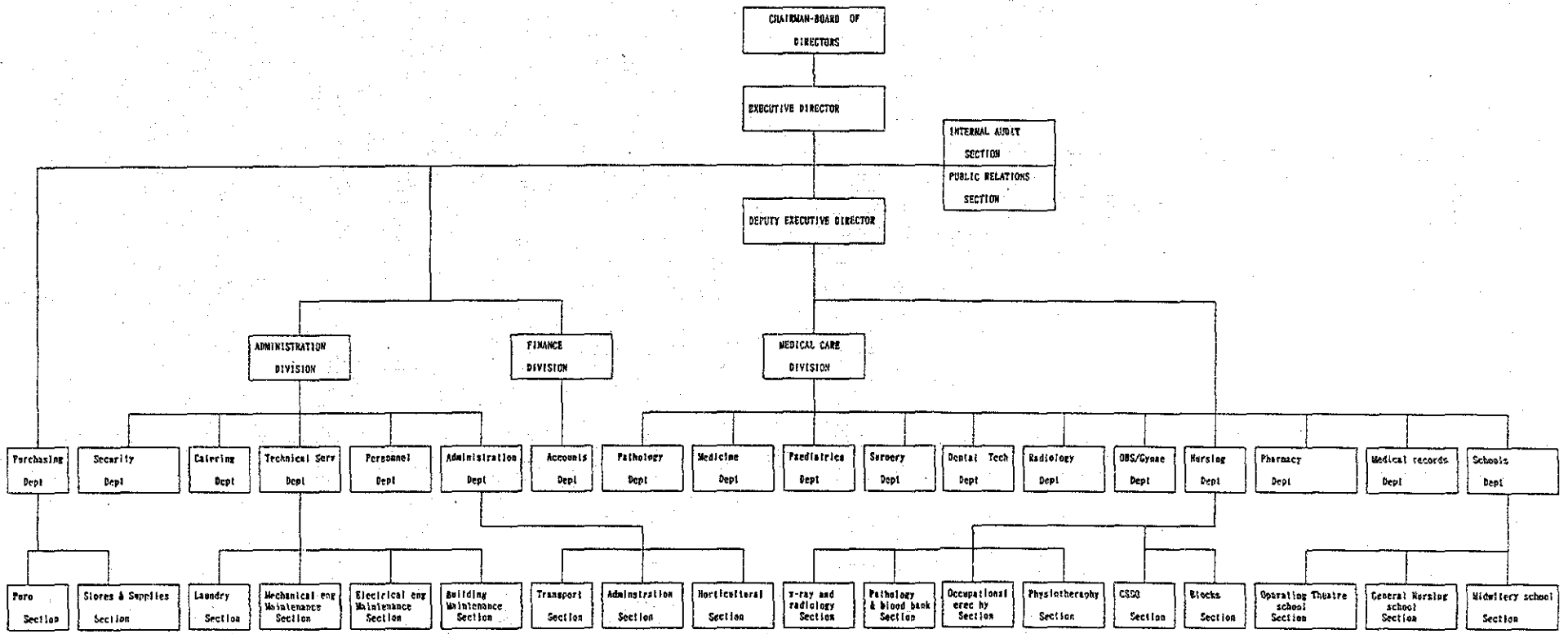
7. 掲 載 資 料

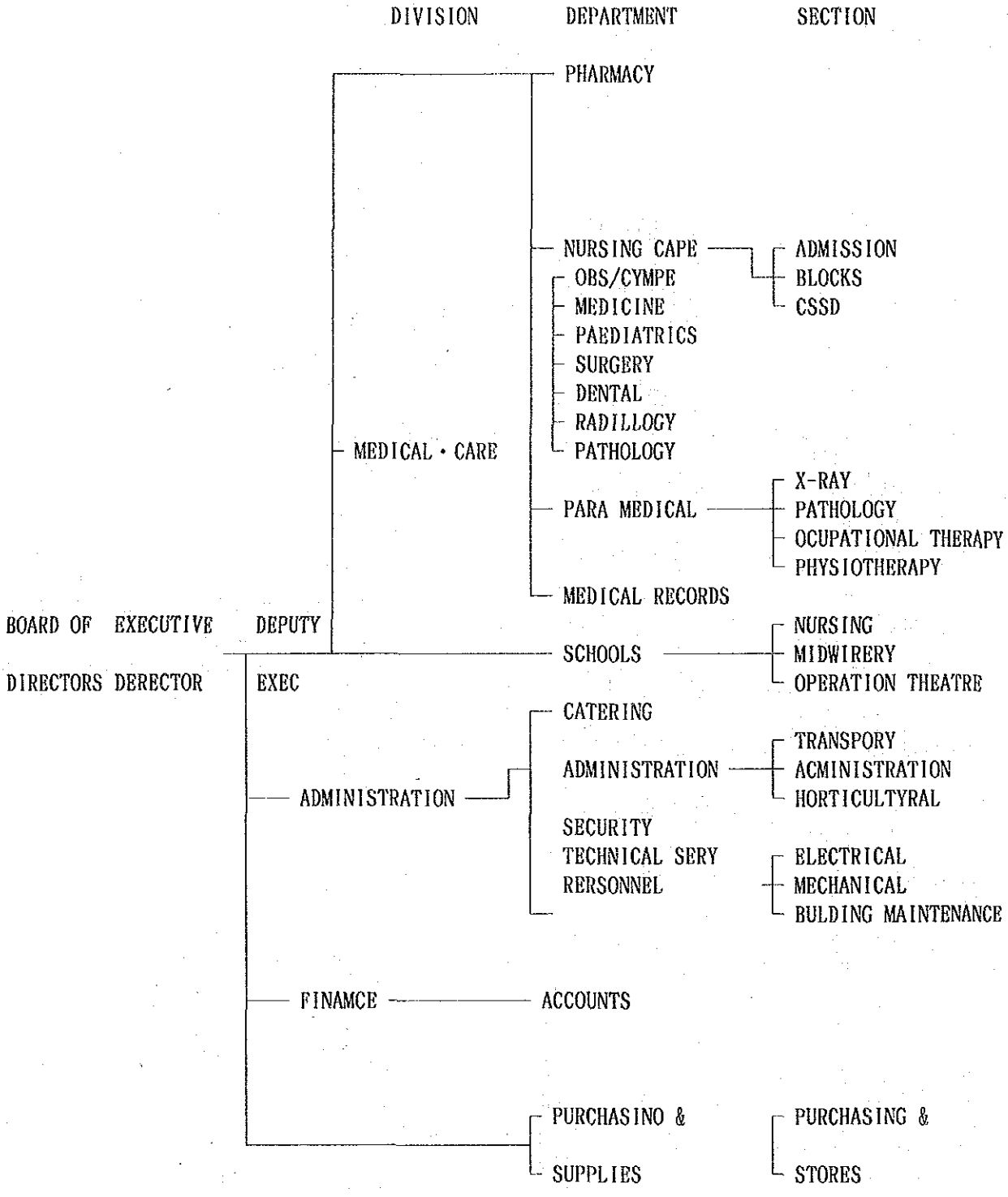
(1) ＵＴＨ Board組織図

(2) ザンビア大学病院敷地図

(3) 第２回National STD/AIDSセミナー配布資料類

UNIVERSITY TEACHING HOSPITAL BOARD OF ANAGEMENT ORGSATION CHART

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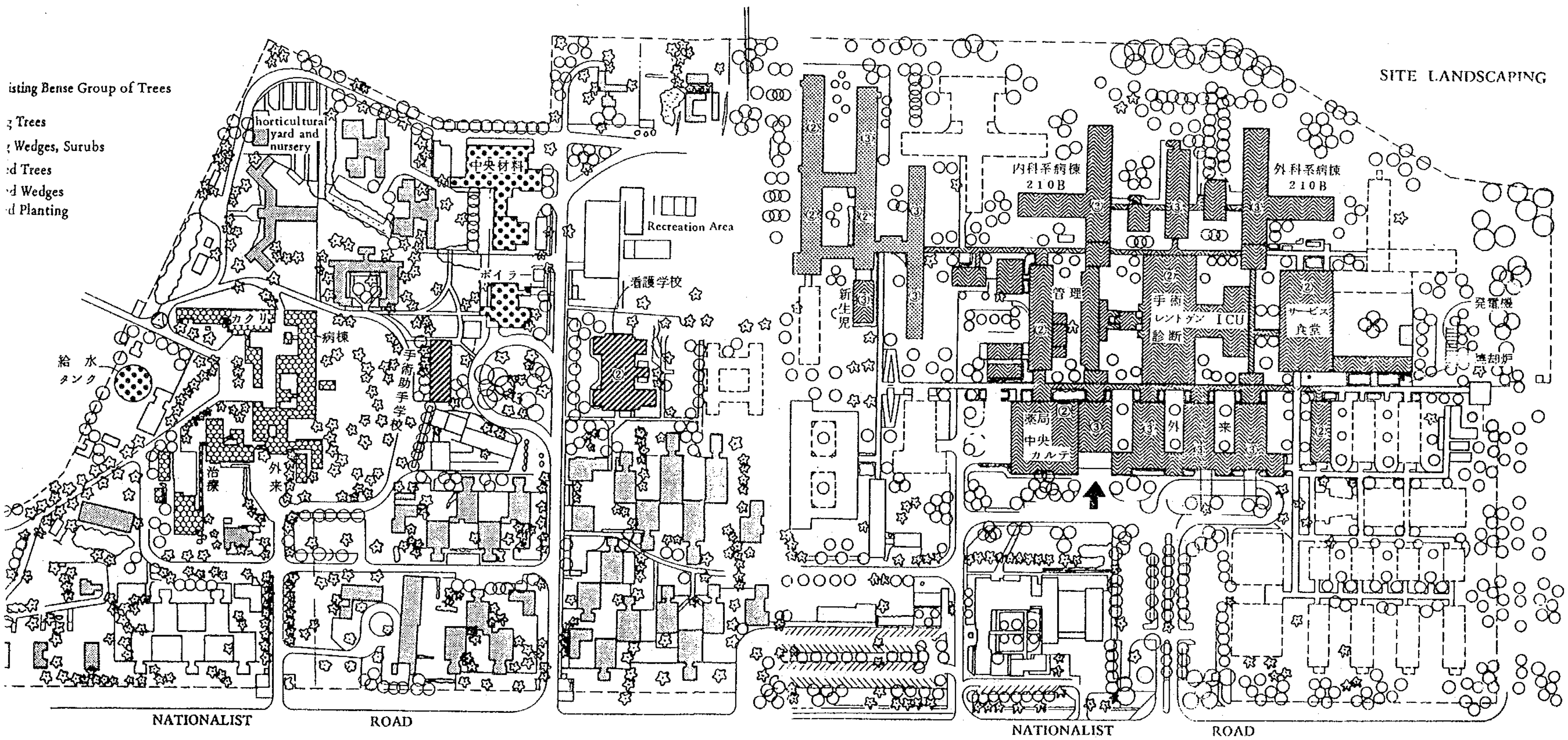
SUPPLIES
PURCHASING &
STORES

① 小児病院群

② 産婦人科病棟群

③ 新病院群

宿舎群



2nd NATIONAL STD/AIDS SEMINAR

PARTICIPANTS:PHYSICIANS, STD OFFICERS, TECHNICIANS,

NURSES, HIALTH EDUCATORS AND COUNSELLORS

March 19: Arrivals

: Registration at Hotel Intercontinental

March 20:

0800-0900 Registration of participants

0900-0930 Official opening by Hon bie Member of Central Committee and Minister of Health

Chairman: Dr. Njelesanl

0930-1000 Overview of STDs-Dr. A. Meheus, WHO

1000-1030 Coffee

Chairman: Prof. Meheus

1030-1045 Giobal epidemioiogy of HIV/AIDS-Dr. B. Nkowane, WHC

1045-1100 Epidemioiogy of HIV/AIDS in Africa-Dr. G. Temoo

1100-1115 Clinical features of HIV disease-Dr. S. Hira

1115-1145 Laboratory diagnosis of STDs and AIDS-Dr. N. Luo

1145-1200 Criteria for ciagnosis of AIDS in Zambia. survelllance and reporting-Pro. Chintu

1200-1230 Introduction to Zambian AIDS Control: Programme-Dr. Chirwa

1230-1300 Discussion

1300-1400 Lunch

Chairman: Prof. Chintu

1400-1430 Syphills-Dr. Marowa

1430-1500 Congenital syphilis-Dr. Bhat

1500-1530 Coffee

Chairman: Prof. Mukelabai

1530-1600 Prevention of adverse outcomes of maternal syphilis-Dr. Hira

1600-1615 Zambian STD control programme-Mr. J. Phiri

1615-1630 STDs in Zambia: Review of trends-Dr. P. Matondo

1630-1715 Discussion

March 21:

Chairman: Prof. Mukunyandela

0830-0900 Genital discharges-Dr. Achola

0900-0930 Ophthalmia neonatorum-Dr. G. Bhat

0930-1000 Pelvic infiammatory disease-Dr. Mohanna

1000-1030 Coffee

Chairman: Dr. Limbambala

1030-1100 Genital ulcer Disease-Dr. Marowa

1100-1130 Other STDs-Dr. Achola

1130-1200 Counselling-Prof. Haworth

1200-1230 Health education/information-Dr. Chirwa

