**YASMIN FWAMBA**

**DIPLOMA IN PUBLIC HEALTH**

**INSTITUTE OF HUMANITARIAN AGENDA**

**MODULE 2: ASSIGNMENT**

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**MODULE 2 ASSIGNMENTS**

1. **Why is hand washing an essential aspect in WASH interventions?**

Hand washing is an essential aspect of WASH interventions because the process prevents

pathogens from spreading and causing disease in an individual, household or community.

It is the act of washing hands effectively that prevents the spread of disease. Thus, for an

effective hand washing, a number of factors under WASH ought to be considered such as

access to quality water supply in terms of quantity and quality, availability of washing

detergents such as soap or improvised solutions such as ash, distance of hand washing points

from toilets, kitchens and eating points. These factors are largely addressed by WASH

interventions during planning, implementation, monitoring and evaluation.

While priorities at the household level vary depending on availability of WASH facilities,

cultural practices and livelihood, it is critical that responsible stakeholders prioritize the

constant availability of safe water at household facilities at a ration of 15 litres per person

per day according to international standards. This ensures that critical times when hands are

expected to be washed are adhered to as a practice such as after visiting the toilet, after

handling the babies’ feacal matter, before food preparation and before eating.

Thus it is essential to develop the practice as a routine behavior and not merely during an

outbreak. WASH related diseases spread through a cycle from feacal to hands to mouth by

means of dirty hands and or flies. Therefore, keeping ones’ hands clean by washing and

maintaining short nails as well as clean environment is an essential aspect of hygiene

promotion and practice.

The proximity of hand washing point is an integral point to consider while planning WASH

interventions both in an emergency and non emergency situations. This approach is

achievable when addressed at community level through health and hygiene promotion

activities while emphasizing on community participation for them to realize the relationship

between disease and the practice of hand washing. With reference to the Ottawa Charter,

health promotion being a process, enables people to increase control over and improve their

own health. In order to reach a state of complete physical, mental and social well- being, an

individual or community must be able to identify and realize the aspirations to satisfy needs

and change or develop coping mechanism within the environment.

While in reference to WHO 1986 statement, health is a positive concept emphasizing on

social and personal resources as well as physical capacities that entails health promotion not

only as a health sector responsibility but goes beyond healthy life styles to well being.

Women in particular are expected to be engaged in WASH activities as they are the most

water users in the community.

Thus hygiene promotion as a component of WASH intervention not only addresses

information transmission but also instils the understanding and builds the capacities of

individuals to improve their own health through their own ability to make the best use of:

prevailing environmental –health conditions and existing services/facilities, act to improve

environmental –health conditions and address behavioral changes in reducing certain

environmental risks at the household level such as hand washing. This will foster the

ownership process while engaging other stakeholders including the larger community, other

humanitarian agencies working in WASH activities through coordination and the

government health authorities.

The above mentioned factors, approaches and practices under WASH support the practice of

hand washing to prevent the spread of pathogens.

1. **What are the main standards in WASH interventions in emergencies?**

WASH standards in an emergency intervention is linked to the international legal

instruments embodied in the Humanitarian Charter addressing the minimum standards for

Water, Sanitation and hygiene promotion as a practical expression of principles and rights.

There are 6 standards linked to WASH interventions during emergencies as explained below.

1. Hygiene promotion
2. Water supply
3. Excreta disposal
4. Vector control
5. Solid waste management and
6. Drainage
7. **Hygiene promotion standard 1:**

This is an integral aspect of WASH with an overarching standard and related indicators given within each sub standard for water supply, excreta disposal, vector control, solid waste management and drainage. The hygiene promotion standard is illustrated through different indicators including program design and implementations, sharing responsibilities, user friendly IEC and BCC materials, and accountability as explained below:

1. programme design and implementation –needs assessment:

All facilities and resources provided should reflect the vulnerabilities, needs and preferences

of the affected population. Users are involved in the management and maintenance of hygiene facilities where appropriate. For the program design and implementation to be successful, out comes of monitoring and evaluation should be reflected in the key indicators related to hygiene promotion as described below:

* Key hygiene risks of public health importance are identified during the initial needs assessment. Once identified, the focus on addressing the hygiene behaviour such as excreta disposal, use and maintenance of toilets, lack of hand washing with soap or an alternative, the unhygienic collection and storage of water, and unhygienic food storage and preparation can easily be developed encompassed with a likely success of a promotional activity. Having said that the assessment should focus on the needs of the vulnerable people as much as possible with a consultative process to enhance participation. The assessment should include information on the available resources to the population, their behaviours and knowledge to provide a greater understanding and more sustainable solution. It will be easier to win their behaviour change using resources they are familiar with in relationship to their behaviour while addressing knowledge gap in a friendly manner. For example, if they know that flies are responsible for causing diarrhoea without understanding that the same flies are attracted to faeces, they may not be willing to utilize, and or maintain toilets at their disposal. Hence the existing knowledge gap will deter efforts in practise and resource utilization.
* The HP and WATSAN Minimum standards related to water supply, sanitation and hygiene promotion practices to be considered while developing messages to make them relevant and practical.

