**South Sudan**

**Lakes States –Rumbek**

**Mott McDonald (Water for Lakes project)**

**Nicola Thon Adomic**

[**Nicolathon96@gmail.com**](mailto:Nicolathon96@gmail.com)

[**Tel:+211926356888**](Tel:+211926356888)

**August 30, 2019**

**Diploma in WASH**

***ASSIGNMENTS 2***

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

Washing hands prevents illnesses and spread of infections to others

Handwashing with soap removes germs from hands. This helps prevent infections because:

* People frequently touch their eyes, nose, and mouth without even realizing it. Germs can get into the body through the eyes, nose and mouth and make us sick.
* Germs from unwashed hands can get into foods and drinks while people prepare or consume them. Germs can multiply in some types of foods or drinks, under certain conditions, and make people sick.
* Germs from unwashed hands can be transferred to other objects, like handrails, table tops, or toys, and then transferred to another person’s hands.
* Removing germs through handwashing therefore helps prevent diarrhea and respiratory infections and may even help prevent skin and eye infections.

Teaching people about handwashing helps them and their communities stay healthy. Handwashing education in the community:

* Reduces the number of people who get sick with diarrhea
* Reduces diarrheal illness in people with weakened immune systems
* Reduces respiratory illnesses, like colds, in the general population
* Reduces absenteeism due to gastrointestinal illness in schoolchildren

Not washing hands harms children around the world

About 1.8 million children under the age of 5 die each year from diarrheal diseases and pneumonia, the top two killers of young children around the  
world

* Handwashing with soap could protect about 1 out of every 3 young children who get sick with diarrhea and almost 1 out of 5 young children with respiratory infections like pneumonia
* Although people around the world clean their hands with water, very few use soap to wash their hands. Washing hands with soap removes germs much more effectively.
* Handwashing education and access to soap in schools can help improve attendance.
* Good handwashing early in life may help improve child development in some settings.
* Estimated global rates of handwashing after using the toilet are only.

The main objective of WASH – (Water supply, Sanitation and Hygiene promotion) programmes in disasters is to reduce the transmission of faecal-oral diseases and exposure to disease-bearing vectors through the promotion of:

* Good hygiene practices
* The provision of safe drinking water
* The reduction of environmental health risks
* The conditions that allow people to a healthy life with dignity, comfort and security

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

The Minimum Standards for Water supply, sanitation and hygiene promotion (WASH)

The WASH (Water supply, sanitation and hygiene promotion) program aims to promote better personal and environmental hygiene in order to protect health, with protecting the environment, promoting health and facilitate access to resources. An effective WASH programme relies on an exchange of information between the agency and the disaster-affected population in order to identify key hygiene problems and culturally appropriate solutions. Hygiene promotion is vital to a successful WASH intervention. The focus on hygiene promotion is both general and specific. In general terms, hygiene promotion is integral to all of the sections and is reflected in the indicators for water supply, excreta disposal, vector control, solid waste management and drainage.

1. . **Hygiene Promotion**

Hygiene promotion is a necessary component of WASH programs in disasters. Hygiene promotion allows people to learn how to prevent and/or mitigate related diseases. Hygiene promotion enables a planned and systematic paradigm to let people learn how to prevent and/or mitigate water, sanitation and hygiene-related diseases. The major element in this program is the promulgation of knowledge, participation and utilization of resources among the affected population.

* A mutual sharing of information and knowledge,
* The mobilization of affected communities,
* The provision of essential materials and facilities.

Information is disseminated via previously identified specific social, cultural or religious groups and using appropriate channels of mass communication. Also, interactive hygiene communication methods are utilized wherever feasible in order to ensure ongoing dialogue and discussions among those affected.

1. **Water Supply and Treatment of Drinking-Water in Emergency Situations**

Water is essential for life, health and human dignity. In extreme situations having Access to clean water for meeting basic needs has a critical importance. Many times poor hygiene due to insufficient water or consumption of contaminated water is the main reason for spread of infection. In a disaster, the main priority is to provide safe and equitable access to an adequate amount of water for drinking, cooking and personal and domestic hygiene even if it is of intermediate quality. Therefore location of public water points should be planned sufficiently close to households to enable use of the minimum water requirement.

