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Information and Surveillance Systems for Refugee Populations

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Section A

The Need for Information and Data Collection

Definition of Surveillance

- ◆ *Surveillance* is the ongoing, systematic collection, analysis, and interpretation of health data, essential to the planning, implementation, and evaluation of public health practice
- ◆ It includes timely dissemination of data to those who need to know

Information in Humanitarian Emergencies

- ◆ Information is the backbone of all public health activities
 - Monitoring health services
 - Control of disease outbreaks
 - Program evaluation
- ◆ Although importance is recognized at one level, data collection is often done poorly in the field, although improving

Information May Be Simple

- ◆ Very basic information needed
 - *Numerators*—E.g., who's affected or vulnerable, who's experienced illness, etc.
 - *Denominators*—E.g., population size, population risk, vulnerable population, target group

Information May Be Simple

- ◆ Goal is not to understand full picture
 - But to have enough data to plan and implement emergency response
 - Initial information can be updated regularly from many sources

Phases in Information Needs

- ◆ Information needs differ for each phase of the emergency in terms of . . .
 - Type of data needed for decisions
 - Amount of information required
 - Frequency of collecting data
 - Methods of data collection

Methods of Data Collection

- ◆ Rapid assessments
 - Initially to establish baseline data
- ◆ Surveillance—Ongoing data collection
 - Health facility
 - Sentinel
 - Community health workers

Methods of Data Collection

- ◆ Intermittent population-based surveys
 - E.g., nutritional status, KPC

Phases in Data Collection

<i>Pre-Emergency Phase</i>	Pre-flight information on health status Rapid assessment surveys Establish a surveillance system
<i>Emergency Phase</i>	Rapid assessment surveys Baseline data

Phases in Data Collection

<i>Post-Emergency Phase</i>	Targeted population surveys or sampling Consolidate surveillance
<i>Maintenance Phase</i>	Regular population-based surveys Continue surveillance Modify disease list

Phases in Data Collection

	<i>Emergency Phase</i>	<i>Post-Emergency Phase</i>
<i>Duration</i>	1–4 months	1 month–indefinite
<i>Collection of Data</i>	Mostly active Largely qualitative	Passive and active More quantitative
<i>Method</i>	Qualitative	Mostly quantitative
<i>Case Definitions</i>	Few Simple	More +/- case definitions

Rapid Assessment

- ◆ The initial rapid assessment
 - Begins when displaced persons arrive
 - Forms the basis of the surveillance system

The Assessment Team

- ◆ Team members have health care and epidemiological skills
- ◆ Collect background information
 - Maps, demographic/health data
- ◆ Require support personnel
 - Translators, data collectors, transport

Emergency Phase: Initial Information Needed

- ◆ Depends on decisions to be made
 - Demographic
 - Mortality
 - Morbidity
 - Nutritional status
 - Program monitoring

Emergency Phase: Additional Information

Background information

- ◆ Circumstances surrounding the flight
- ◆ Host/home country disease patterns
 - Host country treatment protocols and antibiotic resistance
- ◆ Usual level of health care received
- ◆ Social structure