1. Sharing responsibilities- participation

Programmes include an effective mechanism for representative and participatory input from all users, including in the initial design of facilities. All beneficiaries should be encouraged to participate in hygiene promotion activities. These includes stakeholders operating in the affected area to enable hygienic practises though ensuring that both knowledge and facilities are accessible with feasible achievements. Further to this, vulnerable groups from the affected population should be engaged in the process of identifying risky practices/ conditions and take responsibility in mitigating risks. This creates an insight and ownership in their own behaviour towards improving their overall health. To enable this, training, promotional activities and facilitation of of behaviour change reflecting culturally acceptable values, practices and norms without overburdening the beneficiaries should be undertaken. An active outreach team composed of members from the vast community that can easily access the population with skills to work with different groups at a ratio of 2 promoters/mobilizers per 1,000 members of the affected population as per international WASH standards.

To support this process user friendly Information Education and Communication (IEC) plus Behaviour Change Communication (BCC) materials ought to be resourced and or developed.

1. Equity- reaching all sections of the population:

All groups within the population have equitable access to the resources or facilities needed to continue or achieve the hygiene practices that are promoted. This standard refers to equity in terms of access to resources by all affected population including the most vulnerable. Distribution points should facilitate equal access by all affected population including the disabled, PLWHI, the elderly, women and children. In an emergency it is good to balance the resource distribution especially with host communities to enhance peacebuilding rather than create animosities.

1. User friendly IEC/BCC materials:

Hygiene promotion messages and activities should address key behaviours and misconceptions and target all user groups. Representatives from these groups participate in planning, training, implementation, monitoring and evaluation. The objectives of hygiene promotion and communication strategies should be clearly defined and prioritized to address behaviours and risks. Thereafter, the understanding gained through assessing hygiene risks, tasks and responsibilities of different groups should be used to plan and prioritise assistance, so that misconceptions are addressed and information flow between humanitarian actors and the affected population is appropriate and targeted.

1. Accountability:

Users take responsibility for the management and maintenance of facilities as appropriate, and different groups contribute equitably. As per the Humanitarian Charter standards, the overall achievement for resource management is through formation of committees. In this case, the committee should be representative of all groups with 50% women to maximize management and proper utilization of communal facilities, participate in hygiene promotion activities as well act as a mechanism for ensuring representation and promoting sustainability. This representation rules out the act of overburdening on management while remains a shared responsibility between different groups and ensures gender balancing and empowerment.

1. **Water supply standard 2:**

This standard addresses the needs water support for life, health and human dignity. The level of safe drinking water remains a critical concern whereas in most cases, main health problems are as a result of poor hygiene due to insufficient water and by consumption of contaminated water. To address these factors the standard is further subdivided into three sub standards namely: water access and quantity, water quality and water utilization. Below is further explanation with examples of related indicators for monitoring and evaluation purposes. Reference is here linked to the Humanitarian charter and minimum standards.

i) Sub standard 1: access and water quantity

This sub standard ensures that all people have safe and equitable access to a sufficient quantity of water for drinking, cooking and personal, and domestic hygiene. Public water points are sufficiently close to households to enable use of the minimum water requirement and minimize risks associated with GBV. In reference to the HP/WATSAN, Humanitarian Charter and Minimum Standards, the need for water varies from one individual to the other based on the climatic conditions, cultural and religious practices, sanitation facilities available etc. Thus the factors requiring consideration with key related indictor are further discussed below:

* ***Access- availability and sustainability of sufficient quantity of water.***

Other superseding factors include whether the water requires treatment to make it safe, time, technology or source of funding to develop, proximity to affected population and any social, political or legal factors concerning the source that can hamper future developments.

The key indicators for measuring this standard are further described below:

* Average water use for drinking, cooking and personal hygiene in any household is at least 15 litres per person per day
* The maximum distance from any household to the nearest water point should be 500 meters. Further distance consumes times time while increases the risk of women and young girls to acts of SGBV given that they are mainly water collectors at the household level
* Queuing time at a water source should be no more than 15 minutes. Longer queuing times at the water point is an indication of insufficient water as a result of either water yield or number of water points serving the population. The potential negative results of excessive queuing times lead to reduced per capita water consumption, increased consumption from unprotected surface sources and reduced time for water collectors to tend to other essential survival tasks. This negative results especially related to taking water from unprotected surface increases the vulnerability to water related infections.
* It takes no more than three minutes to fill a 20-litre container. Longer times on the queue indicate insufficient water as discussed earlier. Additionally, if the water sources are maintained on a regular basis then it ensures sufficient quantities of water on a regular basis.
* Water sources and systems are maintained such that appropriate quantities of water are available consistently or on a regular basis. This indicator addresses the constant availability of water ensuring access as per the humanitarian and Minimum standards.
* ***Water source selection:***

Here the factors that need to be taken into account are the availability and sustainability of a sufficient quantity of water; whether water treatment is required and, if so, the feasibility of this; the availability of the time, technology or funding required to develop a source; the proximity of the source to the affected population; and the existence of any social, political or legal factors concerning the source. It is worth noting that groundwater sources are preferable as they require less treatment, especially gravity-flow supplies from springs, which require no pumping. Disasters often require a combination of approaches and sources in the initial phase. All sources need to be regularly monitored to avoid over-exploitation.

