

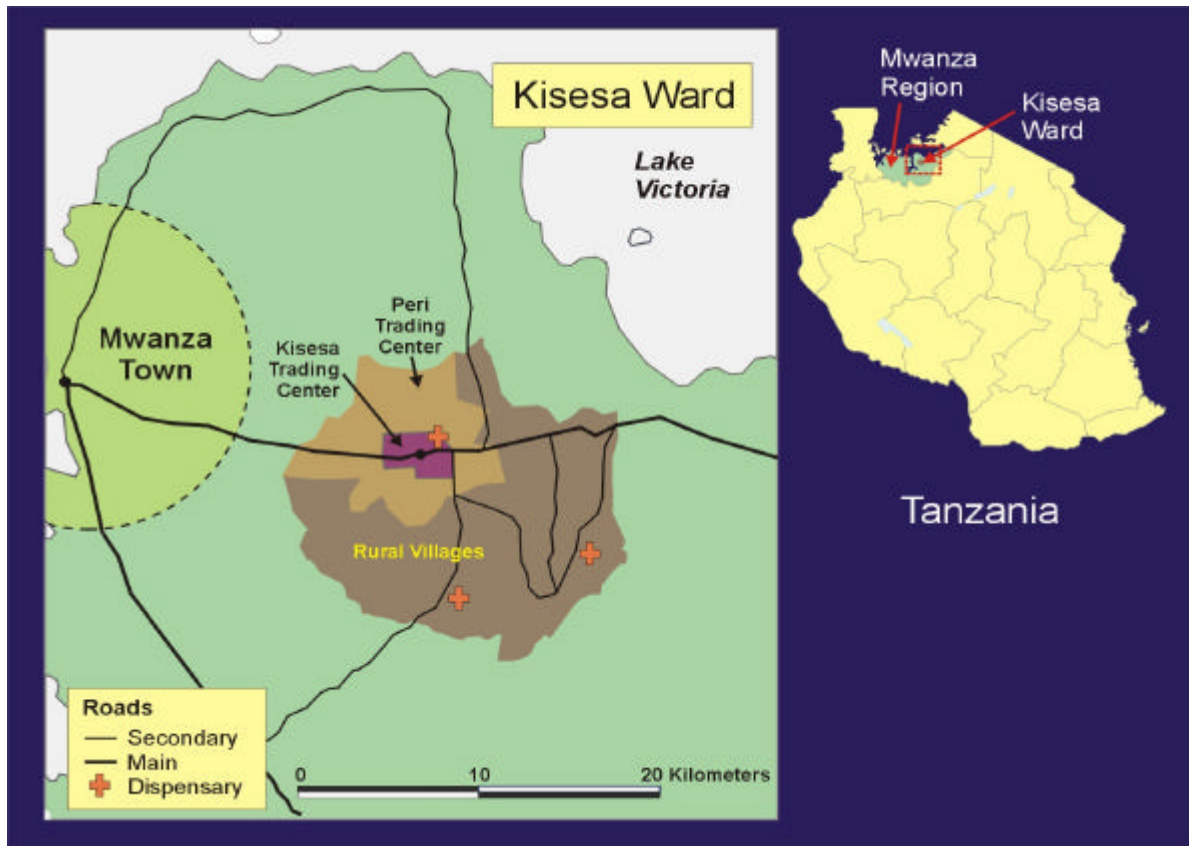
MAGU DSS

Site Description

Contents

- 1.0: Physical Geography of the Magu DSS
- 2.0: Socio-demographic characteristics of the Magu DSS
- 3.0: Magu DSS Procedures
- 4.0: Magu DSS Basic Out put
- 5.0: Capacity for conducting Clinical Trial
- 6.0: Catalogue of Completed and On going Studies
- 7.0: Publications

Location of Magu DSS Site, Mwanza Tanzania (monitored population, 30,000)



1

¹ A Ward is a second administrative division in a District and falls under a 'Division'

² A village is the first administrative division of a 'Ward'

2.0 Socio-demographic characteristics of the Magu DSS

Magu DSS has a population of about 28,000 inhabitants and majority of the residents (over 95%) belong to Sukuma ethnic group, which is also the largest ethnic group in Tanzania.

