GLOBAL SCHOOL HEALTH

TOOLKIT

FEEDBACK SURVEY:

Dear Global School Health Toolkit Users,

We are delighted to be able to provide this resource to you. We'd love your feedback on the toolkit, so that we can expand and improve our work in the future and better assess its impact. Please see the survey link below.

Sincerely,

Global School Health Toolkit Team

Link:

Feedback Survey

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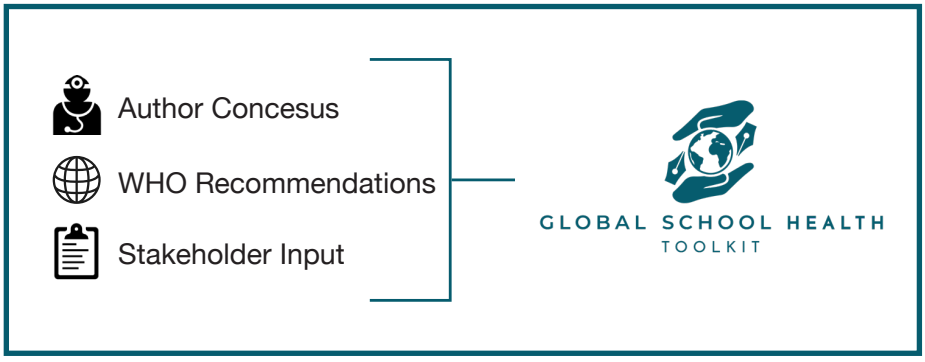
TOOLKIT BACKGROUND AND DEVELOPMENT

Work on the Global School Health Toolkit began as a grassroots effort by members of the American Academy of Pediatrics (AAP) Section on Global Health (SOGH) and Council on School Health (COSH). Five SOGH and COSH members with experience working on school-based health programs in low- and middle-income countries created a working group to develop a "Global School Health Toolkit (GSHT)."

The GSHT is an online, practical resource for pediatric providers from high-income countries with little or no prior school health expertise who are seeking to engage in school-based health initiatives in low- and middle-income countries. After an extensive literature review, working group members recognized that there was no practical, comprehensive global school health toolkit designed specifically for pediatric providers seeking to engage in this work prior to the development of this toolkit.

To better understand the need for a global school health toolkit, our team designed and administered an online needs assessment survey for members of the AAP Section on Global Health and the Council on School Health. Most (96%) survey respondents reported that there was a need for a global school health toolkit.

In order to prioritize topics for inclusion in the toolkit, our work group implemented a three-pronged approach: 1. Author consensus based on field experience in global school-based health; 2. Key school-based health priorities as described by the World Health Organization; 3. Results from the needs assessment survey to determine stakeholder priorities.



Acknowledgements

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Process of Developing the Global School Health Toolkit

OBJECTIVE

The main goals of this toolkit are to provide an overview of general global school-based health principles and offer practical resources to be used in community-led school-based health efforts in low- and middle-income countries, with a focus on establishing effective and sustainable collaboration with local stakeholders. The intended audience of the toolkit are pediatric providers from high-income countries with little or no prior training in school-based health who are seeking to engage in school-based health initiatives in low- and middle- income countries.

This toolkit does not provide the extensive background and resources needed to train pediatric providers from high-income countries to become experts in global school health. Instead, it is meant as a general practical guide for pediatric providers who may have less expertise in global school health but who are seeking to better understand the foundations of, and opportunities within, global school-based health.

Of note, resources and infrastructure towards school-based health vary widely between different schools and communities. Although the toolkit describes various health interventions (often within the framework developed by agencies like the United Nations and the World Health Organization), these programs may not be possible in all schools without the existing infrastructure for specific interventions. This is why it is critical for all school-based health programming to be implemented within the vision, goals, and leadership of local stakeholders. For school-based health programs to be successful and sustainable, there must be champions for such programs within the school and the community.

What is the GSH Toolkit?	A practical, online resource to build knowledge on global school-based health and offer tools for collaboration
Who is it for?	Pediatric providers seeking to engage in school-based health initiatives in collaboration with local stakeholders in resource-limited settings.
When was it developed?	Initially in 2020-2021, with planned updates every 10 years (or as needed) by authors
Where should it be used?	Schools in Low- and Middle-Income Countries with existing infrastructure towards school-based health initiatives
Why is it important?	First comprehensive resource designed for pediatric providers from high-income countries to equip them with the knowledge & practical tools to work on school-based health initiatives in low- and middle-income countries
How was it developed?	Grassroots effort by a workgroup of AAP SOGH and COSH members with experience working on school-based health in low- and middle-income countries


Global School Health Toolkit
1
Needs Assessment
2
Oral Health
3
Hearing Screens
4
Eye Health
5
Reproductive Health
6
Injury Prevention
7
Immunizations
8
W.A.S.H
9
MILK
Nutrition
10
Emergency School Closures

TABLE OF CONTENTS

INTRODUCTION: WHY SCHOOL HEALTH?

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A growing body of evidence suggests that school-based health interventions can have a positive impact on the health, nutrition, and educational outcomes of children.[1,2] In the past two decades, school health programs have evolved from classroom-based health education into a comprehensive approach focused on health policies, skills-based health education, health services, and building a supportive school environment for children and adolescents.[3]

By 1996, WHO had launched a Global School Health Initiative to advocate for improving school health by increasing the quantity and quality of 'Health-Promoting Schools.'[4] In 2000, the United Nations established a framework for implementing school-based health initiatives: Focusing Resources on Effective School Health (FRESH), an overarching school health model. School health initiatives based on this framework have one or more of the following elements: formal health curriculum, environment of the school, and engagement with families and communities.[5]

Recently, the World Health Organization launched a new initiative to "make every school a health promoting school". The WHO, in partnership with the United Nations, has developed global standards and an implementation guide for health promoting schools. The standards are intended to support schools in developing their health and well-being policy, and to help improve and evaluate the policy at a national and regional level.[6]

Acronyms & Abbreviations

FRESH: Focusing Resources on Effective School Health
GSHT: Global School Health Toolkit
LMIC: Low- and Middle-Income Country
SBH: School-Based Health
UNICEF: United Nations Children's Fund
WASH: Water Sanitation & Hygiene
WHO: World Health Organization

SCHOOL-BASED HEALTH NEEDS ASSESSMENT: STOP, LOOK, & LISTEN

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Dhulikhel Hospital Department of Community Health, Dhulikhel, Nepal, 2019, photo by Anisha Rimal

Why implement needs assessments for global school-based health programs?

Applications of needs assessments are particularly important in school-based health programs, as partnerships between school administration, teachers, government leaders, and other collaborators are key in implementing sustainable programs. A needs assessment is not an end in itself, but is a way of using information to plan public health programs and interventions.[7]

Pediatric providers who are interested in collaborating with local stakeholders on school-based health interventions should seek to understand the underlying needs of the schools and the priorities of key stakeholders prior to planning interventions.[8]

PLANNING A NEEDS ASSESSMENT

A. Building a Team/Getting to Know Each other

Prior to conducting a needs assessment, it is key that partners get to know each other and build a working relationship. This is necessary in order to plan, develop, and conduct a needs assessment.

Collaborative members will be responsible for:

- Establishing relationships and buy-in with partners in the school, school district, and community
- Planning the assessment
- Gaining permission to implement a needs assessment
- Participating in and documenting the assessment activities
- Sharing the results of the needs assessment with stakeholders

Recommended team members/representatives:

- Teacher representatives
- School administration representative (i.e. principal)
- Parent representatives (consider PTA or parent organization at school)
- Student representatives
- Local healthcare representative (i.e. school nurse, physician)
- Local government representatives (education sector and health sector)
- Community health workers (may have information about health issues in the community and school)

B. Goals & Scope of Needs Assessment

Prior to implementing the needs assessment, members of the team should agree upon goals of the needs assessment ("what do we want to learn from the needs assessment?") as well as the scope of the assessment (targeting one school vs. one school district vs. multiple school districts in the community). A basic framework to develop goals includes examining:[7]

- Existing school-based health policies in the community
- Current health-based curriculum or interventions in school(s)
- Existing resources towards school-based health in the community

C. Defining a Timeline[7]

The collaborating team should identify a tentative timeline for data collection, interpretation, and dissemination of results. This will be determined based on:

- The number of assessment instruments used (i.e., survey, focus group, etc.)
- The number and size of the target groups for the assessment instrument(s)
- Available staff that can be committed to the assessment

IMPLEMENTATION OF A NEEDS ASSESSMENT

The execution of a needs assessment can be approached in a series of steps in collaboration with local stakeholders:

A. Context & Characterization

Gather information to develop an understanding of the school environment & the greater community (quantitative & qualitative data)

B. Interpretation

Evaluate & interpret the data collected with the key stakeholders

C. Prioritize

Identify top school-based health priorities for intervention based on data interpretation

D. Articulate Action Plan

Creating a specific, measurable goal and outlining the strategy to deliver the interventions

Step A: Context	**Objective:** In partnership with stakeholders, learn more about the communities that form the targeted schools. **Implement**: focus groups/interviews/ surveys (parents, teachers, students, administrators, school staff etc.) **Review:** national health profiles, reports from community assessments that have been done in local or nearby. communities. **Explore**: existing school infrastructure & relationships between health and education entities (local government).	**Key Questions:** • Are schools linked to a health center? • Are there school nurses in place? • What do parents see as the health needs of students? • What do teachers see as the health needs of students? • What current strategies are in place to promote health in schools? • What current services are delivered in schools? • What is the overlap between the health sector and education sectors in the community?
Step B: Interpretation	**Objective:** Synthesize data into a format that can be used by the collaborating team to identify priorities for intervention.	**Key Concepts:** • Quantitative data/Statistical analysis: Create a database structure to organize data into variables to be used in analysis. • Qualitative data: Develop a framework to analyze the qualitative data (codebook). • Articulate findings using methods that will help the stakeholders understand results: graphs & charts to distill large data, select quotes that illustrate themes from interviews & focus groups.[8]
Step C: Priorities	**Objective:** Following the implementation of a needs assessment & interpretation of results, collaborators should create a written report summarizing the findings and explaining key priorities of the intervention based on the findings.	**Key Sections of Report:** • Executive summary (description of the project, goals of the assessment) • Description of collaborators • Methods of the assessment (i.e. semi-structured interviews, surveys) • Key findings • Priorities for interventions
Step D: Action Plan	**Objective:** It is beyond scope of this section to discuss the process of intervention in detail. However, it is critical that the action plan should identify measurable, specific strategies for intervention, which reflects the top priorities outlined in the needs assessment report.	CDC SMART Action Plan

NEEDS ASSESSMENT: TOOLBOX

WHO Community Health Needs Assessment	Developed for family health nurses in Europe. Describes the process of health needs assessments and includes material on the use of assessment tools (see appendix 3 for interview & collection tools). Available in English, French, and Dutch.	WHO Community Health Needs Assessment
Strength and Needs Assessment for School-based Health	Sponsored by the US Department of Justice: Information about building a collaborative team, identifying and prioritizing assessment goals, developing and implementing data collection methods, etc.	Program Development Resources
Institute for Health Metrics and Evaluation	Information on national health metrics to compare a community with national statistics, and compare countries to each other.	Country Profiles
Community Health Toolbox	Toolkit on developing a community health needs assessment from University of Kansa	Chapter 3. Assessing Community Needs and Resources

SURVEY & INTERVIEW QUESTIONS

Key Tips (Developing Questions)[8]

- Develop questions that are simple and easy to understand and answer; for interviews, questions should be mostly open ended.
- Begin with questions that are the least sensitive, such as demographic questions & end with the most sensitive questions.
- Group questions by topic.
- Maintain the same format for survey question responses to stay consistent.
- Avoid including questions that assume the respondent shares the same perspective as the collaborative member to prevent bias.

Example Needs Assessment Questionnaire

A. How does this school measure the health of its students?

- Do they keep records of immunizations on each child enrolled in school?
- What do they do if a child comes sick to school or becomes ill (for example, with fever, vomiting, diarrhea, cough) at school?
- What are the most common illnesses or injuries?

B. Does the school have a written school health policy?

- If yes, what does it contain?
- Does your school have an intake form for students when they enter school that you use? If yes, how often does this intake form get updated?
- Are there students at your school who have chronic medical problems such as asthma, seizures, diabetes, or physical disabilities (for example, use hearing aids, eyeglasses, crutches or a wheelchair)?
- What is the health literacy level of most of the parents of the students?
- Do you have extra tutoring or resources for children with learning problems?

C. What works well at your school to keep kids healthy?

D. Services

- Anti-parasitic medications in school? How often? Dose? Who provides the medication?
- Iron tablets or vitamins?
- Vaccines?