1230-1300 Discussion

1300-1400 Lunch

Chairman: Dr. Van Praag

Identifying HIV disease in:

1400-1420 medical wards-Dr. Bisseru

1420-1440 STD clinic-Mr. Kamanga

1440-1500 Blood bank-Dr. Luo

1500-1530 Coffee

Chairman: Prof. Bagshawa

Identifying HIV disease in:

1530-1550 Obs/Gyn wards-Dr. Mrs. Wadhawan

1550-1610 Pediatric wards-Prof. Chintu

1610-1630 Psychiatry wards-Prof. Haworth

1630-1650 Surgical wards-Mr. Watters

1650-1715 Discussion

March 22:

Chairman: Dr. B. Nkowane

AIDS Research:

0840-0900 Pneumocystis carinii pneumoria & HIV-Dr. Lumbwe

0900-0920 Blood bank-Dr. Luo

0920-0940 Tuberculosis and HIV-Dr. Elliot

0940-1000 Maiarea and HIV-Dr. Lumbwe

1000-1030 Coffee

Chairman: Dr. Marowa

AIDS Research:

1030-1100 Neurologic manlfestations - Dr. Mukunyandeia

1100-1120 Ndola STD Clinic - Dr. Kazi

1120-1140 Prisons survey - Dr. Malek

1140-1200 Malnutrition ward - Dr. Maiek

1200-1220 AIDS pathology - Dr. Patil

1220-1240 AIDS education in schools - Dr. Baker

1240-1300 Discussion

1300-1400 Lunch

Chairman: Dr. Achola

AIDS research:

1400-1420 Perinatal transmission - Dr. Hira

1420-1440 Impact of AIDS and a community based response at Chikankata Hospital - Dr. Campbell

1440-1500 Home care in a city - Prof. Bayley

1500-1530 Coffee

Chairman: Dr. Chirwa

AIDS research:

1530-1550 Fleld experience of sercodiagnosis for HIV - Mrs. Mwendapole

1550-1610 Socio-reiigious perspective of STDs - Fr. Kelly

1610-1640 Future course of STD/AIDS epidemic - Dr. Njelesani

1640-1715 Discussion

March 23:

0803-1230 Group Discussions

1. Clinicians

* Risk groups and approaches for intervention
* Standardised treatment protocois for STDs
* Role of STD clinics in provincial and district hospitals
* Contact tracing and counselling for STDs including HIV
* Antenatai syphilis screening programme in Zambia
* Promoting condom use in STD clinics

2. Technicians

* Laboratory setups for STDs/HIV at provincial and district hospitais
* Quality control
* Cost-effectiveness of tests for STDs/HIV.

