Notes:

- Please add details of the date, time, place and sponsorship of the meeting for which you are using this presentation in the space indicated.
- This is a large set of slides from which the presenter should select the most relevant ones to use in a specific presentation. These slides cover many facets of the problem. Present only those slides that apply most directly to the local situation in the region.
Global sanitation needs are enormous. Without access to these basic services, everyone—especially children—misses out on opportunities to improve their lives with dignity and good health. Access to sanitation is a need and basic human right. This presentation will deal with children's health in relation to sanitation and hygiene.

Image:
• © WHO / Diego Rodriguez
Sanitation and hygiene, two “traditional” environmental threats, continue to be issues affecting children’s health. This infographic highlights important statistics on access to safe sanitation worldwide.

**Figure:**
- © WHO
Learning objectives

• To understand the global context of sanitation and hygiene
• To review the major challenges and inequalities impacting sanitation and hygiene
• To learn about the consequences of inadequate sanitation and hygiene facilities have on children’s health, development and well-being
• To consider some of the barriers and options for improving sanitation and hygiene in the future
Outline

• Magnitude of the problem
• Environmental origin, transport & fate
• Health effects
• Interventions

Note:
When selecting the slides to include in your presentation, please choose only those of relevance to the region and/or interests of your audience.

Image:
• © WHO / Tom Pietrasik
MAGNITUDE OF THE PROBLEM

Image:
• © WHO / TDR / Andy Craggs
This infographic highlights key statistics about hygiene and sanitation worldwide.

**Figure:**
- © WHO
Global sanitation needs are enormous. Only two out of five people on the planet, or 39% of the global population, used a safely managed sanitation service in 2015. 2.3 billion people lacked a basic sanitation service, 600 million people used a limited sanitation service and 892 million people worldwide still practised open defecation.

Reference:

Figure:
In Least Developed Countries (a United Nations category of low-income countries confronting severe structural impediments), 27% of the population had basic handwashing facilities, 26% had limited handwashing facilities, and 47% had no handwashing facility on premise. Coverage of basic handwashing facilities varied from 15% in sub-Saharan Africa to 76% in Western Asia and Northern Africa.

Reference:

Figure:
In 2015, the United Nations adopted the 2030 Agenda for Sustainable Development, a blueprint for economic, social and environmental development, including 17 Sustainable Development Goals. Goal 6 specifically focuses on clean water and sanitation, with Target 6.2: by 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations. The SDG explicitly references vulnerable populations and ending open defecation.

Target 6.3 also addresses sanitation: by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

Notably, indicators measured for these targets include:
6.2.1: Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water, and
6.3.1: Proportion of wastewater safely treated.

Reference:

Figure:
• © United Nations
The Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), between WHO and UNICEF, periodically conducts global assessments of drinking water, sanitation and hygiene for the SDGs. JMP uses the service ladder shown here to describe different levels of sanitation services in order to benchmark and compare progress across countries. Improved facilities, which hygienically separate excreta from human contact, can be divided into safely managed, basic and limited; unimproved facilities and open defecation take the bottom rungs. Safely managed services are further described by dark green sections of the figure on the left. Improved facilities not safely managed are considered basic.

**Reference:**

**Figure:**
This figure illustrates progress between 2000 and 2015 towards universal basic sanitation services among countries where at least 5% of the population did not have basic services in 2015. Only one in 10 countries is on track to achieve universal basic sanitation by 2030.

Countries that have a greater proportion of their population with basic sanitation services appear further to the right. Those within the orange section have seen decreases in basic sanitation coverage from 2000 to 2015; those in the yellow and green sections have seen increases in coverage, but only countries in the green section have progressed at a rate high enough to reach universal basic sanitation by 2030.

Increased efforts in the SDG era are needed for all countries to achieve universal basic sanitation by 2030.

Reference:

Figure:
Handwashing with soap and water is a top priority in all settings. The JMP ladder for hygiene, shown on top, is divided by access to handwashing facilities, a priority indicator for SDG 6. Handwashing facilities can consist of a sink with tap water, but can also include other devices that contain, transport or regulate the flow of water. Bar soap, liquid soap, powder detergent and soapy water all count as soap for monitoring purposes.

