

Health in Emergencies Handbook

USAID/OFDA (October 2007)

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Acronyms

- ACT: Artemisinin based combination therapy
- ANC: Antenatal Clinic
- ARI: Acute respiratory infection
- ART: Antiretroviral therapy
- ARV: Anti-retroviral
- CDC: Centers for Disease Control and Prevention
- CFR: Case fatality rate
- CHW: Community health worker
- CSR: Communicable Disease Surveillance and Response unit
- EmOC: Emergency obstetric care
- EPI: Expanded program of immunizations
- EPR: Epidemic Preparedness and Response
- EWARS: Early Warning and Alert and Response System
- FAO: Food and Agriculture Organization
- FOG: Field Operations Guide
- GBV: Gender based violence
- HHS: Health and Human Services
- IDSR: Integrated Disease Surveillance and Response
- IEC: Information education and communication
- IEHK: Interagency Emergency Health Kits
- IMCI: Integrated Management of Childhood Illnesses
- IPT: Intermittent preventive treatment
- IRS: Indoor residual spraying
- ITN: Insecticide treated net
- ITPS: Insecticide treated plastic sheeting
- LLIN: Long lasting insecticide treated net
- MISP: Minimal initial service package
- MOH: Ministry of Health
- ORS: Oral re-hydration salts
- ORT: Oral re-hydration therapy
- PEP: Post exposure prophylaxis
- PEPFAR: President's Emergency Plan for HIV/AIDS Relief
- PHC: Primary health care
- PMI: President's Malaria Initiative
- RDT: Rapid diagnostic tests
- SAR: Search and rescue
- STI: Sexually transmitted infection
- TB: Tuberculosis
- VCT: Voluntary counseling and testing
- WHO: World Health Organization

Introduction

The following guidance is intended to standardize the USAID/OFDA health response and to provide basic information about health related issues in complex emergencies and natural disasters for USAID/OFDA staff as well as partners implementing USAID/OFDA funded programs. It is not intended to replace the Field Operations Guide (FOG) but to give quick and usable up to date information for decision making using specific scenarios. It is based on the latest know best practices in the field of health and supports the Sphere standards. The information will be presented according to context including complex emergencies and natural disasters both slow and rapid onset. Each section will be addressed separately to provide information on specific health concerns following a disaster and then present public health options for USAID/OFDA assistance. USAID/OFDA assistance can come in the form of technical support from the USAID/OFDA DC based Technical Assistance Group (TAG), basic management of the most common diseases causing morbidity and mortality, prevention activities as well as supply of commodities and capacity building. USAID/OFDA should always gear programming to provide support to the Ministry of Health (MOH) even if it has been compromised by the disaster. Programs should work in collaboration with the Health Cluster and with all partners in the field including the MOH, WHO, UNICEF, NGOs, Red Cross and other donors.

Goal: *Contribute to the international effort to ensure access to health care for all in the event of a complex emergency or natural disaster in order to decrease excess morbidity and mortality in the target population.*

Objectives

- Establish standardized guidelines to ensure a consistent health response for USAID/OFDA based on known best practices for health interventions;
- Provide technical guidance to USAID/OFDA DC and Regional offices, US government (USG) and field based partners;
- Strengthen the linkages to sectors such as Water, Sanitation and Hygiene (WASH), Shelter, Nutrition and Protection;
- Ensure transparency and coordination with USAID/OFDA, USG, MOH, UN and NGO partners.

Emergencies pass through phases including an immediate acute phase and then possibly to a more prolonged chronic phase. The type of disaster as well as the vulnerability of the population can influence the amount of time the emergency will continue. A sudden-onset natural disaster may have a high death rate early and requires only a few months of support to the health system. Complex emergencies and other slow-onset natural disasters may last for many years requiring extended service support. During the acute phase (first 3 months) priorities are for immediate humanitarian relief including life saving activities as well as ensuring that there is basic primary health care to manage the most common diseases afflicting the target population, appropriate water, sanitation and hygiene systems, shelter and food security. During the chronic phase/ or rehabilitation it is even more critical to strengthen the national primary health care

system and increase efforts for prevention. During the transition phase or reconstruction USAID/OFDA health programming should seek to transition activities to the national government, other development donors such as USAID and international organizations such as NGOs.

This is a living document and will be updated with new material as approaches to public health in disasters change. A section on nutrition will be integrated in the next version as well as new information for Pandemic Influenza. Future versions may also contain a section on mitigation.

Natural Disasters

General Information

Natural disasters can be either; geological such as earthquakes, volcanoes and tsunamis, hydrometeorological such as floods, droughts, extreme temperatures and cyclones and geomorphic such as landslides. The general health risks and USAID/OFDA response options for several natural disasters are presented below for rapid onset disasters such as earthquakes, volcanoes, tsunamis and windstorms and for slow onset disasters such as droughts.

Depending on the hazard and the magnitude, direct and immediate morbidity and mortality can occur from traumatic injuries and drowning. In the emergency phase saving lives through local search and rescue with emergency medical services may be the most appropriate strategy. The risk of communicable disease transmission immediately following a natural disaster is low. Often, health consequences from natural disasters result not from the hazard itself but from the resultant population displacement and overcrowding as well as a breakdown in the public health system. The preexisting health status of the population, local disease epidemiology and functioning of the health system can further exacerbate excess morbidity and mortality.

USAID/OFDA can support the response effort through technical assistance, immediate needs including emergency medical care and later through strengthening public health interventions. USAID/OFDA can support the government and partners to coordinate the relief effort, conduct assessments, improve the surveillance and early warning systems, support the pre-existing primary health care systems and link with sector interventions in water, sanitation and hygiene, nutrition, shelter and site planning and food security.

All health interventions should be conducted in support of the local government Ministry of Health, use the national policies and standardized guidelines and avoid running parallel systems. Interventions should fill gaps in the relief effort through coordination with the government, Health, Nutrition and WASH Clusters, donors and implementing partners.

Earthquakes

PUBLIC HEALTH RISK

Immediate health consequences of earthquakes result from large scale death and injury and depend on the magnitude and depth of the earthquake, housing type and building codes, time of day, and population density. Death can be instantaneous, rapid within minutes to hours from dust inhalation and asphyxia, shock or environmental exposure or delayed due to dehydration, environmental exposure, crush syndrome or infection. Secondary landslides and tsunamis generated by some underwater earthquakes (see Tsunami section) can cause increased mortality and some injuries. The demand for life saving health services occurs within the first 24-48 hours and continues for approximately 3-5 days. After 5 days the possibility of survival from traumatic wounds is rare. Most other initial visits to health facilities are for wounds and fractures as well as exacerbations of chronic diseases and lung and eye irritation. A second wave of casualties may present as relief operations bring in cases from more remote areas. The local community frequently is the first responders and takes care of the initial and most important response.

Risk of communicable disease including epidemics is not an immediate concern following an earthquake. The risk for increase in communicable diseases as well as exacerbation of chronic diseases can result from the following:

Pre-existing Health and Nutrition Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector- borne diseases such as dengue, malaria, and typhus. Population movement to higher disease transmission areas, sleeping outside and lack of prevention and control strategies, can exacerbate the risk of vector-borne disease.

Disruption of Health Systems: Damage to health facilities and decreased or loss of resources such as health staff, medical supplies and logistical support including communication, electricity and transportation can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases such as diarrhea including cholera and shigellosis, typhoid, hepatitis A and E.

PUBLIC HEALTH INTERVENTIONS

All staff should be aware of the danger associated with felt aftershocks that often occur after large earthquakes and they should take precautions to ensure their safety and the safety of those around them when possible.

Technical Assistance: USAID/OFDA Technical Assistance Group (TAG) is available by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health and WASH Clusters (Nutrition if a local priority) and/or the WHO and UNICEF to ensure strong leadership in coordination of health, nutrition and WASH sectors preferably by the national government. Coordination should be encouraged between all partners including donors, the UN, NGOs, Red Cross and the local National Disaster Committee.

Health Assessment: Support the government and partners to conduct a rapid assessment in the immediate phase to assess the impact on health (basic demographics and location, number and severity of injuries, other major illnesses and deaths), the extent of damage to health services (structures, medical supplies, human resources, electricity, water and communications) and disruption of other sectors (water, sanitation, food, vector control). After the first day a more elaborate health assessment can be performed with the Health Cluster and the ministry of health (MOH).

Emergency Medical Care

- **Trauma/Surgical Care:** Priority in the immediate aftermath of the disaster should be on triage and management of trauma in support of search and rescue (SAR) operations. Depending on the current vaccination status, management for casualties may include tetanus vaccination (not mass vaccination).
- **Commodities:** Provision of essential medicines, medical supplies and equipment. These may be initially geared towards surgical procedures and wound management.
- **Field hospitals** (see reference below) for mass casualties should only be supported if they can be **operational** within 24 hours after the disaster **and are self sufficient** (staff, commodities, power) to provide life support within the first 48 hours. Staff of these hospitals should be culturally appropriate. These hospitals can remain to continue care of these victims and handle emergencies for 3-15 days. After the initial life saving function field hospitals can be set up if they can be fully operational within 3-5 days and only if they are filling a needed gap in the local capacity. They should be used only if local hospitals are not available or cannot cope. They should not be a substitute for already functioning capable local facilities. They should follow the National Health Guidelines of the MOH and coordinate with the public health system of the local government. Be aware of the costs of the hospital and who will cover all expenses. Effort after this period should be to reestablish existing health facilities versus starting parallel systems.
- **Primary Health Care (PHC):** Where possible support partners to reinforce the existing PHC system including case management for the most common diseases, reproductive health, vaccination programs, and health education to accommodate displaced populations. **Mobile clinics** should only be used if there are no functioning health facilities available.

Surveillance and Early Warning Systems: Although communicable disease outbreaks are not a concern in the immediate aftermath of an earthquake surveillance systems

should be reinforced as soon as possible for early detection of diseases of epidemic importance.

- Support the WHO to strengthen MOH disease and nutritional surveillance (including logistics, training and laboratory diagnosis)
- Support the WHO to conduct a communicable disease risk assessment

Reinforce existing PHC system:

- **Case Management:** Support health services for early diagnosis and management of common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory medical supplies and nutritional supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.
- **Commodities/Medical Supplies:** Ensure adequate supply of essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Discuss with the MOH, the WHO and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6 months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue with the national expanded program if immunizations (EPI) program as soon as possible in the affected population.
- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea and exclusive breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc.
- **Nutrition:** Monitor nutritional status, support feeding programs such as infant and young child feeding, exclusive breastfeeding, when necessary the provision of nutrition services such as community therapeutic care (CTC), supplementary or therapeutic feeding programs according to the circumstances. Link with Food Security to ensure adequate intake of at least 2100 calories/day.
- **Psychosocial support** (see Psychosocial section)

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow

fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.

- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements. Also ensure that shelters are in appropriate sites and constructed to resist the impact of further earthquakes since felt aftershocks can occur for months after large earthquakes.
- **Management of Corpses** (see reference below): There is no evidence that corpses increase the risk of epidemics after natural disasters. Staff that works with corpses is at increased risk for TB, HIV, hepatitis B and C and gastrointestinal infections and should use universal precautions (deaths from cholera and hemorrhagic fevers are special cases that require more elaborate preparation measures). Burial should be culturally sensitive according to local customs. Graves should be 30m from ground water sources used for drinking and the bottom should be 1.5 m above the water table with a 0.7m unsaturated zone.

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Communicable diseases following natural disasters: risk assessment and priority interventions WHO 2006: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

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Epidemics after natural disasters WHO 2006: <http://www.cdc.gov/ncidod/EID/13/1/pdfs/1.pdf>

The Public Health Consequences of Disasters Noji 1997

Natural Disasters: Protecting the Public's Health PAHO 2000

WHO-PAHO Guidelines for the use of Foreign Field Hospitals in the aftermath of sudden impact disasters: http://www.who.int/hac/crises/international/pakistan_earthquake/field_hospitals.pdf

Management of Dead Bodies after Disasters: A Field Manual for First Responders: PAHO, WHO, IFRC, ICRC: <http://www.paho.org/english/DD/PED/DeadBodiesFieldManual.pdf>

Floods

PUBLIC HEALTH RISK

Depending on the magnitude immediate direct causes of morbidity and mortality can include drowning and injuries, shock and hypothermia from contact with water, wound, eye and gastrointestinal infections from polluted water and psychosocial disturbances. Death can result from secondary causes such as landslides.

Risk of communicable diseases and other significant health consequences do not occur from the flood itself but from the following pre-existing conditions and consequences from the flood.

Pre-existing Health and Nutritional Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector-borne diseases such as dengue, malaria, and typhus. Population movement to higher disease transmission areas, sleeping outside and lack of prevention and control strategies, can exacerbate the risk of vector-borne disease. Displacement of livestock with population movements can increase the risk of diseases transmitted by animals (zoonoses) such as Rift Valley fever and plague.

Disruption of Health Systems: Damage to health facilities and decreased or loss of resources such as health staff, medical supplies and logistical support including communication, electricity and transportation can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases such as diarrhea including cholera and shigellosis, typhoid, leptospirosis (fresh water), hepatitis A and E.

Disruption of the Environment: Increased risk of vector-borne diseases from pooling of water such as malaria (initially breeding sites are washed away so risk is generally 6-8 weeks after flooding), and lack of sanitation such as yellow fever, dengue and Rift Valley fever (not directly with flooding but with lack of sanitation). The risk can be exacerbated by overcrowding, population movement to higher transmission areas, sleeping outside and lack of prevention and control strategies. Certain rodent borne diseases are associated with flooding, including leptospirosis, tularaemia and viral hemorrhagic diseases. Flooding may also lead to overflow of toxic waste sites, or release of chemicals or human / industrial waste stored in the ground or in flood plain to the river system.

PUBIC HEALTH INTERVENTIONS

Technical Assistance: USAID/OFDA Technical Assistance Group (TAG) is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health and WASH Clusters (Nutrition if a local priority) and/or the WHO and UNICEF to ensure strong leadership in coordination of health and water and sanitation sectors preferably by the national government. Coordination should be encouraged between all partners including donors, the UN, NGOs, Red Cross and the local National Disaster Committee.

Health Assessment: Support the government and partners to conduct a joint assessment on the impact on health (basic demographics and location, number and severity of injuries, other major illnesses and deaths), the extent of damage to health services (infrastructure, medical supplies, human resources, electricity, water and communications) and disruption of other sectors (water, sanitation, food, vector control).

Surveillance and Early Warning Systems: Surveillance systems should be reinforced as soon as possible for early detection of diseases of epidemic importance. In areas where a flood forecasting and early warning systems or climate outlooks are available, the forecasts can provide a lead time for health professionals to plan ahead for potential health consequences before the outbreak such as stockpiling or cleaning up ditches, providing mosquito nets or public awareness campaigns etc.

- Support the WHO to strengthen MOH disease surveillance (including logistics, training and laboratory diagnosis)
- Support the WHO to conduct a communicable disease risk assessment

Reinforce Primary Health Care (PHC) System:

- **Case Management:** Support health services for early diagnosis and management of common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory and medical supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.
- **Commodities/Medical Supplies:** Ensure adequate supply of essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Discuss with the MOH, the WHO and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue

with the national expanded program of immunization (EPI) as soon as possible in the affected population.

- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea and exclusive breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc.
- **Nutrition:** Monitor nutritional status, support feeding programs such as infant and young child feeding, exclusive breastfeeding, when necessary the provision of nutrition services such as community therapeutic care (CTC), supplementary or therapeutic feeding programs according to the circumstances. Link with Food Security to ensure adequate intake of at least 2100 calories/day.
- **Psychosocial support** (see Psychosocial section)

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. Possible widespread contamination of the water table must be evaluated. Attention must be paid to waste water and drainage blockages exacerbating flood magnitude. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.
- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements.

References

Communicable diseases following natural disasters: risk assessment and priority interventions WHO 2006: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

Communicable diseases Control in Emergencies: A Field Manual, WHO 2006: http://whqlibdoc.who.int/publications/2005/9241546166_eng.pdf

Epidemics After natural Disasters WHO 2006: <http://www.cdc.gov/ncidod/EID/13/1/pdfs/1.pdf>

The Public Health Consequences of Disasters Noji 1997

Natural Disasters: Protecting the Public's Health PAHO 2000

Flooding and communicable disease fact sheet: WHO 2005: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

Volcanoes

PUBLIC HEALTH RISK

The direct causes of mortality from volcanic eruptions are derived from the impacts of pyroclastic flows (ground-hugging avalanches of ash that can be hotter than 500 degrees C, volcanic rock fragments, and volcanic gas that rush down the sides of a volcano as fast as 100 km/hour or more), fragments of volcanic rock and lava, lahars (volcanic mudflows), volcano-induced tsunamis, and to a lesser extent, lava flows, gas, debris avalanches, floods, seismicity, and lightning. The young and elderly are especially susceptible to the impacts of volcanic eruptions. Indirect morbidity and mortality can arise from the post-eruption impacts of living in camps for displaced populations that may lack adequate nutrition and/or medical services. Volcanic activity can also impact shelters, including healthcare facilities. Shelters can be destroyed by falling volcanic debris, lava flows and associated fires, and heavy ashfall may result in the collapse of roofs. Volcanic eruptions can be sudden-onset disasters with discrete events, or in some cases they can continue for several years. Secondary events such as lahars and landslides can occur long after an eruption has ended.

Immediate health consequences of volcanoes result predominately from trauma and respiratory irritation exacerbated by the destruction of health facilities. Trauma results from falling rocks and debris, blasts and projectiles from eruptions, burns from hot ash, gas and lava and gases and ash can cause eye and skin irritation. Inhalation of gases and ash causes respiratory irritation (SiO_2 , HCL, HF), asphyxiation (CO_2), intoxication (H_2S or CO), suffocation from ash, exacerbation of chronic lung disease and long term inhalation of silica ash can lead to pulmonary problems later. Ingestion of contaminated water with fluorine, and to a lesser extent mercury or arsenic (from ash leached into water systems) can lead to other health effects. Fluorine mainly leads to dental mottling in children, and at higher concentrations to bone and joint complications (osteofluorosis). Volcanoes can disrupt agriculture with loss of crops and death of livestock due to ash consumption (fluorine) and ash can endanger fish.

Risk of communicable diseases and health consequences do not usually occur from the volcano itself but from the following pre-existing conditions and consequences resulting from the volcano.