The ward is administratively divided into six villages, three of which are located along one of the main roads connecting Tanzania and Kenya. There are about 4500 households with mean size of 6.4 individuals. The main economic activity among the area residents is farming (97%) and commonly grown crops include sorghum, paddy, maize and cassava. Cotton is the predominant cash crop in the area though currently paddy is emerging as another important cash crop. Few residents keep livestock and some are involved in petty trade of farm and animal products. The ward has four government health facilities (all providing MCH services), three private dispensaries and five chemists. It has 11 primary schools and one secondary school.

3.0 Magu DSS Procedures

3.1 Objectives of the Magu DSS

Magu DSS has five main objective listed herewith;

- To measure child and adult mortality and fertility in the general population and by HIV status
- To lay a reliable foundation for epidemiological surveys by registering people's mobility and mortality
- To assess the leading causes of death through verbal autopsy (and death certificates if possible)
- To assess the potential changes in family structure due to the adult mortality (e.g. orphanhood)
- To provide Vital Data to the Ward and District authorities to support the planning process.

3.2 Introduction to the Magu DSS Procedures

Magu DSS was established by the Tanzania-Netherlands Support Program on HIV/AIDS Control (TANESA) as one the components of the Kisesa Open Cohort Study. The cohort is involved in Research and Interventions against HIV/AIDS. Other research activities implemented in the cohort include, two yearly Epidemiological serological surveys, quarterly antenatal clinic surveillance and other social behavioural studies. In addition, since late 1995 several community interventions were introduced to promote safer sexual behaviour. The DSS has employed ten fieldworkers who work on DSS activities but they also partly supports other cohort's undertakings. Each fieldworker lives in the village where he works and uses a bicycle to move around. The DSS team also includes one field supervisor, four data entry clerks, a statistician and overall in-charge of the cohort activities.

3.3 Magu DSS field procedures

3.3.1 Baseline census

Magu DSS activities cover all the six villages² in the Ward. Data collection began in 1994 with the baseline census which involved listing of all individuals living the DSS's geographical area. All were listed with their names, sex, age, relation to the household head, survival status of parents, education, source of income, material used in house construction. The baseline survey lead to the creation of Demographic Household Card (DHC) i.e. a card containing all individuals living in a particular household with their names, age, sex and relation to the household head. It was also possible to allocate a DSS number to each listed individual. The

number is based on administrative subdivision in the DSS area. It includes a village, sub-village, ten household leaders, household number and line number of a person in the household card.

3.3.2 Follow-ups listings

Following the baseline census (carried out in 1994), records collected during the baseline are being constantly updated through demographic follow-up rounds conducted on regular basis (four monthly intervals). Special forms are prepared for the undertaking but the enumerators (referred here as “DSS field workers”) also carry with them the Household Cards. All households (defined as a group of people who regularly eat together from the same pot) are visited each round and information is collected on residence and survival status of all household members, on pregnancy of women of reproductive ages and on new arrivals (migrants and new-borns). A new person is listed as a household member if the household respondent had indicated that this person was intending to stay in the household. On the other hand, if person had left the household by the next round he/she is not considered a household member and therefore he/she is crossed out using a blue pen and for those dying are crossed from the DHHC using a red pen. Moreover, returning household members are re-listed and keep their original line numbers.

3.3.3 Verbal Autopsy (VA)

All deaths encountered in the course of DSS follow-up listing are listed on a separate form. Deaths of individuals 60 years or less are then followed by VA interview. Verbal Autopsy interviews in the Magu DSS area were initiated in February, 1995. Verbal Autopsy (VA) data collection started in 1995. In the beginning the three different instruments (for data collection) were used i.e. one each for neonates, children and adults. From 1996 a short module was added to the interview to assess consequences of terminal illness and deaths among adults. For the purpose of this chapter, the analysis focuses on the VA data collected in five years (1999-2001). VA interviews are conducted for about 75% of all deaths in the Magu DSS.