3. Counsellors & Health Educators

* Health education methods for STDs and AIDS
* Counselling needs. training
* Messages for prevention

1230-1400 Lunch

1400-1630 Group Discussions

1830-2030 Dinner Reception (North Ballroom. Hotel Intercontinental) Includes presentation entitled 'AIDS versus the rest' by UTH Drama Group.

March 24:

0803-1230 Off (Good Friday)

1230-1400 Lunch

1400-1700 Reports of group discussions

1700 Closing

March 25: Departures

SYPHILIS INTERVENTION IN PREGNANCY: ZAMBIAN DEMONSTRATION PROJECT

SUBHASH K HIRA, MD

Report of the project funded by International Development Research Centre, Ottawa, Canada.

STD Control Programme, Ministry of Health
Dermato-Venereology Division
University Teaching Hospital
Lusaka, Zambia.

October 1988.

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TEAM

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Epidemiologists	B M Nkowane, MD G Tembo, MD
Statisticians	N Ng'andu M Msoni
Health Education Consultant	M Gershman, Ph. D
Research assistant	J Kamanga

BACKGROUND

Venereal syphilis continues to be a serious public health problem in many countries (World Health Organisation, 1982; table 1.1). Over the past two decades the number of reported cases of infectious syphilis in the United States has increased, largely as a result of an increase in syphilis among male homo-sexuals (US Public Health Service, 1981) and an increase has been recorded of congenital syphilis, which is the offshoot of infectious maternal syphilis, of 24% since 1979. In several African nations much higher rates of infectious and congenital syphilis have been reported. For example, congenital syphilis is reported in 26% of children under the age of 10 years in Uganda., 2.2% of live births and 11% of sick children between 0 and 4 years of age in Ethiopia, and 7.5% of sick neonates in Lusaka (Lomholt, 1976; Friedman and Wright, 1977; Ursi et al, 1981; Ratnam et al, 1982; Hira et al, 1982). As in most of the world, the highest age-specific attack rates of infectious syphilis are in adolescence and early adulthood; the reproductive period (Brunham et al, 1984).

In studies of congenital syphilis in Zambia we observed that men who claimed to have frequent sex were also more likely to acknowledge having intercourse both with their wives and other partners during pregnancy. This may particularly explain our observations that 15% of mothers acquired their infection during latter half of pregnancy, and that the source of infection usually was their husband (Hira et al, 1986).

The maternal spirochaetaemia peaks in the first 2 years of infection and decreases slowly thereafter as the result of acquired immunity. The duration of untreated maternal syphilis is inversely correlated with the risk of congenital syphilis (Perine, 1981). Although infectivity to sexual partners ceases after 4 years, infectivity to the fetus lasts longer since it is a blood-borne transplacental infection. Thus, a fetus is almost always infected in utero in early maternal syphilis (Fiumara, 1975).

It was long believed that the fetus was protected by the trophoblast (Langerhans' layer) of the developing placenta until the 16th week of gestation (Dipple, 1944). Silverstein demonstrated in 1962 that infection of the fetus may occur at any gestational age but the pathological evidence of congenital infection becomes apparent only after the immune system of the fetus becomes operative at about 16 weeks' gestation. Thus, the treatment of maternal syphilis early in pregnancy tends to reduce the chance of fetal damage.

The effects of untreated maternal syphilis on the fetus depends on the stage of the maternal disease and the stage of pregnancy when the infection was acquired. The results of untreated syphilis will be one of the following:

1. Abortion in the second trimester, commonly around 20 weeks' gestation, when the fetus becomes immunocompetent. In our recent study in Zambia, seroreactivity for syphilis was reported in 18% of those who spontaneously aborted before 20 weeks' gestation (Ratnam et al, 1982).

2. At a later gestational age the fetus may die in utero resulting in a stillbirth. In a study in Zambia, 42% of stillbirths were attributable to maternal spyhilis (Ratnam et al, 1982).

3. Delivery of a premature infant. Fetal infections cause prematurity due to cellular destruction and inhibition of cellular multiplication. In our study (Hira et al, 1982b) and those of others (Lomholt, 1976; Larsson and Larsson, 1970), women seroreactive for syphilis have 12 times the usual risk of premature delivery.

4. Delivery of an infant with clinical features of congenital syphilis. In Zambia, one out of every 100 liveborn babies showed overt congenital infection at birth (Hira et al, 1982b) and this was implicated in 30% of perinatal deaths (Bhat et al, 1982).

5. Delivery of an apparently healthy baby who manifests signs of infection within 6 months. Presumably, in such cases, infection occurs very late in pregnancy, and the multiplication of the organism and development of spirochaetaemia occur slowly. The infant's immune system is more able to cope with the infection as it grows, and mortality decreases with age. In our published series on 202 infants of congenital syphilis, the mortality in the first 4 weeks of life was 53.8%, and 8.5% in older infants (Hira et al, 1985).

6. Delivery of an infant without overt signs of infection in whom signs of congenital syphilis appear gradually in childhood or adolescence (tardive form).

7. Failure to infect the fetus. This is the usual outcome in long-standing maternal disease. Ingraham noted in 1951 that a mother with late syphilis had 80% chance of having a live infant who would survive the neonatal period.

In Zambia, 12,8% pregnant women in urban as well as rural areas have reactive serological tests for syphilis and a sixth of these infections are freshly acquired during pregnancy. High seroreactivity rate of 3.6% among sick infants under age of 8 months was also established. As a result there is high incidence of congenital syphilis (Hira et al, 1982) as well as abortions and stillbirths (Ratnam et al, 1982) attributed to this infection. These studies also indicate syphilis to be the foremost risk factor associated with 30% of total perinatal mortality.

Adverse pregnancy outcomes due to syphilis are preventable through routine serological screening and treatment early in pregnancy. This is well demonstrated by a very low incidence of congenital syphilis in industrialised countries. Although 90-92% women attend antenatal services in Zambia and serological screening is mandatory, several barriers to implementation and effectivity have been recognised:-

(a) Late attendances at antenatal clinic (ANC).

(b) Screening test for syphilis not performed in 70-80% of antenatal attendees.

(c) Failure to provide treatment to seroreactive women and their sexual partners (s). It is established that only 25% of seroreactive women receive treatment and majority if not all their sexual partners remain untreated.

(d) Failure to recognise infections acquired late in pregnancy i.e. after initial screening.

The national STD control programme with simplified strategy incorporated in Primary Health Care approach has already been underway since 1981 and priority is given in this programme for prevention of syphilis complications in women and children by improving antenatal screening efforts.

TABLE 1.1. SEROPREVALENCE OF SYPHILITIC INFECTION AMONG PREGNANT WOMEN.

COUNTRY	No. TESTED	% REACTIVE
Fiji: Suva	495	22.0
Brazil: Niteroi	200	16.0
Zambia: urban and rural	1437	12.8
Ethiopia: Addis Ababa	337	10.9
Chile:	21,052	3.4
Republic of Korea:	686	3.4
Malaysia: Kuala Lumpur	10,096	2.0
Nigeria: Ibadan	8,024	1.9
Rwanda: Butare	862	1–2
India: Kerala	2,000	1.4
Australia:	3,042	0.3
Poland: Bialystock	140,000	0.27
United Kingdom: Scotland	64,404	0.03

(Modified and reproduced from WHO Technical Report Series No. 674. Treponemal Infections, 1982)

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17. World Health Organisation. Treponemal Infections. Technical report series 674, 1982.

SYPHILIS INTERVENTION PROJECT

This demonstration project was carried out to establish the effectiveness of adequate and practical intervention in reducing the complications of syphilis and recommend rectification of existing deficiencies. This project was meant to be the initial step towards developing national control program for syphilis.

OBJECTIVES:

1. To develop and evaluate the effectiveness of new health education methods in eliciting attendance by 16 weeks of pregnancy in 75% attendees.

2. To implement and evaluate antenatal screening and treatment system for syphilis in reducing adverse pregnancy outcomes by:

   (a) Performing serological screening (RPR) test on all attendees at first visit and repeated in early third trimester.
   (b) Treating all reactive women and their sexual partners with appropriate drug.

3. To demonstrate improvement in pregnancy outcomes in the population covered, a year after implementation of the intervention program.

