Review Paper

Institutional WASH in the SDGs: data gaps and opportunities for national monitoring

Christie Chatterley, Tom Slaymaker, Chander Badloe, Alban Nouvellon, Robert Bain and Rick Johnston

ABSTRACT

The inclusion of water, sanitation and hygiene (WASH) in non-household settings in the Sustainable Development Goals (SDGs) elicits the need for data to track progress over time. This review focuses on schools and health care facilities, and seeks to: (1) assess the availability of SDG baseline data for ten case study countries; (2) evaluate the extent to which existing national data allow monitoring against the SDG criteria; and (3) identify opportunities to improve the availability and quality of data for SDG monitoring. While none of the ten countries could provide all of the data needed to establish comprehensive SDG baselines, every country had information on at least some of the indicators. Education Management Information Systems (EMIS) currently provide the majority of national data on WASH in schools and, in many cases, could be aligned with the SDG criteria with only minor changes. Far fewer data are available for health care facilities. Health Management Information Systems (HMIS) provide a potential entry point for national monitoring. However, where HMIS are administered monthly, annual data collection instruments, such as facility inventory surveys, may be more appropriate. These findings have implications for monitoring WASH in other settings, such as workplaces and prisons.

Key words | equity, health care facilities, monitoring and evaluation, schools, SDG6, WASH

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INTRODUCTION

Household water, sanitation and hygiene (WASH) services have been monitored globally by the World Health Organization/United Nations Children's Fund (WHO/UNICEF) Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) since 1990. However, there has also been growing attention paid to WASH in other settings, recognizing that people typically spend a significant amount of time outside the home, including when they go to school, work and seek health care services (Cronk *et al.* 2015). The Sustainable Development Goal (SDG) 6 targets aim for 'universal access' to safe drinking water (6.1) and sanitation and hygiene (6.2) 'for all' which clearly imply all settings and all populations. Furthermore, SDG 4 (Quality Education) target 4.a includes an explicit reference to WASH in the school-setting, as a key component of a 'safe, non-violent, inclusive and effective learning environment' (United Nations 2017).

Global SDG monitoring of WASH in institutions will initially focus on WASH in schools and health care facilities where global norms already exist, and where WASH services are recognized as being crucial for maintaining the health and education of children and vulnerable populations

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(WHO & UNICEF 2015). Children spend a significant part of their day at school where WASH services can improve educational opportunities and decrease the potential for disease transmission between students, in addition to addressing issues around dignity, particularly for girls (Columbia University & UNICEF 2012; Jasper *et al.* 2012; Freeman *et al.* 2013; Nauges & Strand 2013). Achieving and maintaining WASH services in health care facilities is a critical element for a number of health aims, including those linked to quality universal health coverage (SDG target 3.8), infection prevention and control, patient safety, and child and maternal health, in particular the time around child delivery (Allegranzi *et al.* 2011; Velleman *et al.* 2014; Campbell *et al.* 2015; WHO 2015; Gon *et al.* 2016; Guo *et al.* 2017). WASH benefits also extend beyond health impacts to include dignity and respect, staff morale, and performance and safety (Pearson & McPhedran 2008).

While global monitoring of WASH in institutions is still a nascent effort, reviews of available data have been conducted in recent years. In the 2015 publication *Advancing WASH in Schools Monitoring*, national coverage data for water and sanitation in primary schools were reported for 149 countries (UNICEF 2015). National data on handwashing facilities in schools were only readily accessible for 11. While a number of countries could provide water and sanitation data, often through the national Education Management Information System (EMIS), indicator definitions were either not specified or varied widely between countries and data sources. This limits the potential for generating accurate cross-country comparisons and for regional and global aggregation. For example, coverage estimates for water in schools in Kiribati (3%) were based on a minimum quantity of water per student from an improved source, while in Bolivia, coverage (87%) included schools where any water source existed, regardless of type or functionality.

Harmonized data on WASH in health care facilities are even less widely available. A 2015 global study provides estimates for WASH in health care settings for 54 countries (WHO 2015). However, estimates from only 20 of these are nationally representative and nine are from the year 2010 or later. Additionally, as with WASH in schools monitoring, indicators were unclear or varied between sources. Common data sources included the United States Agency for International Development (USAID) Service Provision Assessment (SPA), the WHO Service Availability and Readiness Assessment (SARA), the World Bank Service Delivery Indicators (SDI) survey, and government-led national surveys. No comprehensive regular national monitoring sources (e.g. annual facility inventories or monthly Health Management Information System) were identified in the review. For both schools and health care facilities, additional WASH data and greater harmonization between data sources, based on the SDG criteria, are needed to establish harmonized SDG baselines.