* ***Measurement:***

This sub standard is related to measuring solely the volume of water pumped into the reticulation system or the time a hand pump is in operation will not give an accurate indication of individual consumption. This measures varies based on the climate and individual physiology, social and cultural norms, food type, social as well as cultural norms.

* ***Quality and quantity:***

Water-related disease transmission is due to insufficient water for personal and domestic hygiene as opposed to contaminated water supplies. Until minimum standards for both quantity and quality are met, the priority therefore should be to provide equitable access to an adequate quantity of water even if it is of intermediate quality, rather than to provide an inadequate quantity of water that meets the minimum quality standard. Other special circumstances include people living with HIV/AIDS need extra water for drinking and personal hygiene while particular attention should be paid to ensure that the water requirements of livestock and crops are met, especially in drought situations where lives and livelihoods are dependent on these

* ***Coverage:***

In the initial phase of a response, the first priority is to meet the urgent survival needs of all the affected population. People affected by an emergency have a significantly increased vulnerability to disease and therefore the indicators should be reached even if they are higher than the norms of the affected or host population. Thus there is an increased demand for agencies to plan a raised level of water and sanitation facilities of the host population as well, to avoid provoking animosity.

* ***Maximum numbers of people per water source:***

The number of people per source depends on the yield and availability of water at each source. The greater the volume the increased access. For example, standards can be set based on the following indicators :250 people per tap based on a flow of 7.5 litres/minute, 500 people per hand pump based on a flow of 16.6 l/m while 400 people per single-user open well based on a flow of 12.5 l/m.

ii) Sub standard 2: -water quality

This refers to water palatability, and of sufficient quality to be drunk and used for personal and domestic hygiene without causing significant risk to health.

***Key indicators***

* A **sanitary survey** indicates a low risk of faecal contamination. This should cover possible causes of water contamination either at the source, during transportation or at the end user-home. Other factors to consider are the defecation practices, drainage and solid waste management. This can be done through community mapping to identify public health risks followed by an involvement of the community to mitigate them including the control of animal excreta in the environment.
* There are **no faecal coliforms per 100ml at the point of delivery**. This indicator measures the need for water treatment. For example, suspected high human/animal waste contamination is suspected if the feacal coliform bacteria for E. Coli is greater than 99% an indication for presence of harmful pathogens.
* **People drink water from a protected or treated source** in preference to other readily available water sources. Emphasis should be towards enabling communities to understand health benefits of using protected water sources as opposed to un protected ones. Therefore, during program design and implementation, the involvement of end users is vital to create an awareness from the beginning. These efforts should be reinforced with continuous health promotion services through an outreach system based on the ration of 2 promoters/mobilizers per 1000 beneficiaries as per the Humanitarian Charter and minimum standards. The outreach team ought to understand the rationale for the protected preference in order to transmit the correct message during hygiene/health promotion sessions. Activities related to WASH should be overseen by a technical personnel
* **Queuing time**: excessive queuing times are indicators of insufficient water availability either due to an inadequate number of water points or inadequate yields of water points. This indicator as earlier discussed under access and quantity is cross cutting with the same potential risks of reduced per capita water consumption that in turn increases consumption from unprotected surface sources.
* **Access and equity:** Additional measures may be necessary even if a sufficient quantity of water is available to meet minimum needs, to ensure that access is equitable for all groups. Water points should be located in areas that are accessible to all regardless of e.g. sex or ethnicity. There is need to modify carrying containers to suit the needs of beneficiaries such as PLWHIVA, elderly, the disabled and children. In case of rationing times, the users are expected to be consulted on convenient times and dully informed when the supply is available. This is made in reference to HP/Watsan minimum Standards in Water supply, Sanitation and Hygiene promotion
* **Steps are taken to minimise post-delivery contamination**. Despite water being safe at the point of delivery, it can easily present a significant health risk due to re-contamination during collection, storage and drawing. Steps to minimise such risks include: improved collection and storage practices, distributions of clean and appropriate collection and storage containers treatment with a residual disinfectant, or treatment at the point of use. For this reason, water should be routinely sampled at the point of use to monitor the extent of any post-delivery contamination
* For **piped water supplies,** or for all water supplies at times of risk or presence of diarrhoea epidemic, water is treated with a disinfectant so that there is a free chlorine residual at the tap of 0.5mg per litre and turbidity is below 5 NTU. This risk will be determined by conditions in the community, such as population density, excreta disposal arrangements, hygiene practices and the prevalence of diarrhoeal disease. The risk assessment should also include qualitative community data regarding factors such as community perceptions of taste and palatability. The treatment should be done either before distribution or in the home. On the other hand, promotional activities are needed to ensure that only safe supplies are used.
* In the event of **health facilities**, all water should be treated with chlorine or any other residual disinfectant. Where rationalization is done storage facilities with enough capacities should be factored in during planning
* **No negative health effect is detected due to short-term use of water** contaminated by chemical (including carry-over of treatment chemicals) or radiological sources, and assessment shows no significant probability of such an effect. This is a a common scenario in areas of industrial or military activities suggesting chemical or radiological health risks. Thus the risks need to be rapidly assessed through a chemical analysis to guide a decision making process on striking a balance between benefits of such activities versus the public health risks.