METHODS:

1. Project sites – Three periurban health centres in Lusaka, each subserving and average population of 20,000 in shanty compounds were chosen as study centres. Another three comparable periurban health centres were chosen to provide control population. Criteria for choosing study and control centres were that these centres should be subserving population comparable in terms of number of residents and their socio-economic status.

Study centres	– Chilenje, east of Lusaka – 4 Km from UTH
	– Mutendere, north of Lusaka – 8 Km from UTH
	– Chilanga, south of Lusaka – 20 Km from UTH
Control centres	– Bauleni, east of Lusaka – 5 Km from UTH
	– Chainama, north of Lusaka – 10 Km from UTH
	– Makeni, south of Lusaka – 15 Km from UTH

2. Training of staff – Total 12 antenatal clinic (ANC) staff members at three study sites, 6 midwives at the labour ward at University Teaching Hospital (UTH), and 3 field supervisors were trained. Two 5 – day workshops were conducted at UTH to train the staff in the methods of health education, clinical evaluation, serological tests and assessment of pregnancy outcomes. Pre-test was initially administered and after the training, post-test was administered to evaluate effectiveness of the training course.

3. Initial Phase (Pilot)

This was conducted at UTH labour ward. It was targetted to include 150 pregnant women into the study from each of the three study sites. An equal number of women who had attended antenatal care at three control sites and delivering at UTH were also included into the study.

Detailed antenatal histories and their past pregnancy outcomes were recorded. Serological screening for syphilis were performed with rapid plasma reagin test (RPR) on the serum samples of all mothers and on cord blood. Continuous assessment of consecutive admissions to the hospital was carried out without selection until the specified numbers of study group populations were covered.

The women entered into the study for initial assessment from study and control centres were as follows:-

Study centres	Number
Chilenje	205
Mutendere	174
Chilanga	112
	491
Control centres	
Bauleni	150
Chainama	166
Makeni	118
	434

4. Intervention for a period of 12 months

4.1. Health education by the ANC staff aimed at motivating early attendances to antenatal clinics and to improve treatment compliance of seroreactive women and their partners was carried out by:

4.1.1. DEFINING TARGET AUDIENCES

The first element of health education was to learn about sexually transmissible diseases (STDs) and the behaviour of people so that target audiences could be defined. Three target audiences were identified at each study centre:

(a) Sexually active women attending antenatal, family planning and under-five clinics;

(b) Sexually active men and women attending general out-patient clinics;

(c) Elderly men and women attending general out-patient clinics.

The first two target groups were identified since sexually active individuals are at high risk of acquiring sexually transmitted diseases. The third group consisted of parents who may tend to ignore the importance of antenatal care and STDs and in a traditional society, they tend to be influential in motivating behavioural change.

4.1.2. DEVELOPING MESSAGES

The health education/information messages were accurate and clear. The guidelines used were:

1. Use of local words, pictures and stories
2. Facts about antenatal care and diseases
3. Dispel myths and anxiety
4. Messages were kept simple and repitetive.

The approach consisted of three main components:

(a) Training of health workers at the study centres.

(b) Consultation with local residents to develop appropriate messages. The importance of using local language was stressed by community leaders.

(c) Pre-testing of communication materials to find out if the target groups understood the idea, believed the messages, thought it related to them, said that they would follow it.

4.1.3. IMPLEMENTATION

Before starting intervention, a questionnaire was administered to 150 antenatal attendees at each centre to determine (a) the pattern and frequency of antenatal attendance and (b) reasons for attending late in pregnancy.

Several educational methods were used by the team at each centre. These included lectures (with or without flipcharts), question and answer sessions, brain storming, handouts, audio messages, group discussions and individual counselling (for those found seroreactive for syphilis). Each session was attended by 15--20 persons. Each topic was delivered several times in the year (table 2.1) so as to give each client an opportunity to be exposed to a topic atleast once.

The list of topics covered by the team at each centre and their frequency is shown in table.

4.1.4. MONITORING PROGRESS

During the period of intervention, messages and modes of communication were modified at 6 and 9 months to correct what was wrong and to do better what was right.

4.1.5. EVALUATION

At the end of intervention, similar questionnaire was administered to 150 antenatal attendees at each study centre to determine the impact of health education/information on pattern and frequency of attendances.

Table 2.1.

List of topics covered for health education at study centres.

		No. of topics delivered/year		
		Chilenje	Mutendere	Chilanga
1.	Importance of antenatal care	34	40	30
2.	Gonorrhoea	26	38	31
3.	AIDS	30	34	10
4.	Diarrhoeal diseases	36	30	34
5.	Immunization	20	28	15
6.	Syphilis	29	26	42
7.	Vaginal discharge	15	40	12
8.	Anemia in pregnancy	21	22	15
9.	Chancroid	17	20	18
10.	Importance of nutrition	26	20	40
11.	Congenital syphilis	15	19	0
12.	STDs (General)	18	18	13
13.	Home delivery	14	15	10
14.	Methods & importance of family planning	34	26	50
15.	Jaundice	0	12	0
16.	Worm infestation	10	12	10
17.	Causes of abortion	12	0	15
18.	Care of the new born	12	10	10
19.	Measles	18	10	29
20.	Others (10 times)	70	65	101
	Diet in pregnancy			
	Herpes genitalis			
	Scabies			
	Pubic lice			
	LGV			
	Venereal warts			

What is pregnancy			
Weaning			
Importance of underfive clinics			
Ante and postpartum haemorrhage			
Malaria in pregnancy			
Sore eyes in newborn			
Breast feeding			
Backyard gardening			
Budgeting			
	457	485	485

4.2. At all three study centres, antenatal staff implemented syphilis screening and treatment programme. Serological screening was performed by the antenatal staff in the clinic using simple RPR card test kits. Positive reactors were identified and treated with a single dose of 2.4 million units of Benzathine penicillin. Special messages were passed through the women to their partners to attend the clinic for early treatment.

Following number of women attended the antenatal clinics at study centres and were screened for syphilitic infection:

Chilenje	1703
Mutendere	1928
Chilanga	1376
Total	5007

4.3. All sera tested in the antenatal clinics was retested at the STD centre at UTH for RPR, TPHA and FTA–ABS reactivity.

4.4 All women attending antenatal clinics in study centres were encouraged to deliver at UTH.

4.5. All three control centres continued their MCH and STD control activities which included health education, antenatal syphilis screening and treatment of seroreactors and their sexual partners.

5. FINAL PHASE

At the end of one year period of implementation of the programme a study similar to that performed for the initial phase (pilot) was repeated in the UTH labour wards. The women entered into the study from three study centres and three control centres were as follows:

Study centres	Number
Chilenje	379
Mutendere	231
Chilanga	196
	806
Control centres	
Bauleni	415
Chainama	515
Makeni	344
	1274

6. TIME SCALE

Initial phase	– September 1985 – January 1986
Programme implementation	– February 1986 – January 1987
Final phase	– February 1987 – June 1987

7. DATA ANALYSIS

7.1. Effects of the new health education efforts in all three study centres was assessed by comparing the antenatal attendance patterns in the initial two weeks period of intervention with the pattern seen in a similar period at the end of the intervention phase.

7.2. Programme performance was also evaluated by (a) analysing the data on pregnancy outcomes in the initial and final phase studies involving the study population, and (b) comparing such data with that of the control population. Students one tailed and two tailed tests and Chi square were used as tests of significance to assess the difference.

7.3. Programme performance was compared with the desired performance and reasons for any inadequacies were identified.

RESULTS

1. Demographic factors (Tables 3.1 & 3.2)

1.1. Age group:
The mean age of women attending study and control centres for the purpose of antenatal care was 24.5 years. 85% of women were in 20–40 years age group. Single women were younger.

1.2. The mean housekeeping income per month during initial assessment (1985) was K140. However, it rose to K240 during final assessment (1987) probably due to increase in the cost of living.

1.3. Almost 60% of women had received primary education.

1.4. Mean life-time sexual partners were 2.2. This was not correlated with the marital status, although widows tended to have less number of life-time sexual partners.

