

PROFILE OF SEXUALLY TRANSMITTED
DISEASES AT ADDINGTON HOSPITAL
DURBAN

Dr. Uttam Govind



A Dissertation Submitted to the Faculty of Medicine
University of Natal, Durban
for the Degree M. Prax. Med. (Primary Care)

DURBAN 1986.

C O N T E N T S

	<u>PAGE</u>
(1) SUMMARY	1
(2) INTRODUCTION	1 - 4
(3) OBJECTIVES OF THE STUDY	4
(4) METHODOLOGY	5 - 9
(5) RESULTS	9 - 34
(6) DISCUSSION	35 - 53
(7) CONCLUSION	54
(8) RECOMMENDATION	55 - 56
(9) ACKNOWLEDGEMENTS	57
(10) REFERENCES	57 - 60
(11) ANNEXURES - PHOTOGRAPHS	61 - 69

S U M M A R Y

During the period January 1985 to December 1985, 537 consultations were undertaken at the Special Clinic at Addington Hospital, 483 of these were specifically for venereal disease. The male to female ratio was 2.2:1. The majority of the patients treated were Coloureds. Most of the patients were in the age group of 20-35 years. The majority of the patients were unemployed. Gonorrhoea was diagnosed in 25.13% of the patients, followed by latent syphilis 19.52%. Chancroid was the commonest cause of genital ulceration and was diagnosed in 10.4% of the study population. *N. Gonorrhoea* was isolated in 42 patients; 40.5% of the isolates were resistant to penicillin, 66.6% to cotrimaxazole and 30.9% to ampicillin. The organism was sensitive to chloramphenicol, erythromycin and tetracycline in most cases. All the penicillin resistant strains were sensitive to spectinomycin.

I N T R O D U C T I O N

Veneral disease has been one of man's oldest diseases. We have come a long way from the time when the Romans and Greeks believed that there was only one venereal disease which presented in various clinical ways.

With the rapid progress and understanding of the different diseases the whole speciality of venereal diseases has evolved through several phases which began as venereology, and went onto dermatovenereology and sexually transmitted diseases and finally ended up as genitourinary medicine in the United Kingdom.

The changing nature of clinical practice within the speciality has necessitated the change of the name of the British Journal of Veneral Diseases to Genitourinary Medicine in the United Kingdom where only 15% of the patients attending departments of genitourinary medicine have classic venereal diseases such as syphilis, gonorrhoea or chancroid.(1)

Apparently some 60 years ago the situation was completely different when over 75% of the cases treated were for statutory venereal diseases. In South Africa we are probably at this stage where large parts of the country are in a third world situation. This picture is further compounded by the appearance of non-gonococcal urethritis, herpes genitalis and penicillinase producing *N.gonococcus* in increasing numbers.

Sexually transmitted diseases have increased at an alarming rate in the present century and it is estimated that over 50 million new cases occur annually in the world.(2) In South Africa reliable information is not available because the disease is not notifiable and patients are treated by many health authorities and privately.

A more accurate knowledge of the most common agents of sexually transmitted diseases on a regional basis in South Africa is needed.

Data from the 1984 annual report of the City Medical Officer of Health of Durban showed that out of a total population of 871,290 persons, 62,878 patients (7.2%) were treated for sexually transmitted disease by clinics co-ordinated by the Council (3). For the corresponding period the figure for Cape Town (35) was 31,240 out of a population of 2 million (1.6%). One may speculate that this only represents a fraction of total number of cases in Cape Town, as the rate is very small when compared to Durban.

Medical research into sexually transmitted diseases in South Africa is mainly confined to Johannesburg. Very little is known about venereal disease in Durban, especially in the Coloured community. The other factor that finally stimulated this research was the attendance of the author at the 2nd International Congress for sexually transmitted diseases in Southern Africa in Cape Town in 1985.

In essence therefore this was a pilot study to determine the profile of sexually transmitted diseases at Addington Hospital, which is a provincial hospital situated within the city boundary near the beach front and serves both the White and Coloured communities.

It is the only provincial hospital in Natal that operates a "Special Clinic". King Edward VIII Hospital has a "Special Clinic" on its grounds but it is administered by the City Health Department. R.K. Khan Hospital in Chatsworth does not have a Special Clinic.

The Clinic at Addington Hospital is held once a week on a Tuesday afternoon on an appointment basis. Most of the patients are referred from the out-patients departments where initial investigations and treatment may already have been initiated. The function of the clinic was therefore to co-ordinate treatment and maintain follow up and keep the outpatients doctors informed with recent advances.

It must be pointed out that due to the racial structure of the health services, only Coloured and White patients were allowed to attend the out-patient department. The few African patients that were treated were staff members.

The Coloured community attending Addington come mainly from Wentworth and Newlands East, both of which are low-socio economic areas, and also from Sydnham, Overport and Red Hill areas which are of a higher-socio economic group. The White patients are mainly pensioners and unemployed individuals or holiday makers living nearby the hospital.

It was felt that a study to determine the profile of sexually transmitted diseases at this Clinic would add further light and knowledge to the pattern of S.T.D. in Durban. Furthermore it was hoped that a plan of action could be formulated for the rational treatment of the common S.T.D. especially since laboratory tests may only be available to a limited extent.

The formation of the Sexually transmitted Disease of Southern Africa in 1981 has stimulated further interest and research into this field. The establishment of departments of genitourinary medicine at Medical School in South Africa is looked upon with interest and anticipation.

It seems that sexually transmitted diseases are here to stay with us because no sooner one finds a "cure", then newer problems are created, for example AIDS. The latter has aroused public feeling and fear to such an extent that the prevalence of sexually transmitted diseases is bound to change.

OBJECTIVES OF THE STUDY

1. To determine in respect of patients attending the "Special Clinic" at Addington Hospital :
 - (i) The clinical spectrum of sexually transmitted diseases.
 - (ii) The type of health care administered - diagnostic, therapeutic and preventative.
 - (iii) The laboratory facilities available.
 - (iv) To identify the personal characteristics of patients with sexually transmitted disease.
 - (v) Correlation between clinical diagnosis and laboratory investigations.
 - (vi) Formulate guidelines for treatment.
2. To make recommendations concerning the improvement of health services directed to this core group and to identify areas for further research.



DEFINITION OF CRITERIA

The following criteria were defined for the purpose of this study:

- (i) Special Clinic - outpatients department of Addington Hospital where patients attend for their particular needs.
- (ii) Sexually transmitted diseases - ailments affecting mainly the genitourinary system as a result of sexual contact.
- (iii) Personal data of patients : age, sex, race, occupation and marital status.
- (iv) Type of Health Care : diagnostic, therapeutic and preventative.

SAMPLE AND CONTROL GROUP

Every patient that attended the special clinic during the study period (whether first or repeat visit) was included in the sample group. A control group was not necessary for the purpose of this study.

METHOD OF DATA COLLECTION

Permission to conduct the study was obtained from the Medical Superintendent of Addington Hospital. The study period extended from 1st January 1985 to 31 December 1985. All the patients in the study group were examined and treated by the author. The patients either attended voluntarily or were referred from the different outpatient departments. A standard check list was used to eliminate variables. The following data was collected after history taking, physical examination and special investigations of the patients:

- sex, race, marital status and occupation
- episode of visit - 1st or repeat
- duration of illness and incubation period
- clinical diagnosis
- laboratory investigations and results
- the type of health care administered
- the chemo-therapeutic agent used
- personal characteristics of the sexual contact.

The author was assisted by two staff nurses at the clinic. They were responsible for keeping the clinical records, taking blood specimens and transporting them safely to the laboratory. One of the staff nurses also administered injections.

All the interviewing and examination was done by the author. The diagnosis in most cases was made on clinical findings and treatment was initiated at this stage. The diagnosis and treatment were modified when laboratory results were available. The clinical diagnosis was greatly assisted by the incubation periods of the various diseases and also to some extent by the duration of illness.

N.gonorrhoea was diagnosed if the incubation period was short, usually less than 7 days and N.G.U. if this period was longer. Gonorrhoea was also favoured if the symptoms were more severe, namely copious yellow discharge, although this was not always true. Dysuria with scanty watery discharge was diagnosed as N.G.U. but smears were always taken to exclude gonorrhoea.

Samples of urethral discharge in men were collected with a sterile cottonwool swab. Slides were prepared for Gram stain identification of the organisms. Special culture plates (Thayer-Martin) were also inoculated for culture and antibiotic sensitivity. The diagnosis of urethritis was established if there were significant numbers of polymorphonuclear leucocytes on a Gram stained urethral smear. The presence of intracellular Gram-negative diplococci confirmed the diagnosis of gonococcal urethritis and the absence of the organism was taken as presumptive evidence of non-gonococcal

urethritis (N.G.U.). A first catch specimen of urine was also analysed in some patients who complained of urethral discharge which was not evident at the time of examination.

