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COMMENTARY

The case for investing in public health surveillance in low- and middle-income countries

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ABSTRACT

Surveillance is central to public health. In the absence of comparable data from most low-income and middle-income countries, national and international agencies use estimates to monitor health targets. Although morbidity and mortality estimations generated by statistical modelling can fulfill national and global reporting requirements, locally generated data are needed to guide evidence-based local action. The focus on measurement around the sustainable development goals provides an opportunity for WHO and the global health community to make a case for increased investment by governments to strengthen local surveillance systems.

Surveillance is central to public health[1] and defined as "the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice"[2]. Data are needed to define the problem, to assess and quantify associated risk and protective factors, to define and evaluate interventions and to inform areas for additional research[3]. Data are needed on leading causes of illness, disability and death. In all countries, administrative processes or documentations during health-care provision continuously generate raw health data. Despite the importance of these data, most low- and middle-income countries lack a process to systematically collect, analyse and use these data. Lack of reliable routine data has been identified as one of the main overarching barriers for effective public health action at country level[4].

In September 2016, all member countries of the United Nations (UN) committed to *The 2030 Agenda for Sustainable Development* and its accompanying goals[5]. The global community agreed that the sustainable development goals (SDGs) can't be achieved without addressing the inequalities and exclusions that exist between and within countries. In regard to public health, countries committed to monitor 13 targets linked to the health goal (SDG 3: To ensure healthy lives and promote well-being for all at all ages) and other health-related targets that are incorporated into the other goals[6]. Monitoring these targets to track progress will require quality data at the subnational and national levels [7]. Given the cross-cutting nature of the SDG indicators, official statistical data sources from the health sector as well as other sectors, such as environment, transport, and agriculture, will need to be used to fulfil countries' SDG reporting requirements. However, according to the SDG Indicator Working Group, the limitations with national surveillance and statistical systems make them unsuitable to be used as the sole data sources[8]. The implementation of the sustainable development agenda also requires determining who is left behind. The Working Group and other researchers have identified lack of accurate and timely information as the main reason why numerous groups and individuals are left behind and remain "invisible" and why many development challenges are still poorly understood[8,9]. For example, according to the 2017 WHO World Health Statistics report, of the 194 World Health Organization (WHO) Member States, 42% (81 countries) have very low quality or no data to report on how many of their citizens died in a given year, and what they died from[7]. The universal health coverage target of SDG 3 (Target 3.8) states that everyone should have access to affordable and quality health services. Lack of reliable patient outcome data has been reported as one reason for the lack of progress in improving quality of care in many countries. Routine information systems in low- and middle-income countries are inadequate to be used for measuring quality of care[10]. For example, measuring care-sensitive patient outcomes requires patient-specific input data, but existing systems in low- and middle-income countries often collect and report aggregate data.

To address the data gap from official statistical and surveillance systems, bilateral and multilateral agencies have used innovative data collection methods and statistical modelling techniques to generate estimates for global indicators [11,12]. In the last 15 years, this approach, with all its limitations, allowed governments to fulfil their reporting commitment to the UN and to benchmark themselves with other countries. However, global estimation becomes insufficient for national-level assessment, planning or evaluation. Citing lack of

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comprehensive and quality local data as justification, major donors are opting to finance innovative solutions, such as computer-based modelling to generate estimates using the limited inputs of patient or population data provided by governments [13]. Estimation is a temporary solution. In countries where there are no data, or the data are of poor quality, governments need to establish surveillance systems. Without an effective surveillance system, governments won't be able to determine who is affected to target their interventions and they cannot measure the impact of their interventions. I'll use the example of road traffic injury to illustrate this point.