1.5. 86.5% of women were married.

1.6. 12.4% of women reported to be working.

1.7. 2.2% of women came to the hospital after delivering at home and hence, entered into the study.

1.8. The mean birth weight was 2989.3 grams. There was no significant difference in birth weights between study and control centres.

Table 3.1: Demographic factors.
(values in mean percent)

	INITIAL PHASE		FINAL PHASE			
	STUDY AREA CENTRES (n = 491)	CONTROL CENTRES (n = 434)	STUDY AREA CENTRES (n = 806)	CONTROL CENTRES (n = 1274)	MEAN TOTAL	SIGNIFICANCE
1. Mean Age (yrs)	24.39	24.15	24.55	24.60	24.49	NS
2. Mean parity	2.40	2.35	2.60	2.32	2.41	NS
4. Mean house-keeping income (K) per month	141.47	140.30	232.41	255.70	212.72	NS
3. Mean gravida	3.42	3.60	3.59	3.59	3.56	NS
5. Mean life-time sexual partners	2.29	2.11	2.07	2.19	2.16	NS
6. Marital status never married	9.4	7.4	12.3	10.9	10.6	NS
married	89.6	91.7	84.1	85.2	86.5	NS
divorced	0.6	0.5	1.0	1.2	0.9	
widowed	0.4	0.2	0.2	0.2	0.2	
remarried	0.0	0.2	2.4	2.5	1.7	
7. Occupation						
working	9.2	10.4	12.9	13.9	12.4	
nonworking	90.8	89.5	87.3	86.1	87.6	
8. Education						NS
none	10.8	15.0	8.7	10.3	10.6	
primary	62.4	60.4	59.8	56.1	58,7	
secondary	26.0	24.2	30.0	31.6		29.2
higher	0.8	0.51.5		2.0	1.4	

Table 3.2:

ENTIRE POPULATION (3005)

MARITAL STATUS		MEAN AGE	STD DEV.	MEAN SEX PARTN	STD DEV
Not married	317(10.6)	19.48	3.79	2.56	1.85
Married	2597(86.5)	24.93	5.76	2.10	1.59
Divorced	28(0.9)	29.10	5.64	2.70	1.56
Widowed	7(0.2)	30.42	8.77	1.50	0.54
Remarried	52(1.7)	30.69	5.93	2.73	1.82

2. OBSTETRIC HISTORY (table 3.3)

2.1. Gravida:
The mean gravidity was 3.6; 796/3005 (26.5%) were primies.

2.2. Para:
The mean parity was 2.4.

2.3. 5–6% of all pregnancies seem to end in abortions.

2.4. The under-five mortality was 60–70 per 1,000 live births.

MEAN GRAVIDITY/PARITY BY AGE AGROUPS

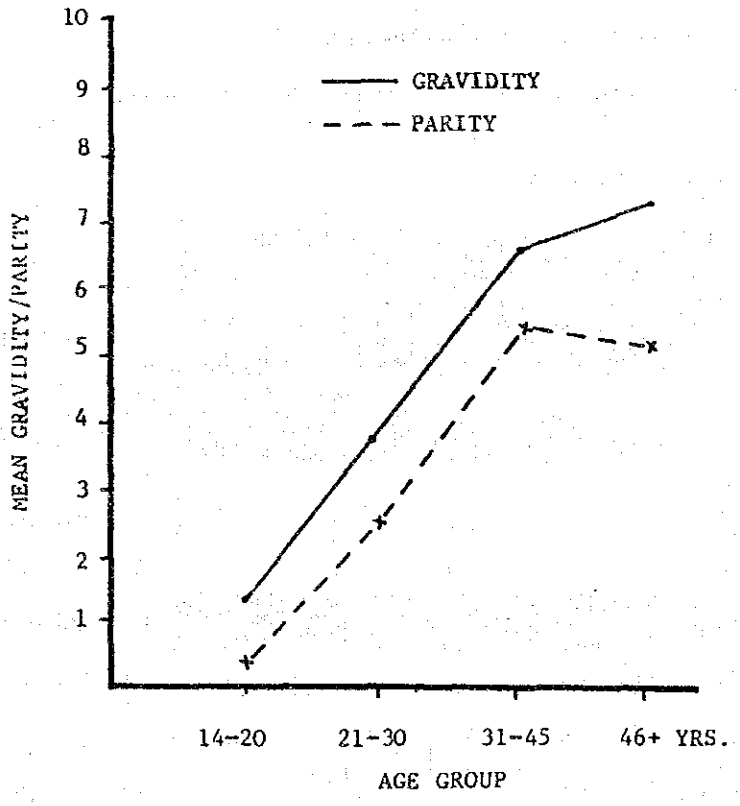


Table 3.3: Past Obstetric History

Values expressed in mean percent.

	Grav 2 n = 2134	Grav 3 n = 1612	Grav 4 n = 1212	Grav 5 n = 920	Grav 6 n = 615	Grav 7 n = 354	Grav 8 n = 191	Grav 9 n = 89	Grav 10 n = 38
1. Full term	99.1	99.3	99.3	99.4	99.1	99.4	98.3	96.3	96.9
2. Preterm	0.9	0.7	0.7	0.6	0.9	0.6	1.7	3.7	3.1
3. SVD	99.2	99.7	99.6	99.6	99.8	99.4	99.5	98.9	97.4
4. Caesarean	0.8	0.3	0.4	0.4	0.2	0.6	0.5	1.1	2.6
5. Abortion	5.5	5.1	6.0	5.0	5.9	6.5	5.2	11.2	13.5
6. Stillbirth	0.8	1.2	0.4	0.7	0.5	0.6	1.0	0.0	2.7
7. Livebirth	93.7	93.7	93.6	94.3	93.6	92.9	93.8	88.2	83.8
8. Alive	92.7	93.1	94.9	94.7	95.2	92.8	93.9	93.8	97.1
9. Dead (under-5)	7.3	6.9	5.1	5.3	4.8	7.2	6.1	6.3	2.9

3. RISK FACTORS FOR STDs (table 3.4)

3.1. 0.5% of women gave history of engaging in anal intercourse.

3.2. History of genital ulcer disease was obtained in 1% of women and of these, two-thirds had received treatment.

3.3. 7.8% of women had history of receiving blood transfusion.

3.4. 10% of all women had visited abroad; mainly the neighbouring countries.

Table 3.4: RISK FACTORS FOR STDs

(Values in mean percent)

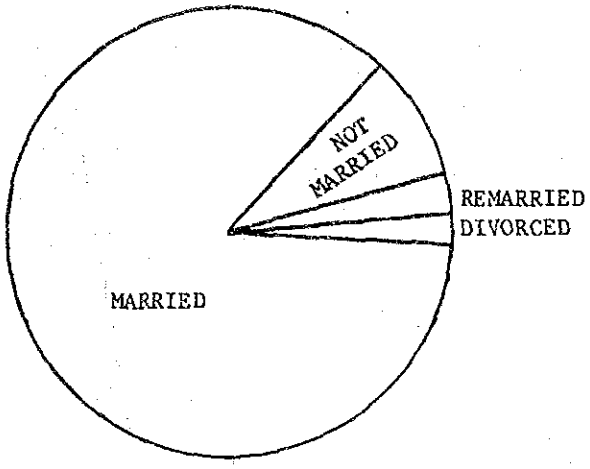
	INITIAL PHASE		FINAL PHASE			
	Study Centres	Control Centres	Study Centres	Control Centres	Mean Total	Signi-Ficance
1. History of anal intercourse	0.8	0.7	0.8	0.2	0.5	NS
2. History of blood transfusion	6.4	5.6	9.1	8.2	7.8	NS
3. History of visit	8.2	8.6	7.4	12.5	9.9	NS
4. History of genital ulcer	1.4	0.9	1.6	0.6	1.1	NS
5. History of treatment	0.8	0.7	1.5	0.2	0.8	NS
6. History of GUD (spouse)	1.0	0.7	0.3	0.2	0.4	NS
7. History treatment (spouse)	0.4	0.7	0.3	0.2	0.4	NS