For female patients suspected of having gonorrhoea, endocervical specimens were collected and analysed in the same fashion. Diagnosis of gonorrhoea and *C.trachomatis* is difficult to make on clinical grounds in females and it is usually a retrospective diagnosis after laboratory tests are available. *G. vaginalis* was diagnosed by the thin, frothy or thick adherent discharge with a characteristic fishy odour. Genital candidosis was diagnosed by its typical appearance of thick cheesy discharge with pruritis. *T.vaginalis* was diagnosed by the presence of frothy offensive yellow green discharge with pruritis and redness of the vaginal mucosa. Vaginal swabs and smears were taken for confirmation of the last three mentioned conditions. A mid-stream urine was collected and analysed where indicated.

Due to the multiple aetiology and clinical presentation of genital ulceration it is not always possible to make a diagnosis on clinical grounds alone. Syphilis was suspected if the incubation period was long (more than 10 days), the ulcer "clean looking", painless and usually solitary. The presence of discrete non-tender inguinal lymphadenopathy was a useful sign. The duration of illness also tended to be longer. The clinical diagnosis was confirmed by serology. A positive rapid plasma reagin (RPR) test of 1/8 or less was confirmed by either a TPHA or FTA.Abs tests so as to exclude a false positive result. Where primary syphilis was strongly suspected and the initial RPR was non reactive, a repeat test was performed the following week and the patient treated on clinical grounds. Every patient attending the clinic had an RPR done irrespective of the diagnosis.

A positive RPR test in the absence of clinical signs of syphilis and no history of treatment, was diagnosed as latent syphilis. The diagnosis of secondary syphilis was always suspected whenever a rash persisted for any length of time. Mucosal involvement (mouth ulcers, condylomata lata) also made one suspicious of secondary syphilis.

Condylomata acuminata was diagnosed by the typical appearance of filiform growth in clusters, sometimes presenting as cauliflower growths. The incubation period also tended to be long (more than three weeks).

Chancroid was diagnosed if the incubation period was short, usually less than 7 days. The ulcer tended to be painful, with a necrotic base and often multiple. The presence of suppurative inguinal lymphadenopathy was an important feature. Non response to penicillin also tended to favour the diagnosis of chancroid.

Herpes genitalis was diagnosed by the presence of painful or itchy vesicles which depending on the time of examination may have ruptured, coalesced and formed larger ulcers. The history of recurrence also favoured herpes genitalia.

Lymphogranuloma venereum (LGV) was suspected by the presence of painful regional lymph nodes with or without a penile ulcer. Again the incubation period tended to be longer than chancroid. Serological tests for herpes genitalia and LGV were requested as indicated, the former having repeat test to demonstrate a rise in antibody levels. Herpes culture was only available towards the end of the study.

Laboratory facilities for dark field microscopy of syphilitic exudates, cultures for chancroid (*H. ducreyi*) and tests for Chlamydial infection (NGU) were not available at the time of the study.

Genital candidosis in male presented either with redness and irritation or with superficial ulceration covered with adherent white plaques.

Treatment was based according to the guidelines laid down by the Centre for Disease Control (CDC) of the United States Department of Health and Human Services (4). Where the diagnosis was in doubt or uncertain, treatment was given to cover all possibilities. Follow up visits were emphasised to ensure recovery. Sexual partners were also encouraged to attend for treatment.

COLLATION & ANALYSIS OF DATA

The data was entered onto an analysis sheet either at the time of consultation or extracted from the clinical notes at a later date. All the data was personally collected by the author and analysed manually. The data was analysed according to visits as opposed to patients in most instances.

RESULTS

A total of 537 consultations were carried out during the study period. Fifty four (10%) of these were for other than venereal disease and were excluded from the main body of patients. A total of 483 "visits" or consultations were analysed for the purpose of this study. There were 331 males (68.54) and 152 females (31.46) in the ratio of 2.2 : 1 as shown in figure 1.

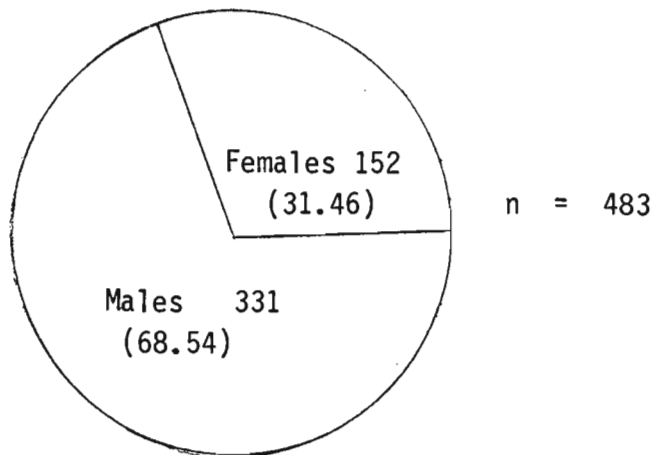


Fig. 1. MALE/FEMALE RATIO - NUMBER AND PERCENT (%)

Most of the patients were from the Coloured group, 328 (67.9%) followed by the Whites, 135 (27.95%) and Africans, 20 (4.10%). Figure 2 shows the racial and sex characteristics of the group.