Pre-existing Health and Nutritional Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector-borne diseases such as dengue, malaria, and typhus. Population movement to higher disease transmission areas, sleeping outside and lack of prevention and control strategies, can exacerbate the risk of vector-borne disease. Displacement of livestock with population movements can increase the risk of diseases transmitted by animals (zoonoses) such as Rift Valley fever and plague.

Disruption of Health Systems: Damage to health facilities and decreased or loss of resources such as health staff, medical supplies and logistical support including communication, electricity and transportation can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases such as diarrhea including cholera and shigellosis, typhoid, leptospirosis (fresh water), hepatitis A and E. Increased risk of vector born diseases from lack of sanitation, overcrowding and pooling of water such as yellow fever and dengue.

PUBLIC HEALTH INTERVENTIONS

Technical Assistance: OFDA Technical Assistance Group (TAG) is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health and WASH Clusters (Nutrition if local priority) and/or the WHO and UNICEF to ensure strong leadership in coordination of health and water and sanitation sectors preferably by the national government. Coordination should be encouraged between all partners including donors, the UN, NGOs, Red Cross and the local National Disaster Committee.

Health Assessment: Support the government and partners to conduct a joint assessment on the impact on health (basic demographics and location, number and severity of injuries, other major illnesses and deaths), the extent of damage to health services (structures, medical supplies, human resources, electricity, water and communications) and disruption of other sectors (water, sanitation, food, vector control).

Surveillance and Early Warning Systems: Surveillance systems should be reinforced as soon as possible for early detection of diseases of epidemic importance. Volcanoes that are monitored with scientific equipment provide warnings before they are going to erupt, so local volcano observatories can provide lead time for preparedness by health responders.

- Support the WHO to strengthen MOH disease and nutrition surveillance (including logistics, training and laboratory diagnosis)
- Support the WHO to conduct a communicable disease risk assessment

Reinforce Primary Health Care (PHC) System:

- **Case Management:** Support health services for early diagnosis and management of common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory and medical supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.

- **Commodities/Medical Supplies:** Ensure adequate supply of essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Discuss with the MOH, the WHO and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue with the national expanded program of immunizations (EPI) as soon as possible in the affected population.
- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea and breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc and how to protect water, agriculture, and personal health from the impacts of eruptions.
- **Nutrition:** Monitor nutritional status, support feeding programs such as infant and young child feeding, exclusive breastfeeding, when necessary the provision of nutrition services such as community therapeutic care (CTC), supplementary or therapeutic feeding programs according to the circumstances. Link with Food Security to ensure adequate intake of at least 2100 calories/day.
- **Psychosocial support** (see psychosocial section)

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. Promote procedures for protecting the water supply from ashfall, and dealing with waste water issues such as ash blocking pumps, canals, etc. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.
- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements. Shelters should be located in geologically safe areas.

References

Communicable diseases following natural disasters: risk assessment and priority interventions
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Volcanic Ash: Effects and Mitigation Strategy <http://volcanoes.usgs.gov/ash>

International Volcanic Health Hazard Network: www.ivhnn.org

Tsunami

PUBLIC HEALTH RISK

Depending on the scale immediate direct deaths occur predominately from drowning as well as injuries from debris. Tsunamis can be generated by underwater earthquakes, volcanic eruptions, or landslides therefore associated impacts from these hazards may occur (see earthquakes and volcanoes sections). Risk of communicable diseases and health consequences do not occur from the tsunami itself but from the following pre-existing conditions and consequences resulting from the tsunami.

Pre-existing Health and Nutritional Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector-borne diseases such as dengue, malaria, and typhus. Population movement to higher disease transmission areas, sleeping outside and lack of prevention and control strategies, can exacerbate the risk of vector-borne disease.

Disruption of Health Systems: Damage to health facilities and decreased or loss of resources such as health staff, medical supplies and logistical support including communication, electricity and transportation can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases such as diarrhea including cholera and shigellosis, typhoid, hepatitis A and E. Increased risk of vector-borne diseases from lack of sanitation, crowding and pooling of water such as yellow fever and dengue. There might be problem of saltwater intrusion to groundwater resources or reservoirs leading to water scarcity also contamination of agricultural land by salt that might lead to food insecurity.

Disruption of the Environment: Increased risk of vector-borne diseases from environmental disruption including lack of sanitation and pooling of water. Initially breeding sites from malaria are washed away so risk is generally 4 weeks after if salty water is mixed with rainwater.

PUBLIC HEALTH INTERVENTIONS

Technical Assistance: USAID/OFDA Technical Assistance Group (TAG) is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health and WASH Clusters (Nutrition if local priority) and/or the WHO and UNICEF to ensure strong leadership in coordination of health and water and sanitation sectors preferably by the national government. Coordination should be encouraged between all partners including donors, the UN, NGOs, Red Cross and the local National Disaster Committee.

Health Assessment: Support the government and partners to conduct a joint assessment on the impact on health (basic demographics and location, number and severity of injuries, other major illnesses and deaths), the extent of damage to health services (structures, medical supplies, human resources, electricity, water and communications) and disruption of other sectors (water, sanitation, food, vector control).

Surveillance and Early Warning Systems: Surveillance systems should be reinforced as soon as possible for early detection of diseases of epidemic importance.

- Support the WHO to strengthen MOH disease and nutrition surveillance (including logistics, training and laboratory diagnosis)
- Support the WHO to conduct a communicable disease risk assessment

Reinforce Primary Health Care (PHC) System:

- **Emergency Medical Care:** priority needs to be given to emergency medical care of victims with injuries. If the tetanus vaccination rate is low then vaccination should be given to injured population (not as a mass vaccination program).
- **Case Management:** Support health services for early diagnosis and management of common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory and medical supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.
- **Commodities/Medical Supplies:** Ensure adequate supply of essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Discuss with the MOH, the WHO and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue with the national expanded program of immunizations (EPI) as soon as possible in the affected population.
- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea and exclusive breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc.
- **Nutrition:** Monitor nutritional status, support feeding programs such as infant and young child feeding, exclusive breastfeeding, when necessary the provision of nutrition services such as community therapeutic care (CTC), supplementary or

therapeutic feeding programs according to the circumstances. Link with Food Security to ensure adequate intake of at least 2100 calories/day.

- **Psychosocial support** (see Psychosocial section)

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. Attention must be paid to increased salinization of the water table and potential need for alternative water supplies. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.
- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements.
- **Management of Corpses** (see reference): There is no evidence that corpses increase the risk of epidemics after natural disasters. Staff that work with corpses is at increased risk for TB, HIV, hepatitis B and C and gastrointestinal infections and should use universal precautions (Deaths from cholera and hemorrhagic fevers are special cases that require more elaborate preparation measures). Burial should be culturally sensitive according to local customs. Graves should be 30m from ground water sources used for drinking and the bottom should be 1.5 m above the water table with a 0.7m unsaturated zone.

References

Communicable diseases following natural disasters: risk assessment and priority interventions WHO 2006: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

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Epidemics after natural disasters WHO 2006: <http://www.cdc.gov/ncidod/EID/13/1/pdfs/1.pdf>

The Public Health Consequences of Disasters Noji 1997

Natural Disasters: Protecting the Public's Health PAHO 2000

Management of Dead Bodies after Disasters: A Field Manual for First Responders: PAHO, WHO, IFRC, ICRC: <http://www.paho.org/english/DD/PED/DeadBodiesFieldManual.pdf>

Tsunami affected areas: Communicable disease risk and interventions WHO 2005: http://www.who.int/diseasecontrol_emergencies/guidelines/tsunami_risk_assessment.pdf

Wind Storms

PUBLIC HEALTH RISK

Hurricanes, typhoons, cyclones or tropical cyclones cause immediate mortality and morbidity predominately from trauma and injuries and drowning from storm surges, flooding and landslides.

Communicable diseases are rarely a risk from the storm but can result from the following pre-existing conditions and consequences resulting from the storm.

Pre-existing Health and Nutritional Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector-borne diseases such as dengue, malaria, and typhus. Population movement to higher disease transmission areas, sleeping outside and lack of prevention and control strategies, can exacerbate the risk of vector-borne disease. Displacement of livestock with population movements can increase the risk of diseases transmitted by animals (zoonoses) such as Rift Valley fever and plague.

Disruption of Health Systems: Damage to health facilities and decreased or loss of resources such as health staff, medical supplies and logistical support including communication, electricity and transportation can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases such as diarrhea including cholera and shigellosis, typhoid, leptospirosis (fresh water), hepatitis A and E.

Disruption of the Environment: Increased risk of vector-borne diseases from pooling of water from flooding such as malaria (initially breeding sites are washed away so risk is generally 6-8 weeks after flooding) and lack of sanitation such as yellow fever, dengue and Rift Valley fever (not directly with flooding but with lack of sanitation). The risk can be exacerbated by overcrowding, population movement to higher transmission areas, sleeping outside and lack of prevention and control strategies.

PUBLIC HEALTH INTERVENTIONS

Technical Assistance: USAID/OFDA Technical Assistance Group (TAG) is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health and WASH Clusters (Nutrition if local priority) and/or the WHO and UNICEF to ensure strong leadership in coordination of health and water and sanitation sectors preferably by the national government. Coordination should be encouraged between all partners including donors, the UN, NGOs, Red Cross and the local National Disaster Committee.

Health Assessment: Support the government and partners to conduct a joint assessment on the impact on health (basic demographics and location, number and severity of injuries, other major illnesses and deaths), the extent of damage to health services (structures, medical supplies, human resources, electricity, water and communications) and disruption of other sectors (water, sanitation, food, vector control).

Surveillance and Early Warning Systems: Surveillance systems should be reinforced as soon as possible for early detection of diseases of epidemic importance. There is a tropical cyclone warning system in almost all the oceans around the globe which will provide a lead time for preparedness by health entities in the countries.

- Support the WHO to strengthen MOH disease and nutrition surveillance (including logistics, training and laboratory diagnosis)
- Support the WHO to conduct a communicable disease risk assessment

Reinforce Primary Health Care (PHC) System:

- **Case Management:** Support health services for early diagnosis and management of common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory and medical supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.
- **Commodities/Medical Supplies:** Ensure adequate supply of essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Discuss with the MOH, the WHO and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue with the national expanded program of immunizations (EPI) as soon as possible in the affected population.
- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea and exclusive breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc.
- **Psychosocial support** (see psychosocial section)

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.
- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements.

References

Communicable diseases following natural disasters: risk assessment and priority interventions WHO 2006: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

Communicable diseases Control in Emergencies: A Field Manual, WHO 2006: http://whqlibdoc.who.int/publications/2005/9241546166_eng.pdf

Epidemics after natural Disasters WHO 2006: <http://www.cdc.gov/ncidod/EID/13/1/pdfs/1.pdf>

The Public Health Consequences of Disasters Noji 1997

Natural Disasters: Protecting the Public's Health PAHO 2000

Flooding and communicable disease fact sheet: WHO 2005: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

Drought

PUBLIC HEALTH RISK

The risk to the health of the population can result from food and water shortages leading to malnutrition and water related diseases. Drought is a slow onset natural disaster and can lead to population movements over time. The main cause of death is from malnutrition as well as from communicable diseases exacerbated by malnutrition and micronutrient deficiencies. Drought can also lead to conflict over natural resources such as water.

Pre-existing Health and Nutritional Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector-borne diseases such as dengue, malaria, and typhus (the risk of vector-borne disease can be exacerbated by population movement to higher transmission areas, sleeping outside and lack of prevention and control strategies).

Disruption of Health Systems: Decreased or loss of resources such as health staff, medical supplies and logistical support due to reallocation of funds for food and water can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases from lack of water for hygiene and seeking water at unsafe locations such as diarrhea including cholera and shigellosis, typhoid, hepatitis A and E.

PUBLIC HEALTH INTERVENTIONS

Technical Assistance: USAID/OFDA Technical Assistance Group (TAG) is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health and Nutrition and WASH Clusters and/or the WHO and UNICEF to ensure strong leadership in coordination of health, nutrition and WASH sectors preferably by the national government. Coordination should be encouraged between all partners including donors, the UN, NGOs, Red Cross and the local National Disaster Committee.

Health and Nutrition Assessments: Support the government and partners to conduct a joint assessment on the impact on health and nutrition (basic demographics and location, major illnesses and nutritional status and deaths), the extent of functioning of

health services (structures, medical supplies, human resources) and sectors including water, sanitation and food security.

Health and Nutrition Surveillance and Early Warning Systems: Surveillance systems should be reinforced as soon as possible for early detection of diseases of epidemic importance. Regional and global climate outlooks are available almost everywhere worldwide. Although these systems and outlooks have inherent uncertainty, they provide lead-time for preparedness and contingency planning for droughts.

- Support the WHO to strengthen MOH disease surveillance (including logistics, training and laboratory diagnosis)
- Depending on the level of population movement and the nature of the surveillance system health and nutrition surveys may be needed.
- Support the WHO to conduct a communicable disease risk assessment

Food Security: General food distribution as well as feeding programs such as blanket supplementary feeding or for specific vulnerable groups.

Reinforce Primary Health Care (PHC) System:

- **Emergency Health and Nutritional Care:** priority needs to be given to emergency medical and nutritional care for severe malnutrition. Support feeding programs such as infant and young child feeding, exclusive breastfeeding, when necessary the provision of nutrition services such as community therapeutic care (CTC), supplementary or therapeutic feeding programs according to the circumstances.
- **Case Management:** Support health services for early diagnosis and management of severe malnutrition, common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory and medical supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.
- **Nutritional Supplies:** Ready to use therapeutic foods (RUTFs) such as Plumpy'nut, F75, F100, BP100, BP5, corn soy blend (CSB), etc.
- **Medical and Nutritional Supplies:** Ensure adequate supply of nutritional supplements and essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Discuss with the MOH, the WHO and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue with the national vaccination program as soon as possible in the affected population.
- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea, complementary feeding and exclusive

breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc.

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. Mid- to long- term activities must address land and water resource management as critical elements to maintaining and recharging the water table and water resources. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.
- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements.

References

Communicable diseases following natural disasters: risk assessment and priority interventions
WHO 2006: http://www.who.int/diseasecontrol_emergencies/guidelines/CD_Disasters_26_06.pdf

Communicable Disease Control in Emergencies: A Field Manual, WHO 2006:
http://whqlibdoc.who.int/publications/2005/9241546166_eng.pdf

Complex Emergencies

PUBLIC HEALTH RISK

A complex emergency is a situation that effects large populations of people from war, civil strife, food shortages, population displacement (both across borders and displaced internally) that can result in excess morbidity and mortality. Depending on the scale, location and situation, direct impact can result from injuries, landmines, torture and sexual violence. Excess morbidity and mortality from complex emergencies, however, predominately results from population displacement with overcrowding and a breakdown of public health services including water, sanitation and hygiene in concert with the underlying health status of the population

The main causes of morbidity and mortality are from communicable diseases such as measles, malaria, diarrhea and acute respiratory tract infections (ARI) as well as malnutrition, obstetrical emergencies and complications of the newborn. HIV/AIDS and tuberculosis (TB) are increasing causes of concern. In areas such as the Middle East, Europe, the ex-Soviet Union and increasingly Latin America and Asia chronic diseases are increasing in priority.

The risk to the health of the population can be from direct complications of the hazard and the underlying health status of the population.

Pre-existing Health and Nutritional Status: Increased susceptibility to disease due to underlying nutritional and vaccination status, local endemic or epidemic diseases and access to health services prior to the emergency. In the event that the disaster occurs in a country with an ongoing conflict the preexisting health status of the population could be further compromised as well as the added affect of insecurity further reducing access.

Population Displacement and Overcrowding: Increased risk of acute respiratory tract infections (ARI), measles, meningitis, polio, tuberculosis; waterborne diseases from lack of sanitation; and vector-borne diseases such as dengue, malaria, and typhus. The risk of vector-borne disease can be exacerbated by population movement to higher disease transmission areas, lack of adequate shelter, sleeping outside and lack of prevention and control strategies. Displacement of livestock with population movements can increase the risk of diseases transmitted by animals (zoonoses) such as Rift Valley fever and plague.

Disruption of Health Systems: Damage to health facilities and decreased or loss of resources such as health staff, medical supplies and logistical support including communication, electricity and transportation can significantly hinder access to primary health care and slow routine disease control programs.

Disruption of Water, Sanitation and Hygiene: Increased risk for waterborne diseases such as diarrhea including cholera and shigellosis, typhoid, leptospirosis (fresh water), hepatitis A and E. Increased risk of vector-borne diseases from lack of sanitation, overcrowding and pooling of water such as yellow fever and dengue.

PUBLIC HEALTH INTERVENTIONS

Technical Assistance: USAID/OFDA Technical Assistance Group (TAG) is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors. When appropriate, TAG Health Team will contact HHS/CDC, State Department, USDA, and other USG interagency partners on behalf of missions.

Coordination: Support the Health, Nutrition and WASH Clusters and/or the WHO and UNICEF to ensure strong leadership in coordination of health, nutrition and WASH sectors preferably led by the national government. Coordination should be encouraged between all partners including the government, donors, the UN, NGOs, and the Red Cross.

Health and Nutrition Assessment: Support the government and partners to conduct joint assessments on the impact on health and nutrition (basic demographics and location, major illnesses and deaths), the extent of damage to health services (structures, medical supplies, human resources, electricity, water and communications) and disruption of sectors such as WASH and food security.

Surveillance and Early Warning Systems: Surveillance systems should be reinforced as soon as possible for early detection of diseases of epidemic importance and malnutrition.

- Support the WHO to strengthen MOH disease surveillance (including logistics, training and laboratory diagnosis) and UNICEF for nutritional surveillance.
- Conduct nutritional surveys
- Support the WHO to conduct a communicable disease risk assessment

Reinforce Primary Health Care (PHC) System:

- **Case Management:** Support health services for early diagnosis and management of malnutrition and micronutrient deficiencies, common local diseases and reproductive health through training of health providers, use of national treatment guidelines, provide running costs to reinforce health facilities including staff incentives and logistics and necessary commodities such as laboratory, medical and nutritional supplies. **Support the existing PHC system when feasible.** If necessary consider mobile clinics but in coordination with the MOH and using national protocols.
- **Commodities/Medical and Nutritional Supplies:** Ensure adequate supply of essential drugs for the management of the most common diseases including diarrhea, ARI and malaria (if endemic), as well as measles vaccines including supplies and the cold chain. Ensure supply of nutritional supplements for therapeutic and supplementary feeding. Discuss with the MOH, the WHO, UNICEF and partners what is needed to fill gaps in commodities and address the local epidemiologic situation. Consider procurement of Interagency Emergency Health Kits (IEHK) (see Pharmaceutical section).
- **Immunization:** Mass measles immunization for children ages 6months-15 years with vitamin A (6-59 months) if current vaccination coverage is <90% (if supplies are lacking then vaccinate from 6 months to 5 years old). Cholera, Hepatitis A and typhoid vaccinations are not generally recommend in an emergency. Continue

with the national expanded program of immunization (EPI) as soon as possible in the affected population.