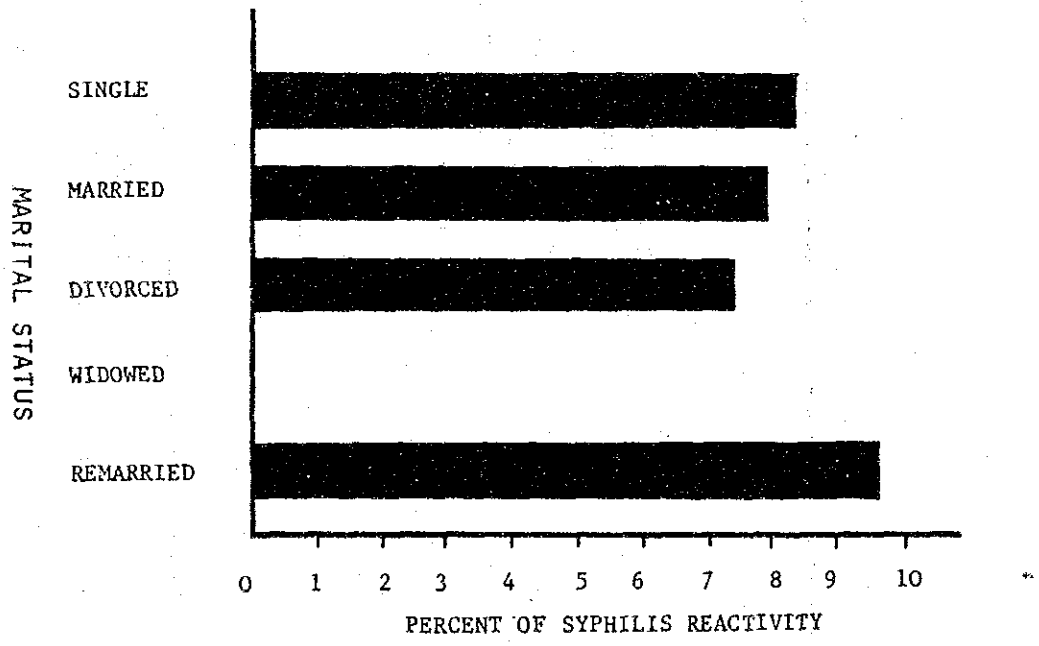
4. SEROREACTIVITY FOR SYPHILIS

4.1. Overall, 8.0% of women were seroreactive for syphilis. There was no significant difference in seroprevalence between study and control centres.

4.2. 85.2% of syphilitic women were married. There was no correlation with marital status.