Fig. 2 RACE / SEX CHARACTERISTICS

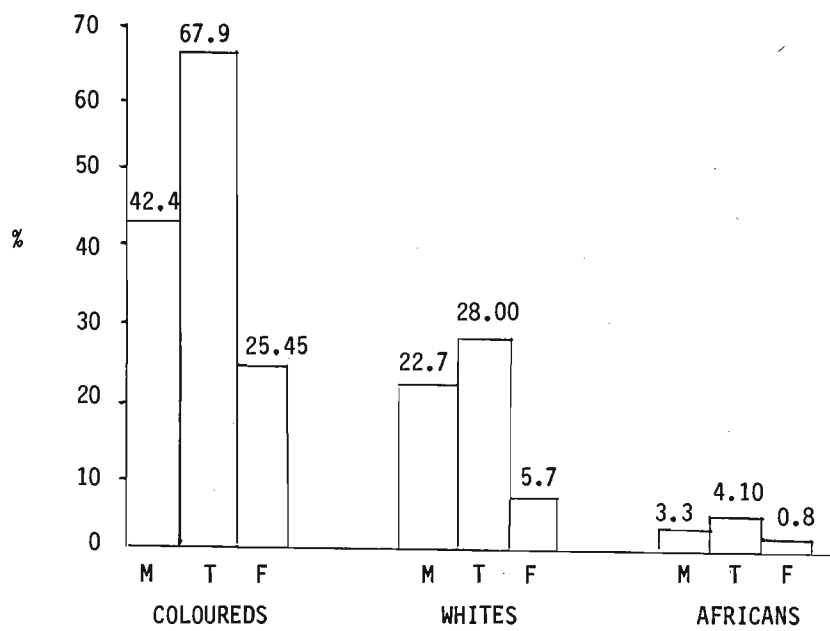


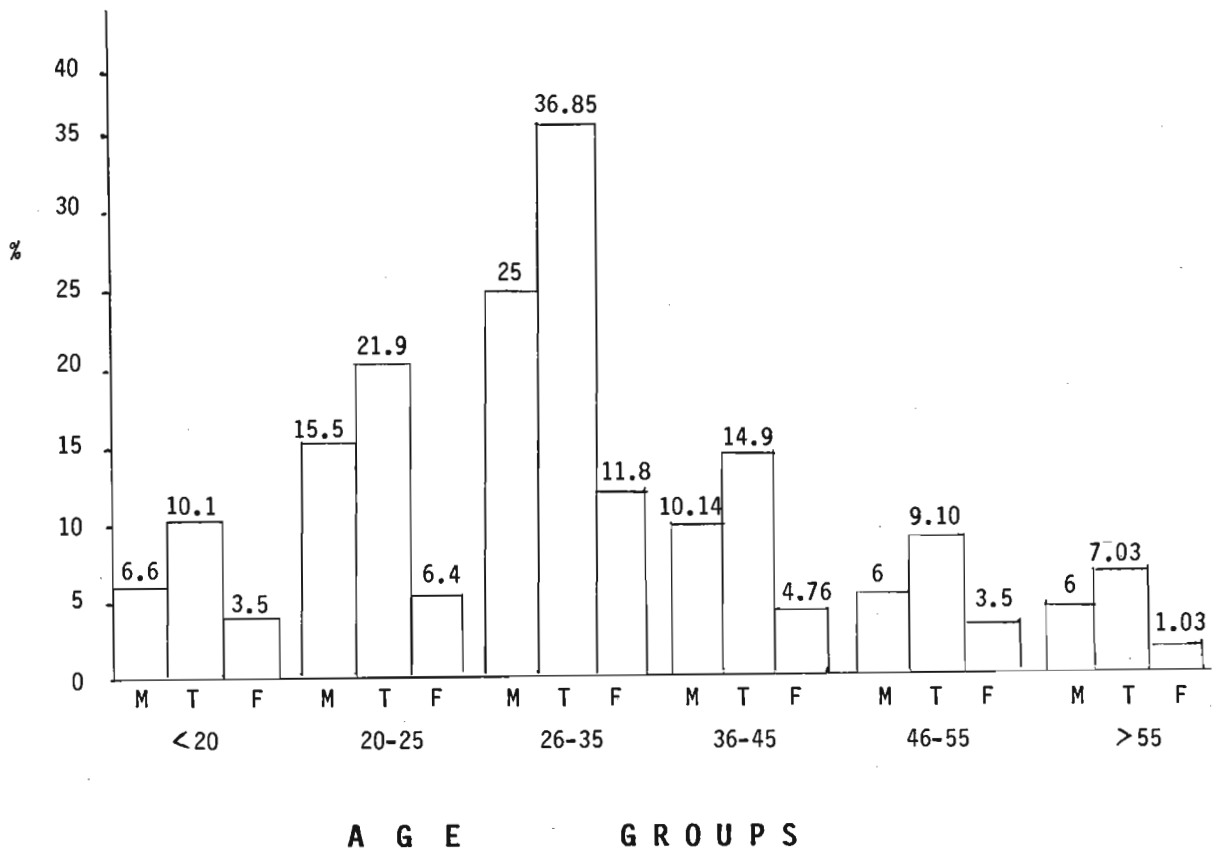
Table 1 shows the age groupings, sex and racial characteristics of the study population. Of all consultations 178 (36.8%) came from the 26 - 35 age group, and 106 (21.9%) from the 20 - 25 year age group. Less than 15% of cases occurred in the other age groups.

TABLE 1. AGE GROUPS / SEX / RACE

AGE	SEX	COLOURED	WHITES	AFRICANS	TOTAL
-20	Male	27	3	2	32
	Female	17	-	-	17
	Total	44(9.1)	3(0.6)	2(0.4)	49(10.14)
20-25	Male	52	15	8	75
	Female	20	8	3	31
	Total	72(14.9)	23(4.8)	11(2.3)	106(21.96)
26-35	Male	76	39	6	121
	Female	52	4	1	57
	Total	128(26.5)	43(8.9)	7(1.4)	178(36.85)
36-45	Male	26	23	-	49
	Female	20	3	-	23
	Total	46(9.5)	26(5.4)	-	72(14.9)
46-55	Male	12	15	-	27
	Female	11	6	-	17
	Total	23(4.8)	21(4.3)	-	44(9.1)
55+	Male	12	15	-	27
	Female	3	4	-	7
	Total	15(3.0)	19(3.9)	-	34(7.03)
GRAND TOTAL	MALE	205(42.4)	110(22.7)	16	331(68.5)
	FEMALE	123(25.4)	25(9.5)	4	152(31.5)
	TOTAL	328(67.9)	135(28)	20(4.1)	483(100)

Figure 3 shows the age and sex distribution of the study group.

Fig. 3 AGE/SEX GROUP (WHOLE GROUP)



As far as the marital status was concerned the majority were unmarried, (59.9%) followed by married (28.7%), divorced (12.6%) and widowed (2.7%). The married group comprised the majority in all three racial groups. As shown in Table 2.

TABLE 2 MARITAL STATUS BY SEX / RACE (%)

STATUS	COLOURED			WHITE			AFRICAN			TOTAL		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Married	82	27	109	21	3	24	4	2	6	107	32	139(28.7)
Divorced	10	15	25	22	14	36	-	-	-	32	29	61(12.6)
Widowed	2	3	5	8	-	8	-	-	-	10	3	13(2.7)
Not Married	111	78	189	59	8	67	12	2	14	182	88	270(55.9)
T O T A L	205	123	328	110	25	135	16	4	20	331	152	483(100)

Most of the unmarried patients were males. The widowed patients in the White group were also males.

The majority of the patients were unemployed (58%), comprising of 195 Coloureds and 85 Whites. There were no prostitute patients in the study group. Table 3 further shows that housewives made up the 3.9% of the group. The professionals made up the smallest group. About 3% were in receipt of either a disability or old age pension. Of the 280 in the unemployed group, 198 were males (41%) and 84 females (17.4%).

TABLE 3 OCCUPATION / SEX / RACE (ALL VISITS)

OCCUPATION	SEX	COLOURED	WHITE	AFRICAN	TOTAL
Professional	Male	1	5	-	6
	Female	-	-	-	-
	Total	1	5(1.03)	-	-
Non Manual	Male	12	23	1	36
	Female	18	4	-	22
	Total	30(6.2)	27(5.6)	1	58(12)
Manual Skilled	Male	24	6	-	30
	Female	5	-	1	6
	Total	29(6)	6(1.24)	1	36(7.45)
Manual Unskilled	Male	29	-	13	42
	Female	11	-	1	12
	Total	40(8.2)	-	14	54(11.2)
Housewife	Female	17(3.5)	-	2	19(3.9)
Unemployed	Male	130(20.9)	66	2	198(41)
	Female	65(13.4)	19	-	84(17.4)
	Total	195(40.4)	85(17.6)	2	280(58)
Scholars	Male	8	-	-	8
	Female	2	2	-	4
	Total	10(2)	2	-	12(2.5)
Pensioners	Male	1	10	-	11
	Female	5	-	-	5
	Total	6(1.2)	10(2.06)	-	16(3.3)
T O T A L	MALE	205	110	16	331
	FEMALE	123	25	4	158
	TOTAL	328	135	20	483

The type of health care administered, namely preventative, diagnostic or therapeutic and the episode of care, are indicated in Table 4.

TABLE 4 CARE ADMINISTERED ACCORDING TO HEALTH CARE EPISODE

	FIRST	REPEAT	TOTAL CARES
Preventative	172	108	352 (30.0)
Diagnostic	267	150	417 (35.5)
Therapeutic	266	139	405 (34.5)
TOTALS	705	469	1174 (100)
TOTAL NO. OF VISITS	270	213	483

A total number of 705 "cares" were administered at the first episode to 270 patients. At the repeat visits (213), 469 cares were administered. The total number of cares exceeded the number of visits because more than one care may have been administered at any one time. The preventative care made up 30%, diagnostic 35.5% and therapeutic 34.5% of the total number of cares. Most of the diagnostic and therapeutic care was given at the first visit.

The diseases were also analysed according to sex, race and age groups. It is important to note that the analysis was based on the total number of visits. In the Coloured group 386 diagnoses were entered; 58 (15%) had more than one diagnosis. In the White group there were 147 diagnoses; 12 (8.2%) patients had more than one diagnosis. There were 373 diagnoses in males and 180 in females. Gonorrhoea was the most common disease (25.13) followed by latent syphilis (19.52) and chancroid (10.48%).

Table 5 shows the different diseases in order of frequency in the different racial groups. N.G.U. and Herpes Genitalis was responsible for 9.22% and 6.5% of the cases respectively. Collectively syphilis made up nearly $\frac{1}{3}$ of the cases. Secondary syphilis was encountered in 7.2% of the cases. Candidiasis also featured prominently.

TABLE 5 FREQUENCY OF DISEASE ACCORDING TO SEX AND RACE (ALL VISITS) : NUMBER AND PERCENT (%)

DISEASE	COLOURED			WHITES			AFRICAN			T O T A L		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Gonorrhoea	87	13	90	24	5	29	7	3	10	118	21	139(25.13)
Latent Syphilis	31	56	87	10	10	20	1	-	1	42	66	108(19.52)
Chancroid	34	14	48	8	-	8	2	-	2	44	14	58(10.48)
Candidiasis	21	9	30	19	4	23	-	-	-	40	13	53(9.58)
N.G.U.	19	-	19	28	4	32	-	-	-	47	4	51(9.22)
2° Syphilis	4	26	30	6	2	8	2	-	2	12	28	40(7.23)
L.Genitalis	14	6	20	12	1	13	3	-	3	29	7	36(6.5)
3° Syphilis	11	8	19	1	-	1	-	1	1	12	9	21(3.79)
Maculata	8	4	12	2	1	3	1	-	1	11	5	16(2.89)
Scabies	2	-	2	9	-	9	-	-	-	11	-	11(1.98)
B.vaginalis	-	8	-	-	1	-	-	-	-	-	9	9(1.62)
B.vaginalis	2	3	5	-	-	-	-	-	-	2	3	5(0.90)
L.G.V.	3	1	4	-	-	-	-	-	-	3	1	4(0.72)
Pubic Lice	1	-	1	-	-	-	-	-	-	1	-	1(0.18)
Sup. Bal. Posth.	1	-	1	-	-	-	-	-	-	1	-	1(0.18)
TOTAL	238	148	386	119	28	147	16	4	20	373	180	553(100)

N.G.U. = Non Gonococcal Urethritis
 L.G.V. = Lympho Granuloma Venereum
 Sup. Bal. Posth. = Superficial Balano Posthitis

An analysis was also made of the different diseases according to the age group and race in order of priority. (Tables 6 & 7).