- **Distribute health education messages** such as hygiene, safe food preparation, water treatment, care seeking behavior, use of long lasting insecticide treated nets (LLINs), management of diarrhea and exclusive breastfeeding. Supply information education and communication (IEC) materials, logistics, training etc.
- **Nutrition:** Monitor nutritional status, support feeding programs such as infant and young child feeding, exclusive breastfeeding, when necessary the provision of nutrition services such as community therapeutic care (CTC), supplementary or therapeutic feeding programs according to the circumstances. Link with Food Security to ensure adequate intake of at least 2100 calories/day.
- **Psychosocial support** (see Psychosocial section)

Environmental Control

- **Safe water, Sanitation and Hygiene:** Support the WASH cluster to ensure safe water supplies via rehabilitation and new construction of water infrastructure and the use of chlorine and water testing kits; to provide materials for latrine construction; to distribute soap and hygiene kits; and to support development and use of materials for hygiene promotion. Attention must be paid to water resource depletion in water scarce areas. The health sector should closely link with WASH.
- **Vector control:** Support programs for malaria control such as indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved in the acute phase followed by distribution of LLINs including procurement, logistics and follow-up. Conduct environmental control methods for dengue and yellow fever such as covering stored water and waste removal. More elaborate vector control measures using pesticide would be considered on a case-by-case basis.
- **Shelter and Site Planning:** Ensure adequate site planning and shelter to avoid overcrowding and provide shelter from the elements.

References

Communicable diseases Control in Emergencies: A Field Manual, WHO 2006:
http://whqlibdoc.who.int/publications/2005/9241546166_eng.pdf

Communicable Diseases

Child Health

Approximately 10 million children under 5 years of age die every year from preventable causes (*Lancet* Child Survival series 2003). Most of these children are in developing countries without access to adequate resources. The majority of deaths are from diarrhea, acute respiratory tract infections (ARI), malaria, measles and malnutrition as well as neonatal causes (asphyxia, preterm delivery, sepsis and tetanus) under 1 year of age. Natural disasters or complex emergencies can exacerbate the already high morbidity and mortality of children under 5 due to the lack of availability of public health services along with compromised underlying health and nutritional status.

Interventions for the prevention and treatment of the most common diseases including exclusive breastfeeding for 6 months, oral re-hydration therapy (ORT), long lasting insecticide treated nets (LLINs), complementary feeding, antibiotics for sepsis and pneumonia, antimalarials and zinc can reduce deaths by 60% (*Lancet* Child Survival series 2003). Other interventions such as measles, vaccination for Hemophilus Influenza b (Hib), and tetanus vaccinations, vitamin A supplementation, water sanitation and hygiene, treatment of dysentery, clean delivery and proper care of the newborn can further decrease morbidity and mortality of children < 5 years of age. Vaccination with the rotavirus for the prevention of diarrhea and pneumococcal vaccines for acute respiratory tract infections are in the initial stages of consideration in some developing countries and can further impact pneumonia and diarrhea incidence rates.

OFDA supports initiatives in complex emergencies and natural disasters that aim to decrease morbidity and mortality in this age group. The following describes each of the leading causes of morbidity and mortality and the most effective interventions for their prevention and control. These diseases can be addressed as a group using a standard case management guidelines called Integrated Management of Childhood Illnesses (IMCI). Interventions should always use national standards and guidelines and be coordinated with the Ministry of Health (MOH) and the Health, Nutrition and WASH Clusters, WHO and/or UNICEF.

A section on malnutrition will be added in the next version of the document.

References

Jones, G et al. (2003) *How many child deaths can we prevent this year. The Lancet* (362); 65-71

IMCI Chart Book http://www.who.int/child-adolescent-health/New_Publications/IMCI/Chartbooklet.pdf

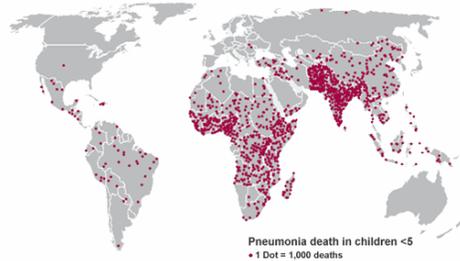
International Child Health Review Collaboration <http://www.ichrc.org/>

Acute Respiratory Tract Infections (ARI)

Public Health Risk in Complex Emergencies and Natural Disasters

ARI is one of the leading causes of morbidity and mortality in children under 5 years of age globally leading to 20% of deaths (WHO).

Pneumonia is most commonly caused by a viral or bacterial infection or a combination of both.



Bacterial causes are from *Haemophilus influenzae* type b (Hib) and *Streptococcus pneumoniae* lead to the greatest morbidity and mortality. An estimated 1 million deaths in children less than 5 results from pneumococcal pneumonia with 90% of these in developing countries (map from pneumo ADIP).

Viral causes are mostly from respiratory syncytial virus (RSV) and influenza viruses. Vaccination with Hib is routine in developed countries and is being slowly introduced in areas such as the Americas and the Caribbean.

The risk of ARI can increase in emergencies due to overcrowding and inadequate shelter of displaced populations, the breakdown of the health system including water, sanitation and hygiene as well as compromised underlying health and nutritional status of the population. Lack of vaccination against measles, diphtheria, pertussis (DPT), Hib and pneumococcal as well as malnutrition and vitamin A deficiency can put the population under 5 further at risk.

Public Health Interventions

Management of ARI should be integrated into primary health care programs and are usually not stand-alone.

- **Technical Assistance:** USAID/OFDA technical staff is available for assistance either by phone, email or for deployment to assist regional offices and partners.
- **Capacity building:** Train staff in the use of the national case definition and management of ARI usually using standard guidelines such as IMCI.
- **Case Management:** Treatment with the appropriate antibiotic and supportive care.
- **Essential medicines:** procurement of drugs for the treatment of pneumonia and supportive care (available in IEHKs, see Pharmaceutical section for procurement)
- **Immunizations:** diphtheria, pertussis, measles, Hib if part of the national EPI program and pneumococcal if part of the national expanded program of immunizations (EPI) program. Pneumococcal conjugate vaccines (PCV-7), routine in the developed countries, are currently being tested in the developing world for their efficacy. The WHO has recommended if the vaccines are available they should be incorporated into the national EPI (Weekly Epidemiological Record March 2007).
- **Nutrition:** exclusive breastfeeding for 6 months, proper infant and young child feeding, zinc supplementation and management of malnutrition.
- **Environmental:** hygiene programs for hand washing and respiratory hygiene.
- **Shelter and site management:** reduction in overcrowding, warmth during winter and proper cooking space.

- **Health Education:** programs for hygiene, vaccinations, exclusive breastfeeding, infant and young child feeding, complementary feeding, decrease in crowding and health seeking behavior for child with respiratory complaints.

References

Acute Respiratory Tract Infection in Children WHO http://www.who.int/child-adolescent-health/Emergencies/ARI_in_children.pdf

Epidemiology and Prevention of Vaccine Preventable Diseases: Hib CDC 2006
<http://www.cdc.gov/nip/publications/pink/hib.pdf>

Pneumococcal vaccine information: www.preventpneumo.org

Pneumococcal conjugate vaccine for childhood immunization-WHO position paper: WHO Weekly Epidemiological Record (WER) 12, 2007, 82, 93-104 <http://www.who.int/wer/2007/wer82.12.pdf>

Diarrhea

Public Health Risk in Complex Emergencies and Natural Disasters

Diarrhea is a major cause of morbidity and mortality in children under 5 years of age worldwide causing 1.5 million deaths per year in this age group. Diarrhea may be one of the leading causes of morbidity and mortality before the crisis and may be exacerbated due to the breakdown of water, sanitation and hygiene systems, lack of access to health care, overcrowding and lack of commodities such as soap and fuel for cooking. It can also depend on the local disease profile, the prior health status of the population including nutritional and HIV/AIDS status.

Diarrhea is defined as greater than 3 loose stools in 24 hours. It is caused by viruses such as rotavirus, Norwalk virus and hepatitis A/E, bacteria such as E. coli, Salmonella, Shigella and Campylobacter and parasites such as giardia, entamoeba and cryptosporidium. Worms do not commonly cause diarrhea. Epidemics are most often associated with cholera and shigella (dysentery or bloody diarrhea). Diarrhea can also be secondary to other diseases such as measles and malnutrition. Deaths from diarrhea are most often caused by dehydration due to lack of access to health care and knowledge of proper home care of the ill child including exclusive breastfeeding, continued feeding and re-hydration.

Public Health Interventions

USAID/OFDA should support the MOH and partners such as the WHO, UNICEF, NGOs and communities through strengthening the national health system for prevention and control.

USAID/OFDA can work with USAID missions to upgrade existing maternal and child health and WASH programs. The following interventions can be used for all cases of diarrhea including epidemic prone diseases such as cholera and shigellosis. (See *specifics for dysentery and cholera in the section on Epidemics*).

- **Technical Assistance:** USAID/OFDA technical staff is available for assistance either by phone, email or for deployment to assist regional offices and partners for Health, Nutrition, WASH and other involved sectors.
- **Surveillance and early warning** including training, laboratory diagnosis and logistics.
- **Capacity building:** Capacity building of staff through training in the use of national treatment protocols including IMCI.
- **Case management:** with oral re-hydration therapy (ORT, see Re-hydration Project reference below for recommended re-hydration therapy), IV fluids, antibiotics for bloody diarrhea (see Epidemic section for dysentery)), zinc supplementation (20mg/day for 10-14 days, 10mg for infants < 6 months old) given during an episode of diarrhea shortens the duration and decreases the incidence for 2-3 months, continued exclusive breastfeeding and maintaining feeding of non-breastfed children.
- **Environmental Control:** Safe water supply or point-of-use water treatment and safe water storage, adequate sanitation facilities, food safety, link with and coordination with WASH and shelter sectors, provision of soap and chlorine.
- **Hygiene Promotion and Health Education:** production/adaptation of information, education and communication (IEC) materials for hand washing,

home management of re-hydration, health care seeking behavior, exclusive breastfeeding, safe water, sanitation and food safety.

- **Nutrition:** exclusive breastfeeding, proper infant and young child feeding, zinc supplementation and management of malnutrition.
- **Vaccination:** Rotavirus vaccination (where part of national protocol)

References

Enhanced Diarrheal Disease Control Resource Center <http://www.eddcontrol.org/>

Diarrhea Treatment Guidelines 2005 USAID with WHO and UNICEF <http://www.eddcontrol.org/>

Acute Diarrheal Disease in Complex Emergencies: Critical Steps WHO 2004
http://www.who.int/topics/cholera/publications/en/critical_steps_en.pdf

The Re-hydration Project <http://rehydrate.org/index.html>

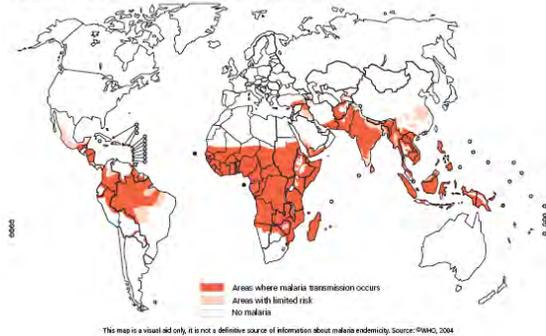
Rotavirus vaccination www.rotavirusvaccine.org

Malaria

Public Health Risk in Complex Emergencies and Natural Disasters

Malaria is endemic (continuously present) in 107 (2005 WHO Malaria Report) countries with most of the burden in Africa. Each year 300-500 million people fall ill resulting in over 1 million deaths (WHO). Approximately 80% of complex emergencies are in malaria endemic areas (WHO map 2004). Malaria control in emergencies can be disrupted due to population movements, breakdown of health infrastructure, lack of resources (such as health providers, medicines, long lasting insecticide treated nets (LLINs) and laboratory supplies), resistance to malaria drugs, weakened immunity due malnutrition and other illnesses, environmental changes such as vector breeding sites and lack of shelter, crowding and movement from different malaria risk zones (from an area with low transmission to high).

Figure 1.1 Global malaria distribution in 2004



Populations most at risk and of top priority for intervention are pregnant women, severely malnourished and children under 5. Then the next priority is moderately malnourished and HIV infected and then the entire population. With repatriation a previously immune population that have been away for greater than 6 months may have lost their immunity and could be at risk upon return. Returning population can also bring back malaria parasites that are resistant to local population and should be screened and treated before return.

Malaria is caused by a protozoan parasite (4 species that infect humans: *Plasmodium falciparum*, *P. vivax*, *P. ovale* and *P. malariae*) transmitted by the female Anopheles mosquito vector. *P. falciparum* is the species that causes the most severe disease and can be fatal if not promptly treated. The vector bites at night mostly inside between dusk and dawn, breeds in clean pools of water and rests on walls after feeding. The incubation period for *P. falciparum* is from 7-14 days after a bite and before symptoms.

High transmission or endemic areas with stable continuous transmission are typically located in lowlands with long rainy seasons. With frequent infection there is a low level of immunity that is developed over time. Children and pregnant women are at higher risk for severe infection. *Low transmission* or epidemic areas are unstable and prone to epidemics are typically in highlands and desert areas. The whole population is at risk due to lack of immunity with pregnant women in particular. Areas with seasonal transmission are at risk after the rainy season.

Symptoms include fever, headache, muscle aches, weakness, vomiting, cough, diarrhea, abdominal pain, kidney failure, convulsions, shock, coma and death (1% case fatality rate with proper care). HIV infection can increase the susceptibility to malaria and malaria may increase the viral load of HIV patients. Co-infection with HIV during pregnancy can increase risk of anemia, low birth weigh and infant death and can reduce efficacy of malaria prophylaxis and treatment.

Public Health Interventions

Acute Phase: Reduce excess mortality through good triage, diagnosis with rapid diagnostic tests (RDT) and case management with anti-malarial drugs as well as vector control with indoor residual spraying (IRS) and insecticide treated plastic sheeting (ITPS) when approved. It is also recommended to screen and treat pregnant women, malnourished children and persons with HIV/AIDS.

Post-acute phase: Integrate malaria treatment and prevention strategies into primary health care (PHC) services with the national malaria control program. Along with treatment using appropriate drugs and intermittent preventive treatment (IPT) for pregnant women in established ANC services prevention of malaria should be stressed through high coverage vector control programs with LLINs and IRS.

Technical Assistance: USAID/OFDA technical staff is available for assistance either by phone, email or for deployment to assist regional offices and partners.

Coordination: with the MOH and partners such as the WHO, UNICEF and NGOs as well as with other USG strategies particularly the President's Malaria Initiative (PMI). The PMI has currently been implemented in 15 countries in Africa (Uganda, Tanzania, Angola, Malawi, Rwanda, Senegal, Mozambique, Ghana, Benin, Kenya, Mali, Zambia, Ethiopia, Madagascar and Liberia). The OFDA Health Team can help facilitate communication with the DC PMI staff. Activities should be coordinated with the national malaria control program if available using national policies.

Surveys/Assessments: To identify the species of malaria, transmission of malaria, seasonality, outbreaks, at risk population, immune status of the population, capacity of national malaria control program, availability of drugs and resistance patterns and prevention methods.

Surveillance: Ongoing monitoring of malaria incidence should be incorporated into the national surveillance system.

Capacity Building: Training and supervision of health providers in case detection, management, prevention and reporting and training and supervision of laboratory staff.

Treatment: Treatment with anti-malarial medications based on the local resistance patterns, national guidelines and availability of drugs should be free of charge in emergencies. With longer term emergencies treatment of malaria should be an integral part of the PHC system and included in IMCI guidelines.

In Africa and Asia malaria is resistant to chloroquine but sensitive to Artemisinin-based Combination Therapy (ACT) such as Artemisinin/Lumefantrine (Coartem) (except for children <5kg or first trimester of pregnancy) and Artemisinin/Amodiaquine. Pregnancy safe treatments include quinine in all trimesters, ACT in 2nd and 3rd, chloroquine (only recommended in Hispaniola, central America west of the Panama Canal and parts of Middle East), proguanil and SP (2nd and 3rd trimesters only).

Malaria drugs are available through IEHK kits (specific malaria modules available), through PMI, UNICEF and the Global Fund. The WHO and UNICEF has established system for pre-certified ACT drugs.

Intermittent Preventive Treatment (IPT): Management of **malaria in pregnancy** should start in the acute phase of an emergency and then through established antenatal care (ANC) services. Pregnant women are at greatest risk for malaria in the 1st and 2nd trimester in the 1st and 2nd pregnancies.

- In high transmission regions malaria in pregnancy can lead to low birth weight, intrauterine growth retardation, pre-maturity, infant death and maternal anemia.
- In low transmission and seasonal malaria regions malaria in pregnancy can lead to spontaneous abortion, stillbirth, premature birth, anemia, low birth weight and maternal death.
- At the ANC provide anti-malarial drugs¹.
- Malaria in Pregnancy should include IPT in combination with vector control measures such as LLINs or IRS as well as management of anemia. In areas of unstable/seasonal transmission or during an epidemic use case management and LLINs.

Diagnosis: made with rapid diagnostic tests (RDT), microscopy and clinically using case definitions. In low to moderate transmission zones it is necessary to confirm malaria in all malaria suspected patients. In high transmission zones confirmation is necessary in only patients > 5 years of age.

- Microscopy (0.12-0.40\$/test) is the gold standard for diagnosis of malaria. It is most effective in stable/endemic zones, as it requires skilled staff and equipment. It is more sensitive to detect low levels of malaria as well as differentiating between species.
- RDTs (0.65\$/test) are good for emergencies because they are quick, sensitive and specific, do not require laboratory supplies and staff requires only minimal training. RDTs are sensitive to humidity and temperature (4-30C) so they should be monitored. RDTs are also good for low transmission areas in emergencies as well as screening for surveys and during epidemics.