iii***)*** sub standard 3: water use facilities and goods:

This sub standard ensures that people have adequate facilities and supplies to collect, store and use sufficient quantities of water for drinking, cooking and personal hygiene, and to ensure that drinking water remains safe until it is consumed. Below are key indictors under this standard for monitoring and quality evaluation purposes:

* Each household has at least two clean water collecting containers of 10-20 litres, plus enough clean water storage containers to ensure there is always water in the household Special attention to be considered when end users are vulnerable such as disabled, people living with HIV/AIDS, children and the elderly. For this reason, the containers maybe modified to suit the vulnerability purpose. Promotion and monitoring of safe collection, storage and drawing provide an opportunity to discuss water contamination issues with vulnerable groups, especially women and children.
* Water collection and storage containers have narrow necks and/or covers, or other safe means of storage, drawing and handling, and are demonstrably used. These vessels should be clean, hygienic and easy to carry and be appropriate to local needs and habits, in terms of size, shape and design
* There is at least 250g of soap available for personal hygiene per person per month.
* Where communal bathing facilities are necessary, there are sufficient bathing cubicles available, with separate cubicles for males and females, and they are used appropriately and equitably. The numbers, location, design, safety, appropriateness and convenience of facilities should be decided in consultation with the users, particularly women, adolescent girls and any disabled people. The location of facilities should be central, accessible and well-lit areas can contribute to ensuring the safety of users.
* Where communal laundry facilities are necessary, there is at least one washing basin per 100 people, and private laundering areas are available for women to wash and dry undergarments and sanitary cloths.
* The participation of all vulnerable groups is actively encouraged in the siting and construction of bathing facilities and/or the production and distribution of soap, and/or the use and promotion of suitable alternatives should be inclusive and one that seeks the opinion of end users.

**c) Excreta Disposal Standard 3:**

Safe disposal of human excreta creates the first barrier to excreta related disease, helping to reduce transmission through direct and indirect routes. Safe excreta disposal is therefore a major priority, and in most disaster situations should be addressed with as much speed and effort as the provision of safe water supply. The provision of appropriate facilities for defecation is one of a number of emergency responses essential for people’s dignity, safety, health and well-being.

***i) Access to, and numbers of toilets***

People have adequate numbers of toilets, sufficiently close to their dwellings, to allow them rapid, safe and acceptable access at all times of the day and night.

Key indicators

* A maximum of 20 people per each toilet (see guidance notes 1-4). This ratio ensures that the environment is free from contamination from human faeces. Encourage active participation of the beneficiaries for enhanced sustainability. Ensure systems for cleanliness and maintenance are adhered to whereas in in the initial phase with toilets, defecation is clearly marked.
* Use of toilets is arranged by household(s) and/or segregated by sex. Use of appropriate disaggregated population data will help in proper planning of gender rationale. Recommended ratio should be 3:1. In the initial phase there should be an approximate 50 people per toilet but this should system in place, developed with the community, to ensure that it is maintained and kept clean. It is evident that where one toilet is shared by less families is generally better kept, cleaner and therefore regularly used when the families have been consulted about its siting and design and have the responsibility and the means to clean and maintain it.
* Separate toilets for women and men are available in public places such as markets, distribution centres, health centres, etc.
* Shared or public toilets are cleaned and maintained in such a way that they are used by all intended users. Further reference is made to bullet point two above.
* Toilets are no more than 50 metres from dwellings
* Toilets are used in the most hygienic way and children’s faeces are disposed of immediately and hygienically as they pose higher risks than adults’ due to higher levels of excreta related infections and low immunity among children as compared to adults.

***ii) Design, construction and use of toilets***

Toilets are sited, designed, constructed and maintained in such a way as to be comfortable, hygienic and safe to use.