Non gonococcal urethritis was the commonest diagnosis in the White 20-25 age group. Gonorrhoea was the most frequent diagnosis in both the 26-35 and 30-45 age groups. In the older age group latent syphilis was the most common diagnosis in the White Group.

Gonorrhoea was the commonest sexually transmitted disease in the younger age group whilst latent syphilis was commoner in the older age group. Chancroid featured prominently in the under 20 and 20-25 age groups.

In the African group most of the patients were in the 20-35 age group and the commonest diagnosis was gonorrhoea. An analysis of the various diseases diagnosed at the first and repeat visit is shown in Table 8.

TABLE 6 WHITES : DISEASE RANKING ACCORDING TO AGE GROUP (ALL VISITS)

RANKING	- 20	20 - 25	26 - 35	30 - 45	46 - 55	56 +
1	Candidiasis 3	NGU. 13	Gonorrhoea 13	Gonorrhoea 9	Latent Syphilis 11	Latent Syphilis 8
2	NGU. 1	Candidiasis 7	NGU. 11	NGU. 4	NGU. 3	2° Syphilis 4
3	-	Gonorrhoea 3	Herpes Gen. 8	Chancroid 4	Herpes Gen. 2	Gonorrhoea 3
4	-	C.acuminata 3	Candidiasis 6	Candidiasis 4	Candidiasis 2	Chancroid 2
5	-	Scabies 1	2° Syphilis 4	Scabies 4	Chancroid 1	Candidiasis 2
6	-	Latent Syphilis 1	Scabies 4	Herpes Gen. 3	1° Syphilis 1	-
7	-	-	Chancroid 1	G.vaginalis 1	-	-

NGU. = Non Gonococcal Urethritis

Herpes Gen. = Herpes Genitalis

TABLE 7 COLOURED : DISEASE RANKING ACCORDING TO AGE GROUP (ALL VISITS)

RANKING	- 20	20 - 25	26 - 35	36 - 45	46 - 55	56+
1	Gonorrhoea 18	Gonorrhoea 32	Gonorrhoea 37	Latent Syphilis 18	Latent Syphilis 12	Latent Syphilis 12
2	Chancroid 8	Chancroid 10	Latent Syp. 30	Herpes 9	Gonorrhoea 5	Candidiasis 3
3	2° Syphilis 6	Latent Syp. 10	Chancroid 21	Gonorrhoea 8	2° Syphilis 4	-
4	Latent Syp. 5	1° Syphilis 9	2° Syphilis 14	Chancroid 8	Chancroid 1	-
5	NGU. 4	Candidiasis 7	Candidiasis 12	Candidiasis 4	L.G.V. 1	-
6	1° Syphilis 3	Herpes 6	NGU. 9	L.G.V. 3	Candidiasis 1	-
7	C. acuminata 3	NGU. 5	1° Syphilis 5	1° Syphilis 2	-	-
8	Candidiasis 3	C.acuminata 4	Herpes 5	2° Syphilis 2	-	-
9	T.vaginalis 1	G.vaginalis 4	Candidiasis 5	G.vaginalis 1	-	-
10	-	2° Syphilis 3	T.vaginalis 3	NGU. 1	-	-

L.G.V. = Lympho Granuloma Venereum
 NGU. = Non Gonococcal Urethritis
 Syp. = Syphilis

TABLE 8 DISEASE ACCORDING TO RACE AND EPISODE OF ATTENDANCE : NUMBER AND PERCENT (%)

DISEASE	COLOURED			WHITE			AFRICAN			TOTAL		
	1st	REPEAT	TOTAL	1st	REPEAT	TOTAL	1st	REPEAT	TOTAL	1st	REPEAT	TOTAL
1° Syphilis	18	1	19	1	-	1	1	-	1	20	1	21
2° Syphilis	16	14	30	3	5	8	1	1	2	20	20	40
Latent Syphilis	24	63	87	5	15	20	1	-	1	30	78	108
Gonorrhoea	65	35	100	19	10	29	6	4	10	90	49	139
NGU	14	5	19	22	10	32	-	-	-	36	15	51
H.Genitalis	10	10	20	7	6	13	1	2	3	18	18	36
C. Acuminata	6	6	12	2	1	3	1	-	1	9	7	16
Chancroid	37	11	48	6	2	8	1	1	2	44	14	58
LGV.	2	2	4	-	-	-	-	-	-	2	2	4
T. Vaginalis	4	1	5	-	-	-	-	-	-	4	1	5
Candidiasis	19	11	30	14	9	23	-	-	-	33	20	53
G.Vaginalis	5	3	8	1	-	1	-	-	-	6	3	9
Scabies	1	1	2	5	4	9	-	-	-	6	5	11
Pubic Lice	1	-	1	-	-	-	-	-	-	1	-	1
Superficial Ballano Posthitis	1	-	1	-	-	-	-	-	-	1	-	1
T O T A L	223	163	386	85	62	147	12	8	20	320	233	553

NGU. = Non Gonococcal Urethritis

LGV. = Lympho Granuloma Venereum

An analysis of the various laboratory investigations undertaken during this study is shown in Table 9.

TABLE 9 LABORATORY INVESTIGATIONS AND RESULTS : NUMBER AND PERCENT (%)

TESTS	POSITIVE	NEGATIVE	TOTAL
RPR	144 (39.5)	221 (60.5)	365 (100)
FTA.Abs	37 (92.5)	3 (7.5)	40
TPHA	120 (95.2)	6 (4.5)	126
Gonococcal Smear	81 (66.9)	40 (33.1)	121
Gonococcal Culture	42 (60.9)	27 (39.1)	69
Herpes CFT	19 (90.5)	2 (9.5)	21
Herpes Culture	2 (40.0)	3 (60)	5
Lympho Granuloma Venereum CFT	1 (100)	0	1
MICRO-VAGINAL SMEAR			
- T.Vaginalis	3 (100)	0	3
- Candidiasis	13 (100)	0	13
- G. Vaginalis	9 (100)	0	9
URINE			
- Gonococcal Culture	4 (100)	0	4
- Pus Cells	16 (100)	0	16
- T.Vaginalis	2 (100)	0	2

The RPR test for syphilis was performed on all patients attending the clinic and was repeated if indicated. In the majority of the cases the RPR and TPHA and or FTA Abs tests were positive where syphilis was suspected. Herpes culture was only performed in selected cases towards the end of the study. Gonococcal culture and smear were positive on 42 and 81 tests respectively. It is interesting to note that N.gonorrhoea was isolated from the urine in 4 patients.

Table 10 shows the antibiotic sensitivity of the gonococcal isolates in the different race groups.

TABLE 10 ANTIBIOTIC SENSITIVITY OF N.GONORRHOEA ACCORDING TO RACE

DRUG		WHITE	COLOURED	AFRICAN	TOTAL	%
Penicillin	(R)	3	12	2	12	40.5
	(S)	6	18	1	25	59.5
Cotrimaxozole	(R)	5	22	1	28	66.6
	(S)	4	8	2	14	33.3
Tetracycline	(R)	-	1	-	1	2.4
	(S)	9	29	3	41	97.6
Erythromycin	(R)	-	-	-	-	0
	(S)	9	30	3	42	100.0
Ampicillin	(R)	3	10	-	13	30.95
	(S)	6	20	3	29	60.05
Chloramphenicol	(R)	-	-	-	-	-
	(S)	9	30	3	42	100.0
Spectinomycin	(R)	-	-	-	-	-
	(S)	3	12	2	17	-

NOTE: R = Resistant
S = Sensitive

The gonococcal organism was resistant and sensitive to penicillin in 40.5% and 59.5% of the isolates respectively. The former were all sensitive to spectinomycin.

Table 11 details the diagnosis and the treatment given.