E. Nutrition

- Do children eat lunch at school?
- Does school provide lunch (or breakfast or snacks) or do children bring lunch/snacks from home?
- Who prepares lunch?
- How is it paid for (by parents/other source)?
- What is the nutritional content of lunches?
- How is the food kept safe? What do you do if there is leftover food after meals?

F. Water and Sanitation

- Is bathroom access separate for boys and girls?
- How can girls at the school attend to their menstrual hygiene?
- Is there a place for handwashing with soap before eating and after using the toilet?
- Is there running water? Is there clean drinking water?
- Are there animals on the premise that pose a threat to safety? Is there standing water (i.e. a place for mosquitoes to breed?)

G. Mental Health

- What do you do if you think children are sad or are having problems at home?
- What policies/rules are in place regarding bullying at school?

H. Injury Prevention

- How do kids get to and from school/home?
- Have children been injured coming to school/going home?
- Do you think the entry access to your school is safe—to prevent road traffic crashes (pedestrian/bicycle/car) outside of the school (crossing guard/speed bumps to slow traffic/ safe place to drop off kids who come on bicycles/cars)?

I. School grounds safety

- Is the playground equipment in good repair and safe to use?
- Are there stairs with railings on school grounds?
- Is there rooftop access with railings?
- Is there a fire extinguisher and first aid kid in the classroom or school?

J. Health Education

- Do teachers or others do any health education with the children—like hygiene, nutrition, etc.?
- Is there any education around puberty, menstruation, sexual education., etc.? Is this education for both girls and boys?
- If you could have help (medical expertise in pediatrics, public health, nursing), what would you like help with?

K. Screening

- Does the school offer Vision, Dental, Hearing screens? Does the school screen for nutritional deficiencies with height/weight?

ORAL HEALTH

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BACKGROUND

The negative effects of poor oral health on the well being, quality of life and overall health of children are widespread globally.[9] Poor oral health is also associated with a growing number of significant chronic conditions.[10] Furthermore, an estimated 50 million school hours are lost annually because of oral health problems, which affect children's performance at school and success in later life.[11]

Schools can provide a platform for promoting oral health, as well as reaching families and the wider community, particularly in LMIC where access to healthcare is limited.[11] The WHO endorses school-based oral health programs with key features including: school policies, optimizing the school environment for oral health, oral health education & skills-based activities, and community/parent engagement.[11]

Questions to Consider for Oral Health Programs[11]

School Health Services

- What are the types of oral health services provided at school, if any?
- Is the school/are the students satisfied with the services?

School Health Education

- How well is oral health integrated into the school curriculum?
- Are these activities effective in promoting oral health?
- What kind of training is provided to staff?
- What do the teachers think of the curriculum?
-

Community

- Are parents/members of the community involved in promotion of oral health?
- Does the school provide any training for parents to promote oral health at home?

Policy

- Does the school have an oral health policy (i.e. limiting junk food on school grounds)?
- Are oral health policies implemented/enforced at the school?

Dental Clinic at Tibetan Homes Foundation, Mussoorie, Uttarakhand, India, 2017, photo by Lewis Koch

Connecting Schools and Families with Local Health Infrastructure

School-based programs can be highly effective in improving oral health. Efforts may include improving the school food environment to reduce the availability of unhealthy snacks and drinks in favor of nutritious options. Teachers can be empowered to identify signs of oral disease and take the lead in implementing routine prevention, like daily tooth brushing. For children that have already developed dental problems, connecting those families with affordable dental care is vital. Any school program should identify and connect with local dental providers (e.g., dentists, dental nurses, or dental therapists, or with medical nurses or physicians trained to address dental problems). Additionally, school programs should aim to work in concert with local dental associations/societies, dental schools, and/or hospitals to avoid effort duplication and to strengthen connections between the school community and the healthcare system.

Dental Care That Can Be Delivered Outside of Traditional Dental Practice

When trained professionals (ideally locally-based) are available, they can aim to deliver the World Health Organization Basic Package of Oral Care.[12]
Basic Package of Oral Care: An Insight
Summary of Basic Package of Oral Care

The WHO recommends three main approaches to addressing oral health in low-resource settings:

- Address urgent infection and pain.
- Encourage access to and use of fluoride toothpaste.
- Perform non-surgical, a traumatic restorations for cavities.

Limitations of the "Mission Trip" model

The traditional model of dental volunteering, which relies heavily on short-term interventions from non-local dentists (usually visiting from wealthy countries) to deliver dental extractions without coordination with the local health system raises several questions about impact, ethics, and sustainability. Some aspects of the "mission trip" dental volunteering model deserve further consideration:

- Lack of long-term dental coverage and sustainability.
- Introduction of oral healthcare techniques and concepts inappropriate for the host setting, due to access, cost, or cultural differences.
- Lack of evidence-based interventions, or interventions that prove inapplicable or ineffective in a low-resource setting.
- Lack of accountability, quality assurance, performance control, and follow-up.
- Lack of integration within the greater healthcare system, which creates potential for duplicated effort, competition with local service providers, or local communities to rely on outside assistance rather than strengthen the local care system.

It is important to have a critical appraisal of short-term dental volunteer systems that are currently in place. Dentistry should not be seen as merely a technical service or consumable good, but rather efforts should be made to integrate personal, social and ethical values of volunteering.[13]

Recommendations for Promoting School-Based Oral Health[14]

- Providers should offer recommendations on healthy food choices and feeding for the entire family, as food preferences and culture will vary widely.
- Providers should understand what foods are available and customary wherever oral health promotion efforts are taking place. Unfortunately, highly processed, low-price junk foods and sweet drinks are widely available and heavily marketed nearly everywhere in the world.
- For older school children and adolescents, spending time talking about food marketing is helpful. Critically dissecting the messaging and targeting in advertisements is key. For example, providers or classroom teachers may pose questions such as: "What are the consequences of widespread junk food for our health? For our culture? For our economy? What are the motivations of the companies that sell them? Who benefits? Who suffers?"
- Providers or teachers may consider examining food labels locally as well as labels and warnings from other countries, like Chile.[15,16]
- Teachers may consider discussing sweetened beverage taxes, such as those implemented in Mexico.[17]

Resources:

- Development of the Chilean front-of-package food warning label
- Sugary Drink Consumption Plunges in Chile After New Food Law
- Taxes trimmed Mexican soda consumption for two years

Infant Feeding Practices

Many school children will have younger siblings, cousins, or other relatives. Families can take steps from a very early age to protect the dental health of young children. The following is information that can be given to families:[14]

Promote bottle best practices: Never place sweet drinks in the baby bottle. A bottle should be used for milk or water only - not for juice, soda, sweetened coffee, or sweetened tea. Do not allow the baby or toddler to sleep with a bottle. Begin to wean the young child away from the bottle and introduce a cup as early as possible after one year of age. Prolonged bottle use increases the risk of tooth decay. Additionally, prolonged bottle use can lead to development of an "open bite," in which the front teeth do not fully come together when the mouth is closed. Young children should drink milk or water from a cup as soon as they are able.

Avoid early introduction of sweet foods: Avoid introducing sweets, sweet drinks, desserts, candies, and other highly-processed foods at early ages. Babies and toddlers naturally like fruits, vegetables, meats, grains, cheese, and other healthy foods. They do not need sweet treats to be happy.

Avoid using food for comfort: Avoid using food and snacks to comfort a baby or young child. Try singing, hugging, kissing, playing with toys, and other ways to soothe an upset child.

Additional Resources:

- Policy on Dietary Recommendations for Infants, Children, and Adolescents (2018)
- Brazilian "Ten Steps" guide to healthy feeding for children age 0-2 years with English translation here.

Tooth brushing and Home Care

An activity that can be highly engaging, relatively easy, and inexpensive is passing out toothbrushes to school children and teaching them how to use good brushing technique for 2 minutes, twice each day. In order to promote sustained behavioral change, tooth brushing must be incorporated into a routine, reinforced, long-term program.[18] The Fit-for-School program (Fit for School) is one example in which toothbrushing is a daily teacher-led activity.[19] Students must have their own toothbrush that can be stored in a safe, clean place. Toothbrushes must be replaced over time. Organizations that are planning school-based tooth brushing initiatives should consider supplying toothbrushes, labels, toothpaste, and brush holders that can be stored at school. Toothpaste supplies must be replenished (although brushing without toothpaste might also have some benefit). Another consideration for organizations would be to supply toothbrushes for family members at home.

Fluoride

Availability

Before beginning a school-based program, the following should be considered:[20]

- Is the locally available community water supply safe to drink?
- If it is safe, is it fluoridated? Is there a community fluoridation program to reach a safe and effective fluoride level in the water?
- Is there naturally occurring fluoride in the ground water?
- Has there been a consultation with local dentists, dental societies, and/or dental schools for their recommendations regarding fluoridated toothpaste and other fluoride sources if there is excessive fluoride in the water?
- Is fluoridated toothpaste available and affordable? (Notably, in some countries, the fluoride content listed on the label does not match what is bioavailable within the tube. It is helpful to know what is sold in local stores and what is customarily bought).

Other home dental hygiene aids

When considering dental hygiene aids, individuals & organizations working in schools should consider questions such as: Is it customary to use dental floss locally? How about a chew stick? Tooth picks? Recommendations for home care should be based on what is culturally relevant locally.[21]

Fluoride Varnish[20]

Fluoride strengthens teeth by making it more resistant to demineralization. Because of this, fluoride varnish is good for preventing future decay, but it is not a treatment for existing decay. Fluoride varnish must be delivered regularly to be effective (at least twice annually), especially for children who are at risk for early childhood caries.

Fluoride varnish can be incorporated into school-based oral health programs, such as school-wide oral health screenings and through training of school-based nurses, teachers, or community health workers. The regularity required for fluoride varnish means implementation of such programs requires sustainable funding, and can be costly. It is important to evaluate the cost effectiveness of fluoride varnish in preventing caries in a local context, and work with local providers to find sustainable funding sources.

Alternative Treatment Options

Alternative treatment options for dental caries include: Silver Diamine Fluoride (SDF); Atraumatic restorative treatment (ART), and Silver Modified Atraumatic Restorative Technique (SMART). These techniques can be helpful for patient populations who may have more severe dental lesions or lack regular access to conventional dental care.

Implementation and delivery of these techniques in a school setting should be coordinated with local dentists. Although these treatment options may be helpful for students with significant decay who lack access to dental care, they are also quite costly. These options should be discussed with local experts.

Evaluation and Monitoring[22]

Dental screening exams can be done in nearly any location, assuming good lighting and appropriate equipment (e.g., masks, gloves, dental mirror) are available. Some general principles:

- Coordination should occur with local dentists or dental nurses to carry out screening evaluations.
- Efforts should be made to help school staff, local nurses, and teachers recognize common dental problems by involving them in screening events.
- There should be referral plans in place to connect children who present with pain and/or infection with urgent dental treatment (i.e. tooth extraction).
- There should be a system in place to collect information on individual children to track them over time.
- It is helpful to coordinate dental health information & exams with other health measures: growth (height and weight), nutrition, etc.

Oral Health Education Modules for Non-Dental Professionals

Below is a list of curated existing literature and oral health modules designed for non-dental professionals. Notably, the modules are focused on interventions in high-income countries. Considerations are needed to appropriately apply these principles to low-resource settings with limited healthcare capacity.

Literature

- Effectiveness of interprofessional oral health program for pediatric nurse practitioner students at Northeastern University, United States[23]
- Interprofessional Oral Health Education Improves Knowledge, Confidence, and Practice for Pediatric Healthcare Providers[24]

Modules (consolidated by the University of Maryland)

- Smiles for Life - National Oral Health Curriculum for Non Dental Professionals
- Open Wide - Oral Health Training For Health Professionals
- The Oral Cavity - Portal To Health and Disease
- OHNEP - Specific to Nurse Practitioners
- American Academy of Pediatrics Modules
- Maryland's Mouths Matter - for Medical Providers

Oral Health Education Modules for Children and Families

There are also existing resources and modules designed specifically for educating children and families. Again, special considerations are needed to make its content culturally appropriate and feasible for the targeted local community.

- Bright Futures - Oral Health Pocket Guide
- Mouth Healthy - ADA --- Lesson Plans and Activity Sheets for Kids
- Fact Sheets for Kids with Special Needs
- Smile Smarts (Oral Health Curriculum PreK - Grade 8)
- Healthy Habits for Happy Smiles

HEARING SCREENS

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Background

Around 360 million people live with hearing loss; of these, nearly 32 million are children.[25] For children, hearing is key to developing language skills and being successful academically.[25,26] Thus, hearing loss poses a barrier to education and social integration. Children with hearing loss can benefit greatly from being identified early in life and offered appropriate interventions. School-based hearing screening programs with clear guidelines for implementation are widely recommended.[27] The goal of hearing screening is to identify all children with significant hearing loss in order to allow for further diagnosis and appropriate intervention.