Long Lasting Insecticide Treated Nets (LLIN): LLINs are recommended after the acute phase of the emergency in moderate to high transmission zones. They are recommended as they are durable for at least 3 years and can still be beneficial after 20 washes.

- LLINs can be distributed in the acute phase only if they are stockpiled in advance and the community is accustomed to using them. Distribution should target high-risk populations.
- After the acute phase LLINs should be distributed through one of several service delivery mechanisms including ANC clinics, feeding centers, HIV programs and immunization programs to high risk populations and then expand coverage depending on availability to target the whole population.
- Use, retention and quality of LLINs should be monitored regularly at the community level. Distribution should target at least > 60% population to decrease incidence of malaria within the community through vector control. With lower coverage levels, while still providing individual protection, the community-wide protective effects of LLINs are diminished.

¹ At least 2 doses of sulfadoxine 500mg-pyramethamine 25mg (SP) beginning in the 2nd trimester (3 tablets of SP/dose) one month apart (Every month where HIV prevalence is > 10%, at least 3 doses if HIV positive but not to women who have received cotrimoxazole prophylaxis)

- Olyset Net and PermaNet 2.0 are recommended by the WHO. BASF LLINs will be soon released on the market.
- Procurement can be through UNICEF, the WHO or through social marketing programs according to the local strategy. In emergencies they should be distributed for free to priority population. (See section on pesticides for USAID requirements).

Indoor Residual Spraying (IRS): Is recommended in the acute phase of the emergency in camp settings and in settings with clustered shelters. It can be useful if there is displacement to an area of high prevalence of malaria, the immunity of the population is low, the type of shelter is adequate and it is prior to the malaria season. Unlike LLINs it does not require extensive behavior change and cannot be sold or stolen. Coverage of 85% of all shelters is necessary to ensure community protection through vector control. It is not for individual protection within the shelter. The effects of IRS should last for 2-6 months (See section on pesticides for USAID requirements).

Insecticide Treated Plastic Sheetting (ITPS): Works in the same way as IRS through community protection with vector control. When considering the use ITPS as a disease control initiative implementing partners must also ensure its appropriate utility as a shelter, its safety to its occupants and to the environment as well as cultural acceptability. Mainstreaming the use of plastic sheetting in emergencies in camp based settings is currently not recommended until completion of Phase III trials and endorsement by the WHO Pesticide Evaluation Team (WHOPES).

Health Education: Production/adaptation of information, education and communication (IEC) materials for causes of malaria and transmission, vulnerable groups, use of LLINs, health care seeking behavior, where to access health services and management of child with fever. Training of community health workers (CHW), health education campaigns and monitoring for behavior change.

Site planning and shelter: Plan shelter away from vector breeding sites such as lowlands and marshes. Consider using ITPS if approved by WHOPES.

Environmental control: Environmental control strategies are not recommended on a routine basis in the acute phase of the emergency. In a chronic long-term emergency environmental control linked with agriculture and water and sanitation can be considered based on the local situation and national strategies. Shelter and site planning can reduce the exposure to vectors though populations residing away from vector breeding sites. The use of larvicides is not recommended in emergencies unless in very particular epidemic situations on a case-by-case basis. Larvicides can be effective in semi-arid areas with localized breeding sites or in temporary large scale flooding in endemic and epidemic zones.

Outbreak response: In unstable transmission areas or when population has moved to an area of variable transmission. The threshold for an outbreak is an increase in number of people with fever infected by malaria. OFDA will respond to an outbreak of malaria on a case by case basis and will most likely scale up existing programs already implementing PHC in the affected region, to assist with the production of an epidemic preparedness plan, create or strengthen a national coordination committee and the surveillance system, stockpile drugs, RDTs or laboratory supplies and vector control measures such as LLINs, IRS and larvicides.

References

Malaria Control in Complex Emergencies; an interagency handbook
http://www.who.int/malaria/docs/ce_interagencyfhbook.pdf

Best Practices and lessons learnt: Implementing malaria control in complex emergencies in Africa 2000-2004 WHO/RBM/MCO September 30, 2005

Malaria Medicines and Supply service: <http://rbm.who.int/mmss/>

Manual for IRS WHO 2000:
http://whqlibdoc.who.int/hq/2000/WHO_CDS_WHOPES_GCDPP_2000.3.Rev.1.pdf

Mapping Malaria Risk in Africa <http://www.mara.org.za/>

Measles

Public Health Risk in Complex Emergencies and Natural Disasters

Measles is a leading cause of vaccine preventable deaths for children under 5 years of age. Approximately 345,000 people died worldwide from measles in 2005 (Measles Initiative) with the majority of these children under 5 years of age. Measles is a highly contagious viral infection transmitted from person to person by respiratory droplets. The risk of epidemics of measles in emergencies is increased due to overcrowding, disintegration of health services, malnutrition and according to baseline measles vaccination rates.

Measles presents with a runny nose, fever, cough, red eyes and white spots in the mouth (Koplik) after a 10-12 day incubation period from exposure. A rash usually presents about 14 days after exposure on head and face and spreads to the body. Deaths are more common in children less than 5 years old from secondary infections including pneumonia, diarrhea, and airway obstruction. Deaths are associated with malnutrition particularly vitamin A deficiency. Case fatality rates in developing countries can range from 1-5% and can rise in emergencies to 10-30%.

Public Health Interventions

One case should be considered the threshold to respond to a measles outbreak but measles vaccination should always be implemented immediately in a setting of displaced population and overcrowding with low (<80%) or unknown vaccination status.

- **Technical Assistance:** USAID/OFDA technical staff is available for assistance either by phone, email or for deployment to assist regional offices and partners.
- **Surveillance** of measles cases for early warning
- **Mass measles vaccination campaigns** in displaced sites and areas of overcrowding. Planning should include training and payment of vaccinators, supply of vaccines, medical supplies including syringes and needles, cold chain and logistics. Vaccination recommendations include:
 - 6 months to 15 years of age (priority for 6 months to 5 years) for a target of 95% coverage.
 - Vitamin A for children 6 months to 5 years for a target of 95% coverage.
 - Children 6 months of age should receive a second dose at 9 months.
- **Case Management:** Capacity building of health staff with training, enforcement of use of national case detection and treatment protocols and availability of medical supplies.
- **Supply of essential medicines** for supportive care and the treatment of secondary infections with antibiotics.
- **National expanded program of immunizations (EPI):** Integration of measles vaccination and vitamin A supplementation into EPI programs after the acute phase of the emergency.
- **Health education** for health seeking behavior and nutrition of child including exclusive breastfeeding for 6 months and complementary feeding.
- **Nutritional support** with promotion of exclusive breastfeeding for 6 months, proper infant and young child feeding and vitamin A supplementation.

References

WHO measles Fact Sheet <http://www.who.int/mediacentre/factsheets/fs286/en>

Measles Initiative www.measlesinitiative.org

Epidemiology and Prevention of Vaccine Preventable Disease: Measles CDC 2006
<http://www.cdc.gov/nip/publications/pink/meas.pdf>

WHO Weekly Epidemiological Record April 2004 Position paper on measles vaccination
http://www.who.int/immunization/wer7914measles_April2004_position_paper.pdf

Expanded Program of Immunizations (EPI)

The EPI is the national strategy for management of vaccine preventable diseases. Each country may have a different schedule depending on national protocol and availability of vaccines. Below is an example of a vaccination schedule for the U.S. (CDC 2007). Other vaccines such as yellow fever and BCG are used internationally and not represented here.

DEPARTMENT OF HEALTH AND HUMAN SERVICES • CENTERS FOR DISEASE CONTROL AND PREVENTION
Recommended Immunization Schedule for Persons Aged 0–6 Years—UNITED STATES • 2007

Vaccine ▼	Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B ¹	HepB		HepB	<i>see footnote 1</i>		HepB					HepB Series	
Rotavirus ²			Rota	Rota	Rota							
Diphtheria, Tetanus, Pertussis ³			DTaP	DTaP	DTaP		DTaP					DTaP
<i>Haemophilus influenzae</i> type b ⁴			Hib	Hib	Hib ⁴	Hib				Hib		
Pneumococcal ⁵			PCV	PCV	PCV	PCV					PCV PPV	
Inactivated Poliovirus			IPV	IPV		IPV						IPV
Influenza ⁶							Influenza (Yearly)					
Measles, Mumps, Rubella ⁷							MMR					MMR
Varicella ⁸							Varicella					Varicella
Hepatitis A ⁹								HepA (2 doses)				HepA Series
Meningococcal ¹⁰												MPSV4

 Range of recommended ages
 Catch-up immunization
 Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2006, for children aged 0–6 years. Additional information is available at <http://www.cdc.gov/nip/recs/child-schedule.htm>. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and

other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

Components of a national EPI program include vaccines, vaccination supplies (syringes, needles, sharps boxes, alcohol pads), cold chain, logistics (vehicles, gas, roads), trained staff, vaccination cards and communication materials.

In 2002, WHO estimated that 1.4 million of deaths among children under 5 years were due to diseases that could have been prevented by routine vaccination. This represents 14% of global total mortality in children less than 5 years of age. This statement of burden of vaccine preventable diseases and the following descriptions have been directly extracted from the WHO. http://www.who.int/immunization_monitoring/diseases/en/

BCG: Bacille Calmette-Guérin vaccine: Vaccine against tuberculosis given at birth to protect against severe tuberculosis (TB) in children less than 2 years of age such as TB meningitis. The vaccine is not routinely given in the US.

Diphtheria: Diphtheria is a bacterial infection caused by *Corynebacterium diphtheria*, transmitted from person to person through close physical and respiratory contact. It can cause infection of the nasopharynx, which may lead to breathing difficulties and death.

Hemophilus influenzae b: *Haemophilus influenzae* type b (Hib) is commonly present in the nose and throat. Bacteria are transmitted from person to person in droplets through sneezing and coughing. Infected children may carry Hib bacteria without showing any signs or symptoms of illness such as meningitis, pneumonia, sepsis, epiglottitis (a

severe throat infection), but they can still infect others. The risk of disease is highest for children between six months and two years of age.

Hepatitis A: Virus that causes inflammation of the liver. Two of the viruses that cause hepatitis (hepatitis A and E) can be transmitted through water and food; hygiene is therefore important in their control. Hepatitis from these 2 viruses resolves spontaneously.

Hepatitis B: Virus that causes inflammation of the liver. Adults who get hepatitis B usually recover but may go on to chronic liver disease. However most infants infected at birth become chronic carriers i.e. they carry the virus for many years and can spread the infection to others. The virus is carried in the blood and other body fluids. It is usually spread by contact with blood

Influenza: caused by a virus that attacks mainly the upper respiratory tract – the nose, throat and bronchi and rarely also the lungs. The infection usually lasts for about a week. It is characterized by sudden onset of high fever, muscle aches, headache and severe malaise, non-productive cough, sore throat, and runny nose. Most people recover within one to two weeks without requiring any medical treatment. In the very young, the elderly and people suffering from medical conditions influenza poses a serious risk. In these people, the infection may lead to severe complications of underlying diseases, pneumonia and death.

Measles: (See Measles section)

Meningococcal: (See Meningitis section)

Mumps: Mumps is an infection caused by a virus. It is sometimes called infectious parotitis, and it primarily affects the salivary glands. Mumps is mostly a mild childhood disease. It most often affects children between five and nine years old. But the mumps virus can infect adults as well. When it does, complications are more likely to be serious. Mumps virus is present throughout the world. It is spread by airborne droplets released when an infected person sneezes or coughs and by direct contact with an infected person.

Pertussis: or whooping cough is a disease of the respiratory tract caused by bacteria that live in the mouth, nose, and throat. Many children who contract pertussis have coughing spells that last four to eight weeks. The disease is most dangerous in infants. Pertussis spreads very easily from child to child in droplets produced by coughing or sneezing. It can lead to pneumonia.

Pneumococcal: (See ARI section)

Poliovirus: Poliomyelitis, or polio, is a crippling disease caused by any one of three related viruses, poliovirus types 1, 2 or 3. The only way to spread poliovirus is through the fecal/oral route. The virus enters the body through the mouth when people eat food or drink water that is contaminated with feces. The virus then multiplies in the intestine, enters the bloodstream, and may invade certain types of nerve cells, which it can damage or destroy. Polioviruses spread very easily in areas with poor hygiene. Live oral polio vaccine (OPV) or Inactivated polio vaccine (IPV) given by injection depending on country schedule.

Rotavirus: (See Diarrhea section)

Rubella: Rubella is an infection caused by a virus. Congenital rubella syndrome (CRS) is an important cause of severe birth defects. When a woman is infected with the rubella virus early in pregnancy, she has a 90% chance of passing the virus on to her fetus. This can cause the death of the fetus, or it may cause CRS. Even though it is a mild childhood illness CRS causes many birth defects. Deafness is the most common, but CRS can also cause defects in the eyes, heart, and brain. Rubella is spread in airborne droplets when infected people sneeze or cough. Once a person is infected, the virus spreads throughout the body in about five to seven days. During this time, pregnant women may pass the virus on to their fetuses.

Tetanus: Tetanus is acquired through exposure to the spores of the bacterium *Clostridium tetani* that are universally present in the soil. The disease is caused by the action of a potent neurotoxin produced during the growth of the bacteria in dead tissues, e.g. in dirty wounds or in the umbilicus following non-sterile delivery. Tetanus is not transmitted from person to person. Tetanus presents as generalized spasms of the muscles often starting in the jaw (lockjaw). A person usually becomes infected with tetanus when dirt enters a wound or cut. Tetanus germs are likely to grow in deep puncture wounds caused by dirty nails, knives, tools, wood splinters, and animal bites. Neonatal tetanus is particularly common and serious. Most infants who get the disease die. Neonatal tetanus is particularly common in rural areas where most deliveries are at home without adequate sterile procedures. Infants born to mothers who have not been immunized do not have protective antibodies.

Varicella: A highly contagious infectious disease caused by the varicella-zoster virus. It usually affects children, is spread by direct contact or via respiratory droplets, and is characterized by the appearance on the skin and mucous membranes of successive crops of itchy vesicles that are easily broken and become scabbed. Chickenpox is relatively benign in children, but may be complicated by pneumonia and encephalitis in adults.

Yellow Fever: (See Yellow Fever section). 1 dose every 10 years (> 9 months of age).

Epidemic Diseases

The major causes of epidemics in emergencies are from cholera, meningitis, measles and dysentery. Other epidemic potential diseases depending on the location can be from malaria, typhus, yellow fever, sleeping sickness, typhoid, hepatitis A and E, leishmaniasis, relapsing fever and viral hemorrhagic fevers. Please see the WHO manual for Communicable Disease Control in Emergencies for details on the diseases not mentioned here: http://whqlibdoc.who.int/publications/2005/9241546166_eng.pdf

USAID/OFDA will support epidemics on a case-by-case basis through providing:

- **Technical support:** through the USAID/OFDA Technical Assistance Group (TAG) and through a standing contract that USAID/OFDA has with the Centers for Disease Control (CDC) in Atlanta.
- **Programming:** scaling up current field based programs for coordination with the WHO Communicable Disease Surveillance and Response (CDR) unit, surveillance in line with the national Integrated Disease Surveillance and Response program (IDSR), expand coverage of the Early Warning and Alert Response System (EWARS), capacity building, case management, prevention, health education, preparedness and response
- **Commodities:** procurement of necessary commodities such as vaccines, laboratory equipment, essential medicines, oral re-hydration therapy (ORT) and long lasting insecticide treated nets (LLINs).
- **Funding:** Through bilateral funding to governments with a disaster declaration.

Avian and Pandemic Influenza

Public Health Risk in Complex Emergencies and Natural Disasters

Avian Influenza (AI) is a viral disease of animals specifically birds that can occasionally affect humans. The current AI is caused by the H5N1 virus. H5N1 is worrisome due to its potential to lead to a pandemic influenza (PI) in humans. The WHO is monitoring the pandemic phases in order to ensure early warning and preparedness. The WHO table below demonstrates the phases of the pandemic. Currently the disease is mostly in birds with limited bird to human transmission from close contact with a sick bird, Phase 3. The virus does not currently pass from human to human. Once it transfers easily and is sustained from human to human there is a risk of a pandemic. There is a possibility the virus will also die out naturally and not lead to a pandemic.

Inter-pandemic phase	Low risk of human cases	1
	Higher risk of human cases	2
Pandemic alert	No or very limited human-to-human transmission	3
	Evidence of increased human-to-human transmission	4
	Evidence of significant human-to-human transmission	5
Pandemic	Efficient and sustained human-to-human transmission	6

Human influenza viruses are transmitted through large particles (>5µm) through respiratory droplets at about a distance of 1 meter and through direct contact from hand to mouth transmission. Though limited data exists the incubation period for H5N1 avian influenza is thought to range from 2 to 8 days, however can be as long as 17 days. Adults are infectious for about 5 days and children approximately 10 days. Attack rates are approximately 15-35% with 1-2% requiring hospitalization. There is currently a very high mortality rate of upwards of 50%.

Once the virus can be transmitted easily from human to human prevention and response options will be limited due to breakdown in support systems such as transportation, security, utilities and the lack of critical resources in all sectors including health.

Populations in emergencies particularly the displaced populations are at risk for AI due to overcrowding, lack of access to health services, lack of access to supportive care, malnutrition, incidence of other communicable diseases, lack of surveillance and early warning, lack of trained providers to detect and manage cases, poor link with the agriculture sector and coordination with national preparedness planning.

It is important to consider the fact that the common diseases that had once affected the population will continue such as malaria, diarrhea, pneumonia, obstetrical emergencies, TB, HIV/AIDS among others. Traditional prevention programs for vaccine preventable diseases, malaria, HIV/AIDS etc. will be disrupted subjecting the population to these diseases.

Public Health Interventions

The best method of disease control is through primary prevention of transmission from bird to human through interventions at the livestock level through surveillance, vaccination of birds and through culling of sick birds. This section concentrates on the disease in humans through mitigating against human to human spread and preparing to respond to a widespread pandemic.

USAID/OFDA will support interventions in coordination with the USAID Avian and Human Influenza Response Unit. The USAID AI Unit is responsible for preparedness in phases 3-5 including the response to the management of avian influenza in the animal population as well as coordinating with USAID/OFDA for pandemic preparedness for a response <http://ghintranet.usaid.gov/aiunit/index.aspx> .