TABLE 11 ANTIBIOTICS ADMINISTERED ACCORDING TO EPISODE OF ATTENDANCE
AND ACCORDING TO TYPE OF DISEASE : NUMBERS

	1ST VISIT	REPEAT VISIT
<u>GONORRHOEA</u>		
Procaine Pen. + Probenecid	74	-
Tetracycline	-	6
Spectinomycin	-	9
Amoxicillin + Probenecid	3	-
Rosaxicin	-	1
Pro.Pen + Tetracycline	13	-
<u>SYPHILIS</u>		
Benz. Penicillin	69	30
Erythromycin	1	2
Tetracycline	1	-
<u>NON GONOCOCCAL URETHRITIS</u>		
Tetracycline	31	-
Erythromycin	3	-
Metronidazole	2	7
<u>CHANCROID</u>		
Cotrimaxozole	41	-
Erythromycin	3	-

Table 12 illustrates the sources of infection in the different racial groups as determined at the first visit.

TABLE 12 SOURCE OF INFECTION ACCORDING TO RACE OF PATIENT AND RACE AND IDENTITY OF CONTACT :
NUMBER AND PERCENT (%)

RACE	PATIENT	CASUAL	REGULAR	PROSTITUTE	WIFE	HUSBAND	WHITE	AFRICAN	INDIAN	COLOURED	TOTAL
C O L O U R E D	Male	98	6	7	13	-	4	28	1	91	124
	Female	14	33	-	-	13	1	5	2	52	60
	Sub Total	112	39	7	13	13	5	33	3	143	184
W H I T E	Male	43	9	8	3	-	51	4	2	6	63
	Female	1	6	-	-	2	9	-	-	-	9
	Sub Total	44	15	8	3	2	60	4	2	6	72
A F R I C A N	Male	8	1	-	1	-	-	10	-	-	10
	Female	2	2	-	-	-	2	-	-	2	4
	Sub Total	10	3	-	1	-	2	10	-	2	14
T O T A L		166	57	15	17	15	67	47	5	151	270
%		61.5	21.1	5.5	6.3	5.5	24.8	17.4	1.8	55.9	100

25.

Casual sexual contact was the commonest source (61.48%) followed by regular partners, prostitutes (5.5%), wives (6.3%), and husbands (5.5%). The racial details of the contacts is also shown in Table 12, namely 24.8% Whites, 17.4% Africans, 1.85% Indians and 55.9% Coloureds.

Table 13 shows the detail of the prostitute as the source of infection.

TABLE 13 RACE OF PROSTITUTE CONTACT ACCORDING TO RACE OF PATIENT: NUMBERS

PATIENTS	PROSTITUTES
COLOURED - MALES	White - 1
	African - 5
	Coloured - 1
	TOTAL - 7
WHITE - MALES	White - 4
	African - 3
	Coloured - 1
	TOTAL - 8

Tables 14, 15 and 16 show the marital status and source of infection in the 3 racial groups.

In the married group 8 patients were infected by casual contacts and 5 by prostitutes. Casual contact was the most common source in the divorced and never married group. In 83.3% of the cases the source of infection was from the same race group.

In the Coloured group the married partner was the source of infection in 14% of the cases. The race of the contacts is also shown in Table 15.

TABLE 14 WHITES : MARITAL STATUS ACCORDING TO IDENTITY AND RACE OF SOURCE : NUMBER & PERCENT

MARITAL STATUS	CASUAL	REGULAR	PROSTITUTE	WIFE	HUSBAND	WHITE	AFRICAN	INDIAN	COLOURED	TOTAL
MARRIED	8	-	5	3	2	15	1	-	2	18
DIVORCED	10	4	-	-	-	12	1	-	1	14
WIDOWED	-	-	2	-	-	-	2	-	-	2
NEVER MARRIED	26	11	1	-	-	33	-	2	3	38
TOTAL	44	15	8	3	2	60	4	2	6	72
%	61.1	20.8	11.1	4.16	2.7	83.3	5.5	2.7	8.3	100

TABLE 15 COLOURED : MARITAL STATUS ACCORDING TO IDENTITY AND RACE SOURCE : NUMBER AND PERCENT

MARITAL STATUS	CASUAL	REGULAR	PROSTITUTE	WIFE	HUSBAND	WHITE	AFRICAN	INDIAN	COLOURED	TOTAL
MARRIED	26	1	4	13	13	1	12	-	44	57
DIVORCED	5	7	-	-	-	-	2	1	9	12
NEVER MARRIED	80	29	3	-	-	4	19	2	87	112
T O T A L	112	39	7	13	13	5	33	3	143	184
%	60.7	21.2	3.8	7.1	7.1	2.7	18	1.6	77.7	100

TABLE 16 AFRICANS : MARITAL STATUS ACCORDING TO IDENTITY AND RACE OF SOURCE : NUMBER AND PERCENT

MARITAL STATUS	CASUAL	REGULAR	PROSTITUTE	WIFE	HUSBAND	WHITE	AFRICAN	INDIAN	COLOURED	TOTAL
MARRIED	2	-	-	1	-	1	2	-	-	3
NEVER MARRIED	8	3	-	-	-	1	7	-	3	11
T O T A L	10	3	-	1	-	2	9	-	3	14
%	71.4	21.4	-	7.1	-	14.2	64.3	-	21.4	100

Table 17 shows the incubation period and duration of illness of the different diseases as recorded at the first visit.

TABLE 17 INCUBATION PERIOD AND DURATION OF ILLNESS ACCORDING TO ILLNESS TYPE : DAYS.

DISEASE	INCUBATION PERIOD		DURATION OF ILLNESS	
	RANGE	MEAN	RANGE	MEAN
1° Syphilis	10-30	18.0	7-30	13.5
Gonorrhoea	2-10	3.5	2-21	5.3
N.G.U.	7-14	7.6	3-30	9.7
Herpes genitalis	7-15	10.1	3-14	8.2
Condyloma acuminata	21-36	28.0	6-30	16.1
Chancroid	3-10	4.8	5-21	11.9
Candidiasis	2-7	2.9	3-30	8.9
Genital scabies	3-7	4.4	4-7	5.4

The average incubation period of primary syphilis was 18 days with a range of 10 to 30 days whilst that of chancroid was 4.7 days and 3 to 10 days. The mean incubation period of gonorrhoea was 3.5 days as compared to 7.7 days in N.G.U. The average duration of illness varied from 5.3 days in gonorrhoea to 24.6 days in secondary syphilis.

The Table 18 shows the spectrum of multiple diagnosis. Chancroid was the most common factor in the various diagnosis. Seventy patients (14.5%) had more than one diagnosis.

TABLE 18 MIXED INFECTIONS : ASSOCIATION BETWEEN SPECIFIC ILLNESSES : NUMBER

	1° SYPH	2° SYPH	L. SYPH	H. GEN	CHANCROID	GC	CANDIDA	G. VAG	C. ACUM	NGU
1° Syphilis	X	-	-	-	10	1	-	-	-	-
2° Syphilis	-	X	-	-	2	-	1	-	-	-
Latent Syphilis	-	-	X	5	-	2	2	2	-	-
Herpes Genitalis	-	-	5	X	1	-	4	-	-	-
Chancroid	10	2	-	1	X	-	10	-	-	-
Gonorrhoea	1	-	-	-	1	X	3	1	1	8
Candidiasis	-	1	2	4	10	3	X	-	-	-
G.vaginalis	-	-	2	-	-	1	-	X	-	-
Condyloma acuminata	-	-	-	-	-	1	-	-	X	-
N.G.U.	-	-	-	-	-	8	-	-	-	X

A total number of 64 patients (13.2%) did not attend follow up clinic and the data for these patients is shown in Tables 19(a), 19(b) and 19(c).

TABLES 19(a) RACE, SEX AND AGE - NON COMPLIANT PATIENTS

RACE		SEX		AGE (Years)	
COLOURED	41	Male	57	Range	15 - 50
WHITES	22	Female	7	Average	29
AFRICAN	1				
TOTAL	64		64		

TABLE 19(b) DIAGNOSIS : NON COMPLIANT PATIENTS : NUMBERS

1° Syphilis	-	8
2° Syphilis	-	6
Latent Syphilis	-	1
Gonorrhoea	-	25
N.G.U.	-	15
Herpes Genitalis	-	4
Chancroid	-	15

TABLE 19(c) LABORATORY TESTS - NON COMPLIANT PATIENTS : NUMBERS

LABORATORY TESTS	POSITIVE	NEGATIVE
RPR	15	49
TPHA	11	2
FTA Abs	4	-
Gonococcal Smear	23	10
Gonococcal Culture	13	15
Herpes CFT	3	-
Herpes Culture	1	-
Urine Gonococcal Culture	1	-
Urine Sterile Pyuria	9	-

An analysis of the treatment given showed that appropriate chemotherapy was given to 63 patients (98.43%) of the 64 that did not attend follow up clinic.

Table 20 shows the data of 54 patients (10%) who attended the clinic but were excluded from the study because they did not have any clinical or laboratory evidence of sexually transmitted diseases.