3.3.4 Nature of VA tool

The VA questionnaire was developed locally following anthropological research to identify commonly used terms for signs and symptoms of disease. Separate instruments were used for neonates, children and adults. The VA interviews are carried out by a qualified Assistant Medical Officer or sometimes a Clinical Officer (lower cadre to AMO). The team co-ordinator and senior technical advisor supervised data collection. Following the death of a person 60 years or less, the respective household is visited by the AMO who interview the parents, spouse or relatives of the deceased or others who knew the deceased well. The interview includes an open-ended disease history and a structured questionnaire conducted in Swahili, the National language, or in Sukuma, the predominant local language.

3.3.5 Assigning causes of death

To obtain a more complete picture of the causes of death in adulthood (15 years and above), data from verbal autopsies, HIV sero-status (if available for the deceased) are used to ascertain the probable primary cause of death. In addition to an ‘objective’ algorithm-based diagnosis done by computer, a Medical Officer (MO) is given the open-ended disease history, as reported by the respondent and the structured questionnaire to make independent diagnosis. Assignment of the cause of death is based on the 10th revision of the International Classification of Diseases. The three diagnoses i.e. field diagnosis by the AMO, second one by the MO and computer based

algorithm) are put together and a final diagnosis is made if at least two of the three diagnoses are in agreement. Otherwise the third clinician is given the respective document and does another independent diagnosis. Those, which still does not match at least on two, they, are considered indeterminate or unknown.

3.3.6 Data management

Magu DSS data are kept in two sites i.e. in the field office and in the main office within the NIMR, Mwanza. The field office keeps the household cards, with the list of all individuals living in the Ward. The main office keeps the follow-up forms and computerized data. After each follow-up listing, the forms are taken to the main office for computer entry. The DSS supervisor has to go back to the field office to rectify any discrepancies noted in the course of computer entry and cleaning.

Double entry system is used for entering DSS data and Dbase IV (Borland International, Scotts Valley, California) is the software which has been used since the beginning. The software is programmed in such a way that it checks and controls common mistakes. For instance, the program will not accept to fill non-programmed information. It also controls the types of characters and number of digits per one entry field. Therefore data entry clerks cannot just enter any number. Analysis work is done using statistical software named Stata (Stata Co-operation, College Station, Texas, USA). The DSS data are linked to other data emanating from the Epidemiological sero-survey, Antenatal clinic surveillance and other studies.