These challenges are similar to those faced when the WHO/UNICEF JMP began global monitoring of water and sanitation at the household level. To support harmonized monitoring, core indicators and questions were developed for inclusion in household surveys and censuses (WHO & UNICEF 2006). As a starting point, harmonized indicators (and associated core questions) for monitoring 'basic' WASH services in schools and health care facilities were defined by global task teams of experts from multiple regions and organizations convened by the JMP (WHO & UNICEF 2016a, 2016b). These define the criteria for meeting the SDGs for basic WASH services in schools and in health care facilities. The criteria (in italics in Table 1) vary between schools and health care facilities based on expert feedback and globally recommended norms (WHO 2001, 2008, 2009), existing questions from national questionnaires and international survey programs for each setting, as well as the normative criteria of the human rights to safe water and sanitation (UN Special Rapporteur 2014). The basic service level represents a universally applicable minimum standard. For countries where the basic service level is not aspirational, a higher 'advanced' service level should also be defined that is appropriate to the national context (van Maanen *et al.* 2016; WHO/UNICEF 2016a). For example, this might include the addition of facilities for menstrual hygiene management in schools, which is not included in the core questions, but is important in schools that serve adolescent girls.

While the importance of WASH in these settings is gaining recognition, data to create baselines and track progress toward the goal of universal coverage by 2030 are lacking compared to household water, sanitation and hygiene data. Based on the harmonized SDG indicators, this article

Table 1 | Indicator definitions for global monitoring of basic WASH in schools and health care facilities, with the SDG criteria in italics (*'improved' facility types follow JMP definitions (WHO & UNICEF 2017a))

Institution	Category	Definitions and criteria
Schools	Drinking water	Water from an *improved** drinking water source (piped water, protected well/spring, rainwater, packaged or delivered water) *available* at school the day of the survey
	Sanitation	*Improved** sanitation facilities (flush/pour-flush toilet, pit latrine with slab, composting toilet), which are *single-sex* and *usable* (available, functional, private)
	Hygiene	*Handwashing facilities* which have *soap* and *water* available the day of the survey
Health care facilities	Water sanitation	Water is *available* from an *improved**source located *on premises* *Improved** sanitation facilities are *usable*, with at least one toilet dedicated *for staff* use, at least one *sex-separated* toilet with *menstrual hygiene* facilities, and at least one adapted for *people with limited mobility*
	Hand hygiene	Functional hand hygiene facilities (with water and soap, and/or alcohol-based hand rub) are present at *points of care* and *within 5 metres of toilets*
	Health care waste	Waste is *safely segregated* into at least three bins, and sharps and infectious wastes are *treated and disposed of safely*

provides a review of data gaps, challenges and opportunities for monitoring WASH in schools and health care facilities against the SDGs, based on ten national case studies from Latin America and the Caribbean, Eastern and South-Eastern Asia, and Oceania.

METHODS

Case studies were conducted in ten countries, including seven from Latin America and the Caribbean (Bolivia, Colombia, Guatemala, Guyana, Haiti, Honduras, and Peru), two from Eastern and South-Eastern Asia (Cambodia, Indonesia), and one from Oceania (Papua New Guinea). Countries were selected based on recommendations from UNICEF regional offices and country office interest. Nationally-representative data on WASH in schools and health care facilities were solicited from UNICEF country offices and relevant ministries in each country. Additionally, relevant national data were obtained from the United Nations Educational, Scientific and Cultural Organization – Latin American Laboratory for Assessment of the Quality of Education (UNESCO-LLECE) Second and Third Regional Comparative and Explanatory Studies (SERCE and TERCE), and the USAID Service Provision Assessment (SPA) websites.

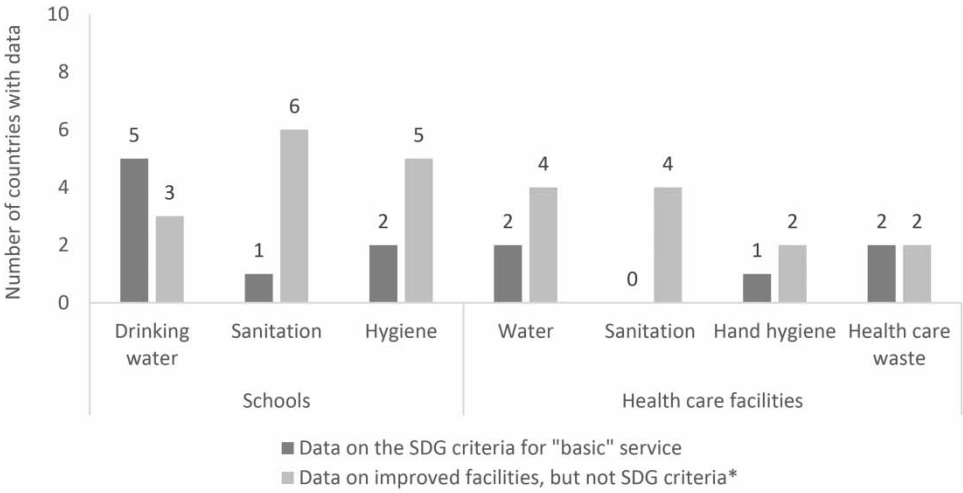
National EMIS questionnaires were collected from national government websites, the UNESCO Asia and Pacific regional office, and global and regional UNICEF offices. Questionnaires from a total of 71 countries were collected, providing an expanded picture beyond the ten case study countries. WASH-related questions were extracted from each questionnaire and assessed for the inclusion of each of the seven new SDG criteria for WASH in schools (Table 1). National Health Management Information System (HMIS) questionnaires were also solicited, but proved difficult to access and reported to not include WASH data in most countries.

The ability to establish SDG baselines was assessed based on all available national data in the public domain. In the process of data collection, stakeholders were consulted in each case study country to understand their perceived challenges and opportunities in establishing national baselines for the SDG criteria for WASH in schools and health care facilities. Stakeholders comprised UNICEF country office representatives in all ten countries, as well as partners and national stakeholders, including officers from the Ministry of Education, Ministry of Health, and National Statistics Office.

RESULTS AND DISCUSSION

Currently available SDG baseline data

In the ten countries, baseline data were already available for some of the SDG indicators for WASH in schools and health care facilities (Figure 1). Half of the countries were able to provide data on the SDG criteria for 'basic' drinking



*For the purposes of this review, "improved facilities" for hygiene refers to handwashing facilities without information on the availability of soap and/or water; and for health care waste, refers to limited data availability on the SDG criteria.

Figure 1 | Data availability for 'basic' WASH services and 'improved facilities' in schools and health care facilities ($n = 10$).

water in schools (Colombia, Honduras, Indonesia, Papua New Guinea, and Peru), while fewer were able to report on 'basic' sanitation (Peru) and hygiene (Honduras and Papua New Guinea). A number of countries have information on the proportion of schools with 'improved' facilities but lack data on the specific SDG criteria, such as availability or usability of those facilities. Fewer countries had data for WASH in health care facilities, but one or two already had data on the SDG criteria for basic water (Guyana and Haiti), hand hygiene (Haiti), and health care waste (Guyana and Haiti) from SPA surveys. Detailed findings from each case country are published in JMP reports in collaboration with regional UNICEF offices (WHO & UNICEF 2017b, 2017c, 2017d).

SDG baseline estimates for 'basic' drinking water in schools could be established for five of the ten case studies (Figure 1). However, for some of these countries, EMIS questionnaires include categories of water supply that cannot be mapped into the global categories of 'improved facilities.' In particular, some questionnaires collect data on schools with 'wells', without distinguishing between unprotected and protected wells. This limits the ability to accurately estimate coverage since unprotected wells are not an 'improved' water source type (WHO & UNICEF 2006). Three countries could provide data on coverage of improved water sources, but had insufficient information on water availability (or system functionality) to establish an SDG baseline.

Among the ten case study countries, only Peru had all of the information necessary to make a baseline estimate for 'basic' sanitation in schools. Other countries had inadequate information on whether facilities are of an 'improved' type or if they are single-sex. Papua New Guinea was able to report a rough estimate based on the availability of functional toilets for boys and for girls, but it is unclear if these facilities are actually single-sex or shared since the EMIS did not include a question on mixed use toilets. Honduras should be able to produce a baseline estimate for 'basic' sanitation in schools, based on the questions in the national EMIS, but the microdata were unavailable and national reports did not provide information on single-sex sanitation. Indonesia and Cambodia collect data on usability and single-sex sanitation, but do not solicit information on facility type to understand if toilets are of an 'improved' type. Six of the ten countries could provide coverage data for 'improved' sanitation, but lacked information on the criteria for 'basic' sanitation service.

Two countries could establish SDG baselines for 'basic' hygiene services in schools. An additional five countries had data on the proportion of schools with handwashing facilities, but lacked data on the availability of soap and/or water. Cambodia collects information on the presence of

handwashing facilities with soap, but lacks information on water availability.

Data on 'basic' drinking water and health care waste disposal were available in Guyana and Haiti, in addition to 'basic' hand hygiene in Haiti (Figure 1). None of the ten countries were able to provide comprehensive data on 'basic' sanitation in health care facilities; no information was available regarding sex-separated toilets or menstrual hygiene facilities. Cambodia was the only country with data on toilets adapted for those with limited mobility. Bolivia, Cambodia, Indonesia, and Papua New Guinea all had national data on some of the SDG criteria for drinking water and sanitation, but insufficient information to calculate SDG baselines for 'basic' service. Additionally, Cambodia and Guyana were able to provide data on some of the criteria for hand hygiene, and some of the criteria for health care waste disposal were available for Cambodia and Indonesia.

Data source review

In the ten case study countries, the majority of the data available for WASH in schools came from national EMIS. In four of the countries, supplemental information was also available from UNESCO-LLECE surveys. LLECE has collected information on schools with potable water, sewer connection, and toilets in good condition, from 16 countries in the Latin America region (LLECE-UNESCO 2008, 2015).

Expanding globally, the 71 EMIS questionnaires assessed in this review included an average of nearly 11 WASH-related questions, ranging from zero to 41. Evaluation of the questions against the core SDG indicators for WASH in schools suggests that the situation in the ten case studies may exemplify the situation globally. Based on EMIS questionnaires, two of the 71 countries (Honduras and Belize) have data on all seven SDG criteria (Table 1) and should be able to establish comprehensive SDG baselines, while 63% capture two or more of the seven criteria (Figure 2). During the 2015/16 school year, over one-third asked about improved water sources (42%) and the usability of toilets (37%) (Figure 3). However, the presence of soap for handwashing was rarely monitored (6%).

While most of the WASH in schools data are available through national EMIS, data on WASH in health care facilities were scattered between multiple data sources, few of which provide a comprehensive picture and none of which are conducted at regular intervals. For example, the Cambodian Ministry of Health conducted a thorough review of national data systems with WaterAid support and identified no comprehensive regular monitoring system, despite standards and targets for WASH in health care facilities (Por 2015).

Of the ten case study countries, four have national WASH in health care facilities data from government-led facility surveys: Bolivia (2013), Cambodia (2013), Indonesia (2011) and Papua New Guinea (2015). Although none of these provide sufficient information to calculate baseline SDG estimates for 'basic' WASH in health care facilities, they do provide information on some of the SDG criteria and suggest interest and capacities of national governments to monitor WASH in health care settings. Two countries conducted USAID-funded SPA surveys (Guyana in 2004 and Haiti in 2013), two have data from Columbia University's Emergency Obstetric and Neonatal Care (EmONC) survey (Cambodia in 2009 and 2014, and Guyana in 2012), and at least one has nationally-representative surveys sponsored by development agencies (UNICEF/WHO and WaterAid conducted surveys in Cambodia in 2010 and 2015, respectively). Only one regular national monitoring source for WASH in health care facilities was identified: the monthly HMIS in Indonesia has one question about the facility water source, but data were not accessible. This review did not identify any countries which are routinely collecting and reporting comprehensive national data on WASH in health care facilities, whether via HMIS, annual facility inventory surveys, or other regular national monitoring mechanisms.

A review of available data and associated questionnaires from these ten countries found that the SPA survey included seven of the 13 SDG criteria, the EmONC included three, and national surveys included one or two. Half of the data sources captured data on the proportion of health care facilities with an improved water source, while 43% collected data on water availability and 36% on usable sanitation facilities (Figure 4). None of the data sources included information on sex-separated toilets or menstrual hygiene facilities, suggesting that the needs of women are not being considered in monitoring of WASH in health care facilities.

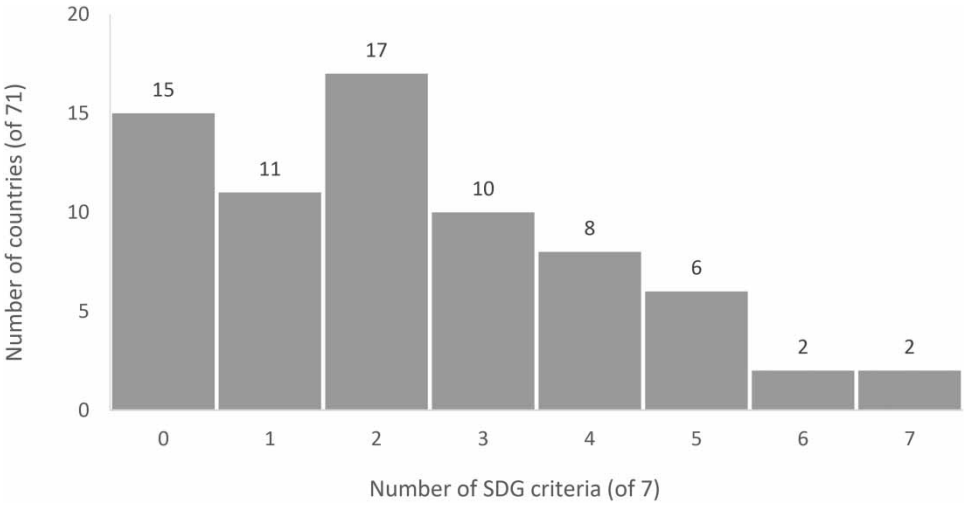


Figure 2 | Histogram of the number of countries that capture the SDG criteria for WASH in schools in their national EMIS, by the number of criteria included ($n = 71$).

Challenges and opportunities

In many countries, the EMIS provides a viable mechanism to monitor the SDGs for WASH in schools through existing national systems. There are seven core questions globally recommended for monitoring WASH in schools in the SDGs (Table 2) (WHO & UNICEF 2016a). The number of WASH questions already included in many EMIS questionnaires, and discussions with EMIS officers in Cambodia, Indonesia and Papua New Guinea suggest that the recommended questions are nationally relevant and within existing national monitoring capacities.

Incremental improvements to these existing national systems would enable SDG reporting on WASH in schools with very little additional investment in monitoring. For many countries, only slight adjustments would be needed to align existing EMIS with the SDG criteria. For example, a number of EMIS questionnaires ask about girls' and boys' toilets, but do not have a category for common use toilets (used by boys and girls), which

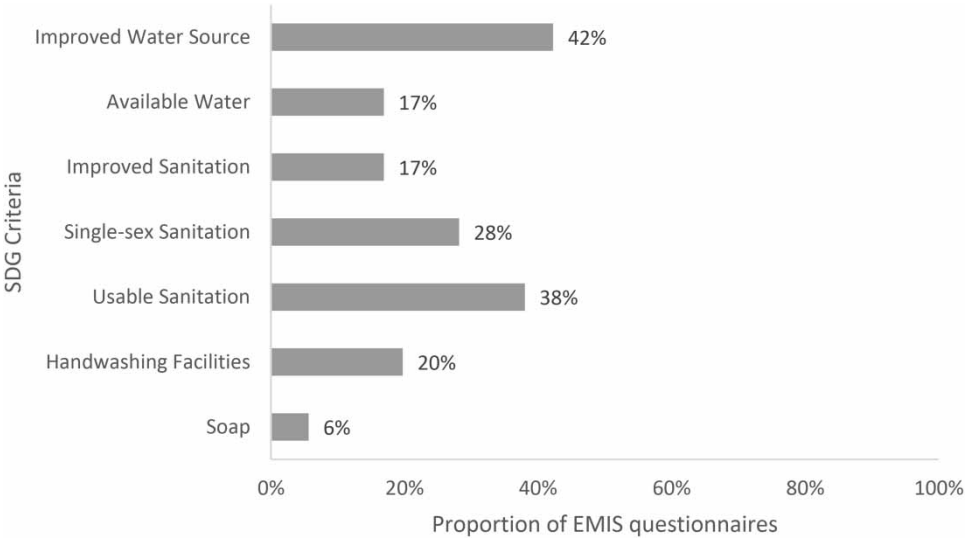


Figure 3 | The proportion of national EMIS questionnaires that currently include each element of the SDG criteria for WASH in schools ($n = 71$).

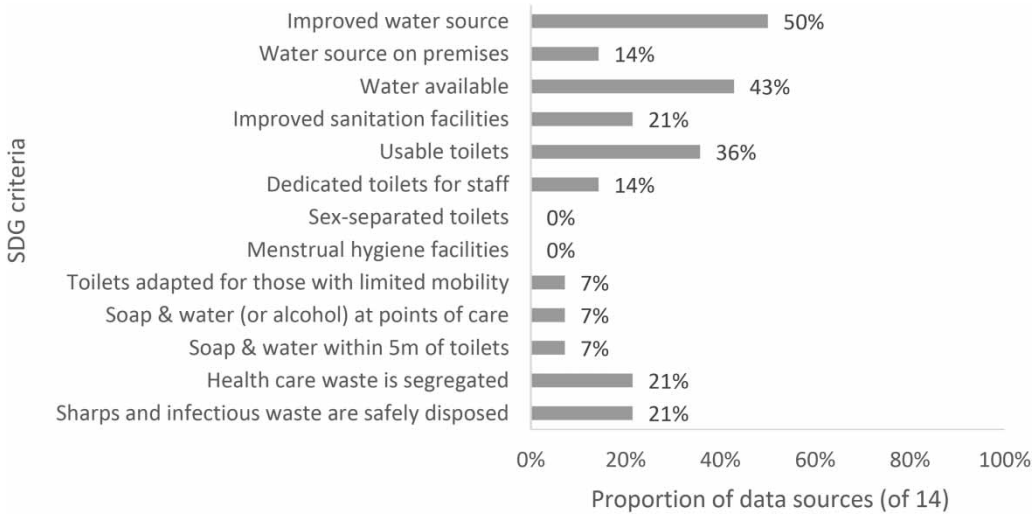


Figure 4 | The proportion of data sources (out of 14 identified in the 10 national case studies) that capture data on each of the SDG criteria for WASH in health care facilities.

limits the ability to determine if the toilets are single-sex. Alignment with the SDG criteria would not only support SDG reporting, but also contribute to strengthening existing national monitoring systems by clarifying information and capturing service quality beyond the presence or absence of infrastructure to support national policy and decision-making. The Ministries of Education in Indonesia and Papua New Guinea have recently updated their EMIS questionnaire to better reflect the SDG criteria and national priorities for the 2016/17 school year and

Table 2 | Globally recommended core questions for monitoring WASH in schools and health care facilities (details and recommended response categories are provided in the associated source publications (WHO & UNICEF 2016a, 2016b))

Category	Core questions for monitoring schools	Core questions for monitoring health care facilities
Water	W1. What is the main source of drinking water provided by the school? W2. Is drinking water from the main source currently available at the school?	W1. What is the main water supply for the facility? W2. Where is the main water supply for the facility located? W3. Is water available from the main supply at the time of the survey?
Sanitation	S1. What type of student toilets/latrines are at the school (most common)? S2. How many student toilets/latrines are currently usable (available, functional, private)? S3. Are the toilets/latrines separate for girls and boys?	S1. What type of toilets/latrines are at the facility for patients? S2. Is at least one of these toilets usable (available, functional, private)? S3. Are there toilets dedicated for staff? S4. Are toilets in sex-separated or gender-neutral rooms? S5. Are there toilets that provide for menstrual hygiene management? S6. Are there toilets that are accessible for people with limited mobility?
Hygiene	H1. Are there handwashing facilities at the school? H2. Are both soap and water currently available at the handwashing facilities?	H1. Are there functional hand hygiene stations available at the points of care on the day of the survey? H2. Are handwashing facilities with soap and water available at one or more toilets on the day of the survey?
Health care waste	N/A	M1. Is waste correctly segregated into at least three labelled bins in the consultation area? M2. How does this facility usually treat/dispose of sharps waste? M3. How does this facility usually treat/dispose of infectious waste?

may serve as examples for other countries (WHO & UNICEF 2017d).

In addition to monitoring service quality, the SDGs provide an opportunity for national systems to monitor *equitable* access to WASH. While rarely reported, national databases often allow for disaggregation that can provide insight into equity considerations within the country, including by location (urban/rural), by school type, and by province or district to understand sub-national disparities. As an example, disaggregated analysis in Papua New Guinea indicates that service coverage is lower, on average, in schools that serve younger children (WHO & UNICEF 2017d). These disparities could be tracked over time to assess how well sub-national gaps are addressed. This would support the wider SDG 10 aim 'to reduce inequalities between and within countries' and to 'leave no one behind'.

Beyond pre-primary, primary and secondary schools, WASH in Early Childhood Development (ECD) centers is a cross-cutting issue, with relevance to SDG targets 3.2, 4.2, 4.a, 6.1 and 6.2. While pre-primary schools typically focus on the year prior to primary school (e.g. kindergarten), serving children aged five, ECD centers tend to focus on even younger children, typically aged 3–5 or younger, which are critical ages for disease vulnerability and building life-long habits. While an important setting for ensuring adequate WASH services are provided, ECD centers are not always registered with the Ministry of Education and therefore not included in regular national monitoring (e.g. EMIS). During this review, a 2012 national assessment of WASH in 3,664 ECD centers ('*primera infancia*') from 446 municipalities in Colombia was identified that provides an example of monitoring WASH in this setting (UNICEF Colombia 2015). Inclusion of ECD centers in national monitoring through the EMIS could support future global monitoring of WASH in these highly influential settings.

A bottleneck to monitoring WASH in schools is that collected data are not routinely analyzed or linked to monitoring of national targets. Aligning monitoring systems with the SDGs may have little consequence without mechanisms to review progress towards national targets and compliance with agreed standards, and to inform programmatic interventions. A 2016 WHO report on WASH in schools in the European region provides an example of utilizing the new SDG criteria to encourage review and update of national WASH in schools targets and standards (van Maanen *et al.* 2016). Digitization of EMIS questionnaires may also make analysis and reporting easier and improve the potential for quick feedback to schools. In addition to monitoring WASH in schools through EMIS, the SDG criteria could be included in checklists for routine school supervisor visits and monitoring systems, and accreditation or school performance assessments.

There are currently 14 core questions globally recommended for monitoring WASH in health care facilities in the SDGs (Table 2) (WHO & UNICEF 2016a). Among the countries in this review, national HMIS programmes were hesitant to include all the questions. While the HMIS may provide a suitable WASH monitoring mechanism, other data collection tools may also be effective and less burdensome. HMIS data are often collected on a monthly or quarterly basis, but some countries additionally have annual or biennial facility inventory surveys that may be more appropriate for the level of detail proposed in the SDG criteria and likely rates of progress toward improving the WASH situation. In both Cambodia and Papua New Guinea, where HMIS data are collected monthly, their annual facility inventory survey was recommended by Ministry of Health officials as a better entry point for SDG monitoring. Routine accreditation or licensing mechanisms could also serve as a mechanism for collecting some basic information about WASH services in health care facilities. In countries which lack established systems for routine facility-based reporting, periodic national surveys could be conducted through international survey programs (e.g. SPA, SARA, SDI) while national systems are developed.

The recent Ministry of Health-led national assessments of WASH in health care facilities in Bolivia, Cambodia, Indonesia and Papua New Guinea are a promising indication of national interest and capacities to collect WASH data in health care settings on a more regular basis. Further discussion is needed at the national level to identify the most appropriate mechanism for data collection in each country.

In many countries, capacities for national monitoring of WASH in health care facilities remains limited. One common bottleneck to regular and comprehensive monitoring is the lack of a clearly defined responsibility within national government. The information required for monitoring WASH in health care facilities is often missing from

national data systems or scattered among various government departments, including infection prevention and control, health care waste management, public works (infrastructure), and others.

Although many countries have limited data on WASH in health care facilities, it is sometimes more straightforward to create a new monitoring framework than to try to modify and adapt an existing one. In this sense, the current bottleneck could be seen as an opportunity to create a strong and streamlined framework for monitoring WASH in health care facilities, which is aligned with national standards and targets as well as the SDG criteria and, where possible, integrated with existing monitoring systems.

A more general bottleneck for WASH in health care facilities is stalled action while awaiting further evidence of links between WASH and improved health outcomes in health care facilities. The general importance of WASH in a health care setting is self-evident, and though additional empirical evidence on specific health benefits may support policy changes and increased investment in monitoring specific aspects, the lack of health impact data should not preclude immediate action to ensure that all health care facilities provide at least a basic level of WASH service.

For both schools and health care facilities, existing data are often not fully utilized. A number of the ten case study countries did not routinely analyze and report the detailed WASH data that were collected in EMIS questionnaires and health care facility surveys. For example, based on the EMIS questionnaire, Honduras should be able to establish a baseline for 'basic' sanitation in schools, but data which were collected on single-sex toilets were not included in reports or online data. Microdata were provided for WASH in schools via official requests to the Ministry of Education of Indonesia, Papua New Guinea and Colombia and via a national online database for Peru, and SPA data were available online for Haiti and Guyana, while for other countries, microdata were not accessible for this review.

Many national monitoring systems are supported, to varying degrees, by international agencies (e.g. WHO, UNICEF, or UNESCO). Further coordination among international agencies and with national governments may help to better support the entire monitoring process, from data collection to analysis and dissemination. The WHO/UNICEF JMP core questions for monitoring WASH in schools (WHO & UNICEF 2016a) and WASH in health care facilities (WHO & UNICEF 2016b) provide examples of how international agencies can support national monitoring.

For self-report questionnaires, such as the EMIS, HMIS or health care facility inventory surveys, data validation and feedback mechanisms may be needed. Based on country consultations, potential data validation mechanisms may include community surveys (e.g. the Commune Database in Cambodia) and spot checks and inspections (e.g. associated with the school accreditation system in Indonesia). Small-scale validation studies could also help to evaluate the accuracy of the information provided through questionnaires, such as a study in Indonesia which found EMIS data to be generally in agreement with the situation observed during school visits (UNICEF Indonesia 2015). And, perhaps most crucially, timely dissemination of results to institution staff and local government as well as students and patients, whether through a government website or annual reports, is needed to support informed action. In many cases, information is out of date or not easily accessible at the local level.

The SDG criteria for WASH in schools and in health care facilities focus on a universally applicably basic minimum level of service, while acknowledging the need to progressively improve service levels. Meeting these criteria will require going beyond simply building infrastructure (taps, toilets and sinks) to considering the level of service provided. This requires a greater focus on the enabling environment, including funding and responsibilities for operations and maintenance. While beyond the scope of this study, national monitoring of input level indicators relating to the enabling environment may support greater progress toward meeting the outcome of basic WASH service provision in these settings.

CONCLUSION

The inclusion of WASH in schools and health care facilities in the SDGs highlights the importance of WASH beyond the household. Although harmonized global monitoring of WASH in institutions is a nascent effort, some national

data are already available that are aligned with the new SDG criteria. In fact, many countries collect more information than they currently report publicly, and more countries may have data on the SDG criteria than previous global reviews suggest. Data are often not easily accessible and additional analysis and data sharing are needed. Preparing for SDG baseline reporting therefore presents an opportunity to streamline, simplify and harmonize between various systems and as such strengthen existing national systems for data collection, analysis and reporting. This process also provides an opportunity for countries to develop locally relevant targets and indicators guided by global goals but taking into account national circumstances, as encouraged by the 2030 Agenda (United Nations Development Group (UNDG) 2015).

Most of the ten case study countries included in this review were able to provide coverage data on WASH in schools. However, few had data relating to the criteria for 'basic' service as defined in the SDGs, particularly for handwashing, and even fewer had data on WASH in health care facilities. While there is a good foundation for monitoring of WASH in institutions, there are small improvements that would support further alignment with the global SDG indicators and result in more effective national monitoring. The national education census (i.e. EMIS), which already exists in many countries, is a good entry point for SDG monitoring of WASH in schools, while potential national data sources for WASH in health care facilities are less clear cut, but could include national HMIS, annual facility inventory surveys, or partnering with international survey programs, such as SPA (USAID), SARA (WHO) or SDI (World Bank), while national systems are developed.

Based on findings from this review, the following steps are urgently recommended to help countries prepare for (or improve upon) SDG reporting for WASH in schools and health care facilities: (1) update national targets and standards, where appropriate, to reflect the new SDG criteria; (2) align existing national monitoring and accreditation systems with the SDG criteria based on global guidance (WHO & UNICEF 2016a, 2016b) and national priorities; (3) analyze, report and disseminate results from all WASH questions included in national monitoring questionnaires; and (4) track progress toward reducing inequities between subnational locations and facility types (including ECD centers, where appropriate). In all cases, data must be analyzed and results disseminated at all levels to inform national and local decision-making and action. Buy-in and leadership of senior Ministry of Education and Ministry of Health officials will be critical to incorporating the SDG criteria for WASH in schools and health care facilities in national monitoring systems, reports, and follow-up actions.

In the longer-term, global monitoring of WASH in institutions could be expanded to include other high use or high-risk settings, such as work places and prisons. The recent increased interest in WASH beyond the household can support the development and improvement of monitoring structures for these additional settings (Kendall & Snel 2016). Improving WASH at both the household and non-household level increases the potential to realize the health, education and quality of life benefits anticipated from WASH investments. Global monitoring of WASH in these settings can ensure that progress is made toward SDG achievement for WASH in institutions.

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