1. **Waste Disposal**

A safe disposal process creates the first barrier to excreta-related disease. It is a major priority in most disaster events and should be addressed with as much speed and effort as the provision of a safe water supply. The main standard of excreta disposal is to maintain the living environment in general and specifically the habitat, food production areas, public centres and surroundings of drinking water sources free from human fecal contamination. After a disaster, demarcation and cordoning off defecation areas, and building communal toilets should be completed as soon as possible. Every member of the community should use these services and for people who do not traditionally use toilets, it is necessary to conduct a concerted hygiene promotion campaign. In urban disasters where there could be damage to existing sewage systems, installing portable toilets or use of septic and/or containment tanks that can be regularly desludged may be required. This occured after Hurricane Katrina in Coastal Mississippi and caused delayes in re-opening hospitals and clinics.

Disaster affected populations need to have adequate, appropriate and acceptable toilet facilities. Those facilites should be sufficiently close to their dwellings, and should allow rapid, safe and secure access at all times, day and night. All excreta containment measures, i.e. trench latrines, pit latrines and soak-away pits, should be at least 30 metres away from any groundwater source. Pits should be at least 1.5 metres above the groundwater table. These distances should be increased for fissured rocks and limestone.

1. **Vector Control**

Vector- borne diseases are a major health risk following disasters and during refugee crises. Mosquitos are responsible for transmission of disease, particularly malaria, which is a leading cause of morbidity and mortality. Mosquitos are also vectors for yellow fever, dengue and hemorrhagic fever. Biting flies, bedbugs and fleas can transmit diseases such as murine typhus, scabies and plague. Also non-biting or synathropic flies (house fly, blow fly, flesh fly etc.) play a major role in the transmission of diarrheal diseases.

Ticks transmit relapsing or hemorrhagic fever, Lyme disease, babesiosis and a plasma; body lice transmit typhus and relapsing fever. Rats and mice are host for vectors eg. Fleas, which may transmit Lassa fever, plague among other infections, and they transmit leptospirosis, Hanta virus and salmonellosis.

Vector-borne diseases can be prevented by measures which prevent the spread of vectors. Decisions about vector control interventions should be based on an assessment of potential disease risk. Factors such as immunity status of affected population (e.g. refugees, internally displaced people (IDPs) – movement from a non-endemic to an endemic area is a common cause of epidemics). Pathogen type, number of vectors, species and increase exposure to the vectors (proximity or pattern of the settlement etc.) influence risk.

1. Solid Waste Management and Drainage

Inadequate solid waste management can cause public health risks of the affected population. These risks can arise from the breeding of flies and rodents and pollution of the surface or groundwater sources. Solid waste disposal should be implemented in close consultation and coordination with the affected population.

All households should have easy access to refuse containers, at least a 100 liter refuse container should be available per 10 households, and those containers should be emptied twice a week at minimum. However the waste should be removed from the living environment daily. Communal refuse pits should be located no more than 100 meters from households. All medical waste should be isolated and disposed of separately in properly engineered pits or safe containers in health facilities.

1. **Drainage**

Pooling surface water may cause health risks by contamination of clean water supplies, vector breeding, damage to toilets and dwellings and also drowning. Water pools may come from household wastewater, leaking toilets, rain or rising floodwaters. A proper drainage plan is essential to protect the community from health risks and maintain habitable settlements. The plan should address storm water drainage through site planning and wastewater disposal using small-scale, on-site drainage

Appropriate drainage facilities have to be built to keep dwelling areas free of pooling water. All water distribution points and hand washing facilities should have an effective drainage system to prevent pooling. The drainage system should be designed to protect shelters, paths and all water sanitation facilities from flooding and water erosion.

**Conclusion**

Water is indispensable for human life and is a priority for survival. Following disasters and during humanitarian relief activities providing safe supplies of water to the affected people is a major challenge. Hygiene and sanitation standards should be implemented into the daily activities of a community as soon as possible in order to protect the population from disease and outbreaks.

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

Solid waste management

Solid waste refers here to all non-liquid waste, in general this does not include excreta, although sometimes nappies and faeces of young children maybe mixed with solid waste. Solid waste can create significant health problems and a very unpleasant living environment if not disposed of safely and appropriately. If not correctly disposed of, waste may provide breeding site for insect-vectors pests, snake and vermin (rat) that increase the likelihood of disease transmission. It may pollute water source and environment

Decomposing organic waste attract animals vermin and flies. Flies may play a major roles in transmission of faecal-oral disease particular where domestic waste contain faeces (often those of children). Rodent may increase the transmission of disease such as leptospirosis and salmonella attract snake to waste heaps.