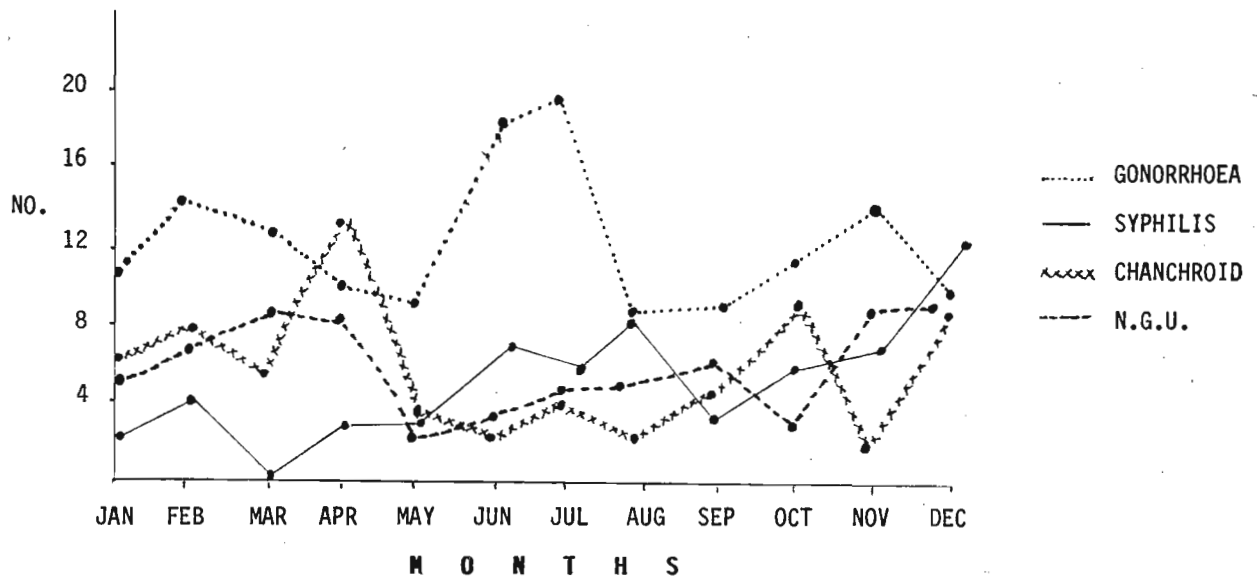
TABLE 20 DIAGNOSIS FOR NON STD PATIENTS ACCORDING TO RACE AND SEX : NUMBERS AND PERCENT (%).

DIAGNOSIS	S E X		R A C E			TOTAL
	Male	Female	WH	AFR	COL	
Urinary Tract Infection	3	-	1	1	1	3 (5.6)
Rape	-	1	1	-	-	1 (1.9)
Tinea crucris	4	-	1	-	3	4 (7.4)
Suspected V.D.	20	8	10	1	17	28 (51.9)
Hypochondriasis	7	-	3	-	4	7 (13.0)
Pelvic inflammatory Dis.	-	4	1	-	3	4 (7.4)
Tick Bite	3	-	-	-	3	3 (5.6)
Bilharziasis	1	-	-	-	1	1 (1.9)
Impotence	1	-	-	-	1	1 (1.9)
Cellulitis Scrotum	1	-	-	-	1	1 (1.9)
Inguinal abscess	1	-	-	-	1	1 (1.9)
TOTAL	41	13	17	2	35	54 (100)

28 Patients (51.9%) attended the clinic because of fear or suspicion of venereal disease. This was the most frequent reason for attendance at the clinic in this sub-group.

Figure 4 shows the pattern of gonorrhoea, non gonococcal urethritis, chancroid and syphilis both primary and secondary during the study period.

FIGURE 4 SEASONAL VARIATION OF VENEREAL DISEASE



Gonorrhoea peaked around June and July with another smaller peak in November. Chancroid and N.G.U. peaked around April. Syphilis was at its highest around December.

D I S C U S S I O N

Sexually transmitted disease services in Durban are provided mainly by the City Health Department. Addington Hospital is the only provincial hospital which provides facilities for the treatment of sexually transmitted diseases. This is the first study on S.T.D. undertaken at this institution.

Although 537 consultations were carried out at this clinic over the study period, 483 (89.9%) were diagnosed as having venereal disease. The 54 (10%) consultations that were excluded form an interesting sub-group of patients who attended the sexually transmitted disease clinic. The study population of 331 males (68.5%) and 152 females (31.4%) with a ratio of male:female, 2.2:1 compares well with that of Latif in Zimbabwe (5) whose study population consisted of 74.8% males and 25.5% females (male:female 2.9:1).

Bello et al (6) describing sexually transmitted diseases in Northern Nigeria showed a male to female ratio of 6:1. The higher percentage of males attending S.T.D. clinics could be attributed to the negative effects of socio-economic and cultural factors such as male promiscuity, unemployment, lack of social and recreational facilities and also to the migratory nature of the work force. Many men have to seek work away from home and are infected by prostitutes who ply their trade near the place of employment. Many of these men infect their wives or partners when they return home over the week-ends.

Data from the Municipal S.T.D. Clinic at Congella in Durban (1984) showed a male to female ratio of 4.5:1 for Coloureds, 5.8:1 for Indians and 2.5:1 for Africans with an overall male to female ratio of 2.5:1 (2). Another reason for the differences in the sex ratio could be due to the asymptomatic nature of many venereal diseases in females and also to the fact that many sexually transmitted diseases present as pelvic inflammatory disease and are treated at gynaecological clinics. Males also tend to present themselves to the clinics because they fear that they may become impotent.

The majority of the patients treated were Coloureds 67.9% followed by Whites 28.0 and Africans 4.1%, the latter being employees at Addington Hospital. Most of the African patients in Durban requiring treatment for S.T.D. are treated at the Congella clinic. There are no figures pertaining to venereal disease in the local Coloured population. A study by Anderson, of venereal disease in the Western Cape (1983) did not give any racial break down of the patients treated (7).

The commonest age group in this study was 26-35 years (36.85) followed by 20-25 years (21.94) which is the most sexually active age group in any community. These figures are similar to Bello in Nigeria (5) where the figures for the 20-24 age group was 36.9% and 25-29 age group was 24.2%. In Latif's study (4) the majority of the patients were in the 20-25 age group (50.5). Sexually transmitted diseases therefore appears to affect the younger population. In the present study the under 35 year age groups accounted for 68.9% of the consultations, the majority of these from the Coloured group (50.5). In the White group most of the patients tended to come from the older age group possibly indicating that the young Coloured population is probably more promiscuous than the White. Most of the patients in the under 20 age group were Coloureds. All the Africans treated were under 35 years.

Coovadia et al (8) in their study of genital ulcers in Africans in Durban found that 80% of the study group was aged between 16-32 years. Due to the migrant nature of employment in this country, it is possible that separation of families for any length of time could lead to promiscuity. This could account for the high percentage of consultations in Coloured females under 35 years, namely 18.4% of the total. The number of White females was fairly constant. The high percentage of patients in the younger age group is further confirmed by Asuzu in Ibadan, Nigeria (9) who showed that 50.4% were in the 20-24 age group, the majority being males. The same pattern also emerges from England (10) where 35% of patients were in the 20-25 age group and 30% in the 25-34 age group as regards gonococcal infection, the majority being males.

Analysis of the marital status showed that 270 (55.9%) were unmarried, which included a small number of scholars. The unmarried group predominated all the 3 race groups studied. 109 (22.5%) of the Coloureds were married whereas only 24 (5%) of the Whites were married. Latif (12) found that 56.1% and 68.8% of men and women respectively were married in his series. Most of the married women were infected by their husbands. In the present study the ratio of married men to married females was 3:1 for Coloureds and 7:1 for Whites, indicating that married men were possibly more promiscuous than their partners. The high percentage of unmarried Coloureds in this series further points to the promiscuous nature of the Coloured community. It is a known fact that child sexual abuse and teenage pregnancy is high in this racial group where the teenage pregnancy rate is 1:10 (13). The depressed economy and poor socio-cultural ties are also contributory causes.

A high percentage of the study population was unemployed, 280 (58%), which would explain why they attended Addington Hospital instead of seeking private medical attention. Housewives and scholars made up 3.3% and 2.5% of the group respectively. This is very low when compared to Bello in Nigeria (6) where the figures were 29.4% for scholars and 12.2% for housewives. The small number of professionals and skilled workers would either suggest that they get fewer infections or that they prefer to be treated by private practitioners.