School-based hearing screening is of particular importance in countries without existing healthcare mandates to conduct hearing screening on newborns and infants for hearing loss.[28] As a result, school-based screening may be the first point of access for detection of hearing loss. The WHO also recommends implementation of school-based hearing screens, with the aim to identify, refer and manage common ear diseases and hearing loss. Specifically the WHO recommends the integration of hearing screening into school health programs with linkages for referrals, including referrals to medical, surgical and rehabilitative services.[25,26]

Principles to Consider for School-Based Hearing Programs

- What other school-based interventions exist in the community? Can school-based hearing screens be integrated into other school-based programs (i.e. dental, vision screens)?
- Who will conduct the hearing screens (i.e. teachers, community health workers)? Who will train the identified personnel to perform hearing screens?
- What resources exist in the community to refer students for diagnosis and treatment of hearing loss including medical, surgical, or rehabilitative services (i.e. amplification, educational interventions)?
- What monitoring/evaluation system will be put in place to track the outcomes of referrals and interventions?

What is Hearing Screening?

Audiometry for hearing screening typically determines whether a person responds to predetermined frequencies and intensity levels at which stimuli are presented.[27] A specific pass/refer criterion is applied to results. A "pass" result indicates no need for further testing, but a "refer" requires referral for further testing. The pure tone audiometric test has been considered the gold standard and is the most widely used and recommended screening method for school-based hearing screening.[27,28]

Screening Population[29]

The target population for school hearing screening should include:

- School-entry learners (i.e. first grade/preparatory grade)
- Learners with parent or teacher concerns regarding hearing, speech, language, development, or learning ability

Screening Personnel

- Screening personnel may include school nurses, teachers, or community health workers. They should receive adequate training in screening methods and referral pathways.

Screening Technologies

A number of test procedures have been used for screening. The pure tone audiometric test has been considered the gold standard for school-based hearing screens, and is the most widely used method for school-based hearing screening.[28] This utilizes a pass/refer criterion that determines the possibility of the presence or absence of hearing loss.

Pure Tone Audiometry Videos[30]

- What is an audiometer
- Pure tone hearing in schools
- Common mistakes for hearing screens

Educationally Significant Hearing Loss (ESHL)

The target disorder for school-aged hearing screening is often referred to as an educationally significant hearing loss (ESHL). ESHL is any form of hearing impairment that could potentially interfere with a learner's academic performance.[28]

Unfortunately, the severity of hearing loss that constitutes ESHL is not always clearly defined. According to the World Health Organization, a disabling childhood hearing loss constitutes an average hearing threshold in the better ear across the frequencies 0.5, 1, 2, 4 kHz to be >30 dB HL.[26,27] However, the American Academy of Audiology Guidelines specifies a screening level of 20 dB HL across 1, 2 or 4 kHz in order to identify an ESHL. Despite some variability in the frequencies employed for screening, current recommendations generally agree that 1, 2 and 4 kHz should be screened bilaterally.[28]

The recommended criterion for referral from institutions such as the American Academy of Audiology may not be ideal for resource-limited countries.[29] School-based hearing programs may not be effective or sustainable if there is not a sufficient infrastructure to cope with the possible cases of hearing loss identified through screening programs.[29] Implementing a school-based hearing screening program could become problematic if a large number of referrals cannot be managed by a limited amount of follow up resources.

A study conducted by Mahomed et. al in 2016 sought to evaluate the referral criteria for school-based hearing screens in South Africa and found no significant difference in referral rates between 25 and 30 dB HL but a significant difference between 20 and 25 dB HL.[29] The study concluded that a 25 dB HL screening intensity level may be most appropriate for resource-limited contexts, as employing 25 dB HL provided lower referral rates than at 20 dB HL, but was still likely to have better sensitivity for milder hearing losses than a screening level of 30 dB HL. The authors also recommended an immediate rescreen should be conducted on all children who referred on an initial screening to reduce the number of excessive referrals, in order to minimize the burden faced by follow-up services.

Screening Environment

Screening should be conducted in a quiet environment with minimal distractions. Ambient noises all contribute to difficulty with screening and may result in false-positive results.[28] Many school systems, especially in low-income countries, do not have the equipment nor expertise to take ambient noise measurements in areas used for screening. In these circumstances, an alternate approach is to use a biologic noise level check prior to the start of hearing screening.[29] This is defined as the ability to establish hearing thresholds at least 10 dB below the screening level (e.g.15 dB HL for screening conducted at 25 dB HL) at all frequencies for a person with known normal hearing.[29] Recent screening tools (automated smartphone audiometer) may have features that enable monitoring of real-time noise to assist screeners.[29]

Screening Procedures

When using pure tone screening, pure tone signals are presented across different frequencies, first in the one ear and then in the other. Responses to the signals typically include raising a hand. The presence or absence of a child's response is recorded for each tone. The child should be seated facing a wall with his/her back turned towards the tester so that no visual cues can be detected.

- Hearing Screen Checklist

Pass/Refer Criteria and Rescreening:

A pass result for a child usually constitutes a pass at all frequencies (1, 2 and 4 kHz) at the recommended screening intensity (e.g. 20, 25 dB HL or 30 dB HL) in both ears. If a child does not respond at the screening intensity at one or more frequencies in either ear, the tester should reposition the earphones and re-screen within the same screening procedure in which the child failed. Children who do not pass the re-screen should be referred for further diagnostic hearing evaluation.[29]

Screening procedures:

Example Procedure[30]

1. Make sure child cannot see the examiner pressing the button either directly or via a mirror/reflective glass.
2. Always screen right ear first.
3. With the intensity dial set to 20 dB and frequency dial at 1000 Hz, present tone for 2-3 seconds and then release.
4. Turn frequency dial to 2000 Hz, present the tone for 2-3 seconds and then release.
5. Turn frequency dial to 4000 Hz, present the tone for 2-3 seconds and then release.
6. Change the selector to the left ear, with intensity still at 20 dB, present tones at 4000, 2000 and 1000 Hz in the left ear.

Frequency	Ear	Intensity
1000 Hz	Right	20 dB
2000 Hz	Right	20 dB
4000 Hz	Right	20 dB
Switch ears		
4000 Hz	Left	20 dB
2000 Hz	Left	20 dB
1000 Hz	Left	20 dB

Screening Results

- If the student responds to all tones in BOTH ears= PASS.
- If the student fails to respond to any of the tones= RESCREEN. If the student fails to respond to any of the tones on rescreen= FAIL and mark REFER. (even if the student only missed 1 tone on re-screen, refer for further testing)

Educational Interventions

While services are sought out for children with hearing impairment or hearing loss, important environmental modifications can be made with immediate effect.

- Sit the child in the front of the class.
- Reduce background noise and choose a quiet place for activities in order to optimize listening and communication.
- Use carpets, drapes, pillows and other soft materials to absorb disturbing “excess sound.”
- Provide visual cues when talking to a child with hearing loss.

Mobile Screening Tools

Many barriers exist in screening for hearing impairment in LMICs, such as the requirement for skilled hearing healthcare professionals and expensive equipment to assess hearing. These challenges may be better managed through the utilization of increasingly available smartphone app technologies for ear and hearing assessments.

A recent study identified the currently available apps for ear and hearing assessments (up to July 2015) and provided a summary of those that have been validated against gold standard measures.[31] The authors identified 30 apps that could be used for ear and hearing assessments, and summarized 11 eligible validity studies that examined six different apps. uHear, an app for self-administered audiometry, was validated in the highest number of peer-reviewed studies against gold standard pure tone audiometry.[31]

Another study, published in 2019 compared the iOS-based automated Ear Scale app (version 2.0) to traditional pure-tone testing among school children in Taiwan.[32] The authors found that the app had favorable high sensitivity and specificity rates and low false-positive and false-negative rates, as compared to traditional screening.[32]

Children waiting for health screening; Tibetan Children’s home, Clement Town, Uttarakhand, India, 2017, photo by Lewis Koch

Example Hearing Screen Form:

Background:

Name of school:
Name of learner:
Age:
Grade:

Results:

Pass / Refer

Comments:

EYE HEALTH

Authors: Anisha Rimal MD, Natalie Tedford MD
Contributor: Luxme Hariharan MD, MPH

Background

Visual impairment affects an estimated 19 million children worldwide.[33] It is a condition that can severely and negatively impact child development, quality of life, and educational attainment.[33] The leading cause of visual impairment in children is uncorrected refractive error, which can be easily corrected with eyeglasses and easily screened for by school eye health screening.[34]
School health programs provide excellent opportunities to deliver comprehensive eye health services to children throughout the world, particularly those residing in low-income countries where access to eye care is limited.[35] Comprehensive eye health programs enable teachers and healthcare workers to provide eye health education as well as screening and referral processes for children with vision problems.[36]

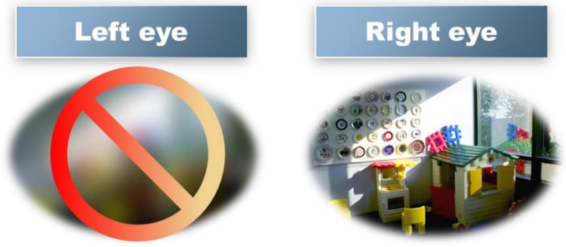
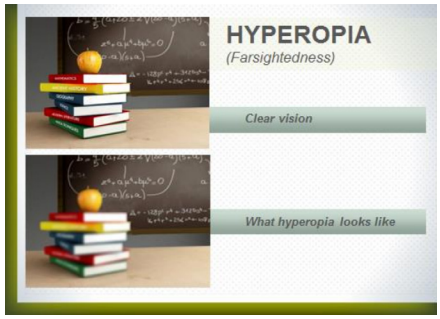
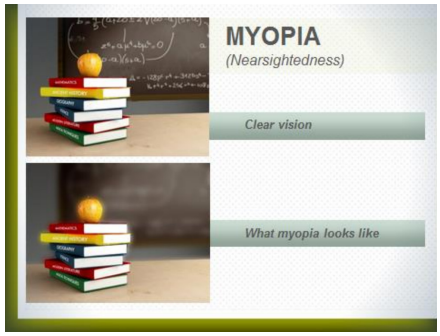
Principles to Consider for School Eye Health[35]

1. What is the need for eye health services in the community?	• Get information from other local school eye health programs • Undertake a formal population-based survey
2. What is the existing infrastructure for school eye health programs (policy)?	• Do insurance schemes or private-public partnerships exist or are they accessible to address pediatric eye conditions? • Are there policies regarding engaging teachers in health programs?
3. What are the existing school health programs?	• Is there an existing school health program? Is eye health included? Is there a budget? • Are other organizations already active in school eye health in the planned area? • Are there other school health initiatives that eye health could be integrated into? (i.e. deworming, dental programs)
4. What are the available resources for refractive errors and other eye conditions?	• What resources exist at primary, secondary, tertiary level for medical and surgical care, prescribing and dispensing spectacles, and low vision care? • What are the building blocks of the health system in the planned area? • What is the list of the equipment required at each level of service delivery?

Key Elements to Consider in Supporting a School Eye Health Program[35]

A. What are the goals of the program/ initiative?	Exmaples goals: • Training teachers in refractive error screening; training optometrists in refractive services and providing the equipment required. • Ensuring that eye health is included in school health curricula. • Ensuring that services for refractive errors in children are integrated into a comprehensive school-based vision program.
B. Who should screen?	Screening can be undertaken by healthcare professionals or non-healthcare personnel **who have been trained in all the steps involved** (i.e., giving explanations; asking children if they already wear spectacles; ensuring adequate lighting and test distance; testing each eye separately; correctly recording the findings as pass or fail for each eye). **Trained teachers or school nurses can be screeners, as this is cost effective and builds ownership of the program.**
C. Refraction	There are alternatives: • Refraction may take place in the school by partnering with optometrists. OR • Children who fail screening are referred to an **eye care provider** engaged in the program.
D. Provision of spectacles	An efficient mechanism should be established to procure **affordable spectacle frames and lenses.** An **inventory of frames and lenses** must be in place, with a large enough stock to meet the demand.
E. Referral mechanisms and tracking	Children whose vision **does not improve with refraction should be referred to specific eye hospitals** or departments with the capacity to manage them. It is important to **track whether these children seek care** following referral.
F. Establishing formal partnerships	Before implementation of programs, it is helpful to form partnerships with local **Ministries of Education and Health**.
G. Monitoring and evaluation	Progress of the program should be monitored on a **regular basis** to ensure that it is meeting its goals.