Preparedness in pre-pandemic phase (phases 3-5) including preparing for a response to phase 6:

- **Coordination:** with partners such as the USG, UN System Influenza Coordination (UNSIC), WHO, FAO, NGOs, Red Cross movement, governments and other donors.
- **National preparedness plan:** Support the local government and partners to develop a pandemic preparedness plan along with all other sectors. This may be built upon the national AI preparedness plan.
- **Needs Assessment:** Conduct a needs assessment for necessary medical supplies based on local prevalence rates of disease and demographic data.
- **Surveillance and early warning:** Support the WHO and MOH to strengthen the surveillance system including case definition, laboratory including access to a reference lab, logistics and reporting.
- **Capacity Building:** training of health staff, community leaders and households how to manage population with AI and other common public health concerns during a pandemic.
- **Case management for AI:** Antiviral medications (Oseltamivir or Tamiflu) can be taken within 72 hours for patients with AI and for close contacts of these patients. At the moment antiviral medications can be used for small clusters of patients but the utility in a PI is unknown.
- **Strengthen Primary Health Care:** Strengthen the current health system to ensure the prevention and management of the most common diseases causing morbidity and mortality
 - EPI: routine vaccinations (including measles with vitamin A)
 - Malaria: LLINs, anti-malarial medications, IPT
 - Diarrhea: chlorine tablets for water, soap, ORS, zinc
 - ARI: antibiotics, vaccination for Hib and pneumococcal pneumonia
 - HIV/AIDS: condoms, ARVs, medicines for opportunistic infections
 - TB: antibiotics for TB
 - Reproductive health: clean birth kits, TT, IPT, fe/folate
 - Malnutrition: RTUF
- **Commodities:** Positioning stockpiles of PPE, disinfectants and soap (see purchasing information), masks and essential medicines for common diseases (malaria, ARI, diarrhea etc.),
- **Support services:** Ensure that planning coordinates with other sectors such as food security, water, sanitation, and hygiene, agriculture, logistics, security

- **Health education and communications:** Hygiene control both for hand washing and respiratory, information on where to access health services and how to manage AI and common illnesses at home.
- **Containment:** Isolate and treat patients with AI and close contacts, infection control in health facilities including PPE, communication, disinfection of health facilities and homes of patients.
- **H5N1 Vaccines:** Vaccines are a useful tool for preventing disease in humans, however, a vaccine for a novel virus will likely take 2 to 6 months to develop after it emerges and longer to distribute. There will not be enough vaccine developed to cover the global population.

Pandemic Response (phase 6): Priority Activities (*Guidance is in progress*)

- **Non-Pharmaceutical interventions:**
 - *Social distancing:* Avoid social gatherings, close schools and public institutions, stay home.
 - *Hygiene:* hand and respiratory hygiene through hand washing and covering the mouth with coughing
 - *Masks/scarves:* To prevent the spread of the virus from an infected person to the community (not to protect the wearer of the mask)
- **Case management of AI:** Antiviral medications (Oseltamivir or Tamiflu) must be taken within 72 hours, there are limited supplies of antiviral medications and their effectiveness for an upcoming pandemic is largely unknown. At the pandemic phase logistical constraints will make the distribution of this medication unlikely
- **Community based PHC for non-AI health concerns:** Guidance and tools are being produced to manage the PHC interventions above at the community level.
- **H5N1 vaccinations:** When/if available and logistics are possible. It will take months to produce the vaccine and it will be available in limited supply. Logistic constraints will make the distribution of the vaccine in rural settings unlikely.
- **Funding:** USAID/OFDA may be able to assist with bi-lateral funding through disaster declarations assuming that current transfer systems are in place.
- **Technical Support:** Where applicable through field based regional advisors and DC based technical support from USAID/OFDA, USAID and CDC.
- **Response teams:** Assuming that human resources will be limited and not targeted during a widespread pandemic deployment of overseas teams will be unlikely. DC based Response Teams would be possible though a pre-arranged trained team that could work from home (guidance is forthcoming).

Pandemic Influenza Preparedness and Mitigation in Refugee and Displaced Populations WHO 2006 http://whqlibdoc.who.int/hq/2006/WHO_CDS_NTD_DCE_2006.2_eng.pdf

UN <http://influenza.un.org>

USG <http://www.pandemicflu.gov/>

WHO http://www.who.int/csr/disease/avian_influenza/en/

Cholera

Public Health Risk in Complex Emergencies and Natural Disasters

Cholera (from the bacteria *Vibrio cholerae*) causes outbreaks of acute watery diarrhea that can quickly lead to dehydration and death. Infection is transmitted most often through contaminated water or food with an incubation period of 1-5 days after infection. Attack rates can be as high as 10-15% in displaced populations but should be 1-2%. Case fatality rates can be as high as 50% if not treated properly (should be at less than 1%). Cholera is treated with re-hydration and for severe cases appropriate antibiotic (depending on the susceptibility of the circulating strain of *Vibrio cholerae*. Doxycycline is commonly used for adults and bactrim for children. One case of cholera can signal an outbreak and should alert a response.

Risk in emergencies is increased due to population displacement with overcrowding, lack of water, sanitation and hygiene, lack of health care, appropriate treatment and the underlying health status of the population.

Public Health Interventions

- **Coordination:** Support the MOH to coordinate the National Epidemic Preparedness and Response committee (EPR) with all partners including NGOs, UN, Red Cross and donors.
- **Preparedness Plan:** Support the MOH and partners to implement or update the national treatment and case definition policy, human resources and training, emergency stockpile of medical and laboratory supplies and alert system.
- **Surveillance:** Support national Integrated Diseases Surveillance and Response (IDSR), support MOH to strengthen surveillance and expand coverage of the Early Warning and Alert Response System (EWARS), promote the standard case definition, laboratory confirmation, reporting and logistics, deployment of CDC technical assistance if required under USAID/OFDA contract and collaborate with the WHO Communicable Disease Surveillance and Response (CSR) unit.
- **Capacity building** of staff through training on prevention, case identification, enforcement of national treatment protocols and reporting.
- **Case management:** Treatment with re-hydration therapy (oral rehydration salts (ORS) or IV), the appropriate antibiotics (doxycycline or bactrim for children) based on local sensitivity patterns and zinc supplementation.
- **Cholera treatment centers:** Support the establishment of cholera treatment centers when necessary to fill the gaps in the national health system.
- **Commodities/Emergency Stocks:** Assess with the MOH the WHO and partners what medical, WASH and laboratory stocks are available to manage a cholera outbreak. Fill gaps in supplies such as ORS, IV fluids, antibiotics, chlorine and soap.
- **Environmental Control:** Safe water supply including point-of-use water treatment (provision of chlorine) and safe water storage, adequate sanitation facilities (materials for latrines and disinfectant supplies), food safety. Link coordination activities with WASH.
- **Nutrition:** Exclusive breastfeeding, proper infant and young child feeding, continued feeding and vitamin A and zinc supplementation.
- **Hygiene Promotion and Health Education** production and dissemination of IEC materials, hand washing, provision of soap, breastfeeding, complementary feeding and food safety.

- **Vaccinations:** An orally administered cholera vaccine (OCV) is not useful during epidemics and emergencies but may be appropriate in stable settings and should be discussed with the WHO and HHS/CDC.
- **Management of dead bodies:** Burials should be held within hours of death and corpses should not be handled at home without hygiene precautions. Corpses should be disinfected and put into plastic bag before culturally acceptable burial.

References

Cholera Cable January 2007 STATE 002234

Guidelines for Cholera Control WHO 1993 <http://www.helid.desastres.net/?e=d-0who--000--1-0--010---4-----0--0-10I--1en-5000---50-about-0---01131-0011-0utfZz-8-0-0&a=d&c=who&cl=CL1.1.7&d=Jwho90e>

Cholera outbreak: assessing the outbreak response and improving preparedness WHO 2004 http://www.who.int/topics/cholera/publications/cholera_outbreak/en/index.html

First steps in managing an outbreak of cholera WHO 2003 http://www.who.int/topics/cholera/publications/first_steps/en/index.html

Acute diarrheal diseases in complex emergencies: critical steps http://www.who.int/topics/cholera/publications/critical_steps/en/index.html

Dysentery

Public Health Risk in Complex Emergencies and Natural Disasters

Dysentery is a disease caused mainly by the bacteria *Shigella dysenteriae* type 1 (Shigella, shigellosis). It is characterized by bloody diarrhea and fever normally without major loss of fluids. Shigella causes 80 million cases and 700,000 deaths per year with 99% of these in developing countries (WHO). It is highly contagious from person to person and through the contamination of water and food with an incubation rate of 1 day to 1 week from infection to symptoms. One case of severe bloody diarrhea and fever should alert a response.

Risk in emergencies is increased due to population displacement with overcrowding, lack of water, sanitation and hygiene, lack of health care, appropriate treatment and underlying health status. There is also a current high level of resistance to common available antibiotics (ampicillin, bactrim, naldixic acid, chloramphenicol and tetracycline) confounding treatment strategies (ciprofloxacin and ceftriaxone are the currently recommended antibiotics, although resistance to these has also been reported).

Public Health Interventions

- **Coordination:** Support the MOH to coordinate the National Epidemic Preparedness and Response committee (EPR) with all partners including NGOs, UN, Red Cross and donors.
- **Preparedness Plan:** national treatment and case definition policy, training, emergency stockpile of medical and laboratory supplies and alert system.
- **Surveillance:** Support national Integrated Diseases Surveillance and Response (IDSR), support MOH to strengthen surveillance and expand coverage of the Early Warning and Alert Response System (EWARS), promote the standard case definition, laboratory confirmation, reporting and logistics, deployment of CDC

technical assistance if required under USAID/OFDA contract and collaborate with the WHO Communicable Disease Surveillance and Response (CSR) unit.

- **Capacity building** of staff through training in use of national treatment protocols, case definition and surveillance.
- **Case management:** Treatment with the appropriate antibiotics (ciprofloxacin) based on local sensitivity patterns, zinc supplementation and supportive care for dehydration and fever.
- **Commodities:** medicines, laboratory supplies, soap, and chlorine.
- **Environmental Control:** Safe water supply including point-of-use water treatment (provision of chlorine) and safe water storage, adequate sanitation facilities, food safety, coordination with WASH and shelter.
- **Nutrition:** Exclusive breastfeeding, proper infant and young child feeding, continued feeding, vitamin A supplementation.
- **Hygiene promotion and Health Education:** production/adaptation of IEC materials for hand washing, home management of re-hydration, health care seeking behavior, exclusive breastfeeding, safe water and food safety.

References

WHO Guidelines for the Control of Shigellosis, including epidemics due to *Shigella dysenteriae* type 1 <http://whqlibdoc.who.int/publications/2005/9241592330.pdf>

Meningitis

Public Health Risk in Complex Emergencies and Natural Disasters

Epidemic meningitis is caused by a bacterium *Neisseria meningitidis* (serotypes A, B, C and W135, serotype A is the most common in Africa). It is transmitted through respiratory droplets from person to person. Epidemics expand rapidly within weeks and can continue for months without vaccination. The attack rate can range from 10-1,000 cases/100,000 population with the higher range of 1,000/100,000 or 1% occurring in Africa. Epidemics of meningitis mostly affect the population under 30. Countries at highest risk for epidemics lie in the meningitis belt (from Senegal to Ethiopia) in Sub-Saharan Africa (see CDC map to the right). Epidemic waves tend to come in cycles of approximately 10-14 years. Meningitis is also **endemic** and seasonal in many countries with incidence rates of 20/100,000 mostly in children ages 5-10 years of age during the dry season from December to June.

Epidemic risk is increased in emergencies due to overcrowding from population movements, lack of hygiene, lack of access to health care, poor health care seeking behavior, possible movement into the meningitis belt. Populations can be further at risk due to a dry season and dust storms as well as underlying health status including the presence of respiratory tract infections (ARI).



The thresholds for meningitis outbreaks below are based on stable populations but may be adjusted for displaced populations due to emergencies. In cases where there are large groups of displaced populations in overcrowded settings the threshold for action may be lowered.

- **Alert threshold**: Start investigation: confirm cases, check preparedness and prioritize areas for vaccination. If next to an area experiencing an epidemic the alert becomes the epidemic threshold.
 - **Population > 30,000**: 5 cases/100,000/week,
 - **Population <30,000**: 2 cases in 1 week *OR* an increase in the number of cases from the previous non-epidemic year
- **Epidemic threshold**: Start control measures: inform public, mass vaccination and treatment
 - **Population >30, 000**: 10 cases/100,000/week if no epidemic for 3 years and <80% vaccination rate or alert threshold crossed early in dry season *OR* 15 cases/100,000/week
 - **Population < 30,000**: 5 cases in a week *OR* doubling the number of cases in a 3 week period *OR* on a case by case basis

Symptoms include headache, vomiting, fever, stiff neck and sensitivity to light (photophobia). A typical rash can also appear. The incubation period from infection to symptoms is from 2-10 days. Case fatality rates (CFR) are typically around 5-15% even with treatment but can rise to as high as 50% without proper treatment. If the CFR is greater than 20% there may be a problem with treatment strategies. Long-term effects can be brain damage, hearing loss and learning disabilities.

Diagnosis is made by through laboratory confirmation by looking at the fluid from a lumbar puncture (collecting spinal fluid) for appearance, with microscopy and confirmation with culture. It is also necessary to confirm the type of meningitis (meningitis can also be from other bacteria or viruses) the serotype for vaccination as well as antibiotic sensitivity. After the start of an epidemic it is not necessary to confirm each case.

Treatment is with intravenous (IV) antibiotics such as penicillin, ampicillin, ceftriaxone or cefotaxime. During an epidemic in resource poor countries or where in-patient management is impossible a single dose of oily chloramphenicol intramuscular (IM) or a single doses of ceftriaxone 100mg/kg are recommended and effective. Mass treatment with antibiotics and isolation are not recommended in epidemics.

Vaccines are available in bivalent A and C forms or polysaccharide forms for serotypes A, C, Y and W135 as well as singly for group C. The polysaccharide, however, does not provide adequate immunity for children less than 2. Protection takes up to 10-14 days after injection and lasts for about 3 years. Mass vaccination during an outbreak can contain it in about 2-3 weeks for priority ages 2-10 years old (or depending on the age distribution of the epidemic). In emergencies vaccines are often procured through emergency stockpiles from the International Coordination Group (ICG) on Vaccine Provision for Epidemic Meningitis Control.

Routine vaccination is not recommended due to the low levels of immunity in children and the short duration. Trials are in progress for new vaccines (conjugate meningitis A) that will provide coverage for infants and long term immunity protecting the individual and the community. The Meningitis Vaccine Project (MVP) is preparing to conduct the trials in Burkina Faso in 2008, Mali and Niger in 2009 and Nigeria, Sudan and Ethiopia in 2010.

Public Health Interventions

- **Coordination:** Support the MOH to coordinate the National Epidemic Preparedness and Response committee (EPR) with all partners including NGOs, UN, Red Cross and donors.
- **Surveillance:** Support national Integrated Diseases Surveillance and Response (IDSR), Support MOH to strengthen surveillance and expand coverage of the Early Warning and Alert Response System (EWARS), promote the standard case definition, laboratory confirmation and reporting, deployment of CDC technical assistance if required under USAID/OFDA contract and collaborate with the WHO Communicable Disease Surveillance and Response (CSR) unit.
- **Capacity building:** Train health providers to detect cases, management of cases, reporting and health education. Train laboratory workers for case detection and vaccinators for mass vaccination campaigns.
- **Case management:** Ensure supply of antibiotics (oily chloramphenicol or a single dose of ceftriaxone 100mg/kg) and medical supplies for proper case management.
- **Vaccination:** Procurement of polyvalent vaccines (from ICG or support to the WHO/UNICEF for purchase) and injection supplies with cold chain, training of vaccinators, conducting a mass vaccination campaign and logistics.
- **Health education and communication:** Produce information education and communication (IEC) materials for health seeking behavior and respiratory hygiene. Public messages to communicate the situation and availability of health services.
- **Shelter and Site Planning:** Plan shelters to avoid crowding.
- **Preparedness:** Establishment of national preparedness plans and committees, strengthen surveillance, capacity building, ensure laboratory preparedness, public health messages and stocks of necessary vaccines and antibiotics.

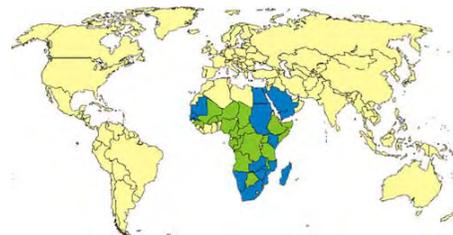
References

Control of Epidemic Meningococcal Disease WHO Practical Guidelines 2nd edition 1998
<http://www.who.int/csr/resources/publications/meningitis/whoemcbac983.pdf>

Rift Valley Fever

Public Health Risk in Complex Emergencies and Natural Disasters

Rift Valley Fever is a viral disease of animals (Bunyaviridae viral family). It can be transmitted to humans through infected *Aedes* mosquitoes that bite mostly during the day from just after dawn to just after sunset (not directly from person to person) and direct contact with animal body fluids (blood, milk, raw meat). It is found mostly in eastern and southern Africa but is also in all of sub Saharan Africa (see CDC map: blue (darker shade) are countries with endemic disease and outbreaks and green with periodic cases).



An outbreak can occur if there is increased pooling of water leading to increased breeding of mosquitoes such as in flooding. Humans are more likely to get infected when in close proximity to animals especially during overcrowding from population movements and in contact with the vector such as sleeping outside.

Most people do not have any symptoms or have mild fever. If ill the symptoms are typically fever, back pain, dizziness and weight loss. Some can progress on to hemorrhagic fever, encephalitis or eye disease. Most people recover within a week but there is a 1% death rate. Treatment is supportive. The most profound effect is on the livestock and the resulting economic burden.

Public Health Interventions

- **Coordination:** The Ministry of Health, Ministry of Agriculture, the WHO and FAO to coordinate with local partners to develop a preparedness and response plan.
- **Surveillance:** Support national Integrated Diseases Surveillance and Response (IDSR), support MOH and the Ministry of Agriculture to strengthen surveillance and expand coverage of the Early Warning and Alert Response System (EWARS), promote the standard case definition, laboratory confirmation and reporting, deployment of CDC technical assistance if required under USAID/OFDA contract and collaborate with the WHO Communicable Disease Surveillance and Response (CSR) unit and the UN Food and Agriculture Organization (FAO).
- **Case management/Capacity building:** Train health and veterinary staff on case detection, management of cases. Supplement medical supplies for supportive care in health facilities.
- **Prevention:** Vector control strategies including distribution of long lasting insecticide treated nets (LLINs), avoid close contact with livestock, and environmental management including proper water storage and covering of containers where the *Aedes* mosquito breeds.
- **Health Education:** Distribution of health education messages for use of LLINs, basic hygiene, care in handling of animals and health care seeking behavior.
- **Vaccination:** Vaccinations for livestock.