Emergency Phase: Additional Information

- ◆ Environmental conditions
 - Climate and geography
 - Shelter and sanitation

Emergency Phase: Additional Information

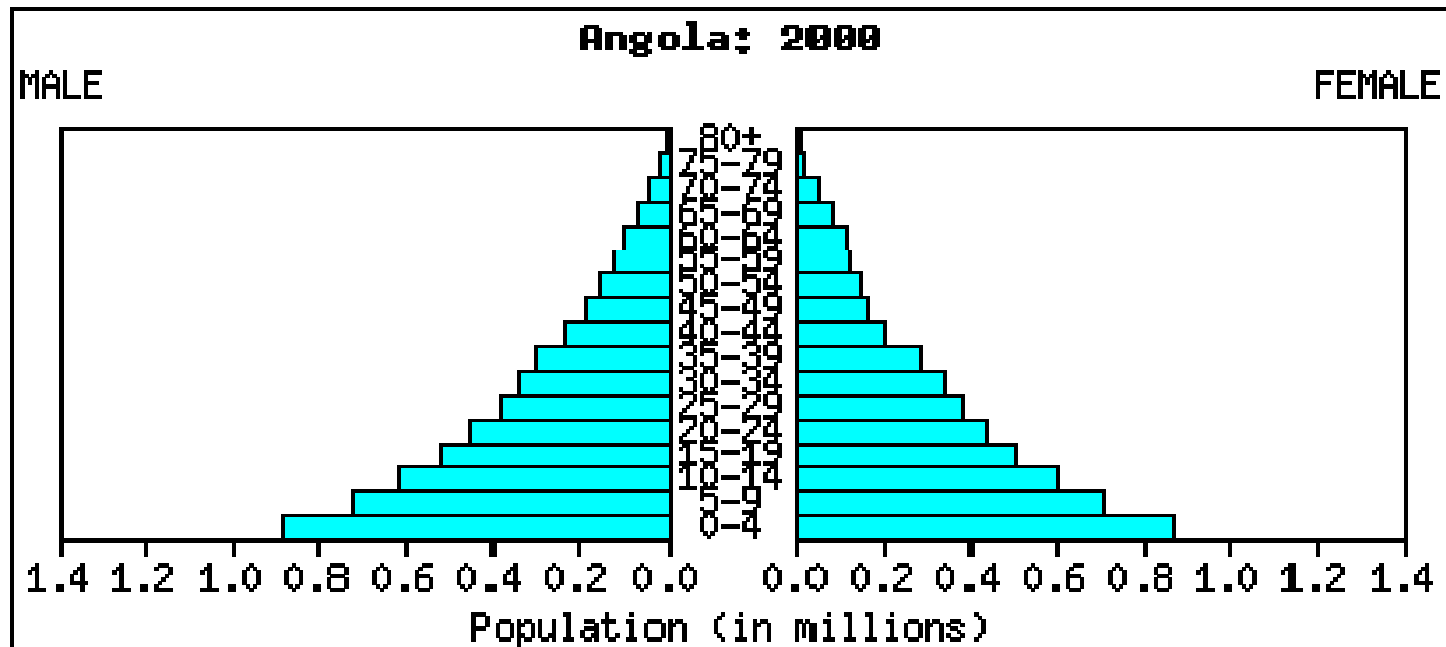
- ◆ Resources available to host country
 - Among the refugees themselves
 - Within host country (emergency food and drug supplies, health personnel, health care capacity)
- ◆ Host country information system

Approach to Initial Assessment

- ◆ Quick survey for serious problems
 - May need convenience sampling
 - Gather as accurate data as possible
- ◆ Detailed survey if less urgent
 - Can use various sampling techniques

Demographic Information

- ◆ Critical denominator—total population
- ◆ Population structure
 - Age distribution
 - Number of males and females



Source: U.S. Census Bureau, International Data Base.

Continued 20

Demographic Information

- ◆ Vulnerable groups
 - Unaccompanied minors
 - Female-headed households
- ◆ Rate of new arrivals and departures



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Section B

Population Size and Sampling

Problems in Estimating Population Size

- ◆ Estimating population size difficult
 - Increasing situations where counting is not allowed
 - General lack of information
 - Lack of confidence in results

Problems in Estimating Population Size

- ◆ Many reasons not to have numbers
- ◆ Results may be manipulated
 - By refugees
 - Agency
 - Or host country

Direct Estimation of Population Size

1. Count number of arrivals
2. Aerial photographs
3. Calculate with GPS
4. Count total number of dwellings
5. Random sampling of households
6. Indirect methods
7. Full registration

Count New Arrivals

- ◆ Count the number of people entering an area (bridge, road, or buses)

Aerial Photographs

- ◆ On-the-ground sampling at same time as over-flight
- ◆ Check for empty huts, moving population
- ◆ Refugee population must be distinct from local population

Calculate with GPS

- ◆ Calculate the circumference of a settled area with GPS
- ◆ Estimate household densities within area
- ◆ Carry out a household census on selected samples