Although comprehensive management of sexually transmitted diseases including contact tracing would have been ideal, it was not practised fully at this clinic due to the limited time that the clinic operated and also to the limited staff. Most of the care given to the patients was directed at the diagnostic and therapeutic levels. The preventative aspect of sexually transmitted diseases was reinforced at each visit and included educating the patients about the advantages of discriminate sex and prophylaxis such as the use of the sheath. Secondary prevention aimed at seeking earlier medical attention and avoiding sexual contact until cured was also stressed. No provision was made for contact tracing but a fair number did attend on their own accord and this should

be encouraged. Formal tracing is costly and is not used in South Africa although it could be applicable under certain conditions such as children with sexually transmitted diseases and an epidemic of P.P.N.G. strain. In the United States of America another form of contact tracing is used, namely "conditional contracting", where health workers offer the patient the option to have partners referred by health personnel or by themselves within a specified period (11).

Gonorrhoea was the commonest diagnosis (25.1%) in this study group. N.G.U. was slightly higher than gonorrhoea in the White group. Syphilis, including latent, primary and secondary totalled 30.54%, latent syphilis being the major contributor. The other causes of genital ulceration such as chancroid and herpes genitalia accounted for 10.5% and 6.5% of the cases respectively. Candidosis was diagnosed in 9.6%. Condylomata acuminata was diagnosed in 2.9% of cases. Other diagnosis included genital scabies, G.vaginalis, T.vaginalis, L.G.V., pubic lice and superficial erosive balanopostitis. Bello (6) showed the following distribution of venereal diseases in Northern Nigeria.

Gonorrhoea	28.1%
Candidosis	9.4%
Chancroid	2.9%
Syphilis (1° and latent)	1.2%
Genital warts	0.9%
Herpes Genitalis	1.1%
Non specific Genital Inf.	22.4%

The figures for syphilis are very low in Bello's study compared to the present study, whereas the figures for gonorrhoea and candidosis compare well. Bello has suggested that since most patients were seen early, the clinical features of syphilis were possibly suppressed by routine treatment for gonorrhoea. This could account for the lower prevalence of syphilis in his study.

Latif in Harare (12) showed the following pattern of S.T.D. in his study.

Gonococcal urethritis	21.0%
Non gonococcal urethritis	11.9%
Chancroid	36.6%
Syphilis 1°	1.4%
2°	0.3%
Latent	0.7%
Herpes Genitalis	2.1%
Condylomata Acuminata	1.6%

Again the disparity is seen as far as syphilis is concerned. Chancroid was also the commonest cause of genital ulceration. Gonorrhoea and N.G.U. compare well with the present study.

The figures for the City Health Venereal Clinic at Congella for 1984 (3) are as follows :

Gonorrhoea	26.8%
N.G.U.	20.7%
Syphilis 1°	1.8%
2°	6.42%
Latent	10.58%
Chancroid	12.7%
Condylomata Acuminata	3.14%

The figures for gonorrhoea, chancroid, secondary syphilis and condylomata acuminata compare well with the present study, but the high percentage of N.G.U. in Blacks is surprising. There are no figures for herpes genitalis.

Coovadia et al in Durban (8) showed in a microbial analysis of 100 Black patients with genital ulcers, that 44% were due to syphilis, 40% to chancroid and herpes 9%.

This confirms that primary syphilis and chancroid are very common causes of genital ulcers in Durban. Duncan (14) in Johannesburg also showed that chancroid was the most common cause of genital ulceration (60%) followed by syphilis 15% and Herpes genitalis. The low prevalence of primary syphilis at the Congella clinic as stated in the 1984 annual report of the City Medical Officer of Health seems doubtful because Coovadia et al carried out their study in the same clinic and year and found that 44% of genital ulcers were due to syphilis.

In the Coloured group gonorrhoea and chancroid were the commonest disease suffered by the younger age group (under 35 years) whereas latent syphilis was prominent in the older age group. The latter may have been due to several factors such as incomplete treatment and the use of broad spectrum antibiotics for other conditions.

The high prevalence of gonorrhoea in the younger population could be due to several interacting factors such as high infectivity of the organism, resistance to antibiotics, younger age of maturity, more young people around, rapid industrialization and urbanization, migrant labour, social boredom, drug taking and increased promiscuity as a result of changing sexual attitudes, more premarital sex, general permissiveness, increase use of the pill and intra uterine device.

In the younger White group both gonorrhoea and N.G.U. were prominent whilst latent syphilis was diagnosed more frequently in the older age group. Chancroid and herpes genitalia were responsible for most of the genital ulcers amongst the White group. Gonorrhoea was the most frequent diagnosis in the young African.

Another interesting feature was the high prevalence of Candidosis especially in the males. The development of balanitis in the male whose sexual partner has candidal vaginitis is well known (15). They develop typical pseudo-membranous lesions on the glans-penis which may extend to the shaft of the penis. The importance of excluding diabetes mellitus in the males cannot be over emphasised.

The lower prevalence of vaginal candidiasis in this study could be due to the fact that many of the female patients would have been treated in the out patients' department and only referred to the venereal disease clinic if they had associated pathogens such as gonorrhoea.

Predisposing factors to the development of vaginal candidiasis include diabetes, pregnancy, use of broad spectrum antibiotics and oral contraceptives and the wearing of nylon and synthetic underwear.

Latent syphilis was the second commonest diagnosis overall and the majority of the cases in the Coloured group were over 26 years and in the Whites over 46 years, whereas at the Congella clinic the majority were in the 17-25 age group (3). The high prevalence of latent syphilis in the local population is further highlighted by Coovadia et al (16) who found that 33% of medical in-patients at King Edward Hospital, Durban had serological evidence of exposure to syphilis. The importance of diagnosing and treating syphilis early is further stressed by the fact that at King Edward VIII Hospital,, 11% of pregnant Black females have syphilis (17), and that the prenatal death rate due to congenital syphilis was 4/1000 (18). Another study by Manning (19) confirmed that serology for syphilis should be done at the first trimester and again about 36/52 of pregnancy in high risk communities to pick up those patients that would have contracted the disease later. The exact incidence of congenital syphilis is not known at Addington Hospital but is suspected to be very low.

Non gonococcal urethritis was commoner in the younger males of under 35 years. The diagnosis was made by exclusion of gonorrhoea. In a microbiological study Ballard et al (20) showed that 54% and 37% of White male patients presenting with urethritis were due to *N.gonorrhoea* and *C.trachomatis* respectively. At the time of this study special investigations for chlamydial infections were not available. Latif (12) also diagnosed N.G.U. by exclusion and found the prevalence to be 11.9%. N.G.U. was diagnosed more frequently in the White group in the present study.

Levy (21) in his study of 282 Black migrant workers in the Transvaal found that 23% suffering from gonorrhoea, 37% non gonococcal urethritis and 40% had a mixed infection of gonorrhoea and N.G.U. This was confirmed by laboratory investigation. It is possible that if laboratory facilities were available for isolation of chlamydia, the present study would have showed a higher prevalence of chlamydia (N.G.U.). A sero-epidemiological study by Fehler et al in Johannesburg (22) showed the prevalence of antichlamydial antibody in a titre of greater than 1:8 was present in 1% of Asians, 35% of Blacks and 17% of Whites indicating that the Blacks had a high exposure rate to these organism. It seems likely that this condition is being under diagnosed at Addington Hospital.

Herpes genitalia was diagnosed in 6.5% of the study population. The highest numbers were seen in the 20-45 age Coloured group whereas in the Whites most of the patients were in the 26-45 age group. Although the serology for herpes simplex infection was performed, most of the cases were diagnosed on clinical grounds. Genital herpes is probably the most common cause of genital ulcers in the Western industrialized countries. It was responsible for about 30% of genital ulceration in this study. Coovadia (8) found herpes genitalia as a cause of genital ulceration in 9% of the cases. Similar figures were also shown by Duncan (12) in Johannesburg. There was also a high percentage of secondary bacterial infection.

Condylomata acuminata recently has been brought back into the limelight because of the danger of malignant transformation (23). C.acuminata was seen mainly in the Coloured community. This condition was diagnosed less frequently by both Bello (6) and Latiff (12).

A summary of the laboratory tests and the results is shown in Table 9. In this community it is inappropriate to wait for confirmation of specific diagnosis before starting treatment. Treatment was given at the first visit based on clinical and epidemiological indicators. This would interrupt the chance of transmission between testing and treatment; it would ensure treatment of infected women with false negative test and also

guarantee treatment of those that would not return. Although this approach would mean that a certain percentage would receive unnecessary treatment, it nevertheless disrupt transmission, thereby helping in the control of the sexually transmitted disease.

As a routine all patients had serological tests for syphilis. The rapid plasma reagin test (RPR) was positive in 144/365 tests. (39.45%). This was confirmed by either the TPHA or FTA Abs or both. The high percentage of latent syphilis could also be explained by the routine performance of serology for syphilis on all patients. Patients with low titres of RPR and those with genital ulcers with a negative RPR had the test repeated to exclude active syphilis. The RPR test was also done to assess the efficacy of treatment. During this study two cases of early primary syphilis were encountered, where the RPR was positive in low titres, FTA Abs positive and TPHA negative.

