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National situational analysis of water, sanitation and hygiene in health care facilities in Serbia



SUMMARY REPORT

ABSTRACT

Provision of safe water, sanitation and hygiene (WASH) and adequate waste management in health care facilities is an essential aspect of ensuring high-quality health care. A resolution on WASH services in health care facilities was adopted at the Seventy-second World Health Assembly in May 2019, stressing the importance of adequate WASH services in achieving universal health coverage and re-emphasizing WASH-related commitments, such as those expressed by the Sustainable Development Goals. In the WHO European Region, countries have also committed to action under the Ostrava Declaration on Environment and Health and the Protocol on Water and Health.

This report presents the results of a comprehensive national assessment in Serbia – one of the first countries in the Region to take concrete action to respond to the World Health Assembly resolution. The assessment collected evidence on the WASH conditions in health care facilities to identify gaps in implementation of the national requirements, to evaluate the routine monitoring system and financing, and to inform the development of advanced indicators.

KEYWORDS

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SUMMARY REPORT

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Introduction

Water, sanitation and hygiene (WASH) are essential environmental determinants of health and well-being. Water and sanitation are recognized human rights, and their fulfilment is in the focus of the 2030 Agenda for Sustainable Development, specifically under Sustainable Development Goals (SDGs) 6 on water and sanitation and 3 on health (Fig. 1). Provision of safe WASH services and adequate waste management in health care facilities is an essential aspect of ensuring high-quality health care, preventing infections and safeguarding maternal and newborn health (1), among others.

On World Water Day 2018, the United Nations Secretary-General made a global call for action for WASH in all health care facilities. WHO, with the United Nations Children's Fund (UNICEF), formulated a joint response strategy and a global vision; most recently, a resolution on WASH in health care facilities was adopted at the Seventy-second World Health Assembly in May 2019 (2). The resolution stresses the fundamental importance of adequate WASH services in achieving universal health coverage and re-emphasizes attainment of the WASH-related commitments, such as those expressed

Fig. 1. SDGs and targets relevant to WASH in health care facilities

	<p>SDG 6 Ensure availability and sustainable management of water and sanitation for all</p>	<p>Targets</p> <p>6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all</p> <p>6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all ... paying special attention to the needs of women and girls and those in vulnerable situations</p>
	<p>SDG 3 Ensure healthy lives and promote well-being for all at all ages</p>	<p>Target</p> <p>3.8 Achieve universal health coverage, including ... access to quality essential health-care services...</p>

Source: Transforming our world: the 2030 Agenda for Sustainable Development. Geneva: United Nations (A/RES/70/1; <https://sustainabledevelopment.un.org/post2015/transformingourworld>, accessed 10 February 2020).

by the SDGs. The resolution calls upon Member States to improve WASH in health care facilities by conducting, among others, comprehensive assessments of WASH conditions according to the national context, on the basis of which follow-up actions should be identified and prioritized. Such interventions may include development of roadmaps for implementation, adoption of standards for quality WASH in health care facilities and integration of WASH indicators into monitoring and accreditation systems.

In the WHO European Region, countries have committed to action on environment and health priorities under the Ostrava Declaration on Environment and Health (3). In particular, the compendium of possible actions to the Declaration (4) stipulates ensuring and sustaining the provision of adequate WASH services in schools and health care facilities through systematic situation assessments and by setting national targets and action plans towards progressive improvement. The Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes also prioritizes action on WASH in health care facilities, as expressed by the programmes of work for the periods 2017–2019 and 2020–2022 (5).

Serbia has been a Party to the Protocol since 2013; according to the Law on Ratification of the Protocol on Water and Health, ministries responsible for health, water management and environmental protection jointly ensure its implementation. To this end, an agreement on establishment of a national working group to undertake joint measures and activities important for implementation of the Protocol was signed by the Ministry of Health; Ministry of Energy, Development and Environmental Protection; and Ministry of Agriculture, Forestry and Water Management. This provides a mandate for the national working group to undertake activities, monitor and analyse implementation and report on progress under the Protocol to prevent, control and reduce water-related diseases. Serbia set

national targets under the Protocol in 2015, but these do not address directly WASH in health care facilities.

Purpose of the survey

Global and regional policy frameworks promote the setting of national targets and formulation of associated improvement plans, based on an analysis of existing conditions. For countries in the WHO European Region, such targets and plans should aspire beyond the provision of basic services towards reaching an advanced level of WASH.

In Serbia, a routine surveillance system is in place at the national level under the Law on the Protection of the Population from Infectious Diseases. This system collects data on sanitary aspects of health care facilities, considering basic indicators for WASH in line with the monitoring indicators for the SDGs established by the WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP). It covers all administrative regions, but only urban secondary and tertiary health care facilities. The results of routine monitoring show high coverage of basic water services, with room for improvement in hygiene and sanitation, suggesting the need for further analysis.

Expanded questions were proposed by the JMP to identify priorities to include in the advanced level of services, and a new basic indicator for environmental cleaning was added in the 2018 version of the SDG monitoring indicators, which was published after inclusion of the indicators in the national surveillance system in 2016 (6).

To assess the WASH conditions in health care facilities in Serbia comprehensively, a systematic one-off survey was conducted in 2019. This collected data from a representative sample of different types of health care facility (including primary care services) from all settings (urban and rural) and all regions at a specific point

in time. This approach facilitated segregated analysis of the data between regions and between rural and urban settings by different types of facility.

The survey aimed to collect comprehensive evidence on the WASH conditions in health care facilities, to identify gaps in implementation of the national requirements, to evaluate the routine monitoring system and to inform the development of advanced indicators for the local context. While WASH is especially critical in hospitals, basic WASH services are fundamental for infection prevention and control (IPC) and for the benefit of patients and health care workers in primary health care facilities. The results may therefore also inform a situation analysis and identification of improvement interventions for this category of facilities, which is not considered in the regular monitoring system.

To complement the survey, an analysis was undertaken of the legal framework and institutional mechanisms for ensuring WASH in health care facilities (see Annex 1 for a list of key references used), and interviews were conducted with experts in the field. This facilitated a comprehensive national situation assessment to identify strengths and gaps at all levels from policy to implementation, and to inform the development of targeted recommendations and measures for cost-effective improvements.

Data and results made available through the survey will help national authorities to:

- integrate WASH aspects in the policy development, strategic planning and management of health systems;
- inform the review and setting of national targets under the Protocol;
- inform priority interventions that are key to achieving WASH- and health-related SDGs and the national agenda (for example, by reducing water-related diseases and improving quality of care);

- inform urgent and midterm improvement planning and interventions;
- identify a national definition of an advanced level of services for monitoring health care quality through WASH and introduce it into surveillance and monitoring practices.

The results will also be useful to provide nationally representative data for global reporting on progress towards the SDGs.

With this approach, Serbia is one of the first countries in the WHO European Region to take concrete action towards implementation of the global and regional commitments on environment and health and to respond to the World Health Assembly resolution on WASH in health care facilities (2).