4.0 Magu DSS Basic Output

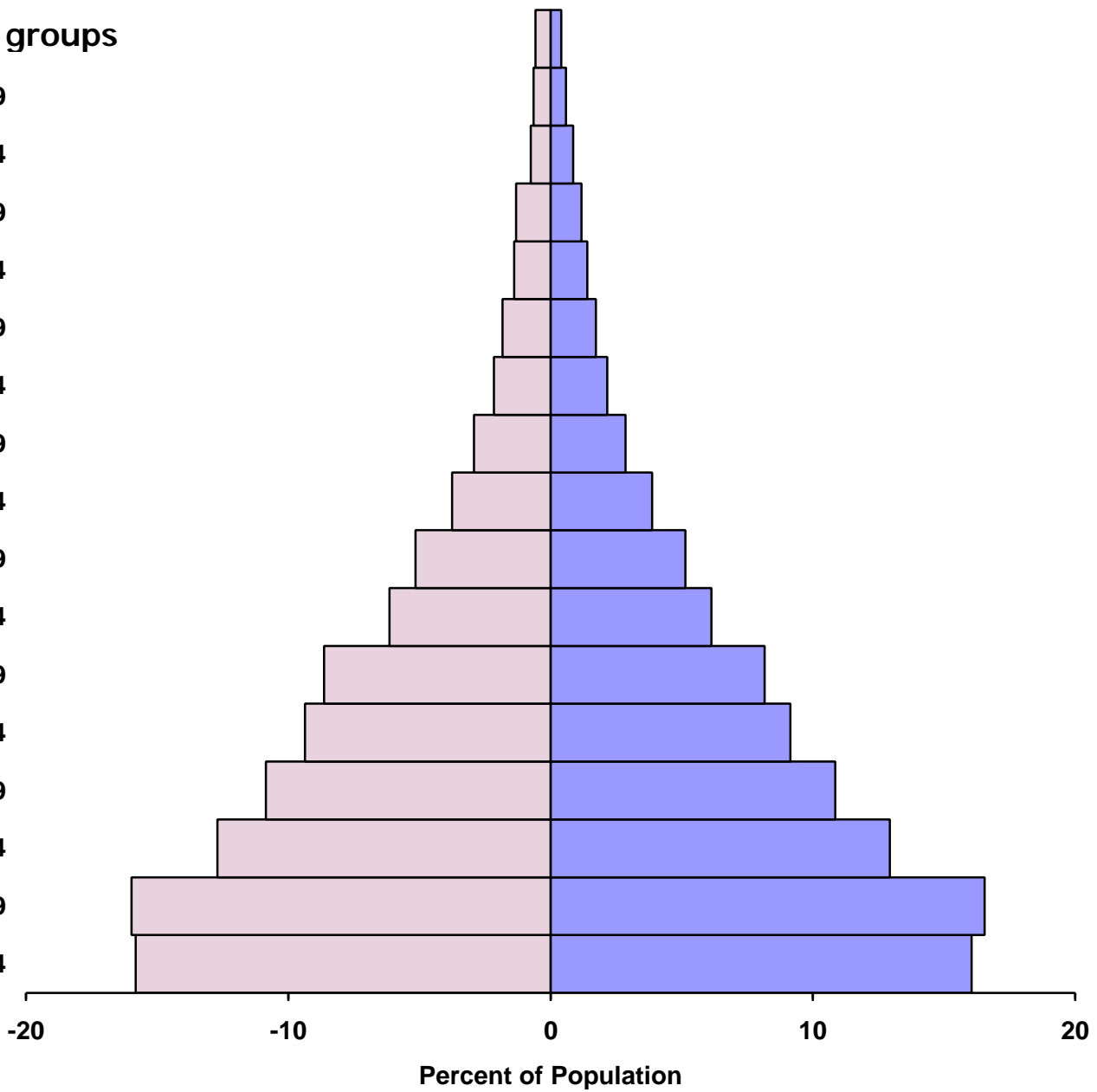
The administrative profile of health services at the district level includes; district hospital, which is supported by health centres at division level and dispensaries at village level. Magu DSS area has four Government dispensaries and three private ones. Residents of the Magu DSS area are used to modern health facilities though use of traditional care is also common. Use of Government health facilities at District and higher levels involves payment of registration fee while none is charged at health centre and dispensary levels. Larger section of deaths occurs at home followed by health centre and dispensaries. Fewer die in the hospitals (Ngalula et al. 2002)

The population Annual Growth Rate is 2.6%, Average household size (6.4), Total Fertility Rate (6.2), Crude Rate of Natural Increase (24.7), Crude Death Rate (11.8), Crude Birth Rate (36.5), Under-five mortality (137). The main causes of morbidity in the DSS area are Malaria, schistosomiasis, upper respiratory infections, and urinal genital infections. HIV prevalence and incidence rate within the Magu DSS area is 7.3% and 0.8 per 100PY respectively. HIV/AIDS is currently the single major cause of death among adults (15-59 years). Up to 37% of all deaths in the age group are attributed to the epidemic. Mortality among infants born to HIV infected mother is 158/1000 against 79/1000 for those born to HIV negative mothers. Furthermore, mortality risk of children (by age five) born to HIV infected mothers is twice that of women with negative status. Mortality among HIV infected adults (15-44) is 73/1000 compared to 3.7/1000 among HIV negatives. Currently, life expectancy is 43 and 44 for men and women respectively.

Population Pyramid, Magu DSS, 2001

Age groups

- 75-79
- 70-74
- 65-69
- 60-64
- 55-59
- 50-54
- 45-49
- 40-44
- 35-39
- 30-34
- 25-29
- 20-24
- 15-19
- 10-14
- 5-9
- 0-4



□ Females □ Males

The population pyramid of the Magu DSS characterises a case of high fertility and mortality populations. The pyramid has broad base and rapid narrowing suggesting that while there are a lot births the life expectancy is however low. For instance not many of Magu DSS residents live beyond 49 years. More women compared to men survives to older age.

