MODULE II

Preventive Medicine in Humanitarian Emergencies

Rapid Assessments
WHAT IS PREVENTIVE MEDICINE?

- Based in Public Health
- Focuses on health of groups *NOT* individuals
- Uses mathematical data
- Looks at underlying causes of disease

*Preventive medicine is concerned with the overall health of a group—a community*
“The patient with thousand arms and legs”

The patient is the community
THE PREVENTIVE MEDICINE
“PATIENT”

- Groups -- Not individual patients
- “Vital signs” = Disease rates

Rates = disease cases $\times$ even number of people at risk

Even number represents the size of the population: Usually either 1000, 10,000 or 100,000
RATES

They are used to easily compare the realities of different communities and to evaluate the success of interventions in a given population in the course of time.
RATES - EXAMPLE

Children < 5 with diarrhea

Town A = 304 cases
Town B = 1054 cases

Which town has more diarrhea problems?
RATES: NUMERATOR AND DENOMINATOR

Town A: 1597 children < 5
Rate= 304/1597 x 10,000=1904

Town B: 12,818 children < 5
Rate= 1054/12,818 x 10,000= 822

Rates of diarrhea per 10,000 children < 5
DEFINITIONS

It is critical to define precisely both numerator and denominator

**NUMERATOR:** uniform criterion to define a case, so as to ensure data can be compared

**DENOMINATOR:** define adequately the population at risk (usually age groups)
INCIDENCE AND PREVALENCE

• **Incidence Rates** = Attack rates
  Number of *new* cases in a given time (day, week, month, year) per *n* population (1000, 10,000, 100,000)

• **Prevalence Rates:**
  Is the *proportion* of cases of different diseases, present in a given population at a given time, and is expressed in percentages
MORTALITY RATES

Standards for assessing severity of a disaster and effectiveness of response:

1) Crude mortality rate (overall most important)
2) Under 5 mortality rate (early warning)

Death is the most severe of all health outcomes and should be measured and followed carefully
CRUDE MORTALITY RATE (CMR)

Total number of deaths in group X 10,000
Total number of people in group

Reported as [Deaths per 10,000 per day]
Goal is less than 1/10,000/day

CMR in age <5:
Number of deaths in <5 X 10,000 per day
Total <5 population

Goal is less than 2 /10000/day
How can we get to know the health status of a given community?
POPULATION EVALUATIONS

- Demographics
- Pre-disaster health conditions
- Health care system evaluation
- Mortality and morbidity surveillance
- Emergency needs assessments
DEM OnOGRAPHICS

- Counting people! Top priority
- Over flights or ground visual estimates
- Sampling
- Census (most accurate counting method)
- Population structure-male/female and age groups <5, 5-15 years and >15
- At risk groups: small children, pregnant and breast-feeding women, injured and elderly
PRE-DISASTER HEALTH CONDITIONS

Know your community before a disaster strikes

- Immunization rates
- Where are the most vulnerable children living?
- Are there vector-borne illnesses?
- What are the most prevalent diseases?
- What is the baseline malnutrition rate?

*The local health agencies may be the best or the only source of information available!*
CONDITION OF HEALTH CARE SYSTEM

- People: who is available to help?
- Places: in which conditions are the facilities?
- Things: emergency medications, oral rehydration packets, medical supplies
- Capabilities: cold chain, vaccines, is surgery or inpatient care possible?

Pre-disaster community planning is crucial!
NEEDS ASSESSMENT/COMMUNITY EVALUATION

Data !!!!
Not speculation!
EMERGENCY NEEDS ASSESSMENT

- Needs assessments looks at both the **NEEDS** and **RESOURCES** of a community.

- Emergency needs assessment looks at the basic resources needed to **IMPROVE SURVIVAL / SUSTAIN LIFE**.