The repeat test confirmed the presence of active syphilis. It is important to note that the non-treponemal test (RPR) may be negative in early syphilis when the FTA Abs will be positive (24). Table 8 shows that 30 patients had a diagnosis of latent syphilis made at the first visit. This was because they already had had serological tests for syphilis before referral to the special clinic. The 78 that had latent syphilis diagnosed at the repeat visit included some of those seen at the first visit plus those that had positive serology on routine testing but no evidence of active disease.

The tests of gonorrhoea namely the smear was positive in 81/121 specimens (66.9%) and positive culture 42/69 (60.8%). Those with a negative gonococcal smear (40) were diagnosed as having N.G.U., of the 27 that had negative culture over 50% were positive by smear. The discrepancy in the number of smears and cultures performed was due to several factors such as non availability of culture plates or initial visit to the out patients department at an inappropriate time.

Herpes complement fixation test were performed on 21 occasions and was significantly positive on 19 occasions (90%). The facilities for herpes culture was available towards the end of the study and was positive in 2/5 tests (40%). It is important to note that the characteristic clinical picture of herpes genitalia makes the laboratory confirmation unnecessary in most cases thereby saving costs. Serological testing of single specimen for herpes is of little diagnostic value as shown by Coovadia in Durban (8) where the test was positive in 97% of the patients and viral isolation only positive in 9% of cases of genital ulceration.

Endocervical smears were positive for *T.vaginalis*, *candida albicans* and *G.vaginalis* in 3, 13 and 9 patients respectively. In venereal disease clinics candidal vaginitis is often associated with other pathogens. In this study candidosis was associated with gonorrhoea (3 occasions) herpes genitalia (4 occasions), latent syphilis (2 occasions), secondary syphilis and chancroid. In males microbiological evidence of fungal infections were not sought but were suspected in many cases of chancroid. The fact that vaginal candidiasis was diagnosed only in 13/180 females (7.2%) is very low.

Young (25) in a review of candidal vaginitis found that many workers reported candidal isolation rates which varied from 5 to 15% in healthy non pregnant females to 31% in asymptomatic pregnant females compared to 75 to 80% screened at antenatal clinics. *Gardnerella vaginalis* was isolated in 9 patients with vaginitis but was associated with gonorrhoea on 1 occasion and latent syphilis on 2 occasions. In most cases *G.vaginalis* can be diagnosed clinically by the typical fishy odour and discharge. Although the organism may be isolated from many asymptomatic women and may not need treatment, it nevertheless causes considerable discomfort to many and necessitates treatment. *T.vaginalis* was confirmed in 5 patients (2 males and 3 females). It is frequently associated with other infective agents (1 patient with gonorrhoea in this study). Hoosen (26) et al found that the incidence of vaginal infections amongst pregnant Urban Blacks to be as follows ; candidiasis 32%, gonococcal infection 7.3% and trichomonas, candida and gonorrhoea in combination 1.3%.

Urine examinations revealed sterile pyuria on 16 occasions, positive gonococcal culture on 4 occasions and also isolated *T.vaginalis* on 2 occasions. This emphasises the importance of urine examination in those patients presenting with minimal symptoms.

Treatment was given according to clinical diagnosis at the first visit. The majority of the 90 patients that were diagnosed as having gonorrhoea at the first visit were given procaine penicillin 4.8 m.u. preceded by 1 gr. probenecid (82.2%); 13 patients had both tetracycline and penicillin (14.4%) and 3 had amoxicillin 3.0 gr. + 1 gr. probenecid (3.3%). 13 Patients were given combination therapy either because the diagnosis was uncertain or they were not able to return for a follow up visit. At the repeat visit 16 patients who had gonorrhoea were given further treatment. The 9 patients that were given spectinomycin at the repeat visit were those that failed to respond to penicillin. Rosaxician was given to 1 patient with gonorrhoea that failed to respond to tetracycline (he refused to have parenteral treatment). Tetracycline was given to 6 non penicillin responders. The antibiotic sensitivity pattern of the gonococcus showed that 40.5% of the isolates were resistant to penicillin, 66.7% resistant to cotrimoxazole, 2.4% to tetracycline and 30.95% to ampicillin. All the penicillin resistant strains were sensitive to spectinomycin and all but one to tetracycline which makes the latter a very useful antibiotic in the local community.

All the strains were sensitive to erythromycin and chloromycetin. The use of the latter drug is restricted because of its toxic side effects. Erythromycin is not used to treat gonorrhoea frequently because of the reduced sensitivity of local isolates of *N.gonorrhoea* to it (27). The use of cotrimaxazole in gonorrhoea should be discouraged. The penicillin resistant strains of *N.gonorrhoea* were not tested for production of beta lactamase so that it is not possible to estimate the incidence of P.P.N.G. in this study. Coovadia (28) showed that the prevalence of P.P.N.G. strain was 5% in his study population and that 14% showed intermediate resistance to penicillin. All the P.P.N.G. strains in his study were sensitive to tetracycline. Furthermore all

the isolates were sensitive to spectinomycin and cotrimoxazole and cephalosporins. This differs from the present study where 2/3 of the strains were resistant to cotrimoxazole. This may be explained by the fact that the studies were done on different race groups who would therefore be exposed to different strains.

Robins Browne (27) in Johannesburg showed that 20% of strains of *N.gonorrhoea* were relatively resistant to penicillin and this was correlated with relative resistance to ampicillin, tetracycline and erythromycin. No penicillinase producing or spectinomycin resistant strains were isolated in that 1978 study. The pattern of gonococcal infection in Africa is changing and more P.P.N.G. are being isolated and account for some 38% of all gonococcal isolates in Harare (29). It is fortunate that most of the local strains are sensitive to penicillin in appropriate doses. Where penicillin fails patients should be treated with spectinomycin 2 gr. or the new cephalosporins but the latter is very expensive.

Rosaxicin, a recently introduced new quinolone derivative seems to be a very useful and promising drug, given as a single dose and is effective against P.P.N.G. strains. Coetzee (30) in Cape Town showed that rosaxicin was effective in 94% of cases of gonorrhoea and 91.67% effective when tested against P.P.N.G. strains, as compared to penicillin 57.14%. Although most of the gonococcal strains remain sensitive to tetracycline as shown in the present study, it is not effective as a single dose and the recommended dosage is 500 mgm. qid. for 5 days.

Non gonococcal urethritis was diagnosed on clinical grounds and a negative smear for gonorrhoea. The incubation period was also used as an index. The longer the incubation period the more likely the diagnosis was N.G.U. although it may not always be correct. In the present study tetracycline was used in 31 patients, erythromycin 3, and metronidazole 9. Two male patients had N.G.U. due to *T.vaginalis* which was confirmed on microscopy of the urine. The 7 patients that were given metronidazole at the repeat visit were those that failed to respond to tetracycline. The response to metronidazole was good. This suggests that *T.vaginalis* is an important cause of N.G.U.

Although N.gonorrhoea, and chlamydia may coexist in up to 25% of cases (20) it was not confirmed in the present study because tests for chlamydia were not available. The use of tetracycline at the first visit may have prevented the appearance of post gonococcal urethritis. Ballard (20) found that in an analysis of 212 White patients with urethritis, 54% were due to N.gonorrhoea and 37% due to C.trachomatis. Where laboratory facilities are limited and compliance is not guaranteed, it is far better to treat both conditions as was done in the present study.

In the present study the diagnosis of gonorrhoea and chlamydial infection, in females, was made on 21 and 4 occasions respectively. The diagnosis of chlamydial infection was made on the basis of a negative endocervical smear for gonorrhoea. As in males it is far better to treat both conditions since it is well known that both gonorrhoea and C.trachomatis can cause acute salpingitis with all its sequelae. If tests for chlamydial infection were available during the study the pick up rate would have been much higher in females.

Schacter (31) stated that retrospective serological studies indicated that previous chlamydial infection was the causative agent in women with tubal factor infertility. The female is important in transmitting the agent to her sex partners and also to her new born infant who may develop conjunctivitis or pneumonia. He states that, therefore control of chlamydial infection should focus on the asymptomatic female population. The highest risk group for chlamydial infection is sexually active adolescents. Control programme should therefore focus on sexually active adolescent females.

It is encouraging to note that despite the multiple aetiology of N.G.U. the majority of cases respond to therapy with tetracycline or erythromycin. The recommended dose is 250 mgm. qid for 10 days tetracycline and 250 mgm. for 14 days for erythromycin (28). The long acting tetracyclines could also be used.

Although the diagnosis of genital ulceration may