Yellow Fever

Public Health Risk in Complex Emergencies and Natural Disasters

Yellow fever is caused by a virus that is transmitted by the *Aedes* mosquito (not directly from person to person). It bites mainly during the day from just after dawn until just after sunset. In Africa it is transmitted in moist savannah regions of west and central Africa in the rainy season, urban and village settings and more infrequently in the jungle from monkeys. It occurs mostly in Africa (WHO map) as well as South America but in sporadic cases among forest and agriculture workers. There are approximately 200,000 known infections and 30,000 deaths worldwide per year. Numbers of cases have been increasing worldwide due to decreased routine vaccination and trends in deforestation and urbanization. Risk factors in emergencies include displacement into urban and overcrowded settings. One confirmed case is considered an outbreak.

Symptoms include fever, muscle aches, headache, loss of appetite and nausea/vomiting with improvement in 3-5 days. The incubation period is 3-6 days after the mosquito bite. The case fatality rate (CFR) is < 5%. Approximately 15% of cases can progress on to a toxic



phase within 24 hours with jaundice, bleeding and organ failure. There is a 50% mortality rate with the remaining going to a full recovery. If the patient has recovered, then he/she will have life long immunity.

The **diagnosis** is made through special laboratory techniques that can be done at a national level facility. **Treatment** is supportive for fever, dehydration and other consequences such as secondary infection.

Prevention is through decrease in exposure to the *Aedes* mosquito with protective clothing, environmental control through destruction of breeding sites and vaccination during an outbreak. Yellow fever patients should be protected under mosquito nets to avoid further spread of the disease. Vaccination provides 95% protection for all individuals over 6 months of age within a week of injection and lasts up to 10 years. The vaccine should not be given to pregnant women (unless in an outbreak and would be life saving) or symptomatic HIV infected persons. Some countries have incorporated vaccination into their national EPI program (80% coverage for community protection). In emergencies vaccines are often procured through the International Coordination Group (ICG) on Vaccine Provision for Yellow Fever Control. In 2007 the Yellow Fever Initiative (funded by GAVI) will be immunizing 12 countries in West Africa (Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Guinea, Liberia, Mali, Nigeria, Senegal, Sierra Leone and Togo) and will help create a stockpile of 11 million doses of vaccine.

Public Health Interventions

- **Coordination:** Support the MOH to coordinate the National Epidemic Preparedness and Response committee (EPR) with all partners including NGOs, UN, Red Cross and donors.
- **Surveillance:** Support national Integrated Diseases Surveillance and Response (IDSR), Support MOH to strengthen surveillance and expand coverage of the Early Warning and Alert Response System (EWARS) , promote the standard case definition, laboratory confirmation, reporting and logistics, deployment of CDC technical assistance if required under OFDA contract and collaborate with the WHO Communicable Disease Surveillance and Response (CSR) unit.
- **National Policy:** Support the MOH to produce, strengthen or implement the national policy for Yellow Fever control as well as implementation strategies.
- **Capacity building:** training of health providers in case detection, management and reporting, training of laboratory workers for detection.
- **Case management:** supportive care through the provision of essential medicines including re-hydration therapy, fever control and antibiotics for secondary infections.
- **Vaccination:** procurement of vaccines including cold chain and supplies, vaccination campaigns, training of vaccinators and logistics. Support for vaccination into national expanded program of immunizations (EPI) where applicable.
- **Health education and communication:** Information education and communication (IEC) materials for health seeking behavior, environmental control, avoidance of the vector. Training of community health workers (CHW) and health education campaigns. Public messages for communication of situation and availability of health services.
- **Vector control:** environmental management of vector breeding sites after the acute phase of the emergency specifically to cover water containers and to

- empty out stagnant water in open containers outside the home. This is particularly important in urban settings. Distribution of mosquito nets to yellow fever patients.
- **Preparedness:** Establishment of national preparedness plans and National EPR committees, strengthen surveillance through the national IDSR program, capacity building, ensure laboratory preparedness, public health messages and stocks of necessary vaccines and medical supplies.

References

District Guidelines for Yellow Fever Surveillance, WHO 1998 <http://www.who.int/vaccines-documents/DocsPDF/www9834.pdf>

USAID Global Health Yellow Fever Cable

Sexually Transmitted Infections including HIV/AIDS

Public Health Risk in Complex Emergencies and Natural Disasters

Complex emergencies and natural disasters resulting in population movement may increase the morbidity and mortality from sexually transmitted infections (STI) including HIV/AIDS due to decreased access to health services for the prevention and management of STIs including HIV/AIDS. After the acute phase of the emergency through transition and reconstruction the breakdown of family and social structure, overcrowding, trading sex for commodities, rape and sexual violence, the presence of military and peacekeeping forces, and injection drug use could further increase the risk of transmission.

Risk to mother: Medical complications can include increased transmission of HIV, ectopic pregnancy, infertility and psychological consequences.

Risk to newborn: Spontaneous abortion or death of the newborn, premature rupture of membranes, premature labor, low birth weight, neonatal infections and congenital malformations.

Public Health Interventions

In the acute phase of the emergency activities and commodities in the minimal initial service package (MISP) can be used to prevent STIs including HIV/AIDS. After the acute phase management of STIs including HIV/AIDS should be integrated into the primary health care system. All efforts should be made to ensure the continuation of prevention and treatment for STIs including HIV/AIDS in an internally displaced persons (IDP) setting as well as upon return. IDPs and host communities should have equal access to services for STIs including HIV/AIDS.

The provision of anti-retroviral therapy (ART) with antiretroviral medications (ARV) and supplies for voluntary counseling and testing (VCT) for the detection and the management of HIV/AIDS should be accessed through resources such as the Presidents Emergency Plan for AIDS Relief (PEPFAR) program, the Global Fund to fight AIDS, Tuberculosis and Malaria, the WHO/UNAIDS 3x5 initiative among other local and regional initiatives if available in country (guidance is forthcoming). USAID/OFDA will

compliment this through funding programs for the prevention of HIV and the prevention and treatment of other STIs through the following activities:

- **Surveillance:** Monitor national trends in STIs including HIV/AIDS, provide data to support policy and monitor programs. Surveillance should be integrated into the national surveillance system.
- **Capacity building:** Training of health staff in diagnosis, management of STIs and HIV/AIDS using national treatment guidelines, confidentiality, health education, condom promotion, partner notification, standard precautions and safe blood supply.
- **Condom availability:** Distribution of condoms for primary prevention (see Pharmaceutical Section for procurement).
- **Comprehensive Preventing Mother to Child Transmission (PMTCT):**
 - Primary prevention of HIV for the mother,
 - Prevention of unintended pregnancies,
 - Prevention during delivery through obstetrical methods (use of partograph to reduce prolonged labor, vaginal cleansing, avoiding artificial rupture of membranes and avoiding routine episiotomy), treatment of the mother starting at 28 weeks and during labor with the ARV zidovudine (ZDV) and a single dose of nevirapine (NVP) at onset of labor and the treatment of the newborn with a single dose of NVP and ZDV at one week. An alternative is a single dose of NVP at onset of labor for the mother and for the newborn.
 - Provision of appropriate support and treatment for the mother and infant
 - WHO recommendation of exclusive breastfeeding for 6 months if HIV status is unknown and replacement feeding is not acceptable, feasible, affordable, sustainable and safe (AFASS). Exclusive breastfeeding is associated with a 3-4 fold decreased risk of HIV transmission (WHO 2007).
- **Post exposure prophylaxis (PEP):** ARVs for survivors of sexual violence or occupational exposure given within 72 hours of exposure and taken for 28 days. PEP is available in the IEHK (see pharmaceutical section).
- **Management of STIs:** Early detection and syndromic treatment of STIs according to national protocols, screening and treatment of maternal syphilis and treatment of neonatal conjunctivitis.
- **Essential medicines:** Procurement of essential medicines for the management of STIs, cotrimoxizol prophylaxis for pneumocystis pneumonia (PCP), treatment of other opportunistic infections (OI) (infectious diseases that are able to proliferate due to decreased immunity from AIDS) and tuberculosis.
- **Health Education:** Information education and communication (IEC) materials and health education for the prevention of STIs including HIV/AIDS, promotion of safe sex behavior, care seeking behavior, and partner notification.
- **Standard Precautions:** Ensuring that in the health facility setting there is proper management of body fluids through disposal of sharps (needles, blades, glass), availability of soap and water for hand washing, personal protective equipment (gloves, masks, gowns), respiratory hygiene, disposal of waste, sterilizing equipment and handling of corpses.
- **Safe Blood Supply:** Training of health staff in safe transfusion policies, provision of reagents to test for HIV (as well as hepatitis B and C and syphilis) and transfusion supplies.

- **Protection:** Mainstream protection activities into all sectors such as access to health services, shelter and site planning, water and sanitation and food distribution as well as for military staff.

USAID/OFDA will fund the continuation of the following services for a population managed on ART until access to supplies from national HIV/AIDS programs (supported by PEPFAR, the Global Fund or others) is reinstated in the event of a supply chain break and a breakdown of health services due to an emergency. Continuation of ART programs should be considered only if the appropriate HIV/AIDS support is possible including protocols and guidelines, trained staff a continuous supply of ARVs, laboratory, and programs for counseling and prevention. **(Further guidance is forthcoming).**

- **Voluntary counseling and testing (VCT)** to inform people of their HIV status.
- **Antiretroviral therapy (ART) with ARVs:** It is essential to continue ART for the population that has been treated before displacement.
- **People living with AIDS (PLWA):** Home based care for PLWA including nutrition.

References

IASC Guidelines for HIV/AIDS in Emergency Settings

http://data.unaids.org/Publications/External-Documents/IASC_Guidelines-Emergency-Settings_en.pdf

Guidelines for the care of Sexually Transmitted Infections in Conflict-Affected Settings:

<http://www.rhrc.org/resources/index.cfm?sector=sti>

Infection Control Standard Precautions in Health Care WHO 2006

http://www.who.int/csr/resources/publications/4EPR_AM2.pdf

Tuberculosis (TB)

Public Health Risk in Complex Emergencies and Natural Disasters

A population can be at risk for increased transmission of TB due to population movements with overcrowding, underlying HIV and nutritional status and breakdown of pre-existing TB programs. Control programs aim to cure TB, reduce transmission and prevent the development of drug resistant TB. TB control in the acute phase of an emergency is not a priority and should only be initiated and/or continued after the crude mortality rate (CMR) is below emergency levels, services are provided to prevent and manage the most common cause of mortality at the time and basic needs are met such as water sanitation, food and shelter.

After the acute phase of the emergency TB control programs should only be initiated if TB is documented as a public health problem in the community, there are available resources (financial, human, drugs, lab supplies) for at least 12 months and the population is expected to stay in an IDP/refugee camp or community setting for at least 6-8 months depending on the national treatment strategy. Continuation of programs for TB should be considered upon return to place of origin as well. TB patients need to have access to a PHC system with integrated TB control programs for long term directly observed therapy (DOTS) with a continuous supply of anti-TB drugs.

Public Health Interventions

USAID/OFDA supports interventions in the acute phase of the emergency to decrease the CMR to below emergency levels through providing basic services and control of the main causes of mortality in an emergency setting. USAID/OFDA follows the WHO recommendations to wait until after the acute phase of the emergency to support TB control activities. OFDA can support the strengthening of a PHC program as a base for TB activities as well as funding programs to provide adequate shelter. TB drugs should be accessed through national vertical programs where available such as those supported by the Global Fund.

- **Shelter and site planning:** ensure that there is adequate shelter to avoid overcrowding.
- **Surveillance:** Integration of TB surveillance into the routine surveillance system after the acute phase of the emergency according to national protocols. Support to laboratory diagnosis.
- **Case management:** Partners should access TB drugs through national vertical programs supported by the Global Fund or other resources where available. It is important that patients that have been started on TB medications continue for the recommended duration of time according to national protocols to avoid drug resistance.
- **Capacity building:** training and supervision of health providers as part of a PHC program
- **Health education:** Information education and communication (IEC) materials and health education if TB is a priority disease in the community.

Tuberculosis Control in Refugee Situations: an Interagency Field Manual WHO 1997:

<http://www.helid.desastres.net/?e=d-0who--000--1-0-010---4-----0--0-10l--1en-5000---50-about-0--01131-0011-0utfZz-8-0-0&a=d&c=who&cl=CL1.1.7&d=Jh0167e>

Reproductive Health in Emergencies

Public Health Risk in Complex Emergencies and Natural Disasters

Every year, approximately 585,000 women die of pregnancy-related complications (Reproductive Health in Conflict Consortium). Maternal mortality is the leading cause of death among women of childbearing age. The majority of deaths are due to hemorrhage, obstructed labor, infection (sepsis), unsafe abortions and hypertension during pregnancy (eclampsia). Approximately 15% of pregnant women will have one of these complications and 3-7% of all pregnancies will require a cesarean section. Malaria, HIV, malnutrition and anemia can contribute to deaths due to the above causes. Maternal mortality can be attributed to 3 delays in accessing care for safe delivery:

- Deciding to seek care (socioeconomic/cultural factors, recognition of illness);
- Accessibility of facilities (distance, transport, cost);
- Quality of care at the facility (human resources, equipment and supplies, poor case management).

Women of childbearing age (age 15-49) in conflict-affected countries and in natural disasters are at risk for increased morbidity and mortality due to further lack of access to emergency obstetric care due to the 3 delays mentioned above, sexual violence and sexually transmitted infections including HIV/AIDS. Women also may be more vulnerable due to compromised underlying nutritional and health status, exposure to common endemic and epidemic diseases and a breakdown in health systems, social structures, and disruption of socioeconomic situation.

Public Health Interventions

In the acute phase of the emergency USAID/OFDA supports the Minimal Initial Service Package (MISP) through the coordinated implementation of a set of interventions and supporting commodities. After the acute phase USAID/OFDA supports the continuation of reproductive health initiatives through integrating activities for antenatal care, emergency obstetric care (EmOC), postnatal care and programs to support the prevention of HIV and the prevention and management of sexually transmitted infections (STI) and gender based violence (GBV) into primary health care programs.

Assessments: The Reproductive Health Assessment Toolkit for Conflict-Affected Women was designed to provide a tool to implement an epidemiologic investigation to evaluate the reproductive health status of women and service availability. This tool will allow partners, donors and governments to make decisions for reproductive health activities in emergencies.

Reproductive Health Assessment Toolkit for Conflict Affected Women CDC, 2007
<http://www.cdc.gov/reproductivehealth/Refugee/ToolkitDownload.htm>

Minimal Initial Service Package (MISP) for Reproductive Health

The MISP is a set of priority activities intended to provide services for reproductive health in the **acute phase** of a complex emergency or natural disaster to reduce reproductive health related morbidity and mortality. Activities included in the MISP ensure:

1. Effective **coordination**;
2. Prevention and management of **sexual violence**;
 - a. Protection and mainstreaming prevention into sector programming
 - b. Emergency contraception (EC) with leaflet
 - c. Pregnancy test
 - d. Presumptive Treatment for STIs
 - e. Post exposure prophylaxis (PEP) for HIV with anti-retroviral (ARV) drugs. ARVs should be accessed through national HIV/AIDS programs supported by PEPFAR, Global Fund or other local or regional initiatives.
 - f. The rape survivor should also have an examination for injuries, tetanus and hepatitis B vaccinations
3. Reduce the transmission of **HIV** through the use of standard precautions, blood safety and the provision of condoms;
4. Prevent excess **maternal and neonatal morbidity and mortality** through the provision of the following commodities and the training of appropriate staff:
 - a. Clean delivery Kits or equivalent locally available materials (plastic sheet, 1 bar of soap, 1 clean razor blade, 2 pieces of string and cloth). For use by the mother or the birth attendants for home delivery or at health centers;
 - b. Clinical Delivery/Midwife Kits for the health facility level;
 - c. Referral Kits for use at the referral hospital. Establish a referral system for obstetrical emergencies: this includes transportation, communications, and a functioning hospital with medicines, equipment and trained staff.
5. Plan for transition into comprehensive reproductive health services integrated into primary health care services.

Reproductive Health Kits: Interagency Emergency Health Kits (IEHK) contain commodities for emergency reproductive health for universal precautions, equipment, supplies and drugs for health center deliveries, obstetrical emergencies and post-rape. UNICEF supplies midwife, obstetric and surgical kits for emergency obstetrical care (EmOC). See the details of the kits in the Pharmaceutical Section.

References

MISP Fact Sheet http://www.rhrc.org/pdf/fs_misp.pdf

MISP Distance Learning Module <http://www.rhrc.org/misp/english/index.html>

Safe Motherhood

The following interventions for safe motherhood should be integrated into national primary health care systems, should be culturally sensitive and involve the input from the community. OFDA can support partners to implement programs for safe motherhood in humanitarian situations through integrating activities for antenatal care, emergency obstetric care, post natal care and services for STIs, HIV/AIDS and gender based violence.

References

Reproductive Health in Conflict Consortium <http://www.rhrc.org/>

Reproductive Health in Emergencies: An Interagency Field Manual:
[http://www.reliefweb.int/rw/lib.nsf/db900SID/LGEL-5JHKQF/\\$FILE/hcr-repr-1999.pdf?OpenElement](http://www.reliefweb.int/rw/lib.nsf/db900SID/LGEL-5JHKQF/$FILE/hcr-repr-1999.pdf?OpenElement)

Reproductive Health Indicators WHO 2006 http://www.who.int/reproductive-health/publications/rh_indicators/guidelines.pdf

WHO Standards for Maternal and Neonatal Care
http://www.who.int/making_pregnancy_safer/publications/standards/en/index.html

Integrated Management of Pregnancy and Childbirth (IMPC)WHO 2006
http://www.who.int/making_pregnancy_safer/publications/PCPNC_2006_03b.pdf

Antenatal Care Services (ANC)

Comprehensive antenatal care from a trained provider can provide services to decrease maternal and neonatal morbidity and mortality through a package of preventative interventions. The pregnant woman should visit ANC services 4 times during her pregnancy (before 16 weeks, 24-28 weeks, 30-32 weeks and 36-38 weeks).