Handwashing data are available for 70 countries, nearly half of which are in sub-Saharan Africa. Data are not available from high-income countries, where it is assumed that access to basic handwashing facilities is nearly universal. The proportion of the population with access to basic handwashing facilities, shown above, varies widely between countries.

Note: Handwashing facilities may be fixed or mobile and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for handwashing. Soap includes bar soap, liquid soap, powder detergent, and soapy water but does not include ash, soil, sand or other handwashing agents.

Reference:

Figures:
4.5 billion people lacked safely managed sanitation services in 2015, as shown on the left. 2.1 billion had basic services, 600 million had limited services, 856 million used unimproved sanitation facilities and 892 million practiced open defecation. Of those with safely managed sanitation, three fifths lived in urban areas, while two fifths lived in rural areas.

The figure on the right further illustrates inequities in sanitation services by examining the situation at different levels. The second column shows the different rates of basic sanitation amongst SDG regions with Latin America and the Caribbean shown as the darkest circle. The third column shows different countries within Latin America and the Caribbean with Panama marked in the middle. The box on the right shows divisions within Panama, with an urban-rural difference, distribution between wealth quintiles and major variance between different geographic regions of Panama, from left to right.

Reference:

Figures:
Disaggregating data by region, country, urban-rural and wealth quintiles can help identify which groups need the most improvement.

Bangladesh has almost eliminated open defecation and has no differences between urban and rural areas. Open defecation is concentrated in the bottom wealth quintiles and two subnational regions.

In Tunisia, coverage of basic handwashing facilities exceeds 80% in all but the poorest wealth quintile, which lags behind at 54%.

Improving access to sanitation and hygiene in these areas will drive global change towards SDG 6.

Reference:

Figures:
In 2018, the United Nations Secretary-General issued a Global Call to Action to elevate the importance of and prioritize action on water, sanitation and hygiene (WASH) in all health care facilities. Health care facilities are essential tools in reducing disease, but without basic WASH, health care facilities can instead contribute to more infections, prolonged hospital stays and preventable deaths, including of mothers and babies.

Sanitation and hygiene in health care facilities relates directly to SDG 6, as previously mentioned, as well as SDG 3: Ensure healthy lives and promote well-being for all at all ages. Target 3.8 aims to “achieve universal health coverage, including financial risk protection, access to quality essential health care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.” Sanitation and hygiene in health care facilities is essential to reaching this goal as well as interdependent SDGs, such as reducing maternal and child mortality. The slide shows service ladders developed for sanitation and hygiene in health care facilities.

A major issue to tackle in improving sanitation and hygiene in health care facilities is lack of data. While 1.5 billion people use health care facilities with no sanitation service, it is likely that many more people are served by health care facilities lacking hand hygiene facilities and safe waste management. 18 countries and only one SDG region had sufficient data to estimate coverage of basic sanitation services in health care facilities. 16 countries had data on the availability of handwashing facilities at toilets, though 55 countries had data available on hand hygiene facilities at points of care.

Highlights from the 2016 JMP survey:
- The proportion of health care facilities without sanitation services ranged from 5% in Eastern and South-Eastern Asia to 40% in Central and Southern Asia.
- In Least Developed Countries (a United Nations category of low-income countries confronting severe structural impediments to sustainable development), 21% of health care facilities had no sanitation service.
- In sub-Saharan Africa, 23% of health care facilities had basic sanitation services. 84% of hospitals had hand hygiene facilities at points of care, compared to 64% of other health care facilities. 51% of health care facilities (51%) had alcohol-based hand rub at points of care.
- One out of three health care facilities (36%) in Eastern and South-Eastern Asia had basic hygiene services.

JMP presents eight steps countries can take to improve WASH in health care facilities:
1. Conduct situation analysis and assessment
2. Set targets and define roadmap
3. Establish national standards and regulation
4. Improve infrastructure and maintenance
5. Monitor and review data
6. Develop health workforce
7. Engage communities
8. Conduct operational research and share learning

Please see *WASH in health care facilities: practical steps to achieve universal access to quality care* and *Core questions and indicators for monitoring WASH in health care facilities in the Sustainable Development Goals*, referenced below, for further information.