Review of Definitions [36,37]

Amblyopia	Loss of vision when nerve cells in the visual cortex of the brain receive insufficient visual stimulation while sense of sight is developing; primary causes include strabismus, cataracts, and refractive errors.	
Astigmatism	An irregular or uneven corneal curvature that causes distortion or blurring of vision for objects at any distance.	
Hyperopia	Medical term for farsightedness; the eyeball is usually shorter than normal, which may make it difficult for the child to focus on objects that are nearby. Light entering the eye focuses behind the retina.	
Myopia	Medical term for nearsightedness; the eyeball is usually longer than normal, which may make it difficult for the child to clearly see objects far away. Light entering the eye focuses in front of the retina.	

Refractive Error	Refraction is the bending of light rays. Refractive error occurs when parallel light rays are not brought to a sharp focus precisely on the retina, producing a blurred retinal image. Nearsightedness and farsightedness are “refractive errors”.	
Strabismus	A condition in which the eyes are not aligned; one eye will appear straight while the other eye turns inward, outward, upward, or downward.	Refractive errors are corrected with eyeglasses, contact lenses, or surgery
Visual acuity	Visual acuity is a measurement of the clarity, or clearness, of vision when identifying black optotypes on a white background using specific sizes at a prescribed distance.	
Myopia	Medical term for nearsightedness; the eyeball is usually longer than normal, which may make it difficult for the child to clearly see objects far away. Light entering the eye focuses in front of the retina.	

Observation of Possible Vision Problems

Children may demonstrate a number of signs that are indicative of possible vision problems; however, they may not voice discomfort or explicitly complain about visual difficulties. Parents and teachers can be educated in order to detect various signs that may indicate that a child is having difficulty with their vision.

Appearance Signs[38]

- Crossed eye or "wall" eye (eye turning in, out, up or down). Eye turn may be continuous or intermittent, particularly when the child is tired
- Continually watering eyes
- Red-rimmed, encrusted, or swollen eyelids
- Cloudiness/haze
- Unequal pupil size
- Drooping eyelid(s). Ptosis, commonly called drooping eyelid, is observed as the sagging of an upper eyelid to touch or the eyelid partially covering the pupil of the eye
- Styes or infections on eyelids
- Presence of a white pupil. This can be associated with a rare but serious eye disease. The white pupil may be observed when looking directly at the individual's eyes, or in his or her photograph
- Possible eye injury. Watch for eyes that are reddened, bloodshot, blackened, bruised or swollen, or show evidence of lacerations or abrasions

Behavior Signs[38]

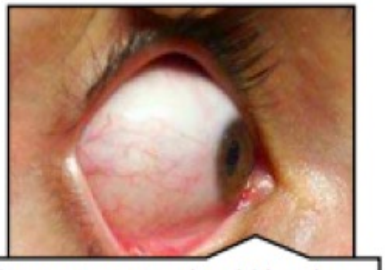
- Body rigid when looking at distant objects
- Clumsiness or decreased coordination
- Thrusting head forward or backward while looking at distant objects
- Tilting head to one side most of the time
- Squinting or frowning when trying to focus
- Excessive blinking
- Closing or covering one eye while doing near work

Complaint Signs[38]

- Headaches, nausea, or dizziness
- Blurred or double vision
- Burning, scratchy, or itchy eyes
- Blurred vision when looking up after close work or when looking at a whiteboard
- Unusual sensitivity to light

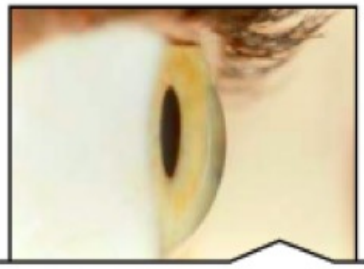
Basic Eye Exam[35]

Teachers, school nurses and community health workers who are involved in a school-based eye health program can be trained to perform a basic, external eye inspection. Published by the International Agency for Preventing Blindness, the Standard Guidelines for Comprehensive School Eye Health Programs has excellent resources for the basic eye inspection (see pages 61-



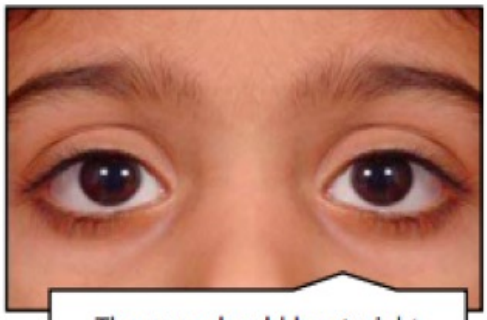
The conjunctiva should be clear showing the white color of the sclera and fine blood vessels

Photo courtesy Brien Holden Vision Institute



The cornea must be transparent and shiny

Photo courtesy Brien Holden Vision Institute



The eyes should be straight

Photo courtesy Brien Holden Vision Institute

The pupil should be equal size, black, round and central

Photo courtesy Brien Holden Vision Institute

The eye lid conjunctiva should be pinkinkish and not be red, shows bumps or lumps.

Photo courtesy Brien Holden Vision Institute

Vision Screening

Schools can be a highly cost effective and efficient setting to conduct vision screenings.[34] School settings provide access to large numbers of children at schools throughout the world with a wide range of ages. School nurses and teachers can be taught to effectively and accurately perform vision-screening.[40] Thus, school-based vision screenings contribute to early detection of visual problems.[40]

In order to provide information on evidence-based techniques for vision screening, several guidelines were reviewed, including: the American Academy of Ophthalmology, the American Association of Pediatric Ophthalmology & Strabismus, the American Academy of Pediatrics, and the American Association of Optometry.[41]

Each of these institutions provides evidence-based guidelines for conducting vision screening, which can be tailored to best fit various settings. Here, we will be presenting techniques described by the American Association of Pediatric Ophthalmology & Strabismus and the American Academy of Pediatrics Section on Ophthalmology in their most recent published guidelines.[41,42]

Key components of a successful vision screen[42]

- For the visual acuity screening to be successful, the child should be able to perform the test reliably. The examiner should be knowledgeable about the steps of the screen and competent in performing them. The examiner should use the best methods available, and the results should be reliable.
- There should also be clear criteria for referral and a functioning structure for referring children who do not pass their vision screens.
- The results of the screening should be communicated with parents.

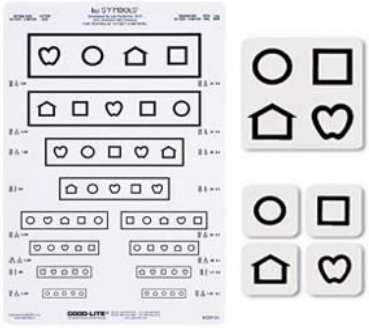
Tools

For vision screening, the standard tool recommended by the American Academy of Pediatrics is the optotype.[41] Optotypes are figures or a selection of distinct letters formatted on chart lines or presented on individual cards. Eye charts using lines of optotypes or matching cards with lines around each optotype provide the most accurate assessments of visual acuity.[40] In the United States, the LEA symbols and HOTV are commonly used for vision screening for younger children. The American Academy of Pediatrics recommends using Sloan or Snellen letter chart for older children.[39,41] Of note, there is no standard visual acuity testing tool in children that has been accepted worldwide.[43] Directional optotypes such as tumbling E charts are widely used globally, particularly in low-resource settings.[44]

Sloan Chart [38]

Tumbling E [44]

LEA Symbols [38]



Technique[39,41,42]

After selecting the screening tool, it is important that the screening area is appropriate for assessing visual acuity and that proper technique is used to promote accurate screening. It is important to refer to the chart to determine the distance required, though most visual screeners that are validated should be set at 10 feet (3 meters). First, a well-illuminated area free from distraction is important. A quiet room or hallway will work for this purpose. Second, an appropriate testing distance must be used. After the chart is hung on a flat wall at the eye level of the child, the distance for school-aged children again should be set at 10 feet (3 meters).

For the screening process, large optotypes at the top of an eye chart are first reviewed with the child, with both eyes open, to help the child understand the test. After this review, one eye is occluded, and lines of optotypes are presented to each eye separately.

It is extremely important that there should be effective occlusion of the eye not being tested, to eliminate the possibility of peeking and skewing results. This can be done using an occluder, an eye patch, or the palm of the hand – avoiding the use of fingertips.

The child may then start at the top of an eye chart and continue reading down each line until he or she recites the smallest line of optotypes discernable with each eye tested separately. This method is called “threshold” acuity testing and remains a common method of acuity testing. It enables the screener to identify the best level of visual acuity in each eye.

Another method that may be used is the critical line screening, which is an alternative to threshold testing for identifying children with potentially serious vision concerns. It can be more quickly administered than threshold testing, but does not allow the screener to identify the best level of visual acuity in each eye.

The “critical line” is the age dependent line a child is expected to see normally and pass. For screening purposes, it is unnecessary to measure acuity below the age-specific critical line to pass the test. In children over the age of five, the critical line is the 20/30 line. Children who are unable to read more than half of the letters on the critical line have failed the test and must be referred.

Interpreting Results

The American Academy of Pediatrics failure criteria is shown here:[41]

Age	Fail criteria	Difference Between Eyes
3 or 4 years	20/50 or worse in either eye	2 lines
5 years	20/40 or worse in either eye	2 lines
> 5 years	20/30 or 2-line difference between eyes	2 lines

For children over the age of five, failure is reading fewer than half of the letters on the 20/30 line and above OR a difference of two lines or greater between eyes.[41] The visual acuity value is the last line on which the individual correctly identified more than half of the letters with each individual eye.[41]

Resources for Vision Correction

- ReSpectacle
- Global Eye Project

School Eye Health Toolbox

Resource	Description	Link
Standard Guidelines: Comprehensive School Eye Health Program	London School of Hygiene & Tropical Medicine + partners create a detailed, evidence-based guideline for establishing an eye health program	Standard Guidelines for Comprehensive School Eye Health Programs
Global Optometry Resources	Free teaching and learning resources for eye health personnel	Education
PEEK Vision	Organization seeking to develop and implement portable diagnostic tools to improve eye health worldwide	Welcome to Peek Vision | Peek Vision
Eye Care Service Assessment Tool (WHO)	Tool for collecting data and information on the provision of eye care	Eye care service assessment tool
Healthy Eyes Activity Book	Activity book for children about how to take care of their eyes, translated into >10 languages	Eye health activity book
Children for Health: Eye Health Book	Eye health resource for educators	FREE! Eye Health & Vision Resource Book for Educators

REPRODUCTIVE AND SEXUAL HEALTH

Authors: Mara Minguez MD, MSc; Andrew Goulian MPH, Anisha Rimal MD, Anna Zuckerman MD

Background: Why School-Based Reproductive and Sexual Health Programs?

The school setting is a phenomenal platform for outreach strategies to the school-age population. Schools are the primary institutions able to reach a majority of adolescents, while also having an impact at the community level. As a safe and empowering environment in which adolescents can focus on the learning process, the school setting can promote comprehensive prevention initiatives. Healthcare providers can partner with educators to leverage this connection and thus promote sexual health and well-being.

In many developing countries, teachers assume an important role in the community, while also serving as role models to many adolescents.[45] In addition, schools are often the only place where adolescents can obtain accurate information on reproductive health. By providing reproductive health programs, schools may encourage the formation of healthy sexual attitudes and practices. In addition to providing education, some schools can also provide basic health services and reproductive health counseling, or refer students to local adolescent-friendly health or counseling services. Research shows that school-based reproductive and sexual health programs are effective in a variety of settings and in different countries.[46] Many programs have positive effects on the factors that influence risky sexual behaviors, including knowledge about sexually transmitted infections (STIs) and pregnancy, as well as increased awareness of risk, values and attitudes toward sexual topics.[46,47]

The focus of this section is largely on opportunities for pediatric providers to collaborate with local stakeholders to promote sexual and reproductive health within the classroom setting Although pediatric providers may have opportunities in a more clinical context in regards to sexual and reproductive health, this section does not focus on clinical competencies and skills needed to provide care to individual students. Rather, this section seeks to illustrate opportunities within reproductive health education, and engagement with the greater community towards sexual and reproductive health promotion. With their expertise, pediatric providers are uniquely positioned to help support sexual and reproductive health education in schools, and may find opportunities in curriculum development and teacher training on reproductive health topics.

Questions to consider for school-based reproductive and sexual health programs

- Does reproductive and sexual health education occur in the school?
- If reproductive and sexual health education does occur in the school, what are the topics that are covered?
- Who teaches reproductive and sexual health (i.e. teacher or community health worker)?
- What do the students think of the curriculum for reproductive and sexual health education? What do the teachers think of it?
- Do girls in the school tend to miss school days due to menstruation? Have there been any interventions to address this? Is there a place to dispose of feminine hygiene products in the school?
- Does the school offer reproductive and sexual health services (i.e. condom distribution, birth control counseling)? If so, who provides the health services? If not, are there nearby clinics that students can be referred to?