Distribution of deaths by age and sex, Magu DSS site, Tanzania (1997- 2001)

Age group	Male		Female		Total	
	N	%	N	%	N	%
0-27 days	62	9.86	38	6.68	100	8.35
28days-11months	111	17.65	101	17.75	212	17.70
1-4 years	109	17.33	83	14.59	192	16.03
5-14years	37	5.88	30	5.27	67	5.59
15-44years	136	21.62	167	29.35	303	25.29
45-60years	78	12.40	35	6.15	113	9.44
Over 60years	96	15.26	115	20.21	211	17.61
Total	629	100.00	569	100.00	1198	100.00

The distribution of all deaths in the Magu DSS by age and sex during the study period is shown in Table 1. Results are presented for the five-year period i.e. 1997 – 2001. During this period, 1198 deaths were recorded in the DSS area. VA interviews were attempted on 989 (82%) deaths and were successfully completed for 741(75%) of the deaths (60 years or less). Failure to conduct VA interviews for the eligible individuals was attributed to the mobility associated with the death, household dissolution, deceased living alone and refusals. The place of death was distributed between home 69.2%), hospital (15.8%), clinic/health centre (14.6%), accident site (0.3%) and other (0.1%) contributing to the rest.

About forty two percent of the deaths involved children under 5 years of age and more among infants (18%). Largest percent of deaths (25%) during the reference period were recorded among adults 15-44 years. Least deaths (6%) occurred among those aged 5-14 years. Males constituted 53% of all deaths during the reference period out numbering females in the five of the seven age groups. The two age groups were 15-44 and 45-60 but huge difference among them was however noted on age group 45-60 where percent of deaths among males (12%) was twice that of females (6%).

Percentage of deaths by sex in specific disease categories, Magu DSS site, Tanzania, 1997- 2001

Category	Male		Female		Overall	
	N	%	N	%	N	%
Communicable	291	65.98	185	61.67	476	64.24
Non communicable	37	8.39	22	7.33	59	7.96
Accident/injuries	16	3.63	8	2.67	24	3.24
Maternal	-	-	7	2.33	7	0.94
Neonatal	37	8.39	28	9.33	65	8.77
Others	60	13.61	50	16.67	110	14.85
Total	441	100.00	300.00	100.00	741	100.00

About 64% of all deaths were attributed to communicable diseases, while less than tenth (8%) were non-communicable (Table 3). Neonatal causes constituted 9% of all causes. Accidents/injuries accounted for 3% and maternal causes constituted about 1% of all deaths during the interval. About 15% died from other causes, which included such causes like anaemia, sickle cell anaemia and malnutrition.

5.0 Capacity for conducting Clinical Trial

The Magu DSS operated by the Tanzania National Institute for Medical Research. The Institute's major research programmes are focused on Tanzania's leading communicable diseases. These are malaria, schistosomiasis, filariasis including onchocerciasis (river blindness), trypanosomiasis (sleeping sickness), tuberculosis, diarrhoeal diseases, intestinal parasites and Sexually Transmitted Infections (STI) including HIV/AIDS. The Research Centres/stations/field stations (mentioned earlier) are located in the areas endemic to the respective diseases. The Institution is well equipped in terms of manpower and enabling facilities. NIMR has well trained research scientists who have the capacity to execute different research undertakings as well as special funded research projects.

NIMR has a number of specialised (modern) laboratories at its centres/stations.

The laboratory facilities at NIMR Mwanza Centre are of high quality and used as reference for the lake zone area in North Western Tanzania. Some of the diseases dealt with at the Mwanza laboratory include Schistosomiasis, Malaria, Diarrhoea, TB, STIs and HIV/AIDS. A new laboratory has been completed to be varnished with highly sophisticated laboratory equipment to accommodate diversified laboratory needs.