SYPHILITIC WOMEN: MARITAL STATUS

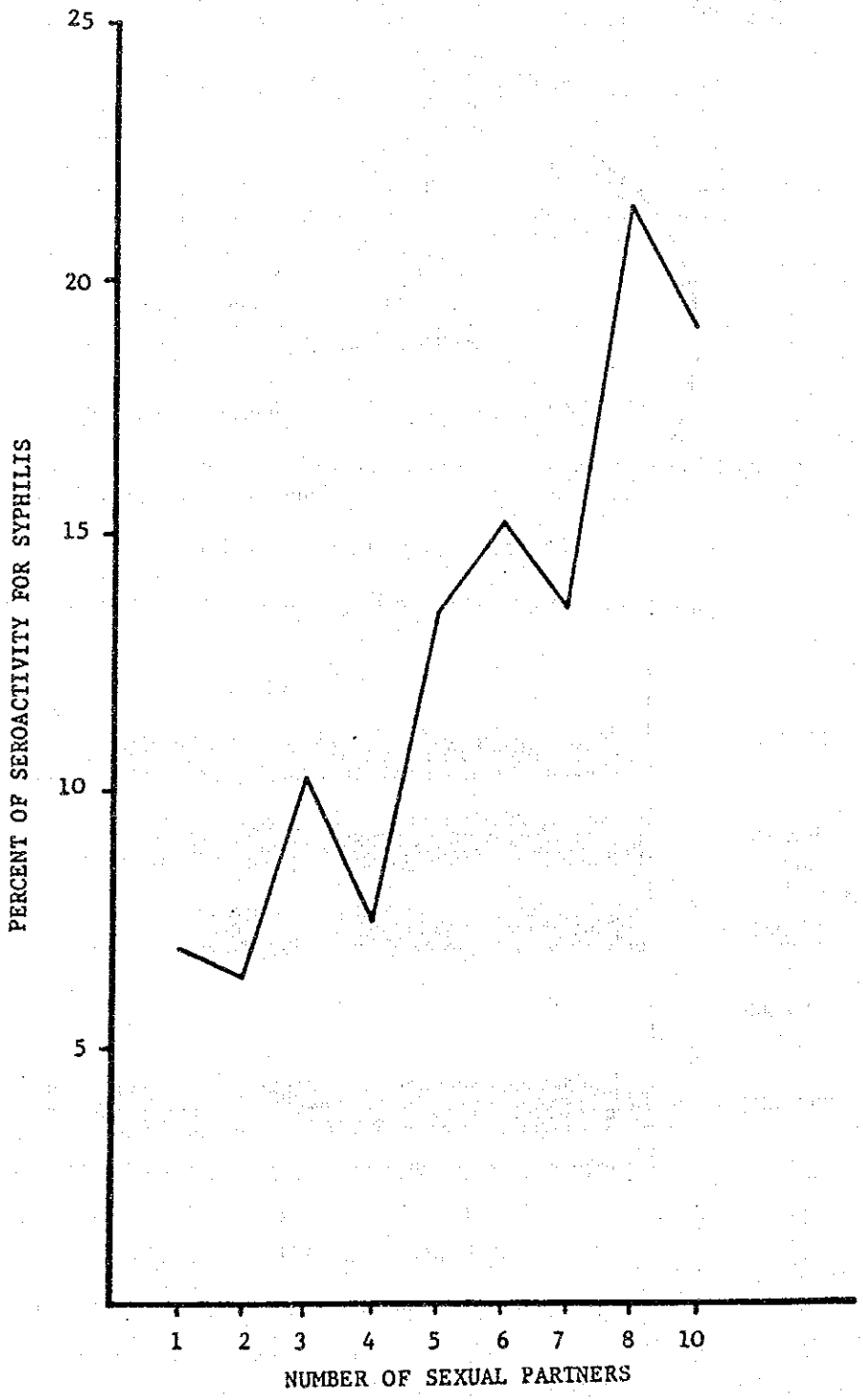




4.3. Seroreactivity for syphilis was directly correlated with number of life-time sexual partners.

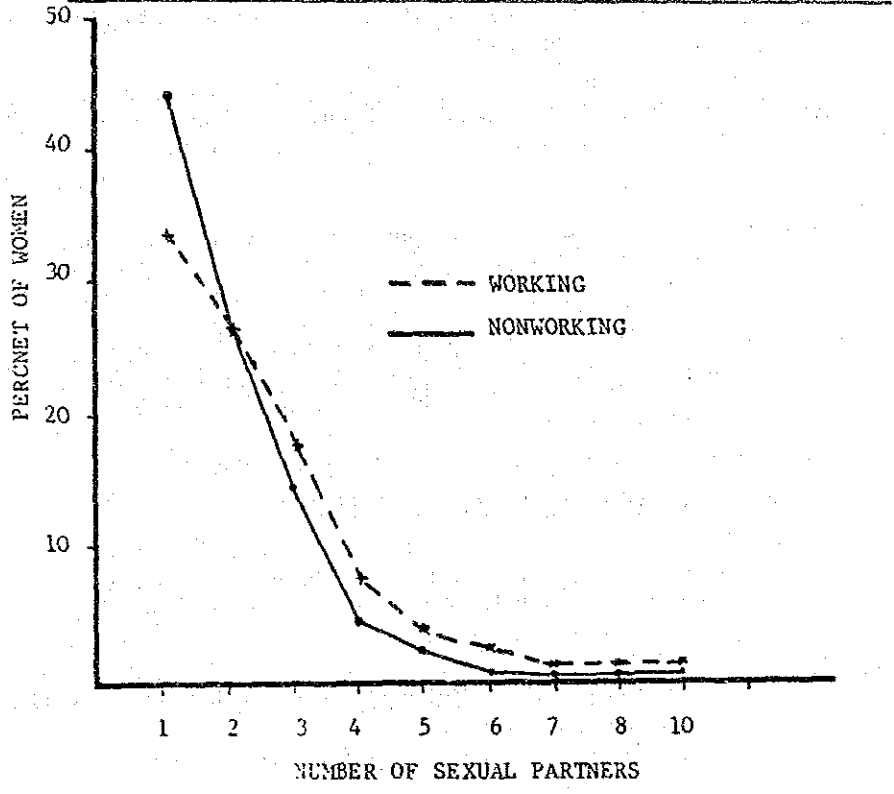
SYPHILITIC WOMEN

NUMBER OF SEXUAL PARTNERS VS. SYPHILIS REACTIVITY

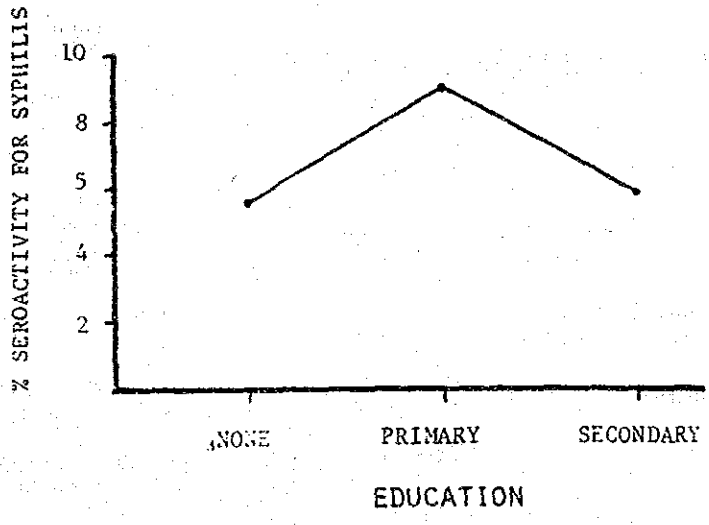


4.4. 21/230 (9.1%) of syphilitic women were employed and they tended to have higher number of life-time sexual partners. Also, employed women had higher seroprevalence.

ENTIRE POPULATION: OCCUPATION VS. NUMBER OF SEXUAL PARTNERS



4.5. Seroreactivity for syphilis was not correlated with level of education.



4.6. 125/196 (63.8%) cord blood specimens (newborns) of syphilis reactive mothers for testing were also seroreactive. Cord blood specimens were not available from 34 abortuses.

4.7 Of 707 sexual partners available for testing, 61 (8.6%) were seropositive.

5. INTERVENTION PHASE

5.1. At the study centres, 68/723 (9.4%) of women had their first antenatal visit before 16 weeks of gestation prior to intervention (table 3.5). Subsequent to health education during the year of intervention, the pattern of attendance at antenatal clinics changed and 194/457 (42.5%) of attendees had their first antenatal visit under 16 weeks of gestation (table 3.6).

Table 3.5: Pattern of antenatal attendance (pre-intervention) (n=723)

	Number (%)
12 – Weeks –	8 (1.1)
12 – 16 Weeks –	60 (8.3)
17 – 20 Weeks –	128 (17.7)
21 – 24 Weeks –	239 (33.1)
25 – 28 Weeks –	226 (31.3)
29 – 32 Weeks –	40 (5.5)
32 – 36 Weeks –	22 (3.0)

Table 3.6: Pattern of antenatal attendance (post-intervention) (n=457)

	Number (%)
12 – Weeks –	67 (14.7)
12 – 16 Weeks –	127 (27.8)
17 – 20 Weeks –	148 (32.4)
21 – 24 Weeks –	88 (19.3)
25 – 28 Weeks –	21 (4.6)
29 – 32 Weeks –	4
32 – 36 Weeks –	2

5.2 The reasons for delayed first antenatal visits in post-intervention respondent sample were:

Table 3.7: Reason for late attendance (457 – 194) (respondents n=263)

	Number (%)
Thought not necessary	145 (55.1)
Didnot want to declare pregnancy early due to traditional customs	23 (8.7)
Early declaration of pregnancy might adversely affect the baby	8
Domestic problems	0
Transport problems	28 (10.6)
Unwell	59 (22.4)

5.3 Variety of methods of health education were used at the study centres. Among the post-intervention respondents, almost a quarter had been exposed to more than one method of health education (table 3.8).

Table 3.8: Final phase respondents.

	% ATTENDED	% HEALTH TALKS ONLY	MORE THAN ONE METHOD
Study Centres n=157	94.3	75.7	24.3
Control Centres n=211	99.0	100.0	0.0

5.4. The data collected at final phase shows that almost 60% of women attending the study centres had had syphilis screening test performed at first visit. By comparison, 14% of women attending the control centres had their first syphilis test done (table 3.9)

5.5. Only 15.1% of women attending the study centres were screened for syphilis in third trimester. By comparison, 1.6% of women attending control centres had been screened during the third trimester (table 3.9).

5.6. The data collected at final phase shows that among 125 women found seroreactive at first syphilis screening, only 46 (36.8%) had received treatment. Almost 80% of these women treated were at study centres.

5.7. Of 46 women who received treatment, 32 sexual partners were simultaneously treated.

5.8. Alternatively, of 88 women who gave history of being seroreactive at first screening test at study centres, only 34 (38.6%) had received treatment. This was much lower achievement as compared to set target of treating atleast 80% of those found seroreactive.

Table 3.9: History of antenatal investigations and treatment

(Values in mean percent)

	INITIAL PHASE		FINAL PHASE			
ANTENATAL INVESTIGATIONS	STUDY CENTRES	CONTROL CENTRES	STUDY CENTRES	CONTROL CENTRESS	MEAN TOTAL	SIGN-
RPR 1st visit						NS
Reactive	0.4	3.0	9.2	2.8	4.2	
Non-reactive	3.3	19.6	49.4	11.5	21.5	
Not done	87.9	65.1	23.3	50.0	51.2	
Don't know	8.4.	12.0	17.7	35.7	23.1	
RPR 3rd trimester						NS
Reactive	–	0.7	1.7	–	0.6	
None-reactive	1.8	1.8	13.4	1.6	4.8	
Not done	88.2	82.7	50.5	68.5	6.89	
Don't know	10.0	20.4	34.4	29.9	25.7	
Treatment for syphilis (self)	0.4	0.2	4.2	0.7	1.5	P 0.05
Treatment for syphilis (spouse)	–	–	3.0	0.2	0.9	P 0.05
Maternal complications at delivery	3.0	1.6	0.4	0.2		NS
RPR reactivity (maternal)	8.7	6.7	7.7	8.3	8.0	NS

5.9. Almost 58% of syphilitic pregnancies had some adverse outcomes i.e. abortion (14.8%), stillbirths 16 (7.0%), preterm/premature (12.2%), low birth weight (21.3%) and congenital syphilis (2.2%). By comparison, 10% of nonsyphilitic pregnancies also had adverse outcomes (table 3.10).

Table 3.10: Adverse pregnancy outcomes among seroreactive and nonreactive women.

	SYPHILIS (RPR & TPHA/FTA–Abs)		
	REACTIVE n = 230	NONREACTIVE n = 2647	TOTAL
Abortion	34	62	96
Stillbirth	16	43	59
Preterm/premature	28	117	145
Lbw	49	48	97
Cong syphilis	5	–	5
TOTAL	132 (57.4%)	270 (10.2%)	402

5.10. Subsequent to the intervention at study centres, the adverse outcomes among syphilitic pregnancies was reduced to 28.3%; almost 50% reduction (table 3.11).

Table 3.11: Adverse pregnancy outcomes among seroreactive women screened at initial and final phases.