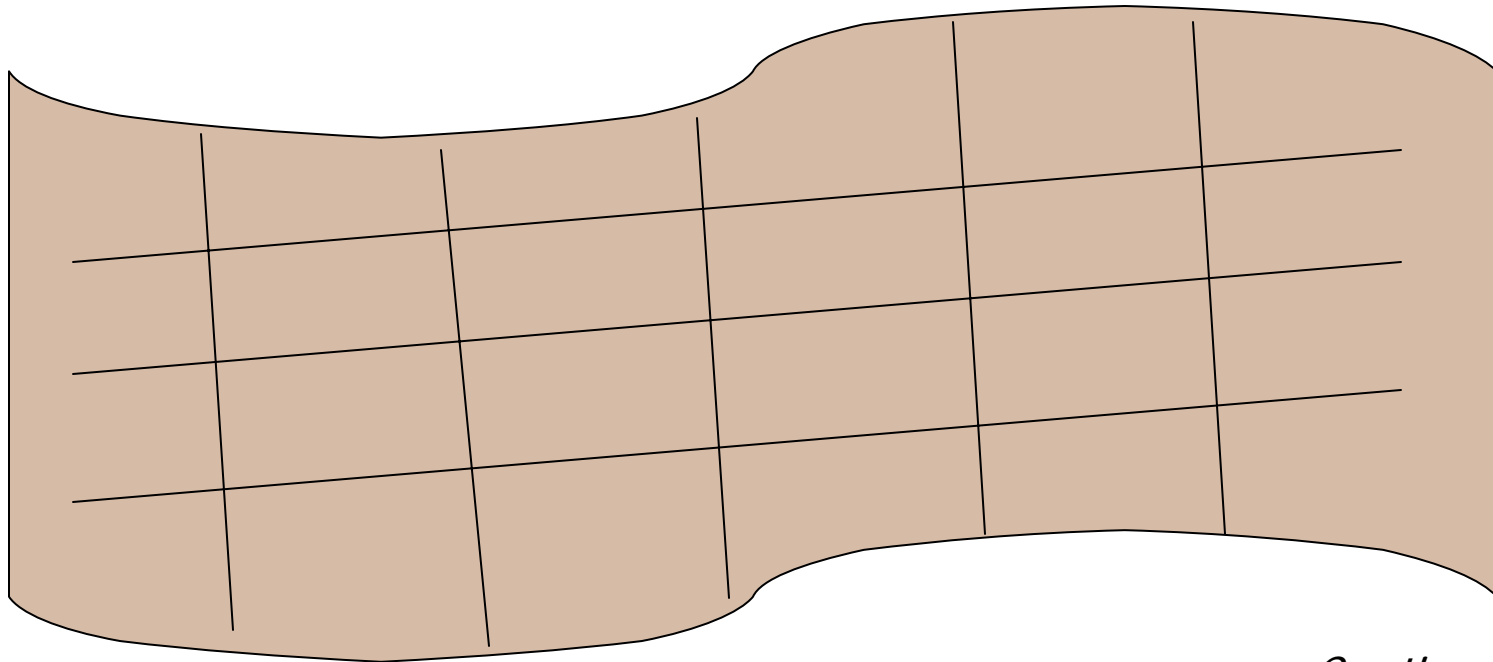
Count Total Dwellings

- ◆ For a small settlement, estimate the mean household occupancy and composition
- ◆ In a sub-sample, calculate the household size