Reference:

Figures:
Two SDG targets rely on sanitation and hygiene coverage in schools:
• SDG 6: ensure available and sustainable management of water and sanitation for all
• SDG 4: ensure inclusive and quality education for all and promote lifelong learning

Target 4a addresses the aspects of education facilities considered most important for a safe, inclusive and effective learning environment for all, including single-sex basic sanitation facilities and basic handwashing facilities.

JMP also developed service ladders for monitoring sanitation and hygiene in schools, described below:

**Sanitation service ladder for schools**
- **No service**: Unimproved sanitation facilities or no sanitation facilities at the school
- **Limited service**: Improved sanitation facilities at the school that are either not single-sex or not usable at the time of the survey
- **Basic service**: Improved sanitation facilities at the school that are single-sex and usable (available, functional and private) at the time of the survey
- **Advanced service**: Additional criteria may include student per toilet ratios, menstrual hygiene facilities, cleanliness, accessibility to all users, and excreta management systems

**Hygiene service ladder for schools**
- **No service**: No handwashing facilities available or no water available at the school
- **Limited service**: Handwashing facilities with water but no soap available at the school at the time of the survey
- **Basic service**: Handwashing facilities with water and soap available at the school at the time of the survey
- **Advanced service**: Additional criteria may include hygiene education, group handwashing, menstrual hygiene materials, and accessibility to all users

In 2016, JMP specifically surveyed sanitation and hygiene coverage in schools with results shown on the slide. Notably, coverage varied widely between regions.
- Basic sanitation coverage ranged from 46% in Oceania to 100% in Australia and New Zealand.
- A third of schools in sub-Saharan Africa and Eastern and South-Eastern Asia had no sanitation service.
- Basic hygiene coverage was below 50% in Oceania and sub-Saharan Africa.
- More than a third of schools worldwide and half of schools in Least Developed Countries had no hygiene service.

Other highlights:
- There are not enough facilities: the ratio of students to toilets often exceeded national guidelines, for both girls...
and boys.

- In most countries with data, fewer than 50% of schools had toilets accessible to students with limited mobility.
- Few countries had data on the proportion of schools providing menstrual hygiene management (MHM) education, sanitary towels and facilities for the disposal of used materials.

Children spend a large proportion of their time at school; ensuring adequate sanitation and hygiene in these environments is critical to their health and safety.

Reference:

Figures:
ENVIRONMENTAL ORIGIN, TRANSPORT & FATE

Image:
- © WHO / Diego Rodriguez
Exposure to pathogens in faeces and urine can occur from hazardous events in any type of sanitation system, as illustrated by this excreta flow diagram.

Toilets of any interface or type must safely separate users from excreta, avoiding active contact from soiled surfaces and passive contact from vectors such as flies. They should be maintained through cleaning, using methods and equipment that protect sanitation workers. Design and superstructure must prevent intrusion of rainwater, stormwater, animals, rodents or insects. Toilets should also have cleansing materials available and handwashing facilities with soap and water nearby.

Non-sewered sanitation systems require safe management at the containment – storage/treatment step. Products generated from the toilet should be retained within the containment technology and/or discharged to the local environment in a manner that does not expose users or the community to pathogens.

Exposures may occur during the conveyance phase where wastewater or faecal sludge is deliberately moved from containment to offsite treatment and/or end use/disposal. Worker exposure and spills may occur in any system of conveyance: sewer-based, manual or motorized.

Treatment prepares faecal sludge or wastewater for intended next use/disposal. Facilities must effectively remove pathogens while also safeguarding workers and surrounding areas.

At the end use/disposal stage, wastewater and sludge will ideally be fully treated to minimize pathogen exposures to the community.

Reference:

Figure:
This figure shows the transmission pathways of excreta-related infections from excreta entering the sanitation chain on the left to disease outcome on the right. Elements within the vertical blocks of sanitation hazards and hazardous events may occur in combination; all sanitation hazards have the potential to lead to eventual exposure through most hazardous events pathways.

Sanitation systems are a primary barrier to transmission, as every step of the chain must be safely managed in order to prevent excreta from polluting the environment.

When sanitation is not safely managed, multiple hazardous events may lead to human exposure from animals spreading excreta to water or home surfaces, to foot and face contact with pathogens.