Components of a Comprehensive School Reproductive Health Program[48]

Component	Example
School policies	Policy that pregnant girls can stay in school and continue schooling during pregnancy and after delivery Zero tolerance of sexual harassment, gender-based violence, or bullying
Health education	Provide skills-based health education to reduce risky behaviors and improve knowledge, attitudes and skills for prevention of sexually transmitted infections
School Environment	Designate a place for girls to dispose of feminine hygiene products
Health services	Provide select sexual health services and counseling (i.e. condom distribution, birth control counseling) in schools OR as a close collaboration between schools and local health centers

Example of a School-Based Reproductive and Sexual Health Program

What: Abriendo Oportunidades
Where: Rural Guatemala
Who: Adolescent girls and boys
How: Partnerships between local school, community, United Nations Population Fund
Link: Abriendo Opportunidades

Cultural Context

In order to promote adolescents' reproductive and sexual health in a rapidly changing global environment, cultural context must be considered. While the UN Convention of the Rights of the Child is supported and ratified in many countries, local, customary, or religious laws often supersede this.

In many places, adolescent human rights are impacted by limited access to contraception and abortion. The age of sexual consent varies widely across different countries, regions, and jurisdictions, and child marriage (before the age of 18) is common practice in many countries, especially in rural settings.[49] Childhood marriage carries significant risks, with twice the rate of physical violence and three times the rate of sexual violence within the relationship.[49] Healthcare providers need to work within each community's cultural framework in order to collaborate with local educators and providers towards promoting the sexual and reproductive health of adolescents.

Communication with Parents

When reproductive and sexual health education is integrated into the school setting or classroom, it is vital to understand the local law or policies regarding parental consent. Communication with parents from school staff and health providers/educators helps foster healthy parent-child relationships that support open conversations about sensitive health topics. To maintain parental trust and support, the school should consider connecting with parents and describe the reproductive health education content and any other reproductive health services provided in schools.

There may be instances in which obtaining formal parental consent is required by local laws and regulations. Collaboration with the school stakeholders can facilitate writing culturally sensitive consent forms, disseminating information to parents, collecting the forms, and addressing opt-out options. Training the school staff to answer questions and concerns is beneficial as well.

Please refer to the link below for a sample consent form.

WHO Research Ethics Review Committee (ERC) for engaging with minors and their caregivers: WHO Consent Form

Adolescent Friendly Environments

In order to promote adolescent health, the school environment must be adolescent-friendly. Even though adolescents are a diverse group with many different backgrounds, global data suggests that adolescents desire to be treated with respect, autonomy, and be ensured that their confidentiality is protected.[50]

Specifically, this information means that private spaces need to be acquired for conversations with adolescents regarding health counseling and that school staff and health providers should use language that is non-judgmental and considerate. Additionally, both the adolescent population and community members must be aware of reliable resources where adolescents can obtain the health services that they need.[51]

Key Resources

- Adolescents Statistics UNICEF
- WHO Adolescent-friendly environment

Reproductive and Sexual Health Education

Definition and significance

Although not all schools may have the infrastructure and resources to offer reproductive health services and counseling to individual students, many schools in LMIC may allow for reproductive and sexual health education. Reproductive and sexual health education includes educational experiences that help develop the capacity of adolescents to understand their sexuality in the context of biological, psychological, sociocultural and reproductive dimensions and to acquire skills in managing responsible decisions and actions with regard to reproductive and sexual behavior.[52]

School-based reproductive and sexual health education is one of the most important and widespread ways to help adolescents to recognize and avert risks and improve their reproductive health.[52] Reproductive and sexual health education aims to achieve a range of behavioral and health outcomes, including reduced sexual activity (including postponing age at first intercourse and promoting abstinence); reduced number of sexual partners; reduced rates of child marriage; reduced rates of early, unwanted pregnancy and resulting abortions; reduced rates of infection with HIV and other sexually transmitted infections (STIs); increased contraceptive use; and improved nutritional status.[53] With their expertise, health care providers are uniquely positioned to help support sexual and reproductive health education in schools.

Key Topics

1. Puberty

Definition & Significance

Notably, the physiological changes that occur during puberty affects boys and girls differently, as the process usually happens between ages 8 and 13 for girls and ages 9 and 14 for boys.[54] During puberty, adolescents need to be provided with accurate information about changes to their body.[55]

Why teach about puberty in schools?

Teaching puberty in schools can help learners better understand themselves and deal with the changes they are experiencing, and hence gain the self-esteem to overcome daily challenges they may face with peers in school. Adolescents also become more conscious of socially constructed myths and taboos built around puberty, such as negative perceptions of menstruation. A better understanding of puberty and life skills helps young people to make independent decisions and better cope with pressure from peers, family, and their community.[56]

What should be taught about puberty in schools?[56]

- What is puberty?
- When does puberty start? When does it end?
- What changes take place in the male and female body?
- What is menstruation?
- What emotional changes are experienced?
- Cultural beliefs, social norms and myths surrounding puberty
- Gender roles
- Privacy
- How does puberty affect a young person's role and relationship with family and friends?

Key Resources

- Curriculum Development on Adolescent Health
- UNESCO Document Puberty and Menstruation Education

2. Menarche

Definition & Significance

For most girls, menarche occurs within the ages of 10 to 16 with the worldwide average age of menarche around 13.5 years.[57]

In many cultures and regions, menstruation is a sensitive topic that intersects religious ideology and doubts of cleanliness combined with a sexualized response. There are many myths and taboos about menstruation and lead to negative attitudes toward menstruation and women experiencing it.[56] The social implications are drastic. After menarche, girls are faced with challenges related to management of menstruation in public places. Young girls often miss school (approximately 4 days per week)[58] and work opportunities that ultimately hinder the economic growth and development of the community.

Why teach about menstruation in schools?

Teaching about menstruation in schools can provide girls with evidence-based, practical information on how to manage their menstruation, as well as help combat the taboos surrounding menstruation. At the same time, teaching young boys about the natural processes that propel girls into adulthood can assist future relationship dynamics that are based on partnership.

As with many other reproductive health subtopics, there will be different needs in each area and community. It is important to train school staff and create environments that promote a positive relationship between young adolescents and menstruation.

What should be taught about menstruation in schools?

- What is menstruation?
- What are normal symptoms associated with menstruation?
- What can you do to control the symptoms associated with menstruation?
- How long should a normal period last?
- How often does a period occur?
- Where do you get the sanitary pads and how do you dispose of them?
- How does menstruation impact your schooling or home life?
- Who are people in your life that you can rely on for accurate information and support regarding menstruation?

How to Provide Support

Many schools and local communities do not have access to appropriate information, facilities, or menstrual products that are effective, affordable and safe to use- which forces young girls to take health risks to earn money to purchase supplies.[59] Providers and healthcare workers can be instrumental in contacting private and international organizations to assist with program implementation and supplies for schools in areas where young females do not have the resources to manage sanitary conditions associated with menstruation. Providers can also bring together groups of young girls and women in the community to stimulate ideas about resource management while also providing crucial social and psychological support to normalize the occurring biological changes. Learning about menstruation in a supportive environment can help girls learn how to better manage and cope with their menstrual symptoms.

Key Resources

- Toolkit for Integrating Menstrual Hygiene Management (MHM) into Humanitarian Response
- https://www.savethechildren.org/content/dam/global/reports/health-and-nutrition/mens-hyg-mgmt-guide.pdf

3. Sexuality

Definition & Significance

According to the World Health Organization, sexuality is a central aspect of being human throughout life, and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction.[60] Importantly, sexuality is intersectional and influenced by biological, psychological, social, economic, legal, cultural, religious and spiritual factors.

Why teach about sexuality in schools?

Navigating sexuality can be challenging for young people, especially when emotional development may not be aligned with physical changes, leading to mental health implications induced by societal norms.[61] Too often, sexuality is clouded with notions of wrongfulness, discrimination and violence. Sexuality education allows adolescents to learn about themselves, their peers, and their community in a positive and safe space. Additionally, understanding sexuality can lead to an increase in effective contraception use and timely care for sexually related medical complications.[62]

What should be taught about sexuality in schools?

Discussing sexuality in the classroom may be challenging, particularly in certain communities where certain topics may be taboo; for example, discussion of sexual orientation may be challenging in communities where homosexuality is unaccepted or illegal. Strategies to increase support and acceptance for sexuality education in schools include: involving traditional or religious leaders, transparent communication, involving caring adults, mobilizing the community, and trying a gradual approach.[53]

Key Resources

- Creating "safe spaces" for adolescent girls
- Creating Safe Space for GLBTQ Youth: A Toolkit

4. Pregnancy Prevention

Definition and significance

Adolescent pregnancy continues to increase in certain regions of the world, with roughly 16 million adolescent girls between 15 and 19 years old becoming mothers each year.[63] Adolescent pregnancy is associated with greater health risks for both the mother and child, and sustains a vicious cycle of poverty, with decreased educational opportunities and poor long-term health outcomes.

Why teach about pregnancy in schools?

In order to decrease undesired pregnancy in adolescents, actions towards pregnancy prevention can be introduced in the forms of education, awareness, and medical intervention in school-based health programs.

Health educators and healthcare providers can discuss sensitive pregnancy topics such as contraception methods and social actions to help reduce coerced sex and unsafe abortions. The discussion in an educational setting not only aims to empower adolescent girls, but also brings adolescent boys into the discussion about responsible sexual conduct and reduces misinformation about pregnancy. Education around intimate partner violence can also begin during adolescence, as recent WHO reports concluded that about 35% of women worldwide experience sexual or intimate partner violence.[64]

It is important to note that conversations regarding pregnancy prevention can be challenging depending on the cultural context. On one hand, adolescent pregnancy leads to negative social, economic and health outcomes. On the other hand, adolescent pregnancy is embedded and accepted in local cultures and traditions. One effective way to discuss pregnancy prevention in the context of local social norms and cultural expectations is to engage leaders within the community.[53]

Key Resources

- https://www.bedsider.org/
- https://youngwomenshealth.org/
- Women Deliver-Toolkit for Young Leaders
- Intimate partner and sexual violence (violence against women)

5. Prevention of Sexually Transmitted Infections

Definition & Significance

Sexually transmitted infections (STIs) consist of more than 30 pathogenic bacteria, viruses and parasites are transmitted through sexual contact. The four predominant curable STIs are gonorrhea, syphilis, chlamydia, and trichomoniasis.[65] According to the World Health Organization, the highest risk of exposure to STIs are 20 to 24-year-olds, followed by 15 to 19-year olds.[66] Furthermore, girls have higher STI prevalence rates than boys, and adolescents who engage in regular sexual activity have the highest rates of infection.[66] As a cohort, not only are adolescents disproportionately infected with STIs, but the negative mental health consequences of incurring an STI during adolescence are incalculable.

Each population and geographic region will have a unique epidemiology that highlights the gaps in care and underlying health disparities that need to be addressed. As with other health topics, healthy sexual practices are often a local concern with local solutions.

Why teach about STIs in schools?

In order to address the risk of STI exposure associated with sexual activity during adolescence, promoting healthy sexual practices is encouraged and recommended. This is done through embracing sexual and reproductive health education, providing referral pathways for treatment and screening services for STIs, and encouraging behaviors that prevent STI exposure.

Additionally, a behavioral method of STI prevention is regular and consistent condom use. Part of the solution is to understand whether condoms are available locally and how adolescents can obtain condoms. Condom distribution may occur in schools as a part of a comprehensive reproductive health education program, or could occur in partnerships with local health centers.

Key Resources

- CDC STI Resource
- Coalition for Positive Sexuality- educational tools to assist adolescents with self care and decisions about sex

6. Adolescent Concerns that May Require Clinical Intervention

Although this section does not focus specifically on clinical care for individual adolescents, there may be certain contexts in which adolescents need further medical care to address their sexual and reproductive health needs. Providers may be asked to provide care in school based health centers in resource-limited settings (example: Dominican Republic). Considerations for these contexts include the legal framework (confidentiality) and creating an adolescent-friendly environment. Additionally, whether tasked with direct clinical care or not, it is important to establish collaborations and referral pathways for adolescents that need a higher level of care than is feasible within the school context.

Areas that may require clinical intervention include:

- Concerns in regards to puberty (delayed or precious puberty)
- Pregnancy prevention (counseling and provision of birth control including condoms, oral contraceptives, implantable devices)
- Assessing symptoms providing treatment for sexually transmitted infections

Desk reference tool for primary level health workers providing clinical care to adolescents in resource-limited settings: Adolescent Job Aid.