Global indicators for monitoring WASH in health care facilities

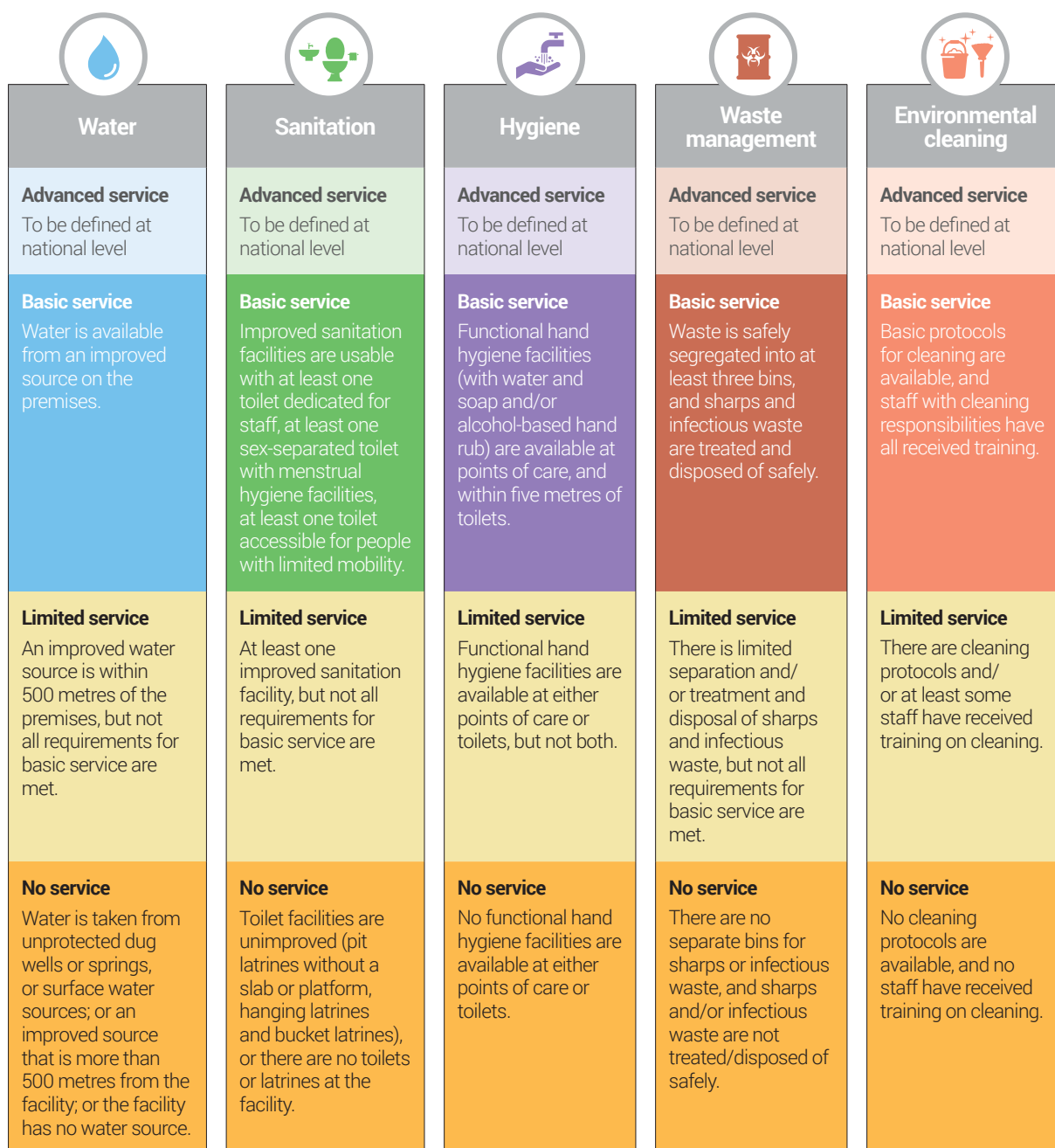
SDG 6 – in particular via targets 6.1 and 6.2 – calls upon Member States to achieve, by 2030, “universal and equitable access to safe and affordable drinking-water for all” and “access to adequate and equitable sanitation and hygiene for all” (see Fig. 1 above). According to the normative interpretation of the targets, “universal access” means in all possible settings, including schools, health care facilities, workplaces and public spaces (7).

To monitor progress towards these targets, the JMP developed a set of core questions and indicators for basic services for health care facilities, mainly for use in outpatient facilities (6). It also developed a set of recommended expanded questions to address additional aspects, such as cleaning practice, water continuity and water treatment, which may or may not be included in routine assessments but are useful for in-depth surveys (8).

According to the JMP terminology, a “basic service” corresponds to the minimum acceptable set of WASH services (see Fig. 2 for detailed definitions of the service levels). In addition to the basic service, an advanced service can be defined at the national level. This innovative system is useful because it allows a differentiated depiction of the actual situation of WASH conditions in a

country, in line with human rights dimensions, and facilitates tracking of development and comparison of progress. Accordingly, national priorities can be identified in terms of improvement interventions for progressive achievements of targets. The approach also allows global harmonization in monitoring of WASH in health care facilities.

Fig. 2. Ladder of services for monitoring WASH in health care facilities



Note: In accordance with the JMP definition, improved water sources include piped water, boreholes or tubewells, protected dug wells, protected springs, rainwater and packaged or delivered water; improved sanitation includes flush/pour flush to piped sewer system, septic tanks, ventilated improved pit latrines, composting toilets or pit latrines with slabs.

Source: WHO and UNICEF (6).

Methodology

The situation analysis had two main components:

- a survey on WASH conditions in health care facilities using onsite observations, structured interviews (domains and specific aspects described in Table 1) and water quality testing for microbiological and chemical parameters (set out in Table 2);
- a qualitative assessment of the enabling environment via a desk review of policies

and implementation mechanisms related to WASH in health care facilities and semi-structured interviews with a limited number of key stakeholders at different levels.

Data were collected from 320 health care facilities between May and June 2019 by the Network of Institutes of Public Health established under the Ministry of Health. The study sample was identified from the national

Table 1. WASH dimensions and aspects considered in the survey

Dimension	Aspects/parameters included in the study	Number of questions
Facility information	Respondent, time, facility setting and size	17
Water	Availability, accessibility, quantity, quality, operation and maintenance	18
Sanitation	Availability, accessibility, usability, quality, safety, sex separation, menstrual hygiene management, operation and maintenance	27
Hygiene	Hand hygiene at point of care and at toilets, hand disinfection, staff capacity	9
Waste management	Segregation, safe storage, transport and disposal	11
Environmental cleaning	Standard procedures for environmental cleaning, staff capacity, equipment, bed hygiene and laundry	15

registry as representative of the number and type of health care facilities at the national level (confidence interval: 95%; margin of error: 5%) and proportional to the population weight. The survey covered randomly selected facilities at all service levels, in rural and urban settings, and from all administrative regions and most districts of the country. For the secondary and tertiary facilities, the maternity/gynaecology, internal medicine and outpatient departments – where WASH is particularly critical – were included in the sample frame.

The survey materials were developed in line with JMP core questions and indicators for monitoring WASH in health care facilities (6) and relevant WHO guidelines (9, 10). Water quality was assessed for microbiological and chemical parameters (see Table 2) relevant to human health and tests were performed in accordance with nationally approved analytical methods and regulations.

Data were analysed with Microsoft Excel and SPSS for descriptive statistics using JMP categorizations and definitions, WHO standards and national requirements for drinking-water quality.

The main reference work for analysis of the regulatory framework was WHO's *Essential environmental health standards in health care* (9), which includes recommendations for adequate WASH provision. WHO's *Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level* (11), which provides recommendations on clean and hygienic environments for patient care activities related to the prevention and control of health care-acquired infections and antimicrobial resistance (AMR), including all elements around WASH infrastructure and services, were also used.

Table 2. Parameters considered in the water quality testing

Microbiological parameters	Chemical parameters
<i>Escherichia coli</i>	Arsenic
<i>Enterococcus faecalis</i>	Residual chlorine (only in facilities using chlorinated water)
<i>Pseudomonas aeruginosa</i>	Conductivity
	Nitrate
	Nitrite
	Acidity (pH)
	Turbidity

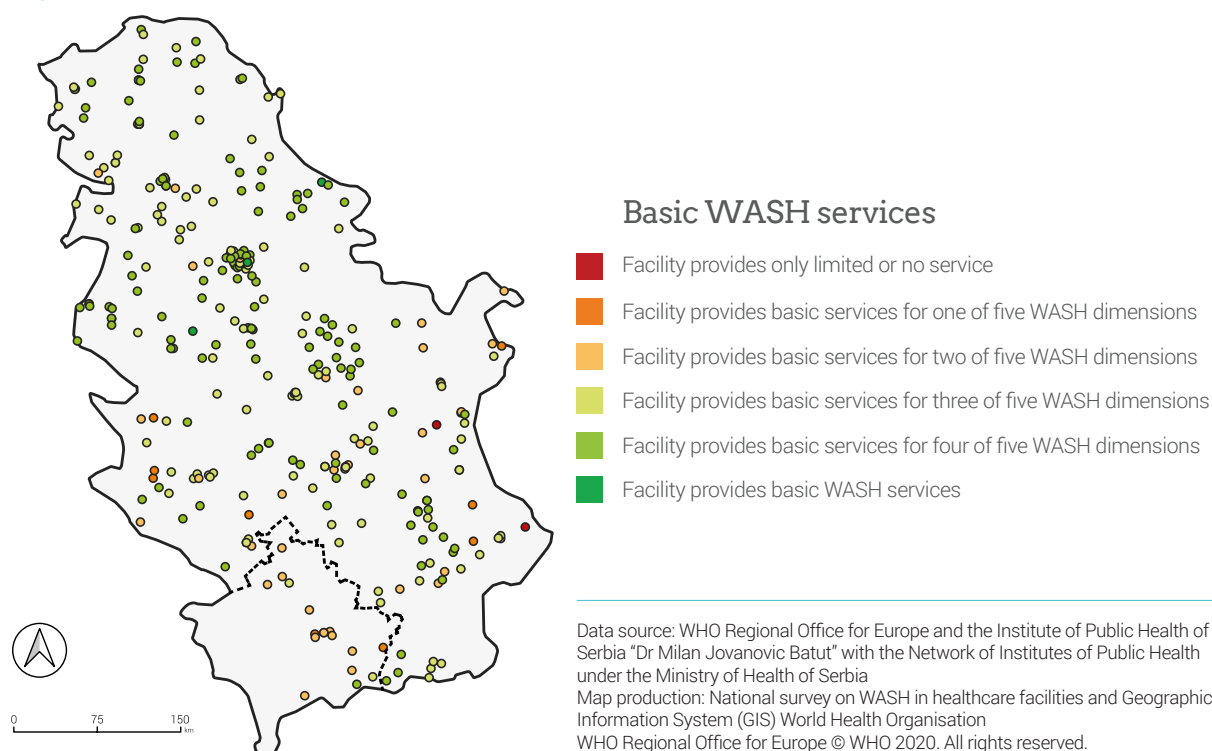
Summary of results

Basic WASH services

The data collected from the 320 health care facilities show very high coverage in provision of drinking-water; however, basic WASH services – in particular, basic sanitation and basic environmental cleaning – are not yet universally

available in health care facilities in Serbia. The map in Fig. 3 shows the health care facilities considered in the survey, colour-coded by their respective WASH score – indicating the number of WASH dimensions for which basic provisions are provided in line with the JMP indicators for basic WASH services (Fig. 2).