SYPHILIS REACTIVE (n = 230)

	INITIAL PHASE		FINAL PHASE		
COMPLICATIONS	STUDY CENTRES n = 41	CONTROL CENTRES n = 24	STUDY CENTRES n = 60	CONTROL CENTRES n = 105	TOTAL
. Abortions	6	5	9	14	34
. Stillbirths	4	2	1	9	16
. Preterm/premature	3	4	6	15	28
. Lbw	8	4	1	36	49
. Congenital syphilis	2	1	0	2	5
TOTAL	23	16	17	76	132
	(56.1)	(66.7)	28.3)*	(72.4)	

*P < 0.001

5.11. The adverse outcomes among nonsyphilitic pregnancies also showed a significant decline at study centres compared to control centres, possibly due to broad-based health education programme undertaken during the phase of intervention (table 3.12).

Table 3.12: Adverse pregnancy outcomes among nonreactive women.

SYPHILIS NONREACTIVE (n = 2647)

	INITIAL PHASE		FINAL PHASE		
COMPLICATIONS	STUDY CENTRES n = 431	CONTROL CONTRES n = 333	STUDY CENTRES n = 724	CONTROL CENTRES n = 1158	TOTAL
. Abortions	7	6	19	30	62
. Stillbirths	10	8	8	17	43
. Preterm	21	15	21	60	117
. Lbw	8	7	11	22	48
TOTAL	46	36	59	129	270
	(10.7)	(10.8)	(8.1)*	(11.1)	

* $p < 0.05$

6. Serology

6.1. When RPR test results were compared with those obtained for FTA-ABS test which was considered as the gold standard, the sensitivity of RPR card test in our setup was almost 80% while specificity was 90.2% (table 3.13).

Table 3.13: RPR versus FTA-ABS tests.

	FTA – ABS		
RPR	REACTIVE	NON REACTIVE	TOTAL
. Reactive	138	42	180
. Nonreactive	37	385	422
TOTAL	175	427	602

Sensitivity of RPR 138/175 = 78.9%
Specificity of RPR 385/427 = 90.2%

CONCLUSIONS

1. Effectiveness of new health education efforts:

1.1. Health education is possible in our existent set-up at health centres. The effectiveness of new health education efforts is evident by the change observed in the pattern of attendance at the study centres after intervention. There was improvement in first antenatal attendance before 16 weeks of pregnancy from 10% to 42.5% towards end of intervention. However this did not meet the study expectation of 75% of antenatal clinic attendences before 16 weeks. This could possibly be explained on the basis of the short period of intervention as it may be difficult to change set beliefs attained over a long time.

1.2. Developing accurate, repititive and clear messages targetted at young, sexually active people as well as elderly persons and using several health education methods including flipcharts, handouts, audio cassettes and individual counselling proved beneficial in modifying the pattern of antenatal attendance. However, at the end of intervention more than half of the late attenders still believed that it was not necessary to attend antenatal clinic early in pregnancy (table 3.7). Again, this could be due to difficulty in changing set ideas and beliefs in a short time.

1.3. The new health education efforts carried out under this project were ambitious i.e. on an average, each study centre conducted two sessions daily for the entire period of one year. This may not be possible at the national level.

2. Serologic screening and treatment:

2.1. The seroprevalence of syphilis at final phase assessment (1987) under this demonstration project was 8.0%. By comparison, the seroprevalence among comparable samples in 1980 and 1983 was 12.5% and 12.8%, respectively. This decline in seroprevalence possibly is an effect of the national antenatal screening programme (funded by UNICEF) in its fifth year of implementation.

2.2. The adverse pregnancy outcomes due to maternal syphilis were preventable (table 3.11). Prior to intervention, almost 60% of syphilitic pregnancies had adverse outcomes. Subsequent to intervention, the adverse outcomes were reduced by two-thirds to 28.3% in comparison to 72.4% at control centres.

2.3. After intervention there was an improvement in the syphilitic pregnancy outcomes inspite of the following inadequacies:

2.3.1. At the study centres, less than 40% of seroreactive women and two-thirds of their sexual partners were treated. Although efforts were made to follow-up seroreactive women and their partners, a good number of them did not turn up for treatment.

2.3.2. Only 60% of women from study centres who were entered in the final phase of the study had syphilis screening at first attendance and another 15% had second screening test in the third trimester. This could be explained on the basis that the antenatal clinic women are a dynamic population entering the care at different times.

2.4. There was a statistically significant difference (p 0.05) in adverse pregnancy outcomes between nonsyphilitic women at study and control centres (table 3.12). This is yet another indicator of improved antenatal care as a result of intervention.

2.5. Reports of adverse pregnancy outcomes due to maternal syphilis during pre-penicillin era suggest that 30–40% might be aborted, 20% might end as stillbirths and 25% may be live born with congenital syphilis. However, our study showed lower pregnancy wastage and congenital syphilis (table 3.10). Although this is difficult to explain, the reasons may be:

2.5.1. Since syphilis antenatal screening programme has been underway in Zambia over the past five years, fewer women may be in the infectious stage.

2.5.2. *Treponema pallidum*, as hypothesised by a number of investigators, might have become less virulent.

2.5.3. Few women who might abort at home may not report to the hospital; hence, did not enter the study.

2.5.4. Since all newborns of seroreactive mothers were treated immediately, the real estimate of congenital syphilis could not be made.

RECOMMENDATIONS

The adverse outcomes of maternal syphilis are preventable. However, it continues to be a problem in the developing world occurring as a result of inadequate antenatal care.

Hence, the key to adequate antenatal care is to:

1. Improve the existing services with special emphasis on:

1.1. Health education to motivate women to attend antenatal clinics early in pregnancy and have regular checkups thereafter.

1.2. Adequate antenatal screening. This consists of screening at first attendance and repeated in the third trimester.

1.3. Early treatment of woman with a reactive test along with her spouse is essential. Benzathine penicillin G, 2.4 million units stat by intramuscular injection is recommended.

2. Cultural acceptability, political feasibility and psychosocial effects of intervention. The intervention outlined above is culturally and politically acceptable in Zambia. On one-to-one basis, the initial reactions of psychosocial counselling are:
   - denial
   - fear or anger
   - bargaining
   - acceptance

3. Cost – effectiveness of intervention considering seroprevalence at 10%.

The estimated costs per 1,000 attendees would be:

– Two tests per attendee (an initial visit and a repeated visit in last trimester) at $.10 per test	$200.00
– Treatment of all reactors at first visit at $1.00/treatment	$100.00
– Treatment of subsequent visit at $1.00/treatment assuming 20% will be retreated	$ 20.00
– Treatment of spouses at $1.00/treatment assuming that 67% of the spouses of the reactors at the first and second visit will be treated	$ 80.00
– Amortized cost for development and printing of the behavioural and educational material	$100.00
– Amortized cost of microcentrifuges and lamps	$100.00
Total	$600.00

This programme is relatively inexpensive considering that the for
1,000 pregnant women will be £600. If the intervention is per. uld
prevent 17 spontaneous abortions, 19 perinatal deaths, and 14 s) ery
1,000 pregnant women (table 4.1). This programme, however, w ec-
tive: (1) attendance at the antenatal clinics may be late, spon me
women and spouses may not be treated, and (3) the screening t ive
and specific.

4. Priorities for future research

4.1. Psychosocial effects of intervention.

4.2. Extend intervention program to all countries. This could be funded by international agencies, either collectively or separately to well demarcated geograpical zones.

4.3. Production of RPR card antigen locally or in regional laboratories.

4.4. Monitor cost-effectiveness.

Table 4.1: Reproductive outcome model assuming 10% seroreactivity in 1000 pregnant women.

	SEROREACTIVE PREGNANT WOMEN	NON-SERORE-ACTIVE PRE-GNANT WOMEN
Pregnancies	100	900
Spontaneous abortions in 2nd or early 3rd trimester	20(20%)	27(3%)
Excess spontaneous abortions due to syphilis	17	–
Pregnancies entending beyond 27 weeks	80	873
Perinatal deaths	24(30%)	52(6%)
Excess perinatal deaths due to syphilis	19	–
Syphilitic infants	14(25%)	–

ACKNOWLEDGEMENT

The team is grateful to International Development Research Centre (IDRC), Canada for funding this project and to the Director of Medical Services and Deputy Director of Medical Services (Primary Health Care) for their support and encouragement.