NIMR has extensive experience in processing and analysing large amounts of quantitative and qualitative data and therefore data processing team at NIMR is highly qualified and well equipped to carry out the assignment.

NIMR has experience in executing projects funded by different donors. They include WHO/TDR, EU, Wellcome Trust, DfID, UNICEF, UNAIDS, Netherlands Government, Danish Biliarhziasis Laboratories (DBL). Management of the Institution is exemplary in its efficiency allowing timely completion of research projects and submission of financial reports. The Mwanza Centre that will foresee the implementation of the proposed study shares the above

qualities and its current research agenda include; Schistosomiasis, STI/HIV/AIDS, and Malaria, Tuberculosis and other specialised epidemiological research work. The centre has engaged in collaborative research with many partners from developed and developing countries, including the London School of Hygiene & Tropical Medicine (LSHTM), The Netherlands Royal Tropical Institute (KITS), Erasmus University, University of North Carolina, the Uganda Virus Research Institute, and the Blair Research and Training Institute of Zimbabwe.

The Kisesa open cohort operated by NIMR Mwanza Centre was established in 1994 and is the second oldest of five such studies in Africa. The cohort has well documented information regarding individuals residing in the cohort area with their names, age, sex and place of residence. Other available information includes mobility, fertility, morbidity and causes of death in general and HIV/AIDS (for individuals 15 years and over). The data set is computerised making it easy to access, analyse and generate any information of interest. Furthermore, the cohort area includes four Government health facilities, which have close link with the cohort's research work. There is also a close link with the health care services at district, regional and consultant hospital level (Bugando Medical Centre – BMC). More important is that the epidemiological sero-survey provides treatment to all participants and children presenting with an illness.

The cohort has a blanket ethical clearance from the ethical clearance committee of the Ministry of health, Tanzania. However, separate ethical clearances are applied for specific studies. In line with the above, ethical clearance to conduct the Clinical Trial will be sought from the medical research co-ordination committee of the National Institute for Medical Research that acts as a national ethics committee in Tanzania. Consent to participate in the study will be sought from all potential participants after they have been clearly informed about the study objectives, methods to be used, anticipated benefits, potential hazards and discomforts that may entail. Where children will be involved, consent will be obtained from their parents or guardians.

6.0 Catalogue of completed and ongoing research activities

6.1 The Kisesa Open Cohort

Magu DSS is one of the components of Kisesa Open Cohort, which is one of the few operating cohort studies in Africa. The cohort has following objectives

- To measure child and adult mortality and fertility in the general population and by HIV status
- To lay a reliable foundation for epidemiological surveys by registering people's mobility and mortality
- To assess the leading causes of death through verbal autopsy (and death certificates if possible)
- To assess the potential changes in family structure due to the adult mortality (e.g. orphanhood)
- To determine prevalence and incidence of HIV/AIDS epidemic
- To determine trends and patterns of the spread of the HIV/AIDS Epidemic within the cohort
- To guide development of intervention against HIV/AIDS
- To provide Vital Data to the Ward and District authorities for planning purposes

The Cohort includes three other research components i.e. Epidemiological sero-survey, Antenatal Clinic surveillance and Other nested studies. Moreover a number of intervention activities against HIV transmission are implemented in the cohort area. They first include IEC activities (School Program, Mapping of risk areas for HIV transmission, Village HIV/AIDS Action Committee, HTA Program, Health Unit Based Training (HUBT), secondly is the Improved management of STDs in the four health units within the cohort area. STDs and thirdly is the Voluntary Counselling and Testing (VCT) available to those in need of such services.

6.2 Completed studies

6.2.1 The Magu Demographic surveillance System (DSS)

This is the base of all research and intervention activities implemented in the cohort. Details in the earlier in section two. Seventeen rounds of demographic listing have been completed.

6.2.2 The Epidemiological sero-survey

The epidemiological sero surveys forms the second major research activity in the cohort. Between 1994 and 2000, three rounds of epidemiological sero-surveys were conducted i.e. first sero survey (1994/95), second (1996/97) and the third one (1999/2000).