Fig. 3. Distribution of health care facilities, colour coded by WASH score



Analysis of service provision according to the JMP core indicators for basic WASH services (Fig. 4) facilitates observation of achievements of past efforts and investment in IPC policies and programmes, and identification of priorities for the future. Sanitation emerges as a priority in terms of attention and interventions to ensure high-quality health care. While the facilities investigated often had usable sanitation services in place, consideration was frequently not given to the needs of women and girls and of patients with impaired mobility (Fig. 5). Environmental cleaning also required attention, in particular as a result of a lack of detailed protocols for cleaning procedures or a lack of structured training. While

figures for basic waste management show very high coverage, 5% of facilities reported not treating infectious and sharps waste, instead disposing of these in general waste.

The figure of 98% for basic water coverage (Fig. 4) reflects the number of active facilities with water provision at the time of the survey. During this period a number of health care facilities – initially considered in the study sample and then replaced – were closed by order of the authorities owing to issues with or a short-term shortage of the water supply. The results thus also show the efforts of staff and public health officers to report and monitor provision of drinking-water; this may

Fig. 4. Basic WASH services in health care facilities

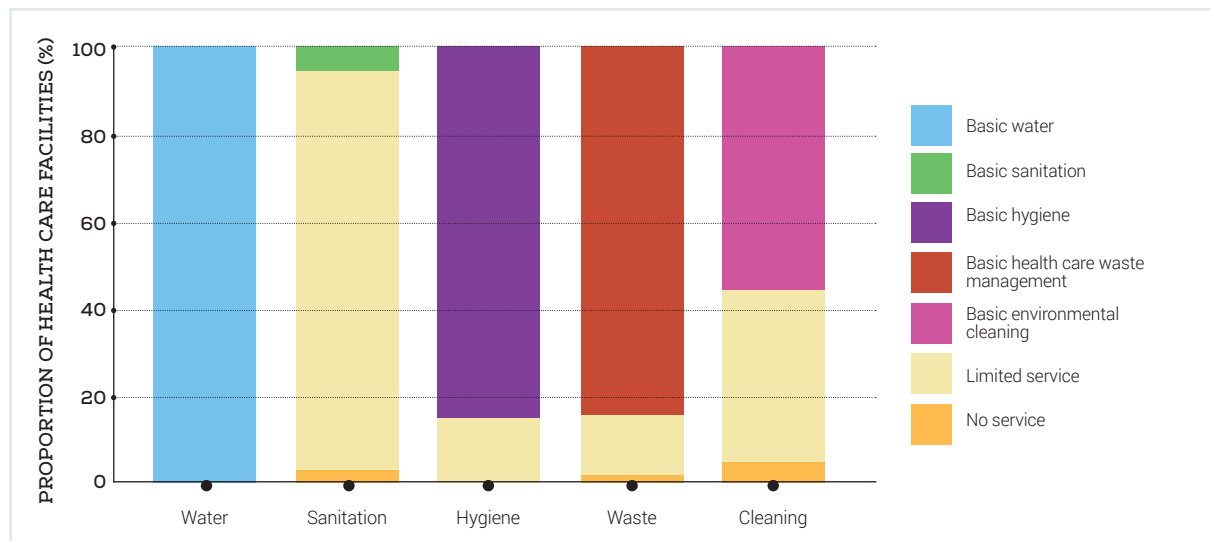
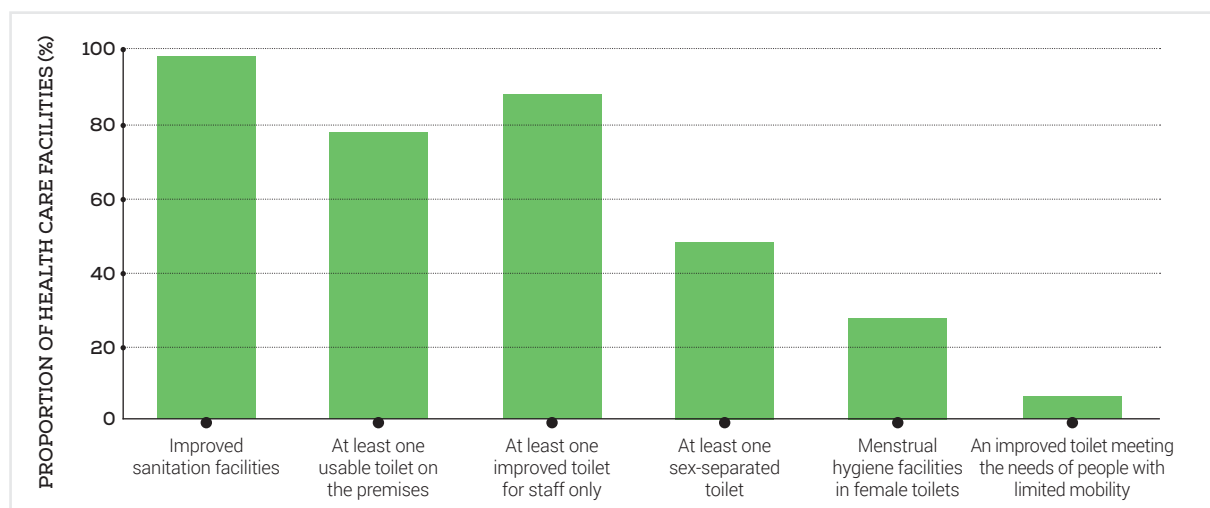


Fig. 5. Individual estimates of the criteria for basic sanitation services, in line with JMP definitions of core indicators



lead – in cases where immediate solutions are not available – to a temporary interruption in health care services. Four health care facilities reported a lack of main water supply but stated that packaged water was supplied, which is considered an improved source.

Significant disparities were observed when comparing regions, settings (rural versus urban) and types of facility. Adequate services are more frequently observed in urban areas and in Belgrade and the northern part of the country, with the exception of some aspects related to operation and maintenance matters (such as

usability of available toilets) and geographically specific conditions (such as a high level of arsenic in drinking-water in the northern part of the country).

The results of the survey also support an evaluation of the current national surveillance programme, which includes aspects related to basic WASH services. Differences were observed when comparing the survey results to the national figures for basic services from routine surveillance; these mainly arose from differences in the coverage and methodology used for data collection and analysis between the two systems (Table 3).

Table 3. Differences between the routine surveillance programme and the 2019 survey

Factor	Routine surveillance	One-off survey
Basic indicators	<ul style="list-style-type: none"> • Definition of basic water services includes drinking-water quality • Definition of basic sanitation services does not include comprehensive indicators for “usable toilet” • Basic environmental cleaning not considered (because based on the 2017 version of the JMP core questions) • Only general figures by level of service (basic, limited, no service) collected at the national level 	<ul style="list-style-type: none"> • Definition of basic WASH services is aligned with the 2019 version of the JMP definitions • Definition of basic sanitation services includes comprehensive indicators for “usable toilet” • Individual figures for each criterion within the levels of service (e.g. available, functional, private) collected at the national level
Coverage	<ul style="list-style-type: none"> • Only secondary and tertiary facilities situated in urban areas 	<ul style="list-style-type: none"> • All types of facilities in urban and rural areas
Methodology	<ul style="list-style-type: none"> • Data collection via observation of the entire facility, even if distributed across multiple departments and buildings 	<ul style="list-style-type: none"> • Comprehensive training conducted with all staff participating in data collection • Data collection via observation only of one department selected at random among outpatient, internal medicine and maternal health in facilities with multiple departments and buildings
Questionnaire	<ul style="list-style-type: none"> • Questions consisting of translations of the JMP core questions • Results available only by overall service indicator and not by individual criteria (e.g. improved, accessible and similar) 	<ul style="list-style-type: none"> • Ad hoc questionnaire, where each question covers only one criterion within the definition of basic services • Observational questions for complex criteria followed up by control questions requesting evidence of the presence of each of the characteristics within the criterion

Formulation of national advanced WASH service levels






Based on the survey findings, a team of experts at the Network of Institutes of Public Health suggested a set of indicators and definitions of advanced levels of WASH services in health care facilities at the national level (Fig. 6). The advanced level is not meant to be static; nor is it comprehensive of all critical aspects for provision of quality WASH in health care facilities. The suggested definitions and indicators were selected because they are considered priorities for the time being. They can also be linked to elements that could be improved in a limited time (around five years). They do not, however, eliminate the need

for further stepwise improvements over time to ensure high-quality health care.