Comprehensive ANC:

- **Capacity building:** Training of health provider in the use of national protocols for assessment of complications such as bleeding, high blood pressure, anemia, malaria, malnutrition, STIs including HIV, and risk factors (age, history of complications, more than one fetus, female genital cutting) and routine prenatal preventative care.
- **Immunization:** Tetanus toxoid vaccination to prevent maternal and neonatal tetanus with 2 doses of tetanus toxoid at 4 weeks apart before delivery. If the woman has received 1-4 doses in the past give one dose before delivery. If the woman has received all of her required vaccinations she does not require further vaccination.
- **Micronutrient supplementation** with iron, folate and vitamin A². Mebendazole should be given during the 2nd or 3rd trimester for de-worming in high prevalence areas to prevent anemia.
- **Intermittent Preventive Treatment (IPT):** Management of **malaria in pregnancy** should start in the acute phase of an emergency and then through established antenatal care (ANC) services. Pregnant women are at greatest risk for malaria in the 1st and 2nd trimester in the 1st and 2nd pregnancies.
 - In high transmission regions malaria in pregnancy can lead to low birth weight, intrauterine growth retardation, pre-maturity, infant death and maternal anemia.
 - In low transmission and seasonal malaria regions malaria in pregnancy can lead to spontaneous abortion, stillbirth, premature birth, anemia, low birth weight and maternal death.
 - At the ANC provide anti malarial drugs³

² Iron 60mg/day (120mg/day treatment if anemic for 3 months) and 400mcg/day Folate for 6 months. Vitamin A supplementation with 10,000/day or 25,000/week

³ At least 2 doses of sulfadoxine 500mg-pyramethamine 25mg (SP) beginning in the 2nd trimester (3 tablets of SP/dose) one month apart (Every month where HIV prevalence is > 10%, at least 3 doses if HIV positive but not to women who have received cotrimoxazole prophylaxis)

- Malaria in Pregnancy should include IPT in combination with vector control measures such as LLINs or IRS as well as management of anemia. In areas of unstable/seasonal transmission or during an epidemic use case management and LLINs.
- **Testing and management of STIs:** Testing for syphilis and HIV when they are highly prevalent in the community, (routine HIV testing not funded by USAID/OFDA). Syphilis can lead to still birth and low birth weight; gonorrhea can cause neonatal eye infections; chlamydia neonatal eye and respiratory infections; and HIV spontaneous abortion, stillbirth, prematurity and intrauterine growth retardation.
- **Maternal Nutrition:** 2,300 kcal/day are required during pregnancy. Pregnant women may need a supplementary food ration.
- **Comprehensive Preventing Mother to Child Transmission (PMTCT):**
 - Primary prevention of HIV for the mother,
 - Prevention of unintended pregnancies,
 - Prevention during delivery through obstetrical methods (use of partograph to reduce prolonged labor, vaginal cleansing, avoiding artificial rupture of membranes and avoiding routine episiotomy), treatment of the newborn and mother with antiretroviral medications⁴.
 - Provision of appropriate support and treatment for the mother and infant
 - WHO recommendation of exclusive breastfeeding for 6 months if HIV status is unknown and replacement feeding is not acceptable, feasible, affordable, sustainable and safe (AFASS). Exclusive breastfeeding is associated with a 3-4 fold decreased risk of HIV transmission (WHO 2007).
- **Health Education:** Information and education campaign (IEC) materials for preparing birth plans include:
 - Method of delivery,
 - Location and choosing provider,
 - Clean delivery,
 - Identification of complications of pregnancy and childbirth,
 - Nutrition (exclusive breastfeeding) and hygiene,
 - Health seeking behavior,
 - Importance of postnatal care, birth spacing and family planning.
- **Clean Delivery Kits:** Each woman should be provided with a clean delivery kit that can be made locally. The kit should include a plastic sheet, 1 bar of soap, 1 clean razor blade, 2 pieces of string and a clean cloth.

Emergency Obstetric Care (EmOC) and Postnatal Care

The leading causes of death from pregnancy are from bleeding (prolonged labor, rupture of the uterus, unsafe abortion or miscarriage), sepsis (infection from remaining tissue or poor procedure), hypertension of pregnancy (eclampsia), obstructed labor (immaturity, stunted growth from malnutrition or structural abnormalities) and from unsafe abortion. Many births occur at the home in developing countries and women do not have access to care for the management of these complications. Approximately 50% of maternal deaths occur after delivery. The mother should visit with a trained health provider within

⁴ Starting at 28 weeks and during labor with the ARV zidovudine (ZDV) and a single dose of nevirapine (NVP) at onset of labor and the treatment of the newborn with a single dose of NVP and ZDV at one week. An alternative is a single dose of NVP at onset of labor for the mother and for the newborn.

24-48 hours of birth to assess complications such as hemorrhage, sepsis, trauma from birth, problems with breastfeeding and complications of the newborn.

Public Health Interventions to reduce maternal mortality through

- **Capacity building:** training (or refresher) and supervision using national protocols for the provision of Basic EmOC for midwives and nurses and cesarean sections and the provision of Comprehensive EmOC for doctors. Traditional birth attendants (TBA) and community health workers (CHWs) can attend a normal delivery and deliver health education and with supervision identify danger signs and refer complicated cases. Competency training can include use of the guidelines Integrated Management of Pregnancy and Childbirth (IMPC) and use of the partograph.
- **Case Management for EmOC:** (see Table 1 from the Field Friendly Guide to integrate EmOC into humanitarian programs)
 - *Home level:* practice clean delivery, identify complications and arrangement of referral.
 - *Health facility: **Basic EmOC*** Provide emergency care for complications such as hemorrhage, high blood pressure, prolonged labor, infection, assisted vaginal delivery, removal of retained tissue of the placenta
 - *Hospital level: **Comprehensive EmOC*** consists of basic EmOC and the ability to perform surgery such as cesarean sections and administer safe blood transfusions.

Table 1. Signal functions of basic and comprehensive EmOC²

	Basic EmOC	Comprehensive EmOC
Signal functions	Parenteral antibiotics Parenteral oxytocics Parenteral anti-convulsants and anti-hypertensives Manual removal of placenta Removal of retained products (MVA) Assisted vaginal delivery (forceps, vacuum extraction)	All 6 basic functions plus: Blood transfusion Cesarean section
Settings	Health centers and hospitals	Hospitals with an operating theater (OT) and surgical capacity
Skilled attendants	Midwives and nurses with midwifery skills Supporting staff	A team of doctors, clinical officers, anesthetist, midwives, nurses and supporting staff

- **Commodities:** Clean Delivery Kits, Midwife Kits and Referral Hospital Kits (see contents in Pharmaceutical Section)
- **Health education** with messages for appropriate health care seeking behavior, recognition of danger signs during pregnancy and after birth, care for the neonate (see Neonatal Care section below)
- **Referral:** Referral system to health facility and hospital including transportation, communication, security, and method of payment.
- **Postnatal Care:** Provision of micronutrients such as Fe/Folate and Vitamin A 200,000 IU, care of the newborn, exclusive breastfeeding, determination of complications from pregnancy and family planning.
- **Contraceptives:** Provision of contraceptives as part of a comprehensive primary health program, to ensure continuation of contraceptives that were in use prior to

the emergency, according to local custom, and as determined necessary for the particular emergency.

UN process indicators and recommended Levels of EmOC:

- **Amount of EmOC available:** For every 500,000 population there should be at least 4 basic and one comprehensive EmOC facilities;
- **Geographic distribution:** Minimum level for amount of EmOC services is also met in sub-national areas;
- **Proportion of all births in EmOC facilities:** At least 15% of all births in a population take place in EmOC facilities;
- **Met need of EmOC services:** 100 % of women estimated to have an obstetrical complication are treated in EmOC facilities;
- **Cesarean sections as a percentage of all births:** As a proportion of all births in a population, cesarean sections account for not less than 5% and no more than 15%;
- **Case fatality Rate:** The case fatality rate among women with obstetrical complications in EmOC facilities is less than 1%.

References

Field friendly guide to integrate emergency obstetric care into humanitarian programs
http://www.rhrc.org/pdf/EmOC_ffg.pdf

Integrated Management of Pregnancy and Childbirth (IMPC)WHO 2006
http://www.who.int/making_pregnancy_safer/publications/PCPNC_2006_03b.pdf

Neonatal Health

Public Health Risk

Neonatal deaths (within the first 28 days) account for 2/3 of infant deaths and are one of the leading causes of mortality of children under the age of 5 worldwide. The majority of this mortality is attributed to:

- Infections (from maternal infection, prolonged or obstructed labor, prolonged rupture of membranes, unclean delivery, acute respiratory infections (ARI), tetanus, diarrhea and meningitis);
- Birth asphyxia (risk from prolonged or obstructed labor, abnormal presentation, eclampsia, prolapsed cord and bleeding);
- Complications of prematurity

The risk is further affected by maternal nutrition, malaria and maternal infections during pregnancy, poor breastfeeding and poor birth planning for emergencies. Low birth weight (less than 2500 grams) is a significant underlying factor in neonatal mortality resulting from prematurity (underdeveloped organs and increased risk of infection) and intrauterine growth retardation (from poor maternal nutrition and malaria). Low birth weight leads to a greater risk of neonatal infection, asphyxia, hypothermia and birth injuries.

Essential newborn interventions include:

Antenatal Care: maternal nutrition, maternal education, malaria prevention, syphilis screening and tetanus immunization;

Delivery: essential obstetric care and clean delivery;

Postnatal Care: temperature control of newborn, eye and cord care, resuscitation, early and exclusive breastfeeding, early detection, referral and management of sepsis and asphyxia and routine immunizations.

Public Health Interventions

- **Capacity Building:** training of health providers in the management of care of the neonate and referral for emergencies using national guidelines.
- **Case Management:** Resuscitation, management of hypothermia (between 6-12 hours after birth with warming through skin to skin contact, swaddling) and hypoglycemia (early breastfeeding), measure birth weight, eye care with tetracycline ointment, cord care, breastfeeding and identification of complications.
- **Prevention** of neonatal infections through maternal tetanus vaccination, management of maternal infections, clean delivery and cord care, early and exclusive breastfeeding and management of sick newborn.
- **Nutrition:** improve maternal nutrition through supplementary feeding programs, micronutrient supplementation for anemia (iron), prevention of malaria and hookworm. Promotion of exclusive breastfeeding for the first 6 months.
- **Commodities:** Clean delivery kits, medical supplies, essential medicines and vaccines.
- **Health Education:** Exclusive breast feeding, cord care, health-seeking behavior, return for immunizations and growth monitoring.

References

Every Newborns Health: Save the Children 2004:

<http://www.savethechildren.org/publications/technical-resources/saving-newborn-lives/EveryNewbornsHealth.pdf>

Gender based Violence

Public Health Risk in Complex Emergencies and Natural Disasters

Women, girls and boys are at an increased risk for complications of sexual and gender based violence due to lack of access to emergency health services during a crisis. The victims are at risk for psychological and physical outcomes including unwanted pregnancy, unsafe abortion, HIV/AIDS, STIs and injuries. Particularly during political crises rape can be used as a weapon of war and sex can be exchanged for commodities due to lack of access to traditional sources of income generation.

USAID/OFDA supports programs for stand-alone GBV programs as well as mainstreaming GBV activities into health programs and other sectors. The management of GBV should be well rounded and include services for medical, psychological, legal and economic support. Health services should include medical management, counseling and referral. For the clinical side USAID/OFDA supports programs integrated into the primary health care system.

Interventions for OFDA support

- **Coordination:** Support the MOH and partners to coordinate GBV activities within the health sector.

- **National Protocols:** Support to the MOH and partners to establish national protocols and policies for the management of GBV.
- **Capacity building:** Training of health providers in the prevention and management of GBV
- **Case management:** Support the MOH and partners to provide health services including:
 - Physical examination in a private room including the management of wounds (where necessary, ensure female provider are available)
 - Prevent HIV transmission with Post Exposure Prophylaxis (PEP) with ARVs (Where available ARVs should be accessed through national MOH HIV/AIDS programs supported by PEPFAR and/or Global Fund resources). PEP can also be ordered as part of the IEHKs (see pharmaceutical section).
 - Prevent sexually transmitted infections with antibiotics
 - Prevent unintended pregnancies with the Emergency Contraception (EC)
 - Referral services to receive health and psychological care
 - Tetanus toxoid vaccination (TT),
 - Vaccination for hepatitis B,
 - Collect forensic evidence (where possible)
- **Medical Supplies:** Supplies such as antibiotics, PEP and the EC are available in the IEHK Kits (see Pharmaceuticals Section).
- **Health Education:** IEC materials for the multi-sector prevention of GBV
- **Protection:** streamline protection activities to prevent GBV into all sectors as well as for military and peacekeeping operations.

References

Guidelines for GBV in Humanitarian Settings IASC
http://www.rhrc.org/pdf/GBV_guidelines_Eng_09_13_05.pdf

UNHCR Sexual and Gender Based Violence against Refugees Returnees and IDPs: Guidelines for Prevention and Response 2003 http://www.rhrc.org/pdf/gl_sgbv03.pdf

Non Communicable Diseases

Psychosocial and Mental health

Public Health Risk in Complex Emergencies and Natural Disasters

Psychological stress in emergencies is due to a break down in social structure, lack of resources, loss of livelihoods, separation of families, and population movements among others. In the humanitarian community the term “psychosocial” is used for this sub sector often included in health and protection. Psychological stress should be differentiated from “mental health” disorders that include clinically diagnosed disorders including schizophrenia and depression. Mental health problems brought on by the emergency were preexisting, are not due to the disaster but may be exacerbated due to lack of access to health services and discontinuation of treatment. It is important to address these patients through ensuring continuation of treatment, however, the focus of humanitarian response should prioritize the general population through a community based public health approach with social interventions aimed at support for the continuation of traditions and culture of the population. In acute emergencies the use of one-on-one psychological care and anti-anxiety medications has not been proven to be effective and may be harmful. The use of western style treatments for posttraumatic stress disorder (PTSD) and trauma-focused care to populations of different cultural backgrounds undergoing stress is not recommended.

Public Health Interventions

- **Coordination:** Support coordination of psychosocial activities among all partners, across sectors and with the community.
- **Assessments:** Support collection of information on social and cultural norms, coping mechanisms, access to services, national and international response capacity including human resources and national guidelines.
- **Capacity Building:** Conducting routine short-term training for health providers in emergencies not recommend as it requires specialized skills. Humanitarian staff regardless of sector can be trained on how to assist in providing the appropriate social interventions and mainstreaming protection activities into programming.
- **Case Management:** Individual case management is not recommended. Focus should be on community based self-help groups with community leaders and social support. Primary health care providers should refer any urgent psychiatric cases and manage other trauma induced psychological complaints with “psychosocial first aid” through listening with empathy and ensuring access to basic services and information. Avoid widespread use of anti-anxiety medications.
- **Social Interventions:** Provide continuous and updated information about the emergency, access to services and relief operations, provide family tracing and reunification services, allow for religious services and culturally acceptable management of the dead, organize recreational activities, education for children, involve the community in the relief effort, promote human rights and international humanitarian law, care of isolated individuals and mainstream protection into all sectors.
- **Ensure access to basic services:** Mitigation of stress through the provision of culturally appropriate shelter, food, water, sanitation and primary health care as well as security.

- **Integration into primary health care (PHC):** Integrate care for mental health patients into PHC services (do not set up special mental health facilities).
- **Preparation:** Assist the host government to develop plans for psychosocial interventions in emergencies.

References

IASC 2007 Guidance on Mental health and Psychosocial Support in Emergencies
<http://www.humanitarianinfo.org/iasc/content/documents/weekly/20070620-1345/Guidelines%20IASC%20Mental%20Health%20Psychosocial.pdf>

Mental Health in Emergencies WHO 2003 http://www.who.int/mental_health/media/en/640.pdf

Mental and Social Health during and after acute emergencies: emerging consensus WHO 2005
http://www.who.int/mental_health/media/mental_and_social_health_in_emergency.pdf

The Psychosocial Working Group <http://www.forcedmigration.org/psychosocial/PWGinfo.htm>

Chronic Diseases

Public Health Risk in Complex Emergencies and Natural Disasters

In areas such as the Middle East, the Balkans, Europe, the former Soviet Union and a growing number of countries in Latin America and Asia chronic diseases such as high blood pressure, heart disease, diabetes, and cancer can be the greatest cause of morbidity and mortality. This is due to lifestyle changes, improved control of communicable diseases and longer life expectancy.

With a disaster the population in these regions is at risk of worsening disease condition due to lack of access to medicines, disruption in health services, medical services such as dialysis for kidney failure and routine monitoring.

Public Health Interventions

OFDA can support the procurement of medicines for the most common chronic diseases causing morbidity and mortality in the country. These medicines should be chosen based on the national drug formulary in consultation with the MOH and/or the WHO. These are medicines that are used on a chronic basis and should link as much as possible with the National Drug Formulary.

Pharmaceuticals

Procurement

There are a number of important factors to consider when contemplating purchase of medical commodities including:

- Registration of medicines or vaccines by the national Ministry of Health
- Safety, efficacy and quality of medicines.
- “Pedigree” of medicines which prevents counterfeit or sub-standard medicines from entering the supply chain
- Resistance patterns of diseases to commonly used medicines.
- Proper disposal of contaminated medical supplies and outdated medicines

Implementing partners have the option of using Interagency Emergency Health Kits or procuring individual medicines and medical supplies from reputable pharmaceutical wholesalers. USAID / OFDA is currently working on a project to pre-approve pharmaceutical wholesalers. These pre-approved pharmaceutical wholesalers would be able to provide safe, effective and quality products to the purchaser.

Interagency Emergency Health Kits (IEHK)

The Interagency Emergency Health Kits are designed to treat 10,000 persons for 3 months. These kits offer a convenient, uniform and rapidly deployable option to provide emergency medical commodities to a disaster site. Additional information on the Interagency Emergency Health Kits may be viewed at:

<http://www.who.int/medicines/publications/mrhealthkit.pdf>

NGOs may consider purchasing the Interagency Emergency Health Kits for their planned emergency interventions. Most international pharmaceutical wholesalers will be able to have IEHK delivered to the site of the disaster within 48 hours.