6.2.3 The Antenatal Clinic Surveillance

In strengthening the monitoring system, Antenatal clinic Surveillance was set up in September, 2000 and covered three health facilities within the cohort area (Kisesa, Igekemaja and Welamasonga dispensary). So far two rounds of the same have been completed.

6.2.4 Other studies

A number of follow-up studies have been conducted in the cohort (all documented). The list includes studies addressing;

- Impact of HIV/AIDS on adult mortality
- Child mortality in the era of AIDS
- Low uptake of Family planning after decades
- Need for new strategies to promote condom use
- Spread of HIV into the rural communities
- Orphanhood and child fostering
- Medical care utilisation and household expenditure
- Male circumcision and susceptibility to HIV infection among men IN Tanzania
- Women and infertility
- Trends in sexual behaviour
- Mobility as a risk factor for HIV infection
- Community factors in the HIV transmission

6.3 On going studies

6.3.1 Follow-up listing under the Demographic Surveillance System

6.3.2 Fourth round of the Epidemiological sero-survey

7.0 Publications

1. M. Urassa, J Todd, JT Boerma, R Hayes R Isingo: Male circumcision and susceptibility to HIV infection among 12,551 men in Tanzania. *AIDS* 1997, 11:73-80
2. JT Boerma, M Urassa, J Ngalula, R isingo, K Senkoro, R Gabone, Mkumbo EN: Levels and causes of adult mortality in rural Tanzania with special reference to HIV/AIDS, *Health Transition Review, Supplement 2-7, 1997:63-74.*
3. M. Urassa, JT Boerma, R Isingo, K Senkoro, Y. Kumogola & D. Schapink: Orphanhood, child fostering and the AIDS epidemic in Tanzania; *Health Transition Review, Supplement 2-7, 1997:141-153.*
4. S Nnko, JT Boerma, R Washija & M. Urassa: The popularization of male circumcision in Africa: Changing practices among the Sukuma of Tanzania; *African Anthropology, Vol. IV No.1,:1998, 68-79.*
5. JT Boerma, M. Urassa, K. Senkoro, A. Klokke, Japheth Ng'weshemi(1999): Spread of HIV/AIDS infection in a rural area of Tanzania. *AIDS* 1999, 13: 1233-1240.
6. Basia Zaba, Lucy Carpenter, J Ties Boerma, Simon Gregson, Jessica Nakiyingi and Mark Urassa. Adjusting ante-natal clinic data for improved estimates of HIV prevalence among women in Sub_Sahara Africa. *AIDS* 2000, 14:2741-2750.
7. JT Boerma, M. Urassa_ The association between female infertility, HIV and sexual behaviour in a rural area Tanzania; *in Infertility in Africa; edited by JT Boerma & Z. Mgalla, 2002; 175-186*
8. Mark Urassa, J Ties Boerma, Raphael Isingo, Juliana Ngalula, Japheth Ng'weshemi, Basia Zaba, Gabriel Mwaluko. The impact of HIV/AIDS on mortality and household mobility in rural Tanzania. *AIDS* 2001, 15:2017-2023.
9. Soori Nko Robert Washija, Mark Urassa and J.Ties Boerma. Dynamics of Male Circumscision Practices in Northwest Tanzania. *Sexually Transmitted Disease April 2001: 214-218*
10. J Ties Boerma, Mark Urassa, Soori Nnko, Raphael Isingo, Basia Zaba, Japheth Ng'weshemi and Gabriel Mwaluko. Socio-demographic context of the AIDS epidemic in a rural area in Tanzania with a focus on peoples mobility and marriage. *Sexual Transmitted Infection* 2002:78 (Suppl. 1) i97-i105.
11. Bloom S., Urassa M., Isingo R., Ng'weshemi J., JTies Boerma. Community effects on the risk of HIV infection in rural Tanzania: *Sexual Transmitted Infection* 2002; 78:261-266.
12. J. Ngalula, M. Urassa, JT Boerma, R. Isingo, G. Mwaluko J. Ng'weshemi(2000): Health services utilization and household expenditure during terminal illness due to AIDS in rural Tanzania, *Tropical Medicine and International Health, 7;10: 873-877.*