UNINTENTIONAL INJURY PREVENTION

Authors: Nan Peterson MS, RN, Natalie Tedford MD
Contributors: Michael Maurer MD, Freddi Adelson RN, MS

Background

Every day, across the globe, more than 2000 children die from preventable injuries.[67] The leading causes of unintentional injury include road traffic injuries, drowning, burns, falls, and poisoning with LMIC sharing a greater burden of injuries than higher-income countries.[67] Unintentional injuries take an enormous toll on families – physically, financially, and emotionally, as well as the medical costs and costs to society.[68] Evidence-based strategies can reduce injury-related deaths and life-long disabilities.[68] Schools have an opportunity to be proactive in this effort and play an important leadership role in the safety of their students. Community partnerships and strong collaboration are imperative for collective impact and to strengthen a culture of safety for children.

Key Facts[67,68]

- Approximately 730,000 children under 18 years die every year as a result of unintentional injuries.
- Unintentional injuries are the leading cause of death for children over 9 years.
- Road traffic injuries and drowning account for nearly half of all unintentional child injuries.
- Road traffic injuries and falls are the main causes of injury-related child disabilities.
- Injury is a leading cause of medical spending for children. Tens of millions of children require hospital care every year for non-fatal injuries.
- 95% of child injuries occur in LMIC.

Best Practice Approaches to Child Injury Prevention[69]

- Use a public health approach:
    - Surveillance through systematic data collection.
    - Identify risk and protective factors.
    - Design, implement, and evaluate interventions.
    - Scale up effective policies and programs.
- Use evidence-based, multi-faceted strategies that embrace the “7 E’s of injury prevention”: Education, Environmental/Engineering modifications, Enactment, Enforcement, Economic incentives, Empowerment, and Evaluation.
- Acknowledge that injuries are preventable and follow predictable patterns, and that underlying causes of injuries are often rooted in inequality and poverty.
- Advocate for youth engagement in preventing injuries. A paradigm shift to include youth will build life-long advocates for injury prevention.
- Build coalitions with key community partners such as law enforcement, fire and emergency services, health and safety professionals, government agencies, service groups, businesses, and parents. This is vital for schools to build public support for improving the conditions in and around their school.

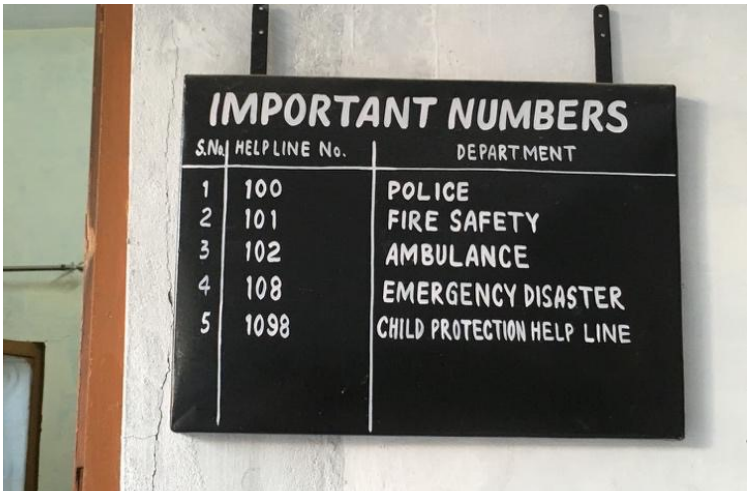
Questions to Consider/School Safety Checklist[69]

School area road safety

- Identified school zone toolkit
- Pedestrians: are there visible crosswalks, speed bumps, adult crossing supervisors at busy intersections, set & enforced speed limits, safe drop off area for vehicles?
- Bicyclists: do they have appropriately sized bicycles, properly fitted helmets, protected bike lanes?
- Routes: do students have safe routes between home and school?
- School bus and bus stop safety: are there safety policies and are they enforced?

Building safety

- Are smoke, carbon monoxide alarms and fire extinguishers present?
- Is there a school escape plan for emergencies?
- Playground safety checklist
    - Supervision
    - Age-appropriate design
    - Fall surfacing
    - Equipment maintenance
- What is the water temperature in the school facilities? (Should be less than 120 degrees Fahrenheit/49 degrees Celsius to prevent burns)
- Where are medications stored at school? (Should be stored in a locked container or drawer)
- Where are chemicals, art supplies and power equipment that are used in the classroom stored? Is this secured?
- Are stair railings present?



Johnson Secondary School, Herbertpur, Uttarakhand, India, 2020, photo by Ann Behrmann

First Aid

- Is there a first aid trained and designated person on-site?
- Is there a first aid kit available in the classroom?
- Does the first aid plan address initial and referral care for common injuries? (Does the plan embrace the "3 P's of First Aid": Preserve life, Prevent deterioration, and Promote recovery)[69]

Emergencies to Consider (training)[70]

Healthcare providers may be engaged to provide teacher and student first aid training in schools. Below are key areas to consider for emergency and first aid training.

- Breathing/ respiratory emergencies
- Bleeding
- Head Injury
- Allergic Reactions
- Bites and Stings
- Poisoning
- Burns

Additional resources:

- School-based first aid protocols
- Responding to injury & illness protocols
- Effects of first aid training for preschool teachers in China
- Mental health first aid

Examples of Innovative School-Related Global Injury Prevention Initiatives

Road Safety

School zone road safety toolkit: School Zones	
Bicycle safety	
Developing an integrated campaign to address child helmet use in Vietnam	Case study - Vietnam National Helmet Campaign by AIP Foundation
Role of Government in helmet safety	Government in Road Safety
Pedestrian safety	
Zambia: iRAP	www.irap.org SR4S Rating for Schools (SR4S) is a systematic and evidence-based tool for measuring, managing and communicating the risk in roads around schools. Justin Kabwe Primary School in Lusaka, Zambia
Child Health Initiative Project combines research, advocacy and evidence-based interventions	https://www.childhealthinitiative.org
Student-led pedestrian safety campaign	www.mystreet.org

Drowning Prevention

Preventing drowning: an implementation guide. Geneva: World Health Organization; 2017.	WHO Drowning Prevention
Bangladesh Drowning Prevention Project	Bangladesh Drowning Prevention Project Journal Article The Bangladesh Drowning Prevention Partnership

Burn Prevention

Comprehensive overview	WHO Comprehensive Review Burns
A WHO plan for burn prevention and care. Geneva: World Health Organization; 2008.	WHO Planning Burn Prevention

Falls Prevention

Overview	Fall Prevention Overview
Fact Sheet: WHO	Children and falls WHO

Poisoning Prevention

Paraffin-related injury in low-income South African communities: knowledge, practice and perceived risk	Paraffin-related injury in low-income South African communities: knowledge, practice and perceived risk

Additional Resources

- United Nations Road Safety Collaboration
- WHO Coming of age: Adolescent Health Report 2018
- CIPRB – a Centre for Injury Prevention and Research
- Progress in adolescent health and well-being: Tracking 12 Headline Indicators for 195 Countries and Territories
- WHO Developing policies to prevent injuries and violence: guidelines for policy-makers and planners
- Child restraints infographic, 2015
- PedFACTs Pediatric First Aid for Caregivers and Teachers
- AAP Disaster Preparedness Advisory Council
- School-Based Injury Manual

IMMUNIZATIONS

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Contributors: James Conway, MD; Tina Q Tan, MD

Background

Immunizations are one of the safest, most successful and cost-effective ways to prevent disease and save lives. However, one in five children do not receive basic vaccines due to a variety of reasons, including supply challenges, vaccine hesitancy, and access issues in resource-limited countries.[71] Immunizations are particularly important for schools, where the clustering of children provides an ideal setting for transmission of infectious diseases. Outbreaks of vaccine preventable disease are not only dangerous to children, but also disrupt successful school functioning.
One strategy to immunize children is through an effective school-based immunization program that targets older children and adolescents who may not have received all childhood recommended vaccines, or lack vaccination documentation. There are several examples of successful school-based immunization programs, one being Indonesia's School Immunization Program.[72]

Questions to consider for school-based immunization programs

- What vaccines are recommended for students at the school?
- How will vaccines be provided to the students (i.e. government, nonprofit, public health department)? What are the costs associated with immunization programs?
- Where can a school obtain records of past immunizations? How can schools maintain records of immunization for future use?
- What monitoring and evaluation systems can be utilized to track immunization outcomes?

While answering these questions, it is important to recognize the limitations of such interventions in a resource-limited setting and identify a specific goal that can be achieved. For example - focusing on only one vaccine preventable illness (i.e. measles), or addressing vaccine hesitancy.

What vaccines are recommended?

The schedule of recommended immunizations varies based on the country and location within the country, the child's health, and vaccine availability. Information on country-specific immunization schedules can be found through the World Health Organization (select country and click "select all vaccines"). The WHO also provides its own recommended vaccine schedules, as well as position papers for each vaccine-preventable disease.

What programs fund vaccines in resource-limited countries?

- WHO-Expanded Program on Immunization
- GAVI, The Vaccine Alliance
- Private health sector
- National government programs

Expanded Program on Immunization (EPI)

The WHO initiated the Expanded Program on Immunization (EPI) in 1974 to vaccinate children around the world.[72] Under the program, national governments can create and implement immunization policies while following EPI guidelines and recommendations.

GAVI - The Global Alliance for Vaccine Initiatives

GAVI is an international organization based in Geneva, Switzerland that partners with public and private donor organizations to provide equitable access to vaccines for children.[73] Established in 1999, GAVI has improved access to new and underused vaccines in resource-limited countries. Eligibility for GAVI depends on gross national income per capita and in 2019, there were 68 countries that qualified for GAVI support. GAVI support varies, and some countries are graduating from GAVI support while most middle income countries do not qualify. The GAVI website provides additional information on countries preparing to transition from GAVI support.

Through the combined efforts of the EPI and GAVI, in coordination with the private health sector, many national health ministries can provide free immunizations to children. Some countries have also supplemented their EPI supported immunization schedule with additional vaccines recommended by a national pediatric society. In most countries, very few, if any, of the newer and expensive vaccines are provided for free by EPI or GAVI, unless the vaccines have been added to a country's basic childhood vaccination schedule.

Vaccine administration

The provision of vaccines varies not only between countries but also within countries where rural areas may have less access to vaccines and vaccine resources. The websites of country-specific ministries of health and national pediatric societies may be useful resources for more information on local vaccine administration. Communication with school administrators may also help identify vaccine administration sources in the community. UNICEF provides reports profiling country-specific immunization rates.
In low- and middle-income countries, vaccinations are usually delivered by dedicated vaccination clinics or through outreach and mobile services.[74] The Tailoring Immunization Programme, developed by the WHO European Regional Office is a useful tool for identify barriers to delivering immunization and formulating an informed course of action.[74]

Contraindications and Side Effects of Vaccines

In general, vaccines are safe. However, there are some minor adverse reactions and rare severe reactions, of which vaccine providers should be aware.[75] They should also be prepared to deal with vaccine reactions and educate the people who administer immunizations.

- Vaccine side effects
- Medical management of vaccine reactions in community setting

There are several precautions and very few true contraindications for vaccination

Recordkeeping and finding prior immunization records

It is crucial to keep updated and accurate records of immunizations; this can be one of the most challenging aspects of coordinating immunization efforts in schools. It is important to discuss potentials plans for maintaining vaccinations records with school administrators.[76] Most countries utilize immunization cards and/or some have immunization registries. Any school-based program should be prepared to update records to avoid unnecessary and costly duplication of services.

Here is an example immunization record.

Immunization Poster, Dekyiling Family Health Center, Dehradun, Uttarakhand, India, 2020, photo by Ann Behrmann

Finding prior immunization records

Finding immunization records for students (if they already exist) can prevent repeated vaccination but this can be quite difficult in LMIC, as records are usually kept on paper, may not exist, or may not be accurate. Immunization records are usually not kept by schools but may be found at the Ministry of Health Clinics. In addition, individuals may move and change healthcare providers, leading to scattered immunization records.

Providers should inquire with the school where immunization records are kept and identify health facilities or health offices that could provide further assistance in locating student immunization records, if they exist. In many countries, families are responsible for keeping and maintaining health records and/or immunization cards for the children in their household.

The CDC provides a guide to translate immunization records from many different languages.

A comprehensive list of foreign language terms can be viewed in the print edition of "Pink Book" from CDC- "Epidemiology and Prevention of vaccine preventable diseases" 13th edition, 2015- Appendix B pages 16-32.