Below are key indicators to be factored in the planning:

* Users (especially women) have been consulted and approve of the siting and design of the toilet.
* Toilets are designed, built and located to have the following features:
* they are designed in such a way that they can be used by all sections of the population, including children, older people, pregnant women and physically and mentally disabled people considering their needs and available resources;
* they are sited in such a way as to minimise threats to users, especially women and girls, throughout the day and night
* they are sufficiently easy to keep clean to invite use and do not present a health hazard;
* they provide a degree of privacy in line with the norms of the users;
* they allow for the disposal of women’s sanitary protection, or provide women with the necessary privacy for washing and drying sanitary protection cloths in line with Humanitarian Minimum Standards.
* they minimise fly and mosquito breeding through maintenance of cleanliness and use of VIP and or covers for squat type. A sense of ownership should be developed through engaging end users on design, site and management.
* All toilets constructed that use water for flushing and/or a hygienic seal have an adequate and regular supply of water for flashing, cleaning and hand washing.
* Pit latrines and soak ways (for most soils) are at least 30 metres from any groundwater source and the bottom of any latrine is at least 1.5 metres above the water table. Drainage or spillage from defecation systems must not run towards any surface water source or shallow groundwater source.
* People wash their hands after defecation, before eating and food preparation. To enable this practise there should be constant source of water and soap near the toilets.
* People are provided with tools and materials for constructing, maintaining and cleaning their own toilets if appropriate to create a sense of ownership. Once they understand and focus on the disease transmission by flies they will take the initiative to control the spread of diseases related to poor excreta disposal

d) Vector Control: Standard 4:

***Definition and understanding sub standard 1:***

A vector is a disease-carrying agent and vector-borne diseases are a major cause of sickness and death in many disaster situations. Below are examples of vectors common in an emergency or populations with poor environmental and personal hygienic practices detailed with diseases they cause.

* The most important vector for control during an emergency is a mosquito that is responsible for malaria transmission, which is one of the leading causes of morbidity and mortality. Mosquitoes also transmit other diseases, such as yellow fever and dengue haemorrhagic fever.
* Other non-biting or synanthropic flies, such as the house fly, the blow fly and the flesh fly, play an important role in the transmission of diarrhoeal disease.
* Biting flies, bed bugs and fleas are a painful nuisance and in some cases transmit significant diseases such as murine typhus and plague.
* Ticks transmit relapsing fever and human body lice transmit typhus and relapsing fever.
* Rats and mice can transmit diseases such as leptospirosis and salmonellosis and can be hosts for other vectors e.g. fleas, which may transmit Lassa fever, plague and other infections.

Control of vector-borne diseases can be achieved through a variety of initiatives, including appropriate site selection and shelter provision, appropriate water supply, excreta disposal, solid waste management and drainage, the provision of health services (including community mobilisation and health promotion), the use of chemical controls, family and individual protection and the effective protection of food stores. Although the nature of vector-borne disease is often complex and addressing vector related problems may demand specialist attention, there is much that can be done to help prevent the spread of such diseases with simple and effective measures, once the disease, its vector and their interaction with the population have been identified.

This standard therefore addresses the knowledge and means to protect the affected population by themselves from diseases through their understanding of the risks associated with the poor practices.

Below are indicators for an effective vector control program to be monitored

* All populations at risk from vector-borne disease understand the modes of transmission and possible methods of prevention. In reference to Minimum Standards in Water Supply, Sanitation and Hygiene Promotion, Humanitarian Charter and Minimum Standards as well as on clinical evidence of a vector-borne disease problem, the affected population need to understand the modes of transmission as well as prevention. This helps them relate the disease to the vector and have a significant understanding on importance of behaviour change. Other important factors include the herd immunity of the affected population and their nutritional status. For example, movement of any displaced population from a non- endemic to an endemic environment in search of protection predisposes them to epidemics as result of pathogens type and prevalence, increased exposure to vectors: proximity, settlement pattern, shelter type, existing individual protection and avoidance measures. This being a new settlement, they may not have the means to protect themselves from vectors as this may not be a priority in terms of needs. That is the reason for agencies responsible for settlement of displaced population to adhere to Humanitarian principles in addressing the dignity of the displaced persons.
* The morbidity and mortality rates captured in routine epidemiological data will help in decision making in addressing seasonality trends related to vector borne diseases or other vectors related to hygiene such as lice and or practice such as staying in ground water that exposes one to schistosomiasis. To address this, agencies may need to work with the community to find alternative sources of water or ensure that water for all uses is appropriately treated.
* All populations have access to shelters that do not harbour or encourage the growth of vector populations and are protected by appropriate vector control measures.
* People avoid exposure to mosquitoes during peak biting times by using all non-harmful means available to them. Special attention is paid to protection of high-risk groups such as pregnant and feeding mothers, babies, infants, older people and the sick through the provision of an Impregnated mosquito nets and spraying of breeding sites etc.
* People with treated mosquito nets use them effectively. This can be achieved through health education on proper use
* Control of human body lice is carried out where louse-borne typhus or relapsing fever is a threat through good personal hygiene and regular washing of clothes and bedding. Other control measures may include personal treatment (powdering), mass laundering or delousing campaigns and by treatment protocols as newly displaced people arrive in a settlement. According to the Minimum Standards in Water Supply, Sanitation and Hygiene Promotion, clean household, environment, together with good waste disposal and good food storage, will deter rats and other rodents from entering houses or shelters.
* Bedding and clothing are aired and washed regularly.
* Food is protected at all times from contamination by vectors such as flies, insects and rodents.

***Vector control substandard standard 2: physical, environmental and chemical protection measures***

The numbers of disease vectors that pose a risk to people’s health and nuisance vectors that pose a risk to people’s well-being are kept to an acceptable level.