Disease specific Interagency Kits include:

- **Malaria:** The IEHK has a disease specific module for malaria (Box 1M-10M) that may be purchased separately.
- **Interagency Diarrheal Disease Kits** are available for 100 severe (cholera treatment unit) and 400 moderate cholera cases (oral re-hydration unit) and treatment for 100 adults and 100 children with Shigella dysentery:
<http://www.who.int/topics/cholera/materials/en/index.html>

Pharmaceuticals

In the event that pharmaceuticals are to be purchased for a planned project using USAID/OFDA funds, implementing partners must adhere to the USAID / OFDA pharmaceutical procurement guidelines.

The 2006 Edition of the OFDA “Guidelines for Unsolicited Proposals and Reporting”; found at

http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/resources/

contains extensive information on the medicines procurement procedures for OFDA financed projects. Please refer to pages 64-68.

Pesticides

USAID Environmental requirements on pesticide use in public health

Because of the risks pesticides pose on humans, the environment and non-target organisms, USAID prohibits their procurement and/or use in its programs unless their impacts are adequately assessed, evaluated and minimized. USAID environmental regulations (22 CFR 216) provide instructions on information to consider in performing the assessment and evaluation processes. The preliminary evaluation procedures of environmental risks and benefits of USAID programs, including those that involve pesticides is called an Initial Environmental Examination (IEE). An IEE for pesticides addresses all 12 factors listed in the Pesticide Procedures Section (22 CFR 216.3 (b)(1)(i)) above and beyond the issues that are outlined in the Regulations.

USAID-supported programs involving pesticides are required to develop and implement risk reduction and management plans. 22CFR 216 defines that only pesticide products that are registered by USEPA [and by the host-country authorities or regional or international organizations, to which the host-country is signatory emphasis added] can be supported. These products must be the most effective and least toxic and pose minimum risks to humans, no-target organisms and the environment. Pesticides that are in WHO category III and U, i.e., slightly hazardous or unlikely to present any acute hazard in normal use and the most preferred. Risks from these pesticides must be minimized by reducing the duration as well as the extent of exposure. Applicators and handles must be proficient in application and safety procedures, including the right dose, equipment, the timing of application and selection of the most appropriate and safest products and personal protective equipment.

Training of personnel involved with pesticides must include proper handling, use, management, disposal of unwanted pesticides, and related waste, especially at the village and household levels. Personnel knowledgeable in first aid procedures must always be reachable during spray, transport, storage and recovery/disposal. Roles and responsibilities, including coordination, management, defining environmental responsibilities, use and management plans, as well as monitoring and evaluation must be outlined and executed.

Five of the six pesticide products that are recommended by WHO for LLIN use are registered by USEPA for similar purposes⁵. These products are: cyfluthrin, deltamethrin, lambda-cyhalothrin, permethrin, and etofenprox. Alpha-cypermethrin is also recommended by WHO, but it is not registered in the U.S. most likely due to lack of a market incentive than risk concerns. If in the future WHO decides to recommend additional chemicals for use with insecticide treated materials (ITMs), then USAID will likely need to evaluate those chemicals prior to allowing their use in USAID ITM programs.

⁵ USEPA registration is one of the requirements of 22 CFR 216.3 (b)(1)(i) and it is done on the basis of scientific information sufficient to demonstrate that their use will not cause unreasonable adverse effects, either to human health or the environment.

WHO pesticide reviews and recommendations are based on methodologies developed in consultation with the international community, including U.S. government authorities and are generally considered authoritative. Its evaluation of products takes into account human and environmental safety, efficacy, ease of application, acceptance by residents of proposed pesticide product uses, as well as cost-effectiveness and availability.

As there are only a few EPA-registered pesticide products that can be used for ITMs, WHO's recommendations on ITM are particularly relevant. Product selection may be pretty much program-specific and dictated by factors that must be evaluated on a case-by-case basis. Nevertheless, only the least toxic products that are effective against the target pest can be selected for use in USAID programs.

References

WHO www.who.int/ctd/whopes,

Programmatic Environmental Assessment for Insecticide-Treated Materials in USAID Activities in Sub-Saharan Africa, (2002), USAID Pest Management Guidelines (1991),
http://www.ehproject.org/PDF/ehkm/ivm-env_assessment.pdf

CDC <http://www.cdc.gov/ncidod/eid/vol7no1/rose.htm> 0

Annex I: OFDA's Health Assessment

1. Coordination:

- Who is coordinating the health sector for the relief effort?
- What potential partners are there on the ground addressing health and what is their focus (maternal and child health, Emergency Obstetric Care, Out patient treatment, Hospitals, HIV/AIDS, etc)?
- Has there been any health assessments conducted recently or in the past? Who conducted these assessments, what were the results?

2. Health Services Access:

- Is there a health facility in the (name) _____ town/IDP camp?
- If no, is one nearby where residents/IDPs can access service? (What is the distance and how do they get there)?
- If not, how do they access health services?
- Do the services and drugs cost anything?
- Can most residents/IDPs afford them?
- Are there any social barriers to access (gender, ethnicity, religion, age)?

Comments _____

3. Health Center Personnel and Health Services

- Does the facility have trained qualified staff (list staff positions, ex. MD, RN, midwife, TBA, CHW)?
- Has the staff received any training in the last 6 – 12 months? If so on what topics and by whom?
- Are outreach workers available? What services do they provide?
- Does the facility dispense drugs? What kind? (Antibiotics, anti-malarials, etc)? Are they out of any needed drugs? Does this happen frequently?
- Is there transport available and access to a referral center?

Comments _____

4. Expanded Program on Immunizations (EPI)

- Are there ample supplies of vaccines (specify which vaccines) and syringes?
- Is there a working cold chain? Why not? (Lack of fuel, equipments needs repairs, etc)
- What EPI programs are in place (community outreach, clinic based, vaccination campaigns)
- What is the area % coverage rate (CR) (% children have all doses of DPT, OPV and measles?)

Comments _____

5. Morbidity: What are the major (top 3 – 5) communicable diseases in the area (such as measles, malaria, diarrhea, acute respiratory infections, etc)?

Under Five Year of Age:

1. _____
2. _____
3. _____
4. _____
5. _____

Over Five Year of Age:

1. _____
4. _____

- Does the Health Facility (HF) have the necessary resources/manpower to prevent or treat them? If not what is needed? (Lab facilities and supplies, enough trained staff, drugs, bed nets, training materials, staff training, supervision)

Comments: _____

6. Outbreaks/Epidemics:

- Have there been any disease outbreaks or epidemics in the past 6 months?
- Were the necessary resources available to manage them? If not, what was missing?
- Can they respond to an outbreak now, and how?

Comments: _____

7. Psychosocial (check questions under psychosocial Section at the end of document, currently in preparation):

8. Health Surveillance:

- ❖ Are there surveillance forms in health facilities? Do they use them?
- ❖ Who do they send the completed forms to? Is there a surveillance focal person in the facility or elsewhere?
- ❖ Are surveillance reports generated and disseminated regularly?

9. Mortality:

Has the health facility had any deaths in the last week?

	Under five years of age	Over five years of age (<i>Do not include Maternal Mortality</i>)
Female		
Male		

What were the main causes of these deaths?

10. Maternal Health:

- Are there antenatal care (ANC) services available and what are they?
- Who is assisting women during deliveries? Are they trained or not trained?
- Is there a referral system in place for obstetrical emergencies?
- Have there been any deaths due to pregnancy and/or delivery in the past one week? Cause of death?
- Have there been any deliveries at the health facility and/or community in the past month? Did any of the mothers or babies die during and directly after the delivery?

11. STIs/HIV/AIDS:

- How are sharps and blood products (needles, surgical items, etc) disposed of at health facilities?
- How are Sexually Transmitted Infections (STI) diagnosed and treated? Is there syndromic (meaning according to symptoms) and not lab diagnosis?
- Is blood screened (for HIV, HEP B, C, and syphilis) before use in transfusions?
- Are condoms available?
- Is health education provided on STI and HIV prevention?
- Are there services available for voluntary counseling and testing (VCT) for HIV, treatment with antiretrovirals (ARVs) for people living with AIDS (PLWA)? (OFDA will not be funding these items, but it will give us an idea of other resources that are available in the area)

12. Gender Based Violence:

- Are there any services available for the medical treatment of GBV survivors?

Annex II: Standards and Indicators

Category	Indicator	Formula	Standard
Demographics			
	Age structure developing country		<1 4%, 0-4 17%, 5-14 28%, 5-29 28% , 30-44 15%, > 45 12%,
	Gender		49% males, 51% females reproductive age(15-49) 20%, pregnant and lactating women 6%
Mortality			
	Crude mortality rate (CMR): death rate in total population	$\frac{\text{total \# deaths}}{\text{total population}} \times 10,000/\text{day}$	< 1 death/10,000/day
	Under 5 Mortality Rate (U5MR): death rate in population under 5	$\frac{\text{total \# deaths under 5}}{\text{total population under 5}} \times 10,000/\text{day}$	<2/10,000/day
	Infant mortality rate (IMR): rate of death in infants under 1	$\frac{\text{total number of deaths under 1}}{\text{total number of live births}} \times 1000$	< 60 deaths/1000 live births/month
	Neonatal Mortality Rate (NNMR): rate of deaths in newborns < 28 days old	$\frac{\text{total deaths newborns <28 days old}}{\text{total live births}} \times 1000$	< 40 deaths/1000 live births/month
	Maternal Mortality Ratio (MMR): rate of pregnancy related deaths	$\frac{\text{\# pregnancy related deaths}}{\text{total \# live births}} \times 100,000$	No specific standard
	Proportional Mortality: proportion of total mortality from disease X	$\frac{\text{\# deaths from X}}{\text{total deaths}} \times 100$	No specific standard, disease specific
Morbidity			
	Disease incidence rate: new cases of disease X over time	$\frac{\text{\# new cases of disease in time period}}{\text{total population at risk}} \times 1000$	No specific standard, disease specific
	Proportional morbidity: proportion of total morbidity from disease X	$\frac{\text{\# cases of disease X during time period}}{\text{total \# new cases during that time}}$	No specific standard, disease specific
Health Systems			
	Utilization rate: The number of new consultations per person per year	$\frac{\text{\#new consultations in 1 week}}{\text{total population}} \times 52 \text{ weeks}$	Emergencies: 4/person/year Stable: 0.5-1/person/year
	Consultation rate: Consultations per health provider per day	$\frac{\text{\# total visits in 1 week}}{\text{\# days clinic open}}$	Maximum 50 consultations/provider/day

	Number of doctors/population	Number of trained doctors/population	1 doctor/50,000
	Number of nurses or qualified health worker/population	Number of trained nurses/population	1 nurse/ 10,000
	Number of midwives/population	Number of trained midwives/population	
	Number of traditional birth attendants (TBA)/population	Number of trained TBA/population	1 TBA/2,000
	Number of Community health workers (CHW)/population	Number of trained CHW/population	1 CHW/500-1000
	Hospital coverage rate	Number of hospitals/ population	1 hospital /150,000-200,000 population
	Health center coverage rate with a functioning primary health care center	Number health centers/population	1 rural health center/10-15,000 population and one central health center/ 50,000 population
	Distance to health facility: % of population within 5km of health facility	# population living within <5km or 1 hour walk/total target population x 100	No specific standard Health facility should be < 5km or < hour walk
	Availability of essential drugs: % health facilities without rupture of stock	# health facilities without rupture of stock/total number of health facilities x 100	There should never be a rupture of stock of essential medicines
	Health Information System: % health facilities submitting weekly surveillance reports to central level	# health facilities submitting reports weekly/total number of health facilities x 100	100%
Child Health			
EPI	Total EPI coverage: % children <1 fully immunized for BCG, Polio3, DPT3 and measles	# <1 fully immunized/target population x 100	DPT3 coverage of > 80% is used to monitor routine vaccination coverage
	Vaccination coverage for DPT3:% children < 1 immunized for DPT3	# <1 immunized DPT/target population x 100	> 80 % coverage GAVI)
	Measles vaccination coverage: % vaccinated against measles 6mo-15 years	# vaccinated against measles in target/total target population x 100	> 95% coverage
	Vitamin A coverage 6-59 months: % target population that received vitamin A	# received vitamin A in target/total target population x 100	> 95% coverage
Diarrhea	ORS, zinc coverage: proportion of children < 5 treated with ORS and zinc	Total <5 treated with ORS and zinc/total # cases of diarrhea x	All children should be treated with ORS and zinc for diarrhea if

		100	treatment protocols are followed
ARI	Proportion of children with who received appropriate antibiotic for ARI	# <5 with fever received antibiotic/# <5 with ARIx 100	All children should be treated with an antibiotic if treatment protocols are followed
	Hib vaccination coverage	# vaccinated against Hib in target/total target population x 100	
	Pnumococcal vaccination coverage	# vaccinated with the pneumococcal vaccine in target/total target population x 100	
Malaria	Proportion of children with fever who received appropriate antimalarials	# <5 with fever received anti-malarial/# <5 fever x 100	All children should be treated with anti-malarial for malaria if treatment protocols are followed
	LLIN utilization < 5 years of age	# < 5 using LLIN/total distributed to target x 100	> 60%
	Indoor residual spraying (IRS) coverage	# HH received IRS/total HH x 100	>85%
	Insecticide treated plastic sheeting (ITPS) coverage	# HH received ITPS/total HHx 100	>85%
Reproductive Health			
	Crude birth rate (CBR): rate of live births in the population	# live birth in population/ total population x 1000	4%
Antenatal Care (ANC)	ANC coverage: proportion of pregnant women with at least 3 visits/pregnancy	# ANC visits/total live births	All pregnant women should have 4 ANC visits per pregnancy
	LLIN utilization pregnant women	# pregnant women using LLIN/total distributed to target x 100	> 60% (for total community)
	Intermittent preventive treatment (IPT) coverage	# pregnant women received 2 doses of IPT/total live births x 100	All pregnant women should receive 2 doses of SP
	Iron/folate coverage: proportion of pregnant women who received iron/folate during pregnancy	# pregnant women received iron/folate/total live births x 100	All pregnant women should receive iron/folate
	Tetanus vaccination coverage: proportion of pregnant women who received 2 doses of TT during pregnancy	# pregnant women received 2 doses of TT/total live births x 100	All pregnant women should 2 doses of TT
Delivery care	Attendance by a skilled birth attendant: proportion of births assisted by a skilled birth attendant	# births attended by skilled birth attendant/number of births x 100	100%
	Cesarean section rate: cesarean deliveries as a proportion of all births in a population	# cesareans/# expected births in population x 100	Minimum: 5% Maximum: 15%
	Proportion of births in EmOC facility	# women who gave birth in EmOC	Minimum of 15% all births in an

		facility/# expected live births in population x 100	EmOC facility
	Case fatality rate: % of women presenting with pregnancy complications that result in death	# deaths due to pregnancy complications/total #women with complications x 100	< 1%
Postnatal Care	Post natal vitamin A coverage (postnatal care) within 3 days of birth	# pregnant women received vitamin A /total live births x 100	All women should have at least 1 post natal care visit
Neonatal Care	Percent of live births with low birth weight (<2,500 gm)	Total # live births <2,500gm/total live births/time period x 100	0%
Family Planning	Contraceptive prevalence rate: proportion of women of reproductive age/or partner who are using a method of contraception	# receiving family planning method/# women of reproductive age x 100	No specific standard. All population should have access to contraceptive methods
Gender Based Violence (GBV)	GBV treatment: GBV treated in time using standard protocols: % GBV survivors who receive care within 3 days of incident	# GBV survivors who receive care in 3 days/# GBV survivors x 100	All GBV survivors should be treated with in 3 days
Nutrition			
	Global Acute Malnutrition (GAM) % population 6months-5 years who are below reference median of WFH -2Z scores or 80% of WFH		< 10%
	Severe Acute Malnutrition (SAM) % population 6mo.-5yrs. Who are below the reference median of -3Z scores or 70% WFH		No current standard
	Exclusive breastfeeding from 0-6 months	# children 0-6 month exclusively breastfed/# children 0-6 months x 100	100%
	Infant and young child feeding: % of infants and young children age 6-23 months fed according to minimum of appropriate feeding practices	# children 6-23 months fed appropriately/# children age 6-23 months x 100	100%
HIV/AIDS			
	Condom coverage: # condoms distributed to the population	# condoms distributed in time period/total population x 1000	5, 000 condoms/10,000 population/month
	Coverage of facilities using Standard Precautions	# facilities practicing standard precautions/# target facilities x 100	100%
	Referral centers with safe blood supply: % blood transfusions screened for HIV	# transfusion blood samples screened for HIV/# samples drawn	100%

		for transfusions x 100	
	Antiretroviral coverage: % HIV/AIDS population receiving ARV	# population with HIV/AIDS taking ARV/total population with HIV/AIDS x 100	100%
Epidemics			
	Attack rate: cumulative incidence of disease during an outbreak	# new cases from disease X/population at risk for disease X x 100	Disease specific
	Case fatality rate: % of patients with disease X who die from disease X	# deaths from disease X/total # X cases x 100	Cholera: <1% Shigella dysentery <1% Typhoid: < 1% Meningitis 5-15%
	Investigation time	Time to detect and report an epidemic	Should be reported within 24 hours
Health Education			
	Hand washing knowledge: % of community that wash their hands at 3-5 critical times	# community that wash hands at 3 critical times/ # community who received health education	All community educated should have the behavior change for hand washing
	Diarrhea transmission knowledge: % of community that practice 2 ways to prevent diarrhea	# community practicing 2 ways to prevent diarrhea/ # community who received health education	All community educated should have the behavior change for diarrhea prevention
	Knowledge of danger signs in pregnancy: % of women who have received health education who have knowledge of 2 danger signs in pregnancy	# community with knowledge of 2 danger signs # community who received health education	All pregnant women educated have knowledge of 2 danger signs in pregnancy
	Knowledge of danger signs in children: respiratory distress, fever, dehydration	# mothers who have knowledge of 3 danger signs/number of mothers provided with health education	All mothers educated have knowledge of 3 danger signs for children
	Knowledge of transmission of HIV/AIDS: % target population with knowledge of 2 types of transmission and prevention of HIV/AIDS	# community with knowledge of 2 types of transmission and prevention of HIV/ # community who received health education	All community educated have knowledge of 2 types of transmission and prevention of HIV/AIDS

References: *UNHCR Standardized Health Information System 2006, IRC Health Unit Core Indicator List for Global Health Programs 2006, Sphere, Reproductive Health in Emergencies, IASC HIV/AIDS, IASC Mental health*