Discussing immunizations with schools

Addressing vaccine hesitancy

Vaccine hesitancy is prevalent worldwide, and it is important to identify and appropriately address vaccine hesitancy while acknowledging that vaccine hesitancy is an individual behavior with associated socio-cultural factors.[77] Factors such as complacency, convenience and confidence are involved.[77, 78] Vaccine hesitancy occurs as a continuum between high vaccine demand and complete refusal of available or offered vaccine.[78]

- **WHO resource on addressing vaccine hesitancy**

Enabling schools to be vaccine advocates

School-based vaccination programs have the potential to generate positivity around immunization in local communities.[76] Providing schools with educational materials on the importance of vaccines can enable them to engage with families, community members and local healthcare professionals to promote immunizations for their students. Public health officials, political leaders, religious leaders and parents may all be advocates that can be engaged in order to discuss the importance of immunizations in schools.

School-based immunization program sustainability

Program sustainability is indicative of a good school-based immunization program.[76] School administrators should be equipped with the knowledge and resources to continue coordinating student immunization without outside involvement. The WHO provides additional information and tools on school based immunization programs.

Immunization training

- The CDC and WHO provide resources on immunization training
- General best practice guidelines on vaccine administration from the CDC

Vaccine storage and handling

It is important to store and transport vaccines as per manufacturer guidelines to keep them effective. This may be more challenging in resource-limited settings.

Vaccines must be kept at stable temperatures. The high temperatures associated with certain regions, such as parts of sub-Saharan Africa and Asia can render vaccines ineffective. This is also a challenge in areas that have unreliable road networks or inconsistent electricity supply systems. Vaccine vial monitors (VVMs) may be present on vaccine vials to indicate exposure to temperatures, which may render vaccines ineffective.[79] The CDC provides a toolkit for vaccine storage and handling (updated Jan 2019).

Summary of Resources

- United States Centers for Disease Control and Prevention Vaccines
- World Health Organization Vaccines
- Immunization Action Coalition
- Gavi, the Vaccine Alliance
- American Academy of Pediatrics: Immunizations at the AAP
- Pan American Health Organization Immunizations
- UNICEF Immunizations

WATER AND SANITATION

Author: Ann Behrmann MD
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Background

There is a growing body of evidence that demonstrates the importance of water, sanitation and hygiene (WASH) infrastructure for the health of young children.[80] WASH in schools significantly reduces hygiene-related disease, increases student attendance and learning achievement, and contributes to dignity and gender equality.[81] Despite this, 3 in 10 schools globally do not have adequate access to drinking water and sanitation facilities, and 4 out of 10 schools do not have basic hygiene services, impacting millions of children worldwide.[82] Each year, children lose 272 million school days due to diarrhea; these illnesses rob children of school attendance and are also underlying causes of malnutrition and stunting.[81]

Studies have also shown that the provision of basic hand washing and sanitation facilities in primary schools can reduce absenteeism and cases of diarrhea and other infectious disease among young children.[83] There is also evidence that providing drinking water to keep children hydrated in school can improve their memory, attention, and overall cognitive performance.[84] Published by WHO and UNICEF, Core questions and indicators for monitoring WASH in Schools in the Sustainable Development Goals establishes an excellent framework for engaging in WASH-related interventions in schools.[85]

Impact of Unsafe sanitation [86]

Table 1.1 The health impact of unsafe sanitation

Direct impact (infections)	Sequelae (conditions caused by preceding infection)	Broader well-being
Faecal-oral infections • Diarrhoeas (incl. cholera) • Dysenteries • Poliomyelitis • Typhoid **Helminth infections** • Ascariasis • Trichuriasis • Hookworm infection • Cysticercosis (Taenia solium/ infection) • Schistosomiasis • Foodborne trematodes **Insect vector diseases** (vectors breed in faeces or faecally-contaminated water) • Lymphatic filariasis • West Nile Fever • Trachoma	**Stunting/ growth faltering** (related to repeated diarrhea, helminth infections, environmental enteric dysfunction) **Consequences of stunting** (obstructed labour, low birthweight) **Impaired cognitive function** **Pneumonia** (related to repeated diarrhea in undernourished children) **Anaemia** (related to hookworm infections)	**Immediate:** **Anxiety** (shame and embarrassment from open defecation, shared sanitation) and related consequences and not meeting gender specific needs **Sexual assault** (and related consequences) **Adverse birth outcomes** (due to underuse of healthcare facilities with inadequate sanitation) **Long-term:** School absence Poverty Decreased economic productivity Anti-microbial resistance

Collated from: Bartram & Cairncross, 2010; Bouzid et al, 2018; Campbell et al, 2015; Cumming & Cairncross, 2016; Cairncross et al., 2013; Schlaudecker et al, 2011.

Reproduced from "Guidelines on sanitation and health. Page 2. Geneva: World Health Organization; Copyright 2018. License: CC BY-NC-SA 3.0 IGO."[86]

WASH as a Component of Sustainable Development Goals [87]

The SDGs aim for universal access to WASH and inclusive and effective learning environments for all

SDG	SDG TARGETS AND INDICATORS
Goal 6: Ensure availability and sustainable management of water and sanitation for all	**6.1** By 2030, achieve **universal** and equitable access to safe and affordable drinking water **for all** **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
Goal 4: Ensure inclusive and quality education for all and promote lifelong learning	**4.a** Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments **for all** **4.a.1** Proportion of schools with access to access to: (a) electricity; (b) the internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; **(e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities** (as per the WASH indicator definitions)

TABLE 1: Global goals and targets related to WASH in schools

Reproduced from: "Drinking water, sanitation and hygiene in schools: global baseline report. Page 4. New York: United Nations Children's Fund and World Health Organization; Copyright 2018. License: CC BY-NC-SA 3.0 IGO."[87]

Questions to Consider for School-Based WASH Programs[85]

All tables below, until the end of this chapter, are reproduced from: "Core questions and indicators for monitoring WASH in Schools in the Sustainable Development Goals. Pages 4, 6-8, 14, 15. Geneva: UNICEF and World Health Organization; copyright 2016."[85]

1. What is the drinking water source for the school?

W1. What is the main source of drinking water provided by the school? *(check one - most frequently used)*	
Piped water supply	
Protected well/spring	
Rainwater	
Unprotected well/spring	
Packaged bottled water	
Tanker-truck or cart	
Surface water (lake, river, stream)	
No water source	

An excellent resource on accessing clean water is from Hesperian Foundation, and discusses methods for accessing clean, safe water in multiple languages

2. Is the water source available during the whole school year in acceptable quantities for WASH activities?

W1 & W2 (alternative). What is the source of water for the school? *(check all that apply)*		
Source	**Currently Available**	**Used for drinking**
[ ] Piped	[ ] Yes [ ] No	[ ] Yes [ ] No
[} Protected well/spring	[ ] Yes [ ] No	[ ] Yes [ ] No
[ ] Unprotected well/spring	[ ] Yes [ ] No	[ ] Yes [ ] No
[ ] Rainwater	[ ] Yes [ ] No	[ ] Yes [ ] No
[ ] Packaged bottled water	[ ] Yes [ ] No	[ ] Yes [ ] No
[ ] Tanker-truck or cart	[ ] Yes [ ] No	[ ] Yes [ ] No
[ ] Lake/River/Stream	[ ] Yes [ ] No	[ ] Yes [ ] No
[ ] No water source	[ ] Yes [ ] No	[ ] Yes [ ] No

XW3. Is drinking water accessible to those with limited mobility or vision?	
Yes	
No	

Note: To be considered accessible, water can be accessed (directly from the source or from a storage container) via a clear path without stairs or steps* that is free of obstructions and has age-appropriate handrails, the tap can be reached from a seated position, and the water source/dispenser can be opened/closed with minimal effort with one closed fist or feet.

**Maximum ramp slope should follow national standards. In the absence of national standards, the following global guidelines are recommended: a maximum ramp slope of 1:20 without handrails or 1:10 with handrails for the first 10 meters (if a longer ramp is needed, there should be an intermediate level landing every 10m).*

XW4. Is drinking water accessible to the smallest children at the school?	
Yes	
No	

Note: To be considered accessible, the water tap can be reached and easily opened/closed by the smallest children. May not be applicable in secondary schools.

XW5. How many drinking water points (e.g. taps) are at the school?	
Insert number	

Note: Count the total number of drinking water points at the school for students. This includes any point where children can get water to drink when needed. These could include, but are not limited to, piped taps, water fountains, jugs, water coolers, and buckets with taps, as well as protected wells or rainwater tanks if children get water directly from those sources.

3. Is water available for cooking or cleaning food/hands?

Resource: making tippy taps

4. How is water filtered/cleaned?

XW6a. Does the school do anything to the water from the main source to make it safe to drink?	
Yes	
No	

Note: The water treatment equipment / supplies should be observed, if possible.

XW6b. If yes, what treatment method is used?	
Filtration	
Boiling	
Chlorination	
SODIS	
Ultraviolet disinfection	
Other _____	

Note: SODIS refers to "solar disinfection" where plastic bottles of water are set in the sun for a number of hours.

XW7. Is the school's main water source compliant with national standards for drinking water?		
Contaminant	**Tested in past 12 months**	**Compliant**
E. coli	[ ] yes [ ] no [ ] don't know	[ ] yes [ ] no [ ] don't know
Arsenic	[ ] yes [ ] no [ ] don't know	[ ] yes [ ] no [ ] don't know
Lead	[ ] yes [ ] no [ ] don't know	[ ] yes [ ] no [ ] don't know
Other_____	[ ] yes [ ] no [ ] don't know	[ ] yes [ ] no [ ] don't know
Contaminant unknown	[ ] yes [ ] no [ ] don't know	[ ] yes [ ] no [ ] don't know

Note: The structure can be modified for surveys that don't accept matrix style questions. If the water was tested, but the contaminants tested are unknown, the "specific contaminant unknown" row can be used. For surveys that test water as part of data collection, the "tested in past 12 months" column can be changed to "sample taken." WHO guidelines recommend a standard of zero *E. coli* (or thermotolerant coliform bacteria) in any 100-mL sample, a maximum arsenic level of 0.01 mg/L, and a maximum lead guideline of 0.01 mg/L.[4] The contaminants in the table can be changed based on the context. If chlorine residual is tested, this may also be recorded; the drinking water guideline is at least 0.2 mg/L

Additional Information

Progress on drinking water, sanitation and hygiene in schools

This updated (2022) document, Progress on drinking water, sanitation and hygiene in schools discusses WASH health-based targets regionally and nationally, including access for disabled students and pandemic preparedness.

5. Where are the toilets for the school?

- Ideally toilets should be accessible for use by smallest, youngest children as well as children with disabilities (vision, physical) and be gender sensitive. [88]
- The ideal minimum of toilets would be 1 toilet for 25 girls and 1 for female faculty/staff; 1 toilet + 1 urinal for 40 boys and 1 for male faculty/staff.[88]
- Ideally, the hand washing facility with water and soap should be next to or nearby the toilets.[88]

School toilet at Jagriti Vidyalaya Primary School, Dehradun, India, 2020, photo by Ann Behrmann

6. What type of student toilets/latrines are at the school?

- Who maintains them?
- Are there separate female/male toilets?

S1. What type of student toilets/ latrines are at the school? *(check one - most common)*	
Flush / Pour-flush toilets	
Pit latrines with slab	
Composting toilets	
Pit latrines without slab	
Hanging latrines	
Bucket latrines	
No toilets or latrines	

Note: If more than one type is used, the most common type of student toilet/latrine should be selected.

Response options should be modified to reflect the local context and terminology such that responses are able to be categorized by improved, unimproved or none. Photos may be useful, where feasible.[12] An "improved" sanitation facility is one that hygienically separates human excreta from human contact (JMP definition[9]). "Improved" facilities in school settings include: flush/pour-flush toilets, pit latrines with slab, and composting toilets. "Unimproved" facilities include: pit latrines without slab, hanging latrines, and bucket latrines, or any other facility where human excreta is not separated from human contact.

S2. How many student toilets / latrines are currently usable (available, functional, private)? *(insert number of holes / seats / stances)*	
Insert number	

Note: Only count toilets/latrines that are usable at the time of the survey or questionnaire, where "usable" refers to toilets/latrines which are (1) available to students (doors are unlocked or a key is available at all times), (2) functional (the toilet is not broken, the toilet hole is not blocked, and water is available for flush/pour-flush toilets), and (3) private (there are closable doors that lock from the inside and no large gaps in the structure) at the time of the questionnaire or survey. If *any* of these three criteria are not met, the toilet/latrine should not be counted as usable. However, lockable toilets may not be applicable in pre-primary schools.

S3. Are the toilets/latrines separate for girls and boys?	
Yes	
No	

Note: Single-sex toilets means that separate girls' and boys' toilets are available at the school, or it is a single-sex school and has toilets.[14] To be considered separate, facilities should provide privacy from students of the opposite sex, but this definition should be further defined based on local context, as needed. For schools that have separate shifts for girls and boys (i.e. girls attend the school at a separate time from boys), depending on local culture, the response could be "yes" since at the time of use, the toilets are only for girls. This question may not be applicable in pre-primary schools.