Key indicators for monitoring this standard include:

* Displaced populations are settled in locations that minimise their exposure to mosquitoes, for example, camps should be located 1-2km upwind from large breeding sites, such as swamps or lakes, whenever an additional clean water source can be provided. This is in relation to shelter and settlement standards.
* Vector breeding and resting sites are modified where practicable either through proper disposal of human and animal excreta under excreta disposal, proper disposal of refuse to control flies and rodents in reference to Solid Waste Management section, and drainage of standing water to control mosquitoes in reference to drainage standards. The intention of such priority environmental health measures is to have some impact on the population density of some vectors.
* Intensive fly control is carried out in high-density settlements when there is a risk or the presence of a diarrhoea epidemic.
* The population density of mosquitoes is kept low enough to avoid the risk of excessive transmission levels and infection. This can be achieved through good drainage, properly functioning VIP latrines, keeping lids on the squatting hole of pit latrines and on water containers, and keeping wells covered and/or treating them with a larvicide e.g. for areas where dengue fever is endemic.
* People infected with malaria are diagnosed early and receive treatment according to the WHO treatment protocol for malaria treatment and control that includes campaigns to improve the health seeking behaviour of affected population. The control measures should be in line with the control of communicable disease-CCD standards. Engaging trained outreach workers in active case finding presents an opportunity for early diagnosis and treatment reducing case facility rates in the affected population.

***Vector control sub standard 3: chemical control :*** safety Chemical vector control measures are carried out in a manner that ensures that staff, the people affected by the disaster and the local environment are adequately protected, and avoids creating resistance to the substances used.

Key indicators to be monitored include:

* Personnel are protected by the provision of training, protective clothing, use of bathing facilities, supervision and a restriction on the number of hours spent handling chemicals.
* The choice, quality, transport and storage of chemicals used for vector control, the application equipment and the disposal of the substances follow international norms, and can be accounted for at all times. The published WHO international and national norms in regard to safety and efficacy should be adhered to at all times.
* Communities are informed about the potential risks of the substances used in chemical vector control and about the schedule for application. They are protected during and after the application of poisons or pesticides, according to internationally agreed procedures.

**e) Solid waste management standard: collection and disposal**

People have an environment that is acceptably uncontaminated by solid waste, including medical waste, and have the means to dispose of their domestic waste conveniently and effectively.

Key indicators for monitoring include:

* People from the affected population are involved in the design and implementation of the solid waste programme.
* Household waste is put in containers daily for regular collection, burnt or buried in a specified refuse pit.
* All households have access to a refuse container and/or are no more than 100 metres from a communal refuse pit.
* At least one 100-litre refuse container is available per 10 families, where domestic refuse is not buried on-site. If organic solid waste is not disposed of, major risks are incurred of fly and rat breeding as per vector control standards and surface water pollution. Uncollected and accumulating solid waste and the debris left after a natural disaster or conflict may also create a depressing and ugly environment, discouraging efforts to improve other aspects of environmental health. Solid waste often blocks drainage channels and leads to environmental health problems associated with stagnant and polluted surface water.

Key indicators

* People from the affected population are involved in the design and implementation of the solid waste programme.
* Household waste is put in containers daily for regular collection, burnt or buried in a specified refuse pit.
* All households have access to a refuse container and/or are no more than 100 metres from a communal refuse pit.
* At least one 100-litre refuse container is available per 10 families, where domestic refuse is not buried on-site.
* Refuse is removed from the settlement before it becomes a nuisance or a health risk. Depending on type of refuse a time frame is given on maximum expose to avoid contaminating the environment and becoming a breeding ground for vectors such as mosquitoes, rats. For example, in case of child’s faecal, disposal should be immediately to avoid flies from contaminating the environment as well as food. All staff involved in waste management should be provided with protective clothing for personal protection according to international standards for Infection Prevention and Control.
* Medical wastes are separated and disposed of separately and there is a correctly designed, constructed and operated pit, or incinerator with a deep ash pit, within the boundaries of each health facility This is because poor management of health-care waste exposes the community, health- care workers and waste handlers to infections, toxic effects and injuries. In a disaster situation the most hazardous types of waste are likely to be infectious sharps and non- sharps (wound dressings, blood-stained cloth and organic matter such as placentas, etc.). The different types of waste should be separated at source. Non-infectious waste (paper, plastic wrappings, food waste, etc.) can be disposed of as solid waste. Contaminated sharps, especially used needles and syringes, should be placed in a safety box directly after use. Safety boxes and other infectious waste can be disposed of on-site by burial, incineration or other safe methods. WHO standards in relation to Infection Prevention and Control should be adhered to throughout the implementation period including the planning and design period.
* There are no contaminated or dangerous medical wastes (needles, glass, dressings, drugs, etc.) at any time in living areas or public spaces.
* There are clearly marked and appropriately fenced refuse pits, bins or specified areas at public places, such as markets and slaughtering areas, with a regular collection system in place.
* Final disposal of solid waste is carried out in such a place and in such a way as to avoid creating health and environmental problems for the local and affected populations. This is done to minimize risks associated with environmental contamination  and staff exposure.