- **WHEN POSSIBLE:** Needs are best met by using local resources.
PRIORITY ‘NEEDS’

- Safe water
- Shelter
- Basic sanitation and hygiene
- Food
- Local environmental conditions
- Health needs
NEEDS: WATER

- Number one priority
- 3-4 liters/person/day to maintain life
- 15-20 liters/person/day: a better estimate - takes into account cooking and cleaning
- Although at first QUANTITY is more important than QUALITY, improving quality will do more to prevent disease than any other measure in most disaster scenarios
WATER PURIFICATION

• Cover and allow to stand
• Sand filtration
• Bulk chlorination
• Reverse osmosis (military supply): good water in large quantities, but usually arrives too late, is expensive, not sustainable
• If other procedures not available, boiling or chlorination by individual user (the least efficient method)

The most basic distribution system will need clean containers for transportation
NEEDS: SHELTER

• WHO recommends 3.5 to 4 m² per person (below roof space)
• For all needs: cooking, cleaning, sanitation, recreation, a camp should have 30 m² per person
• Must be acceptable to local community or may not be used
NEEDS: BASIC SANITATION

• Feces are a concentrated source of human pathogens

• Potential for explosive water-born epidemics following disruption of basic sanitation services

• Keeping fecal matter away from water and food supply is critical
CONTROL OF HUMAN WASTE

• Defecation fields—likely impractical
• Latrines- portable or hand-dug
  - One per every 20 people
  - Must be acceptable to community
  - Between 6-50 meters from dwellings
  - Health education/specific assignments for maintenance
  - Make sure meet children’s needs, or will not be used
NEEDS: NUTRITION

- Know the previous acute malnutrition rate to compare
- Identify community resources
- Need-1900 KCals/person/day minimum
- Food must be acceptable to community
- Malnutrition rate of children <5 years old: gold standard for assessing group status
- Nutritional surveys: use standard sampling techniques, such as random, simple or systematic; cluster or, if possible, a complete census
NEEDS:
ENVIRONMENTAL CONDITIONS

- Contamination of air, water, land
- Chemical spills
- Floods
- Unsafe buildings
- Smoke
- Slope
- Water drainage
- Presence of vectors (insects)
NEEDS: HEALTH

- Crude mortality rate: includes age, sex and cause of death
- Under 5 mortality rate: sentinel population
- Morbidity—surveillance system to capture data—broken down by age and sex

Those who provide clinical care are the key to capturing this information
OTHER COMMUNITY NEEDS

• Security: prevent crime and violence
• Transportation: different kinds of vehicles
• Communications: radio, TV, internet for mass communication; radio/telephone/internet for coordination of relief efforts

Know your community pre-disaster capabilities/challenges!
THE SURVEILLANCE CYCLE

Gather Data

Analyze

Act
SURVEILLANCE

- Ongoing
- Systematic
- Data collection
- Data analysis
- TAKE ACTION BASED ON ANALYSIS

HEALTH DATA MANAGEMENT SYSTEM
WHAT DATA ARE IMPORTANT?

- Deaths
- Significant morbidity or frequent illness in community
- Early warnings; e.g., a single case of cholera
- Other: Malnutrition, malaria, serious trauma
SURVEILLANCE BEGINS WITH YOU!

- The clinician who treats individual patients MUST capture the data
- Keeping a log-book of patients is crucial
- Break down patients by age group and sex
- Analyze at local level and share data quickly

*IT IS CRITICAL THAT THE INFORMATION OBTAINED BE EFFECTIVELY USED*
PREVENTIVE MEDICINE
ROLES OF PEDIATRICIANS

- After a disaster, do not limit yourself to direct patient care
- Post disaster community evaluations:
  - Nutritional assessments
  - Needs of young children
- Provide help with disease surveillance:
  - Design system with children in mind
  - Assist with collection and analysis
PEDIATRICIANS: PRE-DISASTER

- Join disaster planning committees
- Provide input on children’s specific needs
- Make sure that drills include children
- Understand your community’s vulnerabilities and capacities to respond to emergencies
- Make sure you are integrated into specific disaster response plans
IN BRIEF

• Preventive medicine is critical for community disaster recovery
• Use data to evaluate post-disaster conditions
• Set response priorities according to public health needs
• Ensure that an ongoing effective surveillance system is in place
¡THANK YOU!