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8. OVERVIEW OF CENSUS AND VERBAL AUTOPSY METHODS

"It ain't what you do, it's the way that you do it..."

Funboy-Three and Bananarama

8.1 Introduction

The aim of this chapter is to provide a brief overview of the methods used to perform two data collection systems that form the foundations of AMMP. The Project has also produced an extensive and detailed 'Manual of Operations' where more detailed information on the running of the surveillance systems can be found.

- *Census*¾this provides us with our denominator, i.e. the number of people in the populations under surveillance. In Dar es Salaam enumeration of the population is performed twice a year, while in the rural areas it is performed once a year.
- *Verbal autopsy*¾this provides us with numbers and causes of death. Verbal autopsy is a tool that is commonly used to determine cause of death in areas where vital registration systems are unable to do so. Detection of deaths and use of verbal autopsy is continuous throughout the year.

The methodology used by AMMP has developed over the 5 years of the first phase of the project. While it is always possible to make incremental improvements to systems, the basic surveillance system is stable and we believe performs its job well.

8.1.1 Definitions

The following definitions apply to the AMMP surveillance system:

- *resident*¾someone who *intends* to stay in the household. This includes people who are absent on business or have travelled to another area for treatment.
- *household*¾officially this is defined as a group of people sharing food from the same pot. In practice it is likely that it is often defined by the people being interviewed. In Dar es Salaam in particular, it is common to have several *households* in a single *house*.

8.2 Census methods

In the first instance an initial baseline census is taken to determine who was present in each household under surveillance. A single form was used for each household and this information was entered into a computer.

In subsequent census rounds the information for each household has been printed on new forms. Existing data is verified and where necessary updated by the enumerators. New households that appear, either by migration into the area or the splitting of households, for example by marriage, are registered on new household forms. Vital events and migrations are recorded for each household: births, deaths, migrations into the household and migrations out of the household. This provides us with our basic population denominator. The following items of data are recorded for each individual during a household visit:

8.2.1 Census data items

name, age, sex, relationship to head of household, main occupation, marital status, drinking habit, smoking habit, date of entry into the household, mode of entry, date of exit, mode of exit, orphan status.

8.2.2 Tracking of individuals

One important feature is that the surveillance system does not attempt to track individuals as they migrate into and out of the surveillance areas repeatedly through time. The census system is cross-sectional and is designed to determine who is present on a particular date. We do record the date of entry and exit of each individual so we can determine who has migrated in and out from one census to the next, but we do not attempt to link people who migrate out and then back in again. This makes the running of the system considerably simpler and cheaper than other surveillance systems but means that some types of analyses cannot be performed on the data sets provided by AMMP.

8.2.3 Training

A 2-day re-training package for enumerators has been developed and is used before the start of each census. The package includes a review of methods and variables, drama sessions to highlight specific issues and field work. The training of new enumerators takes slightly longer and begins in the week before the re-training.

8.3 Verbal autopsy methods

8.3.1 Verbal autopsy form

A 2-sided pro forma is used to collect information during verbal autopsy. A copy of the form is in annex 20.6. The form consists of a section that identifies the respondent, a section that identifies the deceased, an open-ended history section, a check list of previously diagnosed conditions, a check list of symptoms and their duration, a list of health services sought in the period leading to death, a residential history and a summary of any confirmatory evidence.

8.3.2 Interview

The form is completed by trained health personnel who interview the relative(s) of the deceased or the person who was caring for the deceased. Wherever possible the interview takes place within 6 weeks of the date of death. A compromise has to be made between collecting information as soon as possible after the event and respecting the grief of relatives. Often a small cash offering is made to show respect; this is a common practice in Tanzania.

8.3.3 Detection of deaths

Deaths are detected by community based key informants. In Hai District and Morogoro Rural District these tend to be the enumerators who perform the census. In Dar es Salaam a range of individuals are used. The Key Informants are chosen because of their awareness of what is happening in their community, i.e. they are likely to hear of deaths that occur. The communities are now also aware that deaths should be reported to these people as a kind of vital registration. The personnel who perform the verbal autopsies meet with the key informants on a regular basis to find out about new deaths that have occurred. They then arrange to meet with the relatives or care-takers of the deceased and first verify that the death has occurred and then perform the verbal autopsy.

8.3.4 Coding of diagnosis

The cause of death is determined independently by 2 physicians. The diagnoses are compared and discrepancies are given to a 3rd coder. More details on coding of verbal autopsy are given in Chapter 10.

8.3.5 Confirmatory Evidence

Wherever possible confirmatory evidence of the cause of death is obtained. This includes: in and out patient records, death certificate, and burial permit.

8.3.6 Issues concerning verbal autopsy

Verbal autopsy is not a perfect tool, but can be the only one available to provide information on cause of death in certain circumstances. A number of detailed investigations have been made into the accuracy of verbal autopsy and the issues are both complex and to some extent counter-intuitive. Some of the issues are discussed in more detail in Chapter 10.1 and 10.2. A review of the use of verbal autopsy for determining the cause of death in adults by Daniel Chandramohan and colleagues (Chandramohan, Maude et al. 1994) and an investigation of misclassification errors by Martha Anker (Anker, In press) are recommended reading.

8.3.7 Calculation of rates

Currently the census and verbal autopsy systems are not linked. Mortality rates are calculated from the numerator provided by the verbal autopsy system and the denominator provided by the census system. This is similar in principle to the way that mortality rates are calculated in the UK. The definition of a resident means that it is possible for someone to enter the surveillance area and die and therefore be included in the numerator without having had a chance to be included in the denominator. This is particularly relevant for children under the age of 1 year or where large numbers of people migrate from one area to another just before death. This might become increasingly important with AIDS where people might return home shortly before death leading to an overestimate of mortality rates. In chapter 8 the implications of this are discussed and deaths reported by the 2 systems are compared (**Figure 9.5.1** and **Figure 9.5.2**).

References

Anker, M. "(In press)." .

Chandramohan, D., G. H. Maude, et al. (1994). "Verbal autopsies for adult deaths: Issues in their development." International Journal of Epidemiology **23**: 213-222.