**f) Drainage**

Surface water in or near emergency settlements may come from household and water point wastewater, leaking toilets and sewers, rainwater or rising floodwater. The main health risks associated with surface water are contamination of water supplies and the living environment, damage to toilets and dwellings, vector breeding and drowning. Rainwater and rising floodwaters can worsen the drainage situation in a settlement and further increase the risk of contamination. A proper drainage plan, addressing storm water drainage through site planning and wastewater disposal using small-scale, on-site drainage, should be implemented to reduce potential health risks to the population. This section addresses small-scale drainage problems and activities as opposed to large-scale drainage which is generally determined by site selection and development and is guided by the Minimum Standards for Shelter, Settlement and Non Food items

***Drainage standard: Drainage works***

This Standard addresses an environment in which the health and other risks of people posed by water erosion and stagnant water, including storm water, floodwater, domestic wastewater and wastewater from medical facilities, are minimised.

Key indicators to be considered during monitoring include:

* Areas around dwellings and water points are kept free of standing wastewater, and storm water drains are kept clear. Selection of the area should be based on a layout that allows easy drainage as per the Minimum Standards for Shelter and settlement. The domestic waste water should not be allowed to mix with sewerage as the latter is more difficult to treat than the human waste. For maintenance and ownership process, the affected population should be involved in identifying local drainage system as they understand the water flow. This in the end helps in understanding the physical and health risks that if overlooked can adversely affect the drainage system in given area.
* Shelters, paths and water and sanitation facilities are not flooded or eroded by water (see guidance notes 2-4). Instead the domestic and waste water from washing can be utilized for kitchen gardens which is an integral part of a diversified diet. However, caution should be taken to avoid water source contamination by soapy water or leakage from damaged toilets.
* Water point drainage is well planned, built and maintained. This includes drainage from washing and bathing areas as well as water collection points.
* Drainage waters do not pollute existing surface or groundwater sources or cause erosion. Where possible, and if favourable soil conditions exist, drainage from water points and washing areas should be on-site rather than via open channels, which are difficult to maintain and often clog. Instead simple and cheap techniques such as soak pits can be used for on-site in line with Minimum Standards in Water Supply, Sanitation and Hygiene Promotion, Humanitarian Charter and Minimum Standards for disposal of wastewater. However, if disposal is the only possibility, then channels are preferable to pipes. Channels should be designed both to provide flow velocity for dry-weather sullage and to carry storm water. Where the slope is more than 5%, engineering techniques must be applied to prevent excessive erosion. Drainage of residuals from any water treatment processes should be carefully controlled so that people cannot use such water and it does not contaminate surface or groundwater sources.
* Sufficient numbers of appropriate tools are provided for small drainage works and maintenance where necessary to the population as they have good knowledge of the natural flow of drainage water and where channels should be used.

**3. Waste Management is becoming one problem in the emergencies. Why?**

Waste management has been identified as one of the problems in emergencies because of

overcrowding during an influx that makes it difficult to allocate and implement the

international standards such as a maximum of 20 people per toilet. In most emergencies this

is not the case and toilets are not easily accessible at the earliest stage to that standard. As

such the community may resort to open defecation while solutions are being sort. This

solution in itself is a health hazard as there is no control over flies that cause contamination.

Some cultural barriers by the displaced communities make this a big challenge as at time

the toilets are not set up to cater for the needs of the beneficiaries in terms of segregating

male and female toilets, or due to limited time and camp set ups, the distance from dwelling

sites is compromised due to availability of land.

While the need for public toilet serves in the initial phase, the challenge of maintenance and

hygiene becomes a burden to the stakeholders.

Another aspect of waste management that is a problem in an emergency is the breeding

grounds for vectors such as mosquitoes caused by poor waste disposal practices. This in

most cases increase the risks of the vulnerable groups in the camps and takes time to

address in an emergency situation as it is more concerned with behavior change than merely

the sites for rubbish disposals. Identifying hygiene promoters and training doesn’t take a day

hence it remains a challenge towards influencing the affected populations in identifying

risks, mitigating and developing coping mechanism

On the other hand, during emergency, solid wastes pose a critical problem by attracting

vectors as mentioned afore hand together with rodents and increase the risk of surface water

pollution, while other accumulating solid wastes and debris left after a disaster or conflict

can cause a depressing and or ugly environment that can discourage efforts to improve other

aspects of environment. If not addressed immediately the solid wastes blocks the drainage

system leading to serious environmental health problems associated with stagnant and

polluted surface water such as Malaria, Acute watery diarrhea, etc.

An effective process of waste manage requires the participation of the community which

may not be the case during an emergency as population’s priority differs during

displacement or natural disaster with major attention to basic human rights such as water,

shelter and food.