The SDG Goal 3 (Target 3.6) requires halving the number of global deaths and injuries from road traffic accidents. WHO sets out minimum data requirements that countries need to collect to address the risk factors that lead to severe injuries and death [14]. The recommendations are meant to provide guidance to countries on the necessary data needed to prioritise or to implement proven interventions. However, in the absence of a surveillance system to collect and analyse these key data elements, the agencies responsible for the implementation of the interventions will be making programmatic and policy decisions without or with incomplete information. For example, in a country where the main cause of road traffic death is motorcycle-related crashes, the most effective proven intervention is to implement a comprehensive helmet law. WHO's recommendation for monitoring progress and evaluating impact of the helmet law is to do a population-based observational survey on helmet wearing to measure compliance to the law and to get data on motorcycle-related injuries and deaths to assess whether it is having impact on morbidity and mortality [15]. Without a surveillance system to collect the data on all three indicators – helmet wearing rate, motorcycle-related injuries, and deaths – the impact evaluation of the law will be impossible. The same argument can be made in terms of monitoring outcomes related to healthcare provision. For example, the type of emergency care needed for a ten-year-old child who has fallen from a motorcycle and had a head injury and another child who has been hit by a car and has a broken leg is different. In the majority of low- and middle-income countries, both of these cases will be reported in their hospital statistics as road traffic accident. Without a health facility-based surveillance system to document basic epidemiologic and clinical information such as: who is presenting for care, the age, the reason for the emergency visit, and the type of care provided for each patient, hospital managers will be forced to make resource utilisation decisions with insufficient and inaccurate information. In the absence of data, national institutions and non-governmental organisations working on road safety often use estimates generated by WHO or other research institutions as the basis to inform intervention or promotion programmes. However, estimations generated from these sources are inadequate for programmatic and policy decision making at the country level.

The importance of data for public health is a universally accepted concept. WHO has several recommendations to countries on how to strengthen their local surveillance systems and recommended minimum data sets on different health topics [16,17]. While it is the responsibility of governments to collect data to evidence progress on SDGs, the focus on measurement around the SDGs provides an opportunity for all stakeholders to align their efforts – financial and technical – to support countries to strengthen their local surveillance systems. Although morbidity and mortality estimations generated by statistical modelling can fulfil national and global reporting requirements, locally generated, analysed and disseminated routine data are needed to guide evidence-based local action.

Conflicts of interest

The author declared no conflict of interest.

References

[1] Public Health Surveillance [Website]. Geneva: World Health Organization; 2017 Available from: http://www.who.int/topics/public_health_surveillance/en/ [cited 2017 Aug 23].
[2] Winslow CE. The untitled field of public health. Science 1920 Jan 9;51(1306):23–33.
[3] Buehler JW. Surveillance. In: Rothman KJ, Greenland S, Lash TL, editors. Modern epidemiology. 2nd ed.Philadelphia (PA): Lippencott-Raven; 1998.
[4] Mathers CD, Ma Fat D, Inoue M, Rao C, Lopez AD. Counting the dead and what they died from: an assessment of the global status of cause of death data. Bull World Health Org 2005 Mar;83(3):171–5.
[5] Transforming our world: the 2030 agenda for sustainable development. New York: United Nations; 2015.
[6] Monitoring health SDGs [Website]. Geneva: World Health organization; 2017. Available from: http://www.who.int/gho/publications/world_health_statistics/2017/dashboard/en/ [cited 2017 Aug 23].
[7] World health statistics 2017. Geneva, World Health Organization; 2017.
[8] Sustainable development goals [Website]. New York: United Nations; 2017. Available from: https://unstats.un.org/sdgs/ [cited 2017 Aug 23].
[9] The data revolution: finding the missing millions. London: Overseas Development Institute; 2015. Available from: https://www.odi.org/publications/9476-data-revolution-finding-missing-millions [cited 2017 Aug 23].
[10] Akachi Y, Kruk ME. Quality of care: measuring a neglected driver of improved health. Bull World Health Org 2017 Jun 1;95(6):465–72.
[11] Guidelines for accurate and transparent health estimates reporting: the GATHER statement [Website]. Oxford: UK Equator Center. Available from: https://www.equator-network.org/reporting-guidelines/gather-statement/ [cited 2018 May 28].
[12] Stevenson G, Hogan D, Boerma T. Improving reporting of health estimates. Bull World Health Org 2016 Jul 1;94(7):483.
[13] Butler D. World's foremost institute on death and disease metrics gets massive cash boost. Nature 2017 February;02(542):19.
[14] Data systems: a road safety manual for decision-makers and practitioners. Geneva: World Health Organization; 2010.
[15] Powered two- and three- wheeler safety. Geneva: World Health Organization; 2017.
[16] Holder Y, Peden M, Krug E, Lund J, Kobusingye Gururaj G, editors. Injury surveillance guidelines. Geneva: World Health Organization; 2001.
[17] WHO Application of ICD-10 for low-resource settings initial cause of death collection. Geneva: World Health Organization; 2014.