Reference:

Figure:
HEALTH EFFECTS

Image:
- © WHO / Karen Robinson
Children cannot be healthy without access to adequate sanitation and a safe water supply. One gram of human faeces can contain millions of pathogenic bacteria and viruses and thousands of parasite cysts or worm eggs. Inadequate sanitation, including open defecation, may contaminate water sources and environments where children live and play, and cause repeated infections which hamper their growth and nutrition.

In low and middle income countries, more than 50% of children’s faeces are not disposed of safely; between 11% and 64% of households with improved toilets and latrines do not use them for child faeces. This is due to a perception that child faeces is not harmful. However, faeces from children actually contain more pathogens than adult faeces.

Lack of sanitation is a critical determinant in the contamination of drinking-water by microbes. Faecal pollution of drinking-water can lead to bacteria and parasite transmission causing a number of diarrhoeal diseases, including dysentery, cholera, shigellosis, typhoid, giardiasis, salmonellosis and gastroenteritis.

Several neglected tropical diseases are also spread by poor sanitation and hygiene. Intestinal worms causing soil-transmitted helminth infections are transmitted through eggs in faeces of infected persons which contaminate soil in areas that lack sanitation. Eggs can then transfer to people via food or water, or by playing in dirt as children are apt to do. Schistosomiasis is also transmitted via faeces that contaminates water; eggs from the faeces enter the skin of those who come in contact with the water. Trachoma spreads through personal contact with discharge from the eyes or nose of those infected; it is most common in children, who are likely to touch their eyes and have unclean faces.

Finally, poor sanitation and hygiene can lead to other serious conditions including hepatitis A, polio, malnutrition and anaemia. Intestinal worms can cause micronutrient deficiencies leading to anaemia. Giardiasis causes malabsorption and puts children at high risk for malnutrition. The connection between diarrhoeal diseases and malnutrition will be further discussed on the next slide.

References:
February 2019).
Diarrhoeal diseases attributable to the environment cause about 5.5% of under five child deaths worldwide, making them the second leading environmental cause of death in that age group. Children under five years of age are most vulnerable to the effects of unsafe water. They drink more water per unit body weight than adults, they spend many hours playing in environments or water bodies that are unclean, and many wash in unsafe water. Moreover, children are not able to recognize and act upon risks related to water quality and safety.

Diarrhoea is especially linked to undernutrition, and children who are malnourished or dehydrated are particularly susceptible to repeated diarrhoeal episodes. In turn, diarrhoeal diseases can prevent children from absorbing nutrients and force them to use energy to fight illness rather than to grow, leading to stunting and intellectual deficits.

Many cases of diarrhoea are caused by faecal-oral pathogens, meaning that much of this burden can be prevented through environmental modifications. In children under five, 57% of the disease burden due to diarrhoea is attributable to the environment. WHO estimated that in 2012, children under five lost 35 million disability-adjusted life years (DALYs) due to such preventable diarrhoeal diseases, while children from five to 14 years of age lost 7 million DALYs. In that same year, 361 000 children under five and 84 000 children five to 14 years of age lost their lives due to diarrhoea that could have been avoided with safe water, sanitation and hygiene.

Interventions that improved access to drinking water, sanitation and hygiene effectively reduced diarrhoeal morbidity in children by 45%, 28%, and 23% respectively. There is strong evidence that handwashing at two moments – after defecation and before preparing food – is key to reducing diarrhoeal disease. It is estimated that handwashing with soap could reduce diarrhoeal disease risk by 23% and prevent 297 000 deaths per year from diarrhoea alone.

Progress has been made in reducing diarrhoeal disease in recent years – deaths have fallen dramatically in the under-five age group from 1.2 million in 2000 to 441 000 in 2017, due to improvements in water, sanitation and hygiene, along with better case management. But more remains to be done.

References:


INTERVENTIONS

Image:

- © WHO / Tom Pietrasik
The figure on this slide depicts a sanitation service chain. In order for a sanitation system to be considered safe, it must prevent exposure to excreta at every step of the chain.

To facilitate development of safe sanitation systems for all, WHO has developed health-based guidelines as follows.

