Grefenstette1, Richard Wilder, Abraham J Herbst, David Heymann and Donald S Burke	BMC Public Health 2014, 14:1144 http://www.biomedcentral.com/1471-2458/14/1144
4	Assessing country-level efforts to link research to action	John N. Lavis, Jonathan Lomas, Maimunah Hamid, & Nelson K Sewankambo	Bulletin of the World Health Organization 2006; 84:620-628
5	Results Data Initiative: Findings from Ghana	Development Gateway	Available at http://www.developmentgateway.org/assets/post-resources/RDI-Ghana.pdf
6	A Review of Constraints to Using Data for Decision Making-Recommendations to Inform the Design of Interventions	MEASURE Evaluation	Available at https://www.measureevaluation.org/resources/publications/tr-10-77
7	Strengthening capacity in developing countries for evidence-based public health: the data for decision-making project	Marguerite Pappaioanou, Michael Malison, Karen Wilkins, Bradley Otto, Richard A. Goodman, R. Elliott Churchill, Mark White, Stephen B. Thacker	Social Science & Medicine 57 (2003) 1925–1937
8	The Data for Decision Making project: assessment of surveillance systems in developing countries to improve access to public health information	K. Wilkins, P. Nsubuga, J. Mendlein, D. Mercer, M. Pappaioanou	Public Health (2008) 122, 914-922
9	Data Demand and Information Use in the Health Sector-Case Study Series	MEASURE Evaluation	Available at https://www.measureevaluation.org/resources/publications/sr-08-44

#	Title	Authors	Journal/ Publication
Papers recommended by expert			
10	A Conceptual Framework for Data Demand and Information Use (DDIU) in the Health Sector	MEASURE Evaluation	Available at https://www.measureevaluation.org/resources/publications/ms-06-16a
Full-paper from electronic search			
11	Evaluation of the national tuberculosis surveillance system in Afghanistan.	Saeed KMI, Bano R, Asghar RJ.	Eastern Mediterranean Health Journal 2013; So 19(2):200-207.
12	Bridging the gaps in the Health Management Information System in the context of a changing health sector.	Nyamtema AS.	BMC medical informatics and decision making 2010;10:36.
13	Design considerations for community mental health management information systems.	Lowe BH, Sugarman B.	Community Ment Health J 1978;14(3):216-223.
14	Development of a primary Health Care Information System in Ghana: Lessons learned.	Heywood AB, Campbell BC.	Methods Inf Med 1997;36(2):63-68
15	Evaluation criteria for district health management information systems: Lessons from the Ministry of Health, Kenya.	Odhiambo-Otieno GW.	Int J Med Inf 2005;74(1):31-38.
16	Key influences in the design and implementation of mental health information systems in Ghana and South Africa.	Ahuja S, Mirzoev T, Lund C, Ofori-Atta A, Skeen S, Kufuor A.	Global Mental Health 2016 apr;3:e11.
17	Designing an information technology system in public health: Observations from India.	Thiagarajan S, Gupta P, Mishra A, Vasisht I, Kauser A, Mairembam DS.	BMC Proceedings 2012;6.
18	The reliability and usability of district health information software: case studies from Tanzania.	Lungo JH.	Tanzania journal of health research 2008;10(1):39-45.