4. **Discuss how environmental health and sanitation affect the nutritional status of the vulnerable groups**

* Nutritional status of a given population depends on a number of factors one of them being the environment and sanitation of the surrounding. A polluted environment highly pre disposes the vulnerable population to diseases especially the children under the age of five that are prone to infections due to low immunity as a result of their bodies still developing antibodies to fight infections. With reference to UNICEF’s conceptual framework, one of the direct causes of malnutrition is disease that can easily be contracted when the environment is polluted or has poor sanitation status.
* Children play in fields with no limitation and when calls of nature come they relieve themselves wherever they go to play especially in developing countries. This contamination of the environment poses a high risk to other children playing in the same field in terms of diarrheal diseases.
* On the other hand, people Living With HIV/AIDS have compromised immunity such that a little exposure to pathogens further weakens their systems exposing them to more risks of getting malnourished if repeatedly affected by diseases associated with poor sanitation such as diarrhea and malaria. When pregnant women are infected with Malaria, their red blood cells are destroyed leading to anemia in pregnancy which is a nutritional deficiency for iron. Other repeated infections related to environment and sanitation pre dispose them to having low birth weight babies.

**5. Assuming you have been appointed to head an organization dealing with health development in your area, describe the critical factors that you will consider in planning for health service in that area**

* *Target population and their vulnerability:*

This will guide one in program design. The target population’s size and needs will guide on the program resources. Here the needs are prioritized and resources allocated accordingly. One will require to conduct a rapid needs assessment and compare with secondary information from stakeholders

* *Stakeholder analysis & service mapping:*

The outcome of a stakeholder analysis and service will provide an opportunity to understand different groups and how influential they are in program implementation, monitoring and evaluation. Their influence is critical to the success of the project while constant consultation, collaboration and coordination will lead to a cohesive program with more sustainable solutions. It is the participation of stakeholders that creates a conducive environment for successful implementation of any health program. These stakeholders include the MoH at the national level and or county where applicable, UN partners, NGOs and in particular their activities to avoid duplication of resources, key decision makers among the served population as well as the beneficiaries themselves.

* *Policies*

The National policies will guide the project approach and scale of operation. In line with these policies one is able to design a successful project based on the needs of the beneficiaries. For example, if the National policies misses out on inclusion of to address the needs of the youths, disabled then at design stage one can include the advocacy activity to help lobby with the national government for their inclusion.

* Health system strengthening: this is a coexisting function of health that compiles a umber of factors to be considered during the initial stage, execution and analysis. It is further discussed below on based on most critical priorities to be set up during the planning period.
* The existing health system provides an opportunity in addressing gaps in health financing including management capacities within the departments that includes accountability, planning and reporting on financial aspects.
* Human Resources gaps in assessing capacities in terms of numbers and technical capacities as well as retention. The HR aspects links the quality of care and outcomes in terms of access, equity, sustainability and coverage.
* Communications is linked to the functional system in transmitting adequate and timely information for informed decisions. Its worth looking at the communication tools available, staff capacities to handle them and the cost of maintenance. Such communication tools include the internet access- use of IT equipment, weekly epidemiological reports, surveys and rapid assessment reports to provide secondary information in the context for analysis, planning and execution. The health specific benchmarks to guide the program quality in terms of monitoring and evaluation.
* *Coordination with other partners working in health.* This provides a platform for information sharing and collective decision making. Would be good to look at how different levels are linked to each other eg. how the county government fits in the national system.
* *Logistics and infrastructure:* guided by the type of facility to be set up e.g. PHCC, PHCU, Secondary level, the critical area to look at in terms of infrastructure is the status and capacities. The structural developments should be in line with the WHO recommendations for the level of facility while consideration Minimum standards for Shelter. Other additional information critical to health would include the water supply, waste management facilities, security of the area that can encourage access, power supply, staff facilitation in terms of transport if living away from facility.
* *WASH Facilities:*

There is need to assess the WASH facilities and practices of the beneficiaries to guide the process of planning on what resources already exist. For example, would be good to assess the access to safe, quality and supply of water, waste management practices as us presence of toilets, bathrooms, solid waste management systems, drainage systems and if there are any health related commitments i.e. Water committees, Village health committees and their constitution.

* *Intersectoral collaboration*:

Assessing for existence of co-existing sectors such as nutrition, protection, WASH, community outreach etc. the presence of an active outreach network will increase the access while boost the community participation as in most cases the outreach volunteers come from the communities and have close links to the influential members. They are the ones that identify and can easily reach the most vulnerable members of the community including the marginalized groups.

* *Donors:*

Donor regulations guide the program approach in terms of procurement procedures, type of beneficiaries, as a source of funding to guide on the magnitude of the program, timelines etc. the donor guidelines help in program set up as it plays an overall part on the project cycle management.

* *Referral system:*

Critical to quality of care provided is the existence of a reliable referral systems that provides a trustworthy relationship between the patients and the service providers. This service should be available on a 24-hour basis supplemented by community participation through a sustainable system from the community level to the smallest unit within the health system- PHCU. Communities are encouraged to allocate locally available resources to enable this system to work. While it is the responsibility of the National government to oversee the overall health system, the community have a role in taking active role in their own health. However, this situation is only applicable in development situation as opposed to emergency situation.

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