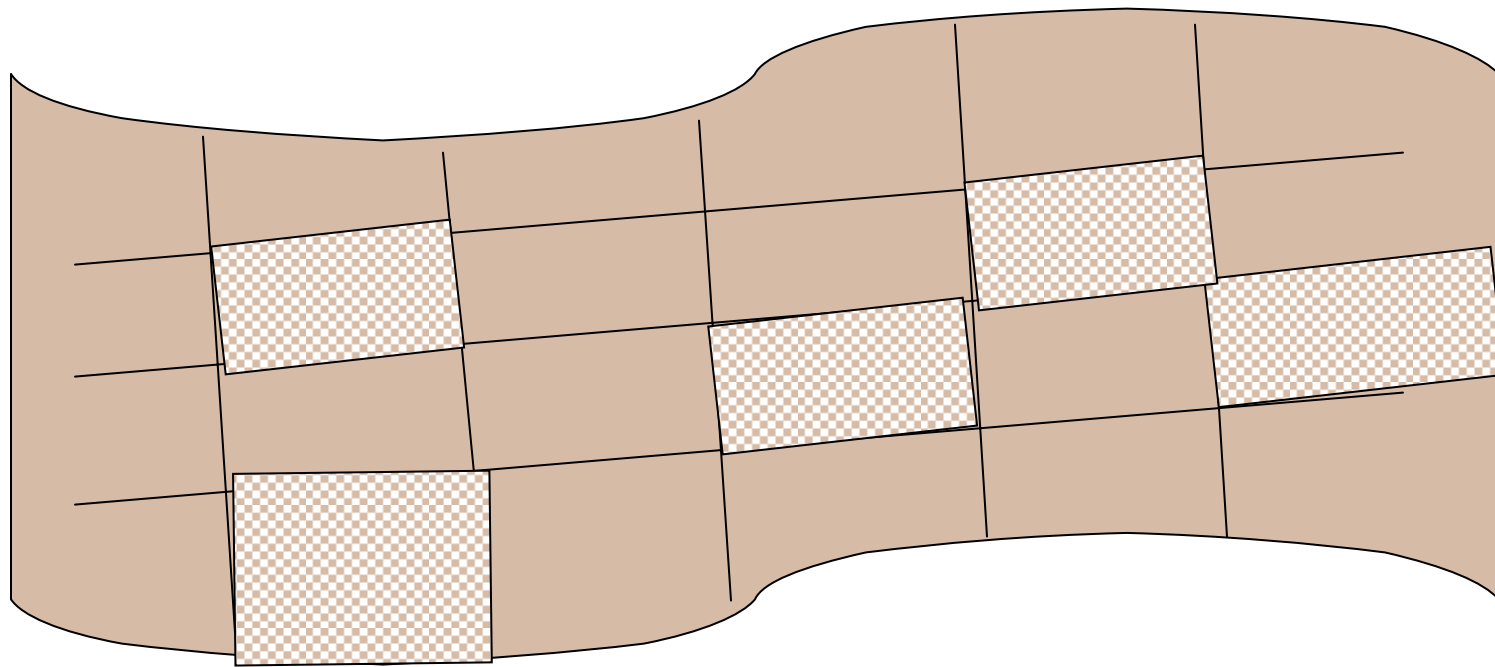
Random Sampling of Households

- ◆ To estimate the number of households
 - Draw a map, estimate size
 - Draw grids to create sections



Random Sampling of Households

- ◆ Count the number of households in a proportion of the sections



Random Sampling of Households

- ◆ Calculate mean household census and composition for a sample
- ◆ Can use a more formal cluster sampling approach
 - Where population is self-settled and lack registration

Full Registration

- ◆ Registration process for refugees
 - Collect demographic data
 - Issue registration cards

Full Registration

- ◆ Takes months to organize/conduct
- ◆ Subject to multiple registrations
 - Follow up sample of registrations to determine percent invalid

Indirect Estimation of Population Size

- ◆ Count the number of children under five years (or less than 110 cm)
 - They average 15–20% of total population

Indirect Estimation of Population Size

- ◆ Use number of immunizations given
 - Calculate coverage rates
 - Estimate total-under-five population



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Section C

Indicators

Emergency Phase: Mortality Indicators

- ◆ Mortality can be reported as . . .
 - Crude mortality rate (CMR)
 - Age and sex-specific mortality rate (particularly for children)
 - Cause-specific mortality rate
 - Case fatality rate (CFR)

Crude Mortality Rate

- ◆ CMR of 1/10,000 persons/day delineates the phases of emergency
- ◆ Calculated as
 - Deaths/10,000 persons/day during acute phase
 - Deaths/1,000 persons/month during post-emergency phase
- ◆ Consider age-specific and gender-specific mortality rates

Emergency Phase: Morbidity Indicators

- ◆ Incidence rates (attack rates)
- ◆ Age and sex-specific incidence rates for primary causes of disease
 - Especially among children
- ◆ Cause-specific morbidity rates
 - Case definition critical

Emergency Phase: Morbidity Indicators

- ◆ Reporting initially very simple
 - Morbidity register in Goma, 1994, started with three diseases

Post-Emergency: Health Information System

- ◆ Morbidity and mortality indicators
- ◆ Disease-specific surveillance
- ◆ Nutritional surveillance
- ◆ Environmental health indicators
- ◆ Program monitoring indicators
- ◆ Reproductive health indicators
- ◆ Violence/human rights abuse indicators