S2 & S3 (alternative). How many toilets/latrines are at the school? *(insert number)*			
	Girls' only toilets	**Boys' only toilets**	**Common use toilets**
Total number			
Number that are usable (available, functional, private)			

Note: This question can replace questions S2 and S3 above for surveys with greater analysis capacity and interest in toilet quantities and generating pupils per toilet ratios. The "common use toilets" column is necessary to determine if the girls and boys toilets are separate, which is not possible with the girls' only and boys' only columns alone.

The number of urinals, teacher toilets or other categories could be added depending on national interest and capacities. In schools where boys and girls are in separate shifts and use the same facilities but at different times, the total number of toilets could be entered for the number reserved for girls and the number reserved for boys (i.e. the same number for both) since at the time of use they are all reserved for each sex separately. Quantities are not needed for global monitoring, but may be desired by national governments.

Toilet for disabled children at Chingari Trust Rehabilitation Center, Bhopal, Madhya Pradesh, India, 2017, photo by Lewis Koch

- Simple engineering advice from Loughborough University, UK, on simple inclusive designs of school latrines and WASH.
- Hesperian foundation on building latrines

7. Are students and teachers able to wash hands after using the toilet and before eating?

- Is there soap available to use for hand washing after using the toilet or before eating?

H1. Are there handwashing facilities at the school?	
Yes	
No	

Note: A handwashing facility is any device or infrastructure that enables students to wash their hands effectively using running water, such as a sink with tap, water tank with tap, bucket with tap, tippy tap, or other similar device. Note: a shared bucket used for dipping hands is not considered an effective handwashing facility.

H2. Are both soap and water currently available at the handwashing facilities?	
Yes, water and soap	
Water only	
Soap only	
Neither water or soap	

Note: To be considered available, water and soap must be available at one or more of the handwashing facilities at the time of the survey or questionnaire. If girls and boys have separate facilities, soap and water should be at both. Soapy water (a prepared solution of detergent suspended in water) can be considered as an alternative for soap, but not for water, as non-soapy water is needed for rinsing. Surveys may choose to add other response categories for ash or alcohol hand rub, but these should be kept as separate categories from soap to support SDG monitoring.

Handwashing station at Chingari Trust Rehabilitation Center, India, 2017, photo by Lewis Koch

Resources: *(both technical advice and funding sources) to improve WASH facilities in schools*

- Rotary International Wash in Schools Target Challenge link and see their Toolkit: A Guide to WASH in Schools
- WATER. SANITATION. HYGIENE. EDUCATION. LITERACY.
- Water.org's Water Credit program
- A list of 15 nonprofit organizations that fund water projects 15 Nonprofit Water Organizations That Make Clean Water a Reality

Washing school lunch dishes, Chingari Trust Rehabilitation Center, India, 2017, photo by Lewis Koch

WASH Assessment Checklist[88]

- Student per toilet ratios
- Menstrual hygiene management (MHM) services
- Toilet cleanliness
- Accessibility to all users
- Systems for excreta management

8. How will the school WASH program be monitored or evaluated?

DRINKING WATER	SANITATION	HYGIENE
Advanced service: Additional criteria may include quality, quantity, continuity, and accessibility to all users	**Advanced service:** Additional criteria may include student per toilet ratios, menstrual hygiene facilities, cleanliness, accessibility to all users, and excreta management systems	**Advanced service:** Additional criteria may include hygiene education, group handwashing, menstrual hygiene materials, and accessibility to all users
Basic service: Drinking water from an improved source and water is available at the school 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	**Basic service:** Handwashing facilities with water and soap available at the school at the time of the survey
Limited service: Drinking water from an improved source but water is unavailable at the school at the time of the survey	**Limited service:** Improved sanitation facilities at the school that are either not single-sex or not usable at the time of the survey	**Limited service:**Handwashing facilities with water but no soap available at the school at the time of the survey
No service: Drinking water from an unimproved source or no water source at the school	**No service:**: Unimproved sanitation facilities or no sanitation facilities at the school	**No service:**: No handwashing facilities available or no water available at the school
Note: Improved sources include piped water, boreholes or tubewells, protected dug wells, protected springs and packaged or delivered water. Unimproved sources include unprotected wells, unprotected springs and surface water.	Note: Improved facilities include flush/pour flush toilets, ventilated improved pit latrines, composting toilets and pit latrines with a slab or platform. Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines.	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.

Figure 2. New JMP service ladders for monitoring WASH in schools in the SDGs

School WASH Toolbox: Summary of Resources

- Core Questions and Indicators for Monitoring WASH in Schools
- A Community Guide to Environmental Health, free Health Wiki on all things WASH from Hesperian Foundation
- WHO Guidelines on Sanitation and Health
- Peace Corps' April 2017 Water, Sanitation, and Hygiene in Schools Toolkit
- Rotary WASH in schools
- UNICEF's February 2021 Key Result for Children 8 Ending Open Defecation - ADVOCACY TOOLKIT
- Children for Health WASH
- United Nations High Commissioner for Refugees WASH resources

NUTRITION

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Background

School-based nutrition programs can be highly beneficial to the health and nutritional status of school children.[89] These programs often include screening for health problems; providing treatments, such as micronutrient supplements and deworming (anthelmintic for treatment of parasitic infections); education about nutrition; and referral to other health services.[90] Data show that school-based programs aimed at improving health and nutrition status have the potential to bring about catch-up growth in stunted school age children.[91] Health and nutrition services delivered within schools are also highly cost-effective.[92]

Beyond the benefits to the learner, their family, and the community, school-based nutrition programs are likely to benefit society as a whole. The consequences of malnutrition (including increased morbidity and mortality) have long-term economic and societal impacts.[93] Therefore, school-based nutrition programs are an investment in a nation's ability to thrive both economically and as a society.

Questions to Consider when Collaborating on School Nutrition Programs

1. How is the nutritional status of school children assessed in the school or community?

Child growth indicators:

- https://www.cdc.gov/nccdphp/dnpao/growthcharts/who/using/interpreting_growth.htm
- WHO Growth Reference Data with WHO Growth Charts 5-19 years

How to weigh and measure accurately:

- CDC Measuring Weight Accurately
- Simple phone app for measurements (search: Boston Children's Hospital Growth Chart)

2. What is stunting?

Stunting is the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation. Children are defined as stunted if their height-for-age Z-score is more than two standard deviations below the WHO Child Growth Standards median.[94]

- 4 minute stunting video from the WHO
- Video on stunting from the International Food Policy Research Institute
- Critical Windows for Nutritional Interventions Against Stunting

3. Is there a school lunch or snack offered? If yes, are the calorie and micronutrient needs for early, middle childhood, and adolescents adequate to meet reference values from WHO, United Nations, Food and Agriculture Organization guidelines?

- For guidelines for caloric, macronutrient and micronutrient requirements for school feeding programs
- Developing a School Feeding Program
- SMP PLUS | WFP Innovation - information about an online toolkit to design nutritious school meals

4. What resources for school lunch programs exist in the country—governmental resources, NGO, or WHO?

- Home grown school feeding | World Food Programme overview to encourage local agricultural product purchase to support local economies
- World Feeding Program Home Grown School Feeding synopsis with information on set up, monitoring and evaluation

5. Are parasites endemic in the pediatric population? Is there deworming done in health clinics or schools?

- WHO 2020 Recommendations on Deworming
- Partnership for Child Development Deworming Toolkit
- Information on supplementation after deworming

6. What about vitamin and micronutrient supplementation in schools?

- There is not sufficient evidence to support micronutrient supplements that are not prescribed for treatment (i.e. Iron for anemia).[95]
- Micronutrients
- 2020 systematic review on micronutrients for adolescents limited evidence of improved health outcome from supplements or education but quality of evidence is of low quality
- Systematic review on deworming and micronutrients
- Info on use of micronutrient sprinkles

7. Are there school policies in place that address consumption of junk food/healthy eating?

- Grenada Says Goodbye to Sodas and Sugary Snacks in Schools
- Gardens and Student Nutrition: Best Practices for Schools to Encourage Kids to Eat and Live Healthfully

Vegetable market shopping for Tibetan Children's Home boarding school meals, Dehradun, India, 2020, photo by Ann Behrmann

School Nutrition Toolbox

School Feeding Programs	World Food Program Evaluations WFP Overview WTF Feeding Sourcebook	World Food Program (WFP) evaluation of school feeding programs worldwide, 2013. (guidelines, menus, etc.) Overview of School Feedings WFP Global Feeding Sourcebook
Partnership for Child Development	Research on health and school nutrition	Linking school health and nutrition
World Bank Group	World Bank	Re-Imagining School Feeding: A High-Return Investment in Human Capital and Local Economies
Inclusive school health	Inclusive Nutrition	Including children with disabilities in school health nutrition programs
Developing a School Feeding Program	School Feeding Toolkit	Great new resource (November 2021) for developing school nutrition–breakfast/lunch or snacks

EMERGENCY PREPAREDNESS FOR SCHOOL CLOSURES

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Background

Health crises such as the COVID-19 global pandemic can severely impact worldwide educational and healthcare delivery systems. In addition to impacting access to education, school closures can lead to decreased access to healthcare (in cases where there is a school nurse or physician), increased risk to personal safety, and increased food insecurity. School closures further aggravate existing disparities in socioeconomic status and access to health and educational resources, which can lead to increased poverty, increased school dropout rates, increased teen pregnancies, and exacerbations of chronic illnesses. It is the responsibility of healthcare providers to advocate for strategies to mitigate the many challenges that students and families face due to school closures.

TIPS FOR CREATING AN EMERGENCY PLAN:

1. Be proactive.
2. Establish lines of communication.
3. Develop ideas for continuing education.
4. Identify community resources.

1. Be proactive: Prepare for School Closures

If the school may need to be closed for a long time (weeks to months), consider meeting with school staff, parents, and students to make a plan to address the following issues:

- How will children access education while away from school?
- What about students whose families will face additional hardships (homelessness, food insecurity)? If the school is providing nutrition (school breakfasts, lunches, or snacks), can those still be dispensed if the school is closed?
- What about high-risk children—students with disabilities or those with increased risk of exposure to family violence?
- How can families with limited financial resources be encouraged to keep students, especially girls, in school?
- Do students and families have access to clean water for drinking, cooking and cleaning?

2. Establish Lines of Communication

It is helpful to designate a local source of consistent communication - a hotline, phone tree, email message (if students and families have internet access), text message chain, or communication through local television or radio. It is also key to identify reliable institutions in the area (i.e. local health department) where students and family may obtain accurate sources of health-related information.

Consider the following:

- Do students' families have access to a mobile phone that has reception and can receive text messages or phone calls from the school?
- How can families contact teachers and school staff if schools are closed? For example, is there a school mobile phone and headmaster/mistress or teacher available to answer questions?
- Does the school have a designated means to communicate important messages to students and their families?
- Could a local radio station be used for community-wide messages?

3. Develop ideas for continuing education

Consider the following questions:

- How can the school continue to teach students when the school is closed?
- Will the students have access to the Internet as a means of communication and for online learning?
- If there is no internet access, is there a safe place (at the school or elsewhere) where students/parents can pick up (and return for grading) printed school work for learning?

Ideas/examples:

- Online school that students can access on a mobile phone.
- Regular radio/TV programs until the school is able to reopen.
- Schools could send textbooks to students through the mail to complete school work at home.
- Older students/siblings in a community may help younger students with reading and basic math skills during the closure.

4. Identify community resources

Consider making a list of available resources for health information:

- Community health department
- Immunization centers
- Community clinics or local health posts for injury or acute illness care and continued care of chronic illness or pregnancy
- Source for free or low-cost cleaning and hygiene supplies and clean water for the home

Also consider using communication to send out health messages from the Ministry of Health or community clinic (such as hand hygiene to prevent Covid-19).

Summary of Key Questions for Emergency Preparedness Plan

- What are the available means for communication between students/families and the school?
- What are the basic needs that school typically helps fulfill, and how will those needs be met when the school is closed?
- What resources, either print or virtual, can be used for education while school is closed?
- Is the school facility able to feed, house, or educate children during an emergency situation?

For additional questions/considerations (including strategies for school re-opening), please refer to the following resources:

- UNESCO COVID 19 and Schools - information on school closures, including providing education during closure and strategies for school reopening, valuable webinar links.
- UNICEF - information about prevention of COVID 19 when school is in session
- WHO Q and A - WHO document from September 2020, mostly regarding school reopening during the pandemic
- UNICEF Framework for Reopening - Resource on school re-opening
- University of Washington - Resource describing 15 countries and school reopening
- Brookings Institute - Resource on school closures and reopening: lessons and building back better
- UNFPA COVID 19 Response - information about continuing family planning resources during COVID 19

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