Solid waste may also provide breeding site for mosquitoes. Mosquitoes of the Aedes genus lay eggs in water stored in discarded items such as tins and drums; these are responsible for spread of dengue and yellow fever, such conditions may also attract mosquitoes of the anopheles genus, which transmit malaria. Mosquitoes of the culex genus breed in stagnant water with high organic content and transmit microfilariae appropriate condition are likely to raise where leachate from waste enter pooling water.

In time of famine or food scarcity members of the affected population maybe attracted to waste heaps to scavenge for food; this is likely to increase the risk of gastroenteritis dysentery and other illness

Poor management of the collection and disposal of solid waste may lead to leachate pollution of surface water or groundwater. This may cause significant problems if the waste contains toxic substance or if nearby water source are used for water supplies.

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

Exposure to environmental chemicals is increasing globally. Nutritional status may modify susceptibility to chemical exposures. However, there are a large number of toxicants, and malnutrition takes many forms including deficiency and excess. Thus, the relation between environmental exposures and nutritional status is complex. The symposium on “Heavy Metal Exposures in Women and Children, the Role of Nutrients,” presented at Experimental Biology 2007 examined interactions among nutritional status, nutrients, and heavy metals in vulnerable populations.

In addition, essential metals can be toxic in their own right. The symposium on “Heavy Metal Exposure in Women and Children, the Role of Nutrients” considers the implications of nutrient-toxicant interactions for the health of women and children. The overall aim of both the symposium and the proceedings is to encourage nutritionists to consider the importance of environmental exposures to their study populations and their research questions.

Furthermore, it is to encourage the involvement of nutritionists in the design of high-quality, rigorous studies of nutritional assessment and interventions in populations exposed to environmental chemicals. As a growing field, the intersection between nutritional science and toxicology would benefit from the expertise of nutritionists. This introductory article highlights a few examples of nutrient-toxicant interactions and serves as background for the more focused papers that follow.

We consider 3 main ways in which toxicants and nutrition are connected, with the understanding that these connections are highly nuanced. We also recognize there may be other determinants of health and disease that are not depicted here but that may interact with toxicants, nutrients, or both. As to our specific model,

* First, food may be the vehicle for delivering toxicants and may increase an individual's exposure and toxicant body burden.
* Second, as a toxicant is absorbed by the human body, it may interact with an individual's nutritional status to affect the amount of toxicant that is retained and bioavailable to do harm. It is also possible that toxicants may affect nutrient absorption and stores.
* Third, once inside the body, nutrients and nutrient metabolism may also interact with the toxicant in affecting a specific health outcome. Other factors, such as gender and age, need to be considered in this model because they affect both nutritional status (child-feeding practices) and toxicant exposure (hand-to-mouth behavior is common in young children). The examples that follow illustrate the interactions between heavy metals and nutrients outlined in this model.

In conclusion, the fraction of disease attributable to environmental (i.e., low-level, non-occupational) exposures may be small, but 3 considerations speak to the importance of toxicants in affecting health. First, even relatively small risk factors make a notable contribution to disease when a large population is exposed. Second, toxicants are present at all stages of development, potentially accumulating to cause a lifetime of ill health. Third, if chemical exposures interact with poor nutrition, the result may be high costs to health and well-being of resource-poor individuals and communities who are least able to cope with those costs. Better understanding of the interactions between nutrition and environmental exposures is needed to guide action from governments and individuals. Future nutrition studies need to consider exposures to environmental pollutants in their study populations and investigate the effects of nutritional interventions as an approach to preventing or reducing toxicity.

* 1. **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.**

**Analysis of the situation**

* The first step in health planning is the analysis of the current situation.

The different aspects to be studied are

* Population – age and sex structure, religion, etc.
* Morbidity and mortality rates
* Morbidity and mortality rates due to the disease under consideration
* Epidemiology and geographic distribution o
* f the disease under consideration
* Existing healthcare facilities
* Technical manpower available
* Facilities for training healthcare staff
* Awareness and attitude of the community regarding the disease etc.