Morbidity Indicators

- ◆ Primary diagnosis
- ◆ Age-specific incidence rates
- ◆ Sex-specific incidence rates
- ◆ Relation to season
- ◆ Changes in CFR (cholera CFR)
- ◆ Reportable diseases
- ◆ Hospital referrals

Disease-Specific Surveillance

- ◆ Priority diseases
 - Measles, malaria, ARI, diarrhoea, meningitis
 - Monitor for antibiotic resistance
- ◆ Other diseases
 - STI, TB
- ◆ Location-specific disease outbreaks
 - Sleeping sickness

Nutritional Surveillance

- ◆ Periodic assessment of under-fives
 - Commonly use WFH or MUAC
- ◆ Acute malnutrition reported as:
 - Moderate if
 - > -2Z (<80% WFH)
 - Severe if
 - >-3Z (<70% WFH)

Nutritional Surveillance

- ◆ Stunting—Indicates long-term problem
- ◆ Weight gain patterns at under-five clinic
- ◆ Screening for micronutrient deficiency

Food Security Indicators

- ◆ Per capita food distribution
- ◆ Number receiving supplementary feeding
- ◆ Food basket content

Food Security Indicators

- ◆ Household food reserves
- ◆ Market prices

Environmental Health Indicators

- ◆ Water supply
 - Quality
 - Quantity available
 - Individual consumption
 - Distance it is carried
- ◆ Sanitation
 - Latrines—ratio to population, usage
 - Solid waste disposal

Program Monitoring Indicators

- ◆ Health facility access indicator
 - U-5 children seen
 - Antenatal clinic attendance, TT doses given, FP services

Program Monitoring Indicators

- ◆ EPI coverage and drop-out rates
(DPT1–DPT3)
- ◆ Health worker performance—quality indicators



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Section D

Establishing a Surveillance System

Objectives of Surveillance System

1. Determine what resources are needed
2. Determine what health status is
3. Set program priorities
4. Detect and monitor outbreaks
5. Assess effectiveness of programs
6. Determine quality of services
7. Allow donors to anticipate particular needs

Establishing a Surveillance System

1. Build initial assessment data
2. Train from people to collect/analyze/use data
 - One person responsible for directing
3. Define the information to be collected
 - Only that which will be acted upon
4. Design quality checks for information
5. Identify program objectives—coverage, KAP, access to services

Establishing a Surveillance System

6. Establish case definitions for common diseases
7. Develop and test surveillance forms
8. List data sources for each indicator
9. Establish data analysis and reporting procedures
10. Review function of the surveillance system periodically

Establish Standard Case Definitions

- ◆ Develop case definitions for . . .

Diarrhea

ARI

Measles

Dysentery

Malaria

Meningitis

Cholera

Hepatitis

STIs

Micronutrient deficiencies

Examples of Case Definitions

<i>Malaria</i>	Fever and periodic shaking, chills
<i>Measles</i>	Fever, cough, rash, conjunctivitis
<i>Watery diarrhea</i>	More than three watery stools per day, but no blood or rice-water in stools
<i>LRTI</i>	Fever, cough, rapid breathing (more than 50 breaths per minute)

Surveillance Forms

- ◆ Develop simple, standardized forms . . .
 - Total adult, under-fives, male, female
 - Weekly mortality forms
 - Weekly morbidity forms

Example of Simple Morbidity Form

Cause	0–4 yrs Male	0–4 yrs Female	5+ yrs Male	5+ yrs Female	TOTAL
ARI					
Diarrhea					
Malaria					
Malnutrition					
Measles					
Other					
Repeat Cases					
TOTAL					

Sources of Information

- ◆ Health facilities
 - OPD
 - Under-five clinics
- ◆ Community
- ◆ Population surveys
 - Periodic—e.g., during an outbreak
- ◆ Grave sites

Data Analysis

- ◆ Don't collect data for the sake of it
 - Examine and interpret it to make appropriate and timely changes
- ◆ Establish data analysis procedures
- ◆ Train staff to do simple analysis
 - Calculate rates, draw tables, compare to previous season