Criteria considered for selection of the indicators were the following:

- a focus on a limited number of 2–3 elements per WASH dimension, reflecting priority aspects discovered during the survey (elements that did not reach full coverage);
- feasibility of monitoring;
- aspects (partly) addressed by national regulations;
- feasibility of (cost-effective) implementation in the next five years;

Fig. 6. Suggested indicators for definition of advanced levels of WASH services in health care facilities in Serbia

 Water	 Sanitation	 Hygiene	 Waste management	 Environmental cleaning
<p>Advanced service Drinking-water is chemically and microbiologically compliant with national regulations; a hygiene plan, including water operation and maintenance, is in place; and an IPC team is responsible for regular monitoring of water services.</p>	<p>No advanced indicator</p>	<p>Advanced service Hand hygiene facilities are provided with both soap and disinfectant; all health care staff have received training on IPC; and hand hygiene facilities at critical points are provided with reminders or instructions for promotion of good hand hygiene practice.</p>	<p>Advanced service A health care waste management protocol is in place, and infectious waste is picked up daily or safely stored for a maximum of three days before treatment and/or disposal.</p>	<p>Advanced service Cleaning of toilets and critical surfaces is performed at least twice per day and whenever soiled, and linen or disposable bed sheets are used and replaced between patients and whenever soiled.</p>
<p>Basic service Water is available from an improved source on the premises.</p>	<p>Basic service Improved sanitation facilities are usable with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, at least one toilet accessible for people with limited mobility.</p>	<p>Basic service Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at points of care, and within five metres of toilets.</p>	<p>Basic service Waste is safely segregated into at least three bins, and sharps and infectious waste are treated and disposed of safely.</p>	<p>Basic service Basic protocols for cleaning are available, and staff with cleaning responsibilities have all received training.</p>

- feasibility of implementation at the facility level (i.e. not covering aspects where responsibility is shared with the authorities, such as drinking-water quality testing);
- a focus on health-related aspects.

improvement interventions and harmonized surveillance across regions (Table 4).

The survey team decided not to develop an advanced indicator for sanitation yet, because of the complex and multidimensional definition of basic service provision and the efforts still needed to achieve universal access to basic sanitation services in health care facilities.

Some indicators within each WASH dimension were further defined to ensure targeted

Table 4. Complementary definitions of indicators for advanced WASH service levels

Water

- Chemical and microbiological requirements are defined by law (Regulation on hygienic correctness of drinking-water of 1998).
- A hygiene plan may be a facility plan for IPC or a dedicated water hygiene plan. To be considered comprehensive of water operation and maintenance, it should include the following key elements:
 - protocols for water supply system operation and maintenance in case of outbreaks;
 - protocols in case of breakdown of the water system;
 - control measures to prevent water contamination (e.g. water treatment, disinfection, temperature);
 - regular monitoring of drinking-water quality in line with the national requirements;
 - protocols for regular inspections of the facility's plumbing systems (for all facilities except small medical posts/primary care clinics);
 - a technical plan of the facility's plumbing system (for all levels except small medical posts/primary care clinics);
 - a system to verify implementation of operation, maintenance and monitoring procedures.

Hygiene

- An accepted hand disinfectant is alcohol-based hand rub.
- Training is intended as continued education classes with a structured programme, led by a trainer or appropriately qualified supervisor.
- Hygiene promotion materials include reminders of the five critical moments for hand hygiene and/or adequate techniques for handwashing.

Waste

Infectious waste storage before treatment and/or disposal is considered safe when there is a dedicated space for storage separate from the general waste stream, and the storage areas are:

- safe from flooding;
- locked and enclosed with walls or a fence to prevent access for non-staff;
- far from and downstream of the local water source (intended as the original source of water and not the tap in the facility).

Environmental cleaning

- Cleaning should be performed with clean mops or cloths using water and detergent.
 - Linen or disposable bed sheets should be used for both medical inspection tables and patient beds.
 - Critical surfaces that require cleaning at least twice per day include toilets and high-touch surfaces such as taps, handwashing basins, call buttons, light switches, door handles, side or tray tables and bed rails.
-

In about five years, the indicators should be reviewed and new or additional indicators introduced, based on new legal requirements and new information on the status of WASH in health care facilities. Possible additional indicators in the Serbian context that could be considered in a future revision include, but are not limited to:

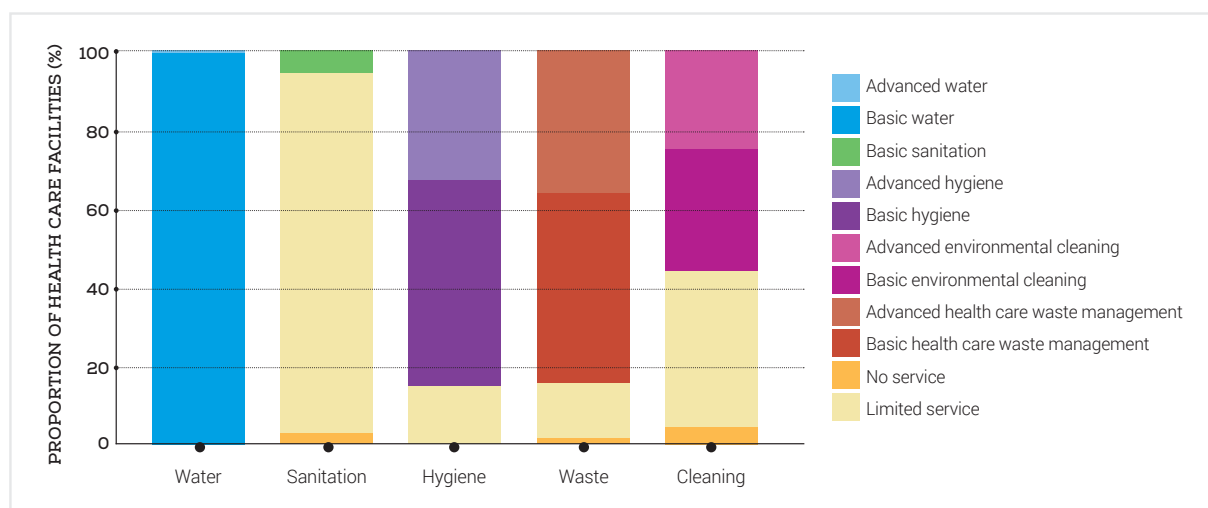
- water quantity: sufficiency for all purposes (drinking, food preparation, personal hygiene, medical activities, cleaning and laundry) and/or sufficiency throughout the year;
- water access: availability of drinking-water points for convenient access and use by staff, patients and visitors and particularly by people with limited mobility and children;
- sanitation: ratio of toilets to patients, distance of toilets from consultation areas, availability of cleansing materials, child-appropriate toilets and same-floor access to toilets;
- environmental cleaning: use of different colour-coded or labelled mops and cloths for different areas (such as toilets and procedure rooms) and departments within the health care facility; budget allocation and expenditure on cleaning materials, disinfection and mechanisms to track out-of-stock materials;
- linen: cleaning and disinfection, transportation and storage of soiled linen, and disinfection of beds;

- health care waste management: location of bins (for example, out of reach of children), ratio of waste containers to beds, frequency of waste collection from service areas, sufficient dedicated containers for transportation and storage of waste and disposal of chemical and radioactive waste;
- other: availability, sufficiency and reliability of energy supply (for water pumps, heaters and medical equipment), a backup energy source, ventilation and airflow, heating and air-conditioning and minimization of infectious disease transmission.

Advanced WASH services

Further information was obtained on provision and needs in health care facilities using the expanded criteria for advanced WASH services, such as quality or maintenance procedures for the water supply and frequency of cleaning. Analysis of service provision according to the JMP indicators adapted to the national definitions of advanced WASH services shows that WASH provisions in Serbia are already beyond the minimum recommended in about one third of facilities in the country for three out of five WASH dimensions (Fig. 7). Efforts will be needed to improve the management of water services within facilities. While water quality figures are positive, more attention is needed in those facilities with individual supplies or no supply.

Fig. 7. Advanced and basic WASH services in health care facilities



These figures set the baseline for monitoring progress in line with national requirements and aspirations in future years. They highlight the need to promote and ensure consistent implementation of measures to control and prevent emerging issues such as AMR and nosocomial infections across WASH dimensions. Such measures include safe water operation and maintenance, hand disinfection, safe waste storage and frequent and appropriate environmental and bed hygiene.