**Recommendation 1: Ensure universal access and use of toilets that safely contain excreta**

a) Universal access to toilets that safely contain excreta and elimination of open defecation should be prioritized by governments, ensuring that progress is equitable and in line with the principles of the human right to water and sanitation.

b) Demand and supply of sanitation facilities and services should be addressed concurrently to ensure toilet adoption and sustained use and enable scale.

c) Sanitation interventions should ensure coverage of entire communities with safe toilets that, as a minimum, safely contain excreta, and address technological and behavioural barriers to use.

d) Shared and public toilet facilities that safely contain excreta can be promoted for households as an incremental step when individual household facilities are not feasible.

e) Everyone in schools, health care facilities, workplaces and public places should have access to a safe toilet that, as a minimum requirement, safely contains excreta.

**Recommendation 2: Ensure universal access to safe systems along the entire sanitation service chain**

a) The selection of safe sanitation systems should be context specific and respond to local physical, social and institutional conditions.

b) Progressive improvements towards safe sanitation systems should be based on risk assessment and management approaches.

c) Sanitation workers should be protected from occupational exposure through adequate health and safety measures.

**Recommendation 3: Sanitation should be addressed as part of locally delivered services and broader development programmes and policies**

a) Sanitation should be provided and managed as part of a package of locally-delivered services to increase efficiency and health impact.

b) Sanitation interventions should be coordinated with water and hygiene measures, as well as safe disposal of child faeces and management of domestic animals and their excreta to maximize the health benefits of sanitation.
Recommendation 3 relates closely to SDG 6, as Target 6.B says: Support and strengthen the participation of local communities in improving water and sanitation management. Sanitation depends on multiple sectors, including land-use, housing, water, drainage and solid waste management, and local government is best placed to coordinate these interrelated services.

(See slide 27 for Recommendation 4.)

Reference:

Figure:
Sanitation and hygiene behaviour change at the individual, household and community level can be challenging for varying reasons.

The diagram on the upper left shows some of the factors that may lead to open defecation. If no sanitation facilities are available, they obviously cannot be used. If they exist but are dirty or lack cleansing materials, people may opt not to use them. Facilities may be far away, and they may be shared between too many people, making them inconvenient or even risky to use. Some may be unfamiliar with toilets and practice open defecation out of habit. The health risks of open defecation may not be known to a community or individuals, so there would not be motivation to change.

Please refer to guidelines for detailed explanations of each recommendation.

Reference:

Figures:
Recommendation 4: The health sector should fulfill core functions to ensure safe sanitation to protect public health

Health and environment professionals have a critical role to play in maintaining and stimulating changes that will ensure children's access to sanitation and protect their health.

Health care providers play a key role in. All of us can do something.
• Diagnosis and treatment – including the environmental etiologies in the differential diagnoses: is the disease linked to lack of/poor sanitation? (at home, at school, in the community...).
• Health care providers should be alert and detect the "sentinel" cases. Their detection and study will be essential for developing, proposing and supporting community based interventions. Publication of cases and research studies allows the communication of knowledge and experience that will benefit other communities and countries
• It is important to inform the children, their parents, families and communities. It is also important to communicate knowledge to colleagues and students didactically, on the importance of sanitation and hygiene-related diseases and how to avoid these
• Finally, health care providers should be vigorous advocates for the promotion of sanitation and hygiene behaviours. These and other measures are crucial for protecting the environmental health of children and future generations. Health care providers who understand both health and the environment, are powerful role models.
Health professionals must be role models for patients, communities and institutions alike.

Reference:
In July 2010, the United Nations General Assembly recognized access to safe drinking-water and sanitation as a human right, “essential for the full enjoyment of life and all human rights”.

Sanitation is vital for health in the prevention of illness. It contributes to social development, as more children, particularly girls, are able to attend school and learn; safe sanitation improves reduces the vulnerability of women and children. Moreover, improved sanitation is a good economic investment, saving costs of illness and lost productivity, and it helps the environment, protecting bodies of water from pollution with safe disposal of human waste.

Finally, sanitation and hygiene are achievable. Successful interventions, programme models and people-centred approaches can be rolled out where there is a will to do so. The costs of meeting sanitation and hygiene goals are affordable.

References:

Image:
- © WHO / Diego Rodriguez
To end this presentation, a beautiful reminder to us from a child who has drawn a clean environment, where proper hygiene conditions bring happiness and health.

Thank you.

**Figure:**
- © WHO SEARO
Acknowledgements for current version

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