**Establishment of objectives and goals**

* This step is to identify the desirable future state for the issue under consideration .The program has to work for achieving this.
* Hence, goals and objectives , establish the standards against which current disease will be compared for assessing the performance of program
* If there are no clear objectives and goals, a plan cannot be implemented efficiently and haphazard wasteful activity will result.
* At the central level, the objectives would be more general and with each successive level, the objectives will become more specific.
* Management techniques are usually used to determine objectives ex : cost-benefit analysis
* These analysis will assess the feasibility of attaining the desired results in optimum cost and time
* the objective can be defined like: *"To reduce the prevalence to the level of 0.5%"*

**Assessment of resources**

* The available : Manpower, Money, Material, skills, knowledge and Techniques should be accessed
* A *balance* is to be struck between the available resources and the attainment of the objectives

**Fix priorities**

* The resources are usually not enough to attain all the objectives
* so priority goals should be listed out and resources should be allocated to these
* various considerations in fixing priorities can be :-
  + in order of magnitude
  + lower costs needed to achieve the objectives
  + saving the lives of younger people
  + political commitments and pressure etc
* Once the priority objectives have been decided:
* Alternative ways of achieving them should be assessed
* Management techniques for comparing the efficiency of alternative plans may be useful for deciding priority

**Write up formulated plan**

* once priorities are laid out , a systematic plan should be made to attain them
* All the major steps should be included with the
  + resources(input) required for each step
  + the expected outcome(output) and
  + time period specified for each step
  + also include are
    - precise guidelines for procedures
    - Fixation of responsibility (identify individual responsible for the execution of each step)

**Programming and implementation**

* once the plan has been approved it has to be implemented
* Implementation requires an effective organization to run the routine procedures and referrals
* The real shortcomings or impracticalities of the program may be revealed at this stage
* Main consideration at this stage are
  + definition of roles and tasks
  + selection and training of personnel
  + organization and communication so that all workers are aware of their responsibility and remain motivated
  + the involved institutions should work efficiently

**Monitoring**

* Monitoring refers to the day to day follow up of functioning of program
* It is to be ensured that the activities are : proceeding as planned and are on schedule
* Immediate corrective action is to be taken in case of deviations
* Monitoring is thus defined as*"the continuous process of observing ,recording and reporting on the activities of the organization or project*

**Evaluation**

* Evaluation refers to the assessing the final outcome of the plan
* Evaluation is in terms of :
  + Degree to which objectives are achieved
  + How efficiently have the resources been utilized(output-input, cost-benefit analysis etc.) in achieving these
  + What were the factors responsible for shortfalls
  + Factors responsible for better performance if any
  + Difficulties faced during the implementation of and possible solutions for them
* Based on the results of the evaluation, one of the following decisions may be taken:
  + To continue running the program as the results are satisfactory
  + To make a few changes to overcome inefficiencies and let the program continue
  + To change the objectives as the disease profile has changed due to the effect of the program
  + To abandon the approach and analyze alternative approaches
    - The program failed to achieve the objectives or
    - A new and much more effective technology has been developed for controlling the disease and needs to be incorporated in the program or
    - A new and more dangerous health problem has emerged and the priority needs a change

*References*

1. *Franks AH, Harmsen HJM, Raangs GC, Jansen GJ, Schut F, Welling GW.*[*Variations of bacterial populations in human feces measured by fluorescent in situ hybridization with group-specific 16S rRNA-targeted oligonucleotide probes.external icon*](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC106730/)*Appl Environ Microbiol. 1998;64(9):3336-3345.*
2. *Ejemot RI, Ehiri JE, Meremikwu MM, Critchley JA.*[*Hand washing for preventing diarrhoea.external icon*](http://www.ncbi.nlm.nih.gov/pubmed/18254044)*Cochrane Database Syst Rev. 2008;1:CD004265.*
3. *Cronin AA, Shrestha D, Cornier N, Abdalla F, Ezard N, Aramburu C. A review of water and sanitation provision in refugee camps in association with selected health and nutrition indicators – the need for integrated service provision. Journal of Water and Health. 2008;6:1–13. [*[*PubMed*](https://www.ncbi.nlm.nih.gov/pubmed/17998603)*] [*[*Google Scholar*](https://scholar.google.com/scholar_lookup?journal=Journal+of+Water+and+Health&title=A+review+of+water+and+sanitation+provision+in+refugee+camps+in+association+with+selected+health+and+nutrition+indicators+%E2%80%93+the+need+for+integrated+service+provision&author=AA+Cronin&author=D+Shrestha&author=N+Cornier&author=F+Abdalla&author=N+Ezard&volume=6&publication_year=2008&pages=1-13&pmid=17998603&)*]*
4. *2. Griekspoor A, Collins S. Raising standards in emergency relief: how useful are Sphere minimum standards for humanitarian assistance? BMJ. 2001;323:740–742. [*[*PMC free article*](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1121289/)*] [*[*PubMed*](https://www.ncbi.nlm.nih.gov/pubmed/11576984)*] [Google Scholar*