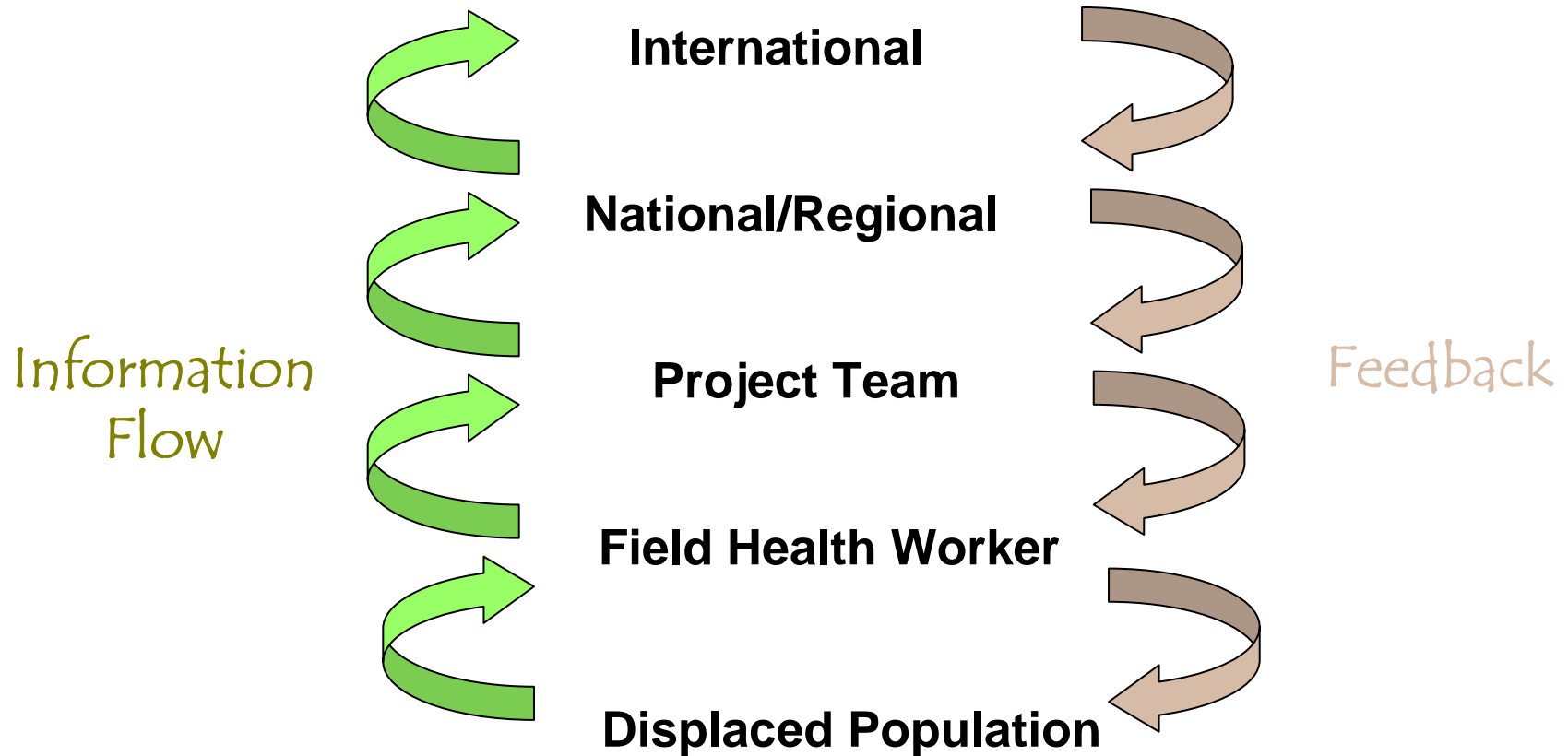
Data Reporting

- ◆ Determine frequency of reporting
 - Daily during epidemic
 - Less frequently in post-emergency
- ◆ Determine information flow and feedback process
 - Epidemiologic bulletin or meetings
 - Encourage informal feedback

Dissemination of Data

- ◆ Who gets?
 - Health coordinators
 - Host country health system
 - Refugee leadership
- ◆ Who follows up?
- ◆ Who documents?

Flow of Information



Evaluation of Surveillance System

- ◆ Periodically review the information system function
 - % deaths reported as “unknown”
 - % morbidity reported as “other”
 - Assess use of case definitions
 - Compare diagnosis to treatment
 - Use of information for decision making