Water quality, quantity and operation and maintenance

From the qualitative analysis, it emerged that WASH infrastructure and service conditions do not seem to be acknowledged as a risk for disease transmission and health care-acquired infections or for the spread of AMR. They thus do not receive the required attention. This was confirmed by analysis of the quantitative data on responsibilities and procedures in place. While almost all health care facilities had a person or a team in charge of IPC, necessary routine operation and maintenance procedures for ensuring adequate WASH services were often not conducted because of a lack of staff, unclear responsibilities and a lack of written plans. Water noncompliance in terms of microbiological quality (8%) and chemical quality (30%); low coverage of monitoring; and levels of residual chlorine found lower than the WHO-recommended level¹ (in 35% of facilities – 33% with an urban; 37% with a rural water supply) show the need to introduce and implement measures for improved and efficient water disinfection or point-of-use treatment, as recommended in the WHO *Guidelines for drinking-water quality (10)*.

Sanitation operation and maintenance, safety, wastewater collection and treatment

Sanitation infrastructure – including the toilets and wastewater collection at the facility level – was

in place and potentially safe, but with some gaps in coverage in rural areas of important aspects such as water drainage and wastewater treatment in 10% of health care facilities (only primary care clinics). Around 30% of facilities (only primary care clinics) reported having drainage systems connected to a septic tank/pit without onsite treatment; these may require further investigation about their management. Operation and maintenance of toilets seemed adequate, except for provision of toilet paper, which was missing in one third of facilities investigated.

Hygiene promotion, capacity and hand disinfection

Hand hygiene practice requires a supportive and enabling environment – including a positive working climate that facilitates awareness-raising and prioritization of hand hygiene improvements – alongside ongoing training and reminders. While hand hygiene infrastructure at critical points was generally present, hand disinfection and factors that facilitate good hand hygiene practice required attention. These include means for drying hands (missing in 25% of facilities), antiseptic soap or hand sanitizers (not in use in 22% of facilities), means for hand hygiene in common areas (not provided in 91% of facilities), training of staff on IPC (lacking in 31% of the facilities) and reminders and posters at critical points of care or in toilets.

Waste management procedures and storage

Waste management was observed to be broadly implemented in line with national standards, although improvement needs were seen in small rural primary care clinics, especially concerning the length of storage of infectious waste before treatment and/or disposal and the safety of dedicated storage areas.

¹ To ensure proper disinfection the WHO *Guidelines for drinking-water quality* recommend a minimum of 0.2 mg/litre of residual chlorine at the point of use.

Cleaning procedures, equipment, bed hygiene and laundry

Health care environmental contamination represents a transmission risk, particularly via the hands of staff (11). Adequate cleaning and maintenance practices and appropriate cleaning materials were generally observed (for example, cleaning was conducted regularly in 95% of health care facilities and at least twice per day in 76%), but bed hygiene – namely the use and changing of bed linen or disposable bed covers – was observed in less than half of the facilities surveyed. When facilities used linen, soiled linen was unsafely managed in a number of cases. The reasons were inappropriate storage and transportation practices – it was not separately sealed in 32% of 225 facilities producing soiled linen, and it was transported in an unlabelled bag in 66% – and a lack of pre-disinfection during onsite laundry (in 44% of 206 facilities with laundry services on the premises) with laundry services on the premises.

Policy analysis and the enabling environment

An enabling environment is a set of interrelated conditions that affect the capacity of actors to initiate and manage development and improvement processes in a sustained and effective manner (12). Table 5 shows selected building blocks and indicators of an enabling environment, adapted from the UNICEF WASH bottleneck analysis tool (13). In the light of the survey findings, the status in Serbia for each indicator is colour-coded as follows:

- **green:** the specific aspects were observed;
- **orange:** the specific aspects were partly observed, or they were observed but with shortcomings (described below);
- **red:** the specific aspects were not observed.

Table 5. Analysis of the enabling environment for WASH in health care facilities

Dimension	Indicators	
Legal framework and political leadership	A legal framework exists	Green
	Policy and regulations, containing national service norms, are approved	Green
	Policy and regulations are comprehensive of all dimensions of WASH	Green
	Policy and regulations include the human right to water and sanitation and are inclusive	Green
	Requirements are in line with WHO's <i>Essential environmental health standards in health care</i> (9)	Green
	Requirements are legally binding	Green
	Requirements are in line with emerging issues (such as <i>Legionella</i> , AMR, health care-acquired infections and sepsis)	Green
	Targets under the Protocol on Water and Health on WASH in health care facilities are drafted or approved	Red
	Accountability mechanisms are clearly defined	Green
	An ongoing national or subnational plan/programme targeted at implementing and improving compliance with the law on WASH in health care facilities is in place	Orange
	WASH is reflected as a component in programmes targeted at quality health care, health care sustainability and similar	Orange
	Political leaders promote and commit to accelerating improved WASH services	Orange
	WASH in health care facilities is prioritized	Orange

Table 5. contd

Dimension	Indicators	
Institutional arrangements and capacity development for implementation	Institutional roles are clearly defined	Green
	Coordination and cooperation are in place: interdepartmental, intergovernmental and broader (all relevant stakeholders)	Green
	Roles are clearly defined at the local level	Green
	National authorities oversee the work of local authorities for WASH in health care facilities	Green
	Roles are clearly defined at the facility level	Orange
	Enforcement mechanisms are regulated/in place	Green
	WASH dimensions are included in the education of medical personnel (doctors and nurses)	Orange
	Structured training for non-health staff in health care facilities is established and comprehensively addresses WASH	Red
	Research is conducted to collect in-depth data on the situation and identify the best interventions for the local context	Green
Sector and service monitoring	Monitoring systems are in place	Green
	Monitoring is conducted regularly	Green
	Monitoring is comprehensive of all WASH dimensions	Green
	Monitoring is conducted systematically through use of surveillance checklists	Green
	Monitoring measures availability and functionality of WASH services	Green
	Monitoring reflects international indicators and definitions (such as the WHO/UNICEF JMP)	Green
	Monitoring has national coverage	Orange
	Monitoring data are used to develop, review and implement policies and targets at the national level	Orange
Budgeting and financing	A national overview of WASH in health care facilities is available	Green
	A specific financial plan/budget line for WASH is in place	Red
	Monitoring of expenditure and need is conducted systematically and used for planning	Red
	A national overview of annual expenditure for WASH in health care facilities is available, including segregated data for urban and rural facilities	Red
	Funding allocation matches government priorities	Green
	Funding allocation is sufficient to meet local needs	Orange
	Donor investments and projects are coordinated at the national level (not considered)	

Regulatory framework

Serbia has a regulatory framework for the provision of WASH services in health care facilities, with several laws and regulations broadly covering various dimensions, including:

- drinking-water quality (requirements for microbiological and physicochemical parameters);
- sanitary conditions (related to building, water, sanitation, waste disposal, mould, hand swabs, surface swabs and sterilization);
- protection of the population from infectious diseases;
- roles and responsibilities of the Network of Institutes of Public Health.

All regulations and policies considered in this analysis are summarized in Annex 1.

While management of (solid) health care waste is the dimension covered most comprehensively by the regulatory framework, wastewater disposal (including water drainage) is regulated not at the national but at the municipal level. New wastewater regulations are being developed at the national level, but these are not expected to consider particular settings such as health care facilities or to specify cut-off values to define safely treated wastewater.

Comprehensive requirements are in place for accessibility of sanitation facilities for patients with disabilities (including considerations for users with impaired vision), but provisions for other groups with specific needs such as women and children are not considered.

The analysis revealed the following general shortcomings:

- a lack of specific WASH requirements for health care settings;
- unclear definitions of a “sanitary facility” or “sanitary unit”, which are

the terms used to set requirements for handwashing and sanitation facilities;

- unclear requirements for numbers and accessibility of drinking-water, handwashing or sanitation facilities (defined per number of rooms and not per number of patients/beds or staff);
- unclear/unspecific requirements for smaller and outpatient facilities;
- unclear requirements for enforcement of facilities active before the adoption of the regulation.

While numerous laws and regulations were reviewed, complementary standards and guidelines providing practical definitions and guidance are scarce, especially for the following aspects:

- procedures specific to health care facilities (for example, in the areas of water provision, operation and maintenance, cleaning and laundry);
- definitions of roles and responsibilities within facilities for implementation;
- provisions for capacity-building and continued training of all staff, including for cleaning.

Specific gaps and weak areas identified in the existing regulations as they relate to relevant WHO guidelines are listed in Table 6. The information is not meant to be comprehensive; rather, it indicates general areas that may need improvement, based on a desk review of the main regulations and standards. In-depth analysis of single regulations may be needed to inform a revision or update. The analysis showed that for some of those aspects observed to have lower coverage in health care facilities, corresponding weaknesses and gaps were present in the existing regulations. For example, the absence of standards for linen and bed hygiene probably plays a role in the observed number of health care facilities neglecting hygienic changing, transporting and appropriate cleaning of laundry.

Table 6. Gaps and areas for improvement identified in existing regulations

Element	Areas for improvement
Water quality	This is comprehensively addressed, with room for improvements in: <ul style="list-style-type: none"> • requirements for water used for vulnerable patients, such as immunocompromised patients; • standards for safe operation and maintenance of drinking-water systems in health care facilities (such as a water safety plan); • standards for prevention of water-related diseases in health care (such as <i>Legionella</i>), including preventive treatment of drinking-water in individual supplies; • frequency/schedule of environmental monitoring to prevent water-related diseases (specific to health care facilities); • accessibility of drinking-water in health care facilities (including drinking-water points separate from handwashing facilities for staff and patients, and their accessibility).
Water quantity and access	This is comprehensively addressed, with room for improvements in: <ul style="list-style-type: none"> • minimum water quantities per patient for all purposes and for specific departments (including outpatient areas, inpatient areas, operating theatres and/or maternity units).
Hand hygiene	This is comprehensively addressed, with room for improvements in: <ul style="list-style-type: none"> • definitions of a sanitary facility or sanitary unit; • specific requirements for numbers and locations of hand hygiene stations.
Wastewater disposal	Gaps were observed in thematic and geographical coverage, such as: <ul style="list-style-type: none"> • a lack of national standards for treatment/disinfection of wastewater at the facility to prevent environmental contamination, which is only regulated at the local level; • a lack of standards on prevention of discharge of hazardous chemical waste and pharmaceuticals into wastewater; • in new regulations for wastewater (pending adoption at the national level), a lack of requirements for treatment of health care wastewater or cut-off values to define safely treated wastewater.
Sanitation/excreta disposal	Many aspects are addressed, with room for improvements in: <ul style="list-style-type: none"> • definitions of a sanitary facility or sanitary unit; • requirements for ratios of patient to fixtures such as toilet seats, handwashing facilities and showers (currently defined per patient room); • provisions for privacy (including partitioning walls at full height, with doors lockable from the inside); • provision of toilets for children in relevant departments; • toilets for staff/patients with disabilities – no mention is made of the need for handles and supporting infrastructure (as recommended by WHO standards), which are important for independent use of sanitation facilities and prevention of accidents.
Environmental cleaning and laundry	Gaps were observed in thematic coverage, such as: <ul style="list-style-type: none"> • a lack of cleaning equipment and procedures specific for health care facilities (as part of IPC and AMR control); • a lack of training on compliance with IPC procedures for staff responsible for cleaning and/or laundry; • a lack of laundry equipment and procedures specific to health care facilities (such as disinfection); • a lack of bed (mattress, pillow and blanket) disinfection.
Waste management	This is comprehensively addressed.

Implementation programmes and advocacy

Several national strategies related to WASH in health care facilities are in place in Serbia:

- Strategy for Public Health, 2018–2026;
- Strategy on Waste Management, 2010–2019;
- Strategy for Improving the Situation of People with Disabilities;
- National Programme for Control of Bacterial Resistance to Antibiotics;
- National Programme on Protection of the Population from Infectious Diseases;
- Strategy for Patient Safety.

Implementation programmes focus on IPC, AMR and environmental sustainability, specifically targeting health care-associated infections and infectious waste management. In addition, awareness campaigns among experts and the wider population are ongoing to control and reduce AMR. Critical WASH aspects are often missing from such activities and programmes, however, neglecting an important precondition and complementary provision for the prevention of diseases and beyond, to ensure high-quality health care.

A new national waste management strategy was developed by the Ministry of Environmental Protection, including a national waste management plan for 2019–2024, which will be adopted in 2020. The strategy aims to fulfil the requirements of the European Union’s Waste Framework Directive by creating a treatment network for hazardous waste, including establishment of five regional incineration plants for organic industrial and medical waste. It also sets out special waste management measures, such as:

- implementation of separate collection of recyclables, non-hazardous waste, infectious waste and other hazardous waste;

- introduction of minimum technical requirements for pretreatment (autoclaving) of (potential) infectious medical waste within public sanitary facility waste (at least in larger institutions);
- collection of small amounts of infectious waste (where onsite pretreatment is not feasible) to be done only in closed tested containers.

Institutional arrangements

Roles and responsibilities are regulated by law and are divided between local and national governments. While responsibility for provision of water and sanitation in health care facilities falls to local authorities, operation and maintenance and monitoring are the responsibility of the national Ministry of Health. In particular, the Network of Institutes of Public Health is responsible for monitoring the provision and conditions of WASH in health care facilities.

No continuous multisectoral coordination mechanism is in place that could consider WASH-related aspects systematically in health care facilities. Ministerial working groups for policy development often allow ad hoc intersectoral collaboration, and implementation of joint projects strengthens collaboration between the Ministry of Health and the Ministry of Environmental Protection. According to the experts interviewed, stronger collaboration with other ministries that share responsibility within the WASH dimensions is needed, such as with the Ministry of Agriculture, Forestry and Water Management and the Ministry of Construction, Transport and Infrastructure, which are responsible for communal affairs and services, for example.

In rural facilities without hygiene or epidemiological staff, collaboration with public health authorities is rare. In urban facilities, collaboration with authorities on WASH

matters is limited. According to the experts interviewed within the survey, communication and collaboration between facilities and authorities may be hindered by the high burden of administrative work when using “traditional” channels with formal written communications. This is influenced by personal connections or previous experience, preventing the engagement of all relevant actors and departments.

Surveillance

Several systems for surveillance of the quality of health care services are in place at the national level, mainly run by the Network of Institutes of Public Health. The main surveillance system collects general data on health care quality, which are used by the Health Inspection Unit within the Ministry of Health to select facilities for follow-up investigations. Additional surveillance systems are in place to collect data specific to thematic areas or individual services from facilities, such as information on patient safety, quality of care or patient and staff satisfaction. Hospitals are also obliged to establish a quality committee responsible for monitoring and make improvement plans and to report findings to the authorities. Such systems, however, generally address only certain elements of WASH, such as general hygiene and the presence of toilets, without reflecting their usability or accessibility. A dedicated surveillance system is also in place to monitor WASH conditions in health care facilities through the National Programme on Protection of the Population from Infectious Diseases, which aims to reduce hospital-acquired infections. This was updated in 2017 to focus on provision of basic WASH services in health care facilities. Existing surveillance systems generally cover one to two thirds of health care facilities (only some types of facility, or only some regions or settings) and involve inspections and reviews at least once a year.

The overall surveillance mechanism is used mainly for enforcement purposes related to

quality of care. Nevertheless, enforcement mechanisms are not yet sufficient to ensure implementation, because of several factors, including:

- the lack of a supporting mechanism for inspectors on enforcing penalties in cases of noncompliance;
- a lack of guidance and incentives for staff and facilities on implementing improvements.

While national reports are released regularly as a result of specific data collections, these are not always used to inform policy-making and financing decisions. No mechanisms or procedures are in place to discuss reports regularly among all stakeholders. The reports are always made available to the Ministry of Health, and experts involved in surveillance are also involved in various working groups for policy development and planning, depending on the department.

Financing

According to the qualitative data analysis, in Serbia health care facilities are mainly financed by the government and the health insurance fund. Many priorities are set out for the financing of health care services: most are naturally associated with specific medical treatment methods, but they also relate to reconstruction and rehabilitation, including of WASH facilities currently used. This is especially the case for big centres of expertise and rehabilitation after the severe flooding that occurred in 2014.

A structured mechanism is in place to inform priority-setting in health care, which considers patient waiting lists and facilities’ priorities with regard to equipment and infrastructure, and which is accompanied by regular reporting and monitoring. The existing mechanisms, however, do not ensure provision of “soft” WASH elements (such as routine hygiene practice or

operation and maintenance of infrastructures), for which facilities sometimes report limited budgets. These elements are spread among different and unspecific budget lines, including for office supplies, epidemiological services and pharmaceuticals, and are not considered in the priority programme. In addition, existing financial reporting mechanisms do not consider gaps between expenditure and actual needs. Nevertheless, according to the qualitative data analysis, hygiene and infection prevention are increasingly recognized as important at the policy level. This led to the current revision of

the regulatory framework on IPC, new working groups and plans for a public information campaign on preventing AMR.

A policy for rationalization of staff has been in place since 2012, and challenges exist with understaffing in health care facilities, especially in rural areas. This may affect WASH services – especially operation and management – because all responsibilities may fall on one person and because of the time constraints for limited staff taking care of sometimes overcrowded facilities.

Discussion and conclusions

This study represents one of the first efforts by a country in the WHO European Region to respond to the World Health Assembly resolution on WASH in health care facilities (2) by assessing the situation at the national level systematically, based on internationally recognized indicators. The outcomes will inform the definition of an advanced WASH service level, development of national targets, improvement programming and strengthening of surveillance systems. They contribute to responding to the calls of the 2030 Agenda for Sustainable Development and the 2017 Ostrava Declaration on Environment and Health to provide baseline assessments on WASH in health care facilities.

The survey results provide important insights into the prevailing conditions of WASH in health care facilities in Serbia. They clearly confirm that basic provision of different WASH components is in place in many health care facilities, especially with respect to water, hygiene and waste management, reflecting past policy and implementation efforts. Many positive findings emerged and specific challenges and priorities have been identified.

Serbia is the first country in the Region to develop a national definition of an advanced level of WASH services, based on the study findings. Such advanced indicators aim to foster improvements and implementation beyond the minimum provision defined by JMP, in line with relevant national regulations, striving for universal high-quality health care.

The analysis reveals that an enabling environment is in place for the provision of WASH in health care facilities, with room for improvement especially with respect to responsibilities within facilities, coordination between actors and levels of implementation and WASH-specific financing. Policies are available for many dimensions of WASH service provision in health care, but financing seems insufficient to reflect implementation and improvement needs. The results also show that in some thematic areas existing regulations and surveillance systems miss critical aspects of WASH service provision and/or are too unspecific for health care settings (including primary care), thereby hindering efficient and safe provision of WASH services in health care facilities. Surveillance could be made more efficient by integrating

WASH into general national monitoring of health care quality or sanitary inspections, as well as using thematic surveys and surveillance mechanisms.

The most important priority areas for improvement identified are sanitation and environmental cleaning, where improvement actions are required at both the policy and the facility level.

- Existing definitions and requirements are not comprehensive of all dimensions of basic sanitation and are not specific to health care settings. Implementation and enforcement may not be efficient in older facilities that were opened prior to adoption of the existing requirements. Consequently, health care facilities often lack sex-separated sanitation facilities, do not provide means for menstrual hygiene management for women and girls, and do not allow adequate access to sanitation facilities for people with reduced mobility because of architectural/construction barriers.
- Cleaning procedures and associated training are not covered by regulations or guidelines. Training is not provided for all staff working in health care facilities, posing challenges to ensuring a clean and safe environment in health care settings.

In general, primary health care facilities were found to face the greatest challenges, especially

facilities located in rural settings and those in western and southern regions of Serbia. Even though differences in the provision of WASH services in health care facilities were observed between regions, the priorities for addressing the challenges observed remain the same.

The survey findings complement previously obtained data and specifically allow observation of additional aspects related to accessibility, usability and management of available WASH services. The study proves that one-off surveys, in line with JMP basic level indicators and expanded indicators in accordance with WHO guidelines (9, 10, 11, 14), are useful to gain in-depth information on various aspects of WASH service provision in health care facilities and provide accurate data that allow the evaluation of existing surveillance systems.

Assessment studies do not bring change themselves, but the information gained is essential to help local and national stakeholders acknowledge the challenges faced by health care staff and patients. Actors can trigger change by using the evidence to develop updated policies, provide capacity-building and strengthen enforcement mechanism and surveillance systems to enable and support sustainable improvements. Not only will this improve the health care system; the positive effect will resonate among the extended community, improving the lives and health of the wider population.

Recommendations

The survey results provide many useful insights. They confirm the success of past efforts and indicate further improvements in WASH in health care facilities towards reaching national, regional and global commitments. The Protocol on Water and Health stipulates national action on institutional WASH, including through national target-setting. Furthermore, WASH in health care facilities should also be considered in the development of a national portfolio of action on environment and health under the 2017 Ostrava Declaration on Environment and Health. In line with these commitments and the 2019 World Health Assembly resolution on WASH in health care facilities (2), the survey team suggests the following follow-up actions.

Setting national targets on WASH in health care facilities

National targets to improve WASH in health care facilities under the provisions of the Protocol on Water and Health should be set, in line with the findings, priorities and needs that emerged from this assessment. The targets should aim at achieving universal basic access to WASH services in all health care facilities (in line with

the aspirations of the World Health Assembly resolution and relevant SDG targets). This should be done by strengthening regulatory and institutional frameworks, surveillance and financing mechanisms, and by triggering a feasible and stepwise increase of coverage for advanced WASH services, as appropriate to the local context.

Developing a roadmap for future action

A roadmap (or action plan) would be useful to foster improvement and implementation activities for progressively attaining universal and sustainable WASH services in health care facilities. It should delineate the steps to achieve the set targets, including clearly defining the approach, intervention areas, responsibilities and budget for improvements. Improvement planning should reflect the priority areas that emerged in this study, both thematically (sanitation, IPC and cleaning) and geographically (rural areas and primary health care services). The underlying objective for the roadmap should be the provision of safely managed WASH services in all health care facilities as a foundation from

which to attain equitable and high-quality health care for all health care users, staff, patients and visitors, including special attention to vulnerable groups.

Strengthening regulations and standards and enforcing them

Strengthening the regulatory framework related to health care settings is important to ensure comprehensiveness and consistency. Regulations and standards should be sufficiently specific for health care settings in line with relevant WHO guidelines and standards, and should allow practical implementation. They should cover the identified gaps and provide clear definitions; they should also be complemented by independent oversight mechanisms and sufficient resources for implementation.

Providing equitable and inclusive WASH services is an essential aspect of ensuring equitable health care for all and human rights. Standards should therefore aim to address comprehensively the needs of vulnerable population groups who, for example, might require gender-segregated toilets, menstrual hygiene facilities or smaller facilities for children.

New or updated standards and practical implementation guidelines specific to health care settings (and different types of health care facility) would support the translation of legal requirements into practice and facilitate implementation by providing guidance on roles and responsibilities, procedures and protocols, as well as definitions for accessible and safe WASH provision relevant to the local context. Areas identified as in need of strengthened practical guidance include:

- safe cleaning and laundry procedures (cleaning protocols, changing and management of soiled linen, pre-disinfection before washing);

- safety measures for wastewater management;
- systematic training on WASH services, environmental cleaning, laundry and IPC;
- operation and maintenance procedures for WASH amenities – infection control programmes and protocols should address aspects such as water quality and treatment, equipment cleaning and control of microbial contamination in the facility water system, as well as environmental cleaning, bed hygiene and laundry.

WASH has been proven to be of high relevance in reducing maternal and newborn morbidity and mortality, in increasing uptake and satisfaction of care, in improving IPC and in controlling and reducing the spread of AMR. Health care-related standards and programmes should aim to integrate critical elements of WASH provision. This would allow integrated and collaborative approaches across different health care domains, facilitate implementation, reduce parallel or duplicate efforts and increase efficiency. Integrated policies are also advantageous when initiating and justifying joint monitoring, and for reviewing progress and financing mechanisms. Examples of initial practical actions at the national level identified by the survey team include:

- incorporating drinking-water accessibility and toilet usability questions in patient questionnaires;
- amending the by-law on IPC to integrate critical elements related to WASH service provision;
- integrating WASH-related objectives into the national AMR strategy when it is revised (expected in 2021), in particular addressing safe water and sanitation in health care facilities and reducing the discharge of untreated wastewater from hospital effluents;
- strengthening collaboration between the Ministry and Health and the Ministry of Environmental Protection on wastewater from health care facilities with the aim

of developing joint regulations and programmes.

Implementation strategies and enforcement mechanisms should be improved to tackle the shortcomings observed, especially for older facilities that may not be explicitly addressed by recently adopted national requirements (such as those for public sanitation, IPC or waste management). Enforcement measures may need to be reviewed and a combination of penalties and incentives could be introduced to facilitate progress in all facilities towards meeting existing standards. WASH aspects should also be included in health inspections, accreditation methodologies and national health insurance schemes.

Financing mechanisms are in place and well informed by specific reporting streams. It would be advantageous, however, to create a separate budget line for WASH provisions to ensure the financial means for the prevention and control of infectious diseases and preventive operation and maintenance of WASH systems. To inform the coverage of this budget line, costing of WASH for facilities should be conducted, and the differences between needs and expenditure should be included in regular reporting by health care facilities. Available thematically specific surveillance reports should be also taken into consideration in financial planning.

Strengthening surveillance

The findings of this survey identified strengths and challenges of the current surveillance and monitoring system. They also hinted at additional important indicators for surveillance of WASH in health care facilities at the national level. A review of the current surveillance and monitoring programme therefore seems appropriate. In particular, the review should take into account the following improvement needs, identified by the survey team:

- formulating surveillance questions based on the updated JMP indicators to ensure that the different aspects and definitions are reflected in the national language;
- improving the methodology and quality of data collection by building on the experiences of this study (for example, splitting questions to assess specific subindicators and individual criteria);
- including suggested national indicators for advanced levels of service in routine monitoring questions to allow improvement beyond the minimum provision of services, to move towards patient-centred, high-quality health care;
- conducting one-off training of trainers to ensure harmonized understanding and implementation of the (updated) surveillance methodology and new indicators across all implementing partners in the Network of Institutes of Public Health;
- including rural and urban primary care clinics and health care stations within primary health care centres and other forms of primary health care services within coverage of the monitoring programme, since primary health care is an important pillar of the national health care service – especially as the survey findings clearly revealed that issues are observed more often in such settings;
- strengthening surveillance of WASH in health care facilities by increasing coverage of drinking-water quality testing, which is currently not conducted systematically, to ensure safe drinking-water provision even in facilities that are not connected to the urban centralized water supply;
- reviewing the national indicators for advanced levels of service included in the routine monitoring questions five years after their adoption, to reflect changes in regulations and in priorities for implementation.

As surveillance of WASH in health care facilities is currently conducted within the National Programme on Protection of the Population from Infectious Diseases, the survey team recommends that the suggested improvement needs should be reflected in a new draft proposal for an update of the programme by a decree of the Ministry of Health.

Whenever possible, integration of specific WASH dimensions (including the basic and advanced indicators) into existing monitoring programmes should be considered, such as those for waste management, patient safety, IPC and AMR. In the long term, it would be useful to integrate WASH indicators into routine surveillance within the quality assurance system and within health and sanitary inspections, including uptake in the health management information system. This would contribute to reducing duplication of effort and inefficient use of resources, turning efforts on WASH in health care facilities into sustainable improvements. Adequate training of the personnel responsible for collection and analysis of data is important in every planning phase.

Liaison with the national statistics office to support the creation of a national database and facilitate national reporting of implementation of SDG 6, by providing data on basic and advanced WASH service provision, is also recommended.

Strengthening multisectoral collaboration

While forms of multisectoral collaboration are in place across government bodies, collaboration across different departments in the Ministry of Health could be improved: WASH experts should be invited to the working groups for health service quality, IPC, AMR control and other relevant matters – and vice versa – to facilitate exchange of experience and joint and integrated planning.

To establish effective communication and collaboration between facilities and public health

authorities, moderated communication and collaboration platforms could be developed. Advocacy campaigns are important to make health care staff and management aware of the relevance of WASH and provide necessary support. In addition, developing collaborations with academic institutions would be beneficial to facilitate a review and update of the health care curricula addressing WASH.

Ongoing collaboration with the Ministry of Environmental Protection and the Ministry of Agriculture, Forestry and Water Management could be further strengthened on different aspects of WASH, especially to address observed gaps of joint interest (such as wastewater management and treatment and AMR) and to explore joint financing options. With the aim of increasing funding for WASH in health care facilities, collaboration with the Ministry of Finance should be expanded to explore possibilities and means of creating a line budget on this dimension.

WASH improvements would also be assisted by strengthening collaboration and coordination between national and regional surveillance authorities and local stakeholders, to facilitate collection of data to inform policy interventions and their implementation.

Improving facilities and empowering staff

Ongoing and new reconstruction and rehabilitation projects at the local level should take into consideration criteria for the provision of basic WASH services and reflect specific priorities emerging from this study, such the usability of basic sanitation services, water treatment and monitoring, cleaning and laundry.

At the facility level, while basic WASH infrastructure is commonly in place, management of services – including proper operation and maintenance – could be improved. Documented

procedures, protocols and clear responsibilities at facilities are useful means to facilitate and ensure sustained implementation. Supported by work on policies and standards, a priority for implementation should be the development, or update, of operation and maintenance plans, hygiene plans and/or IPC protocols at the facility level. These should integrate critical WASH elements and specifically cover identified gaps (such as cleaning procedures and frequency). To avoid overburdening the limited number of staff in health care facilities, responsibilities could be shared among a facility WASH team, with specific individual tasks or alternating roles, for example. External technical staff for operation and maintenance could also be engaged and shared among multiple facilities. Further “soft” interventions, such as hand hygiene reminders and posters or provision for hygiene consumables, could be prioritized as relatively low cost but with great impact.

Although WASH plays an important role in high-quality health care provision and prevention of infectious diseases, WASH aspects are not yet everywhere a priority in health care facilities. Awareness-raising and training on infection control and WASH for staff working in these facilities thus remains a priority, to complement policy strengthening. This is especially important because of the emerging relevance of water-related diseases and the spread of AMR in health care settings. The survey showed that staff in health care facilities are rarely allocated tasks related to monitoring WASH provision and that

practices related to linen or bed cover use and management or laundry are often not safe. While international tools for countries exist to empower staff to strengthen WASH services at the facility level (such as the WHO/UNICEF Water and sanitation for health facility improvement tool, WASH FIT (15)), various national structures and programmes dedicated to quality of health care and IPC are in place in Serbia. These can be used as an entry-point for efficient strengthening of WASH operation and maintenance at the facility level to facilitate the move towards an advanced level of WASH services. Examples of initial practical measures to achieve this identified by the study team include:

- developing advocacy brochures jointly on quality of health care services, IPC and WASH for different audiences on the priority areas identified (safety measures for waste, cleaning and laundry; operation and maintenance of water services);
- developing structured training and criteria for trainers to ensure evidence-based continuing education for health care staff on WASH and IPC, including for carers, technicians and cleaning staff – especially covering critical measures related to cleaning, bed linen and laundry – to ensure control of infection spread;
- integrating such training modules into ongoing courses and training that are regularly conducted on topics such as medical treatment procedures, equipment and devices.

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Annex 1.

Key references used for analysis of the regulatory framework

Title	Official Gazette ^a number(s)	Ministry responsible
National laws		
Law on Water	30/2010	Ministry of Agriculture, Forestry and Water Management
Law on Public Health	15/2016	Ministry of Health
Law on the Protection of the Population from Infectious Diseases	15/2016	Ministry of Health
Law on Sanitary Surveillance	125/2004	Ministry of Health
Law on Waste Management	36/2009, 88/2010, 14/2016 and 95/2018	Ministry of Environmental Protection
Law on Biocidal Products	6/2009, 88/2010, 92/2011 and 25/2015	Ministry of Environmental Protection
Regulations		
Regulation on detailed conditions for the implementation of public health activities related to the environment and population health	34/2019	Ministry of Health, Ministry of Environmental Protection, Ministry of Construction, Transport and Infrastructure
Regulation on hygienic correctness of drinking-water	42/1998	Ministry of Health
Regulation on general sanitary conditions that must be fulfilled in facilities subject to sanitary surveillance	47/2006	Ministry of Health
Regulation on miscellaneous terms and conditions for health care activities in health institutions and other forms of the health service	43/2006, 112/2009, 50/2010, 79/2011, 10/2012, 119/2012, 22/2013 and 16/2018	Ministry of Health

Title	Official Gazette^a number(s)	Ministry responsible
Regulation on technical standards of planning, projecting and construction of facilities, which ensure access for people with disabilities, children and older people	22/2015	Ministry of Construction, Transport and Infrastructure
Regulation on management of medical waste	78/2010, 48/2019	Ministry of Health and Ministry of Environmental Protection
Regulation on the list of waste prevention measures	7/2019	Ministry of Health and Ministry of Environmental Protection
Regulation for management of pharmaceutical waste	49/2019	Ministry of Health and Ministry of Environmental Protection
Regulation on radioactive waste management	60/2010	Agency for Protection against Ionizing Radiation and Nuclear Safety under the Ministry of Environmental Protection
Regulations on the application form for the authorization for treatment – storage, reuse and disposal – of waste	38/2018	Ministry of Environmental Protection
Regulation on types of biocidal products	23/2010	Ministry of Environmental Protection
Standards		
Standards for accreditation of health care institutions of secondary and territorial levels of health care	28/2011	Agency for Accreditation of Health Care Institutions, Ministry of Health
Guidelines		
Handbook for implementation of measures for the safety of patients according to the requirements of the Agency for Accreditation of Health Care Institutions	N/A; accessible via the Agency for Accreditation of Health Care Institutions website	Agency for Accreditation of Health Care Institutions
National strategies and programmes		
Strategy on public health 2018–2026	61/2018	Ministry of Health
Strategy on waste management 2010–2019	29/2010	Ministry of Environmental Protection
National waste management strategy 2019–2024	pending	Ministry of Environmental Protection

Title	Official Gazette ^a number(s)	Ministry responsible
Strategy for improving the position of people with disabilities	1/2007	Ministry of Labour, Employment, Veterans and Social Affairs
Regulation on the national programme for control of bacterial resistance to antibiotics with the national programme	8/2019	Ministry of Health
Regulation on the programme of health care protection of populations against communicable diseases	22/2016	Ministry of Health
Strategy for patient safety	N/A; accessible via the Agency for Accreditation of Health Care Institutions website	Agency for Accreditation of Health Institutions

^a The Official Gazette of the Republic of Serbia is the government gazette containing the country's laws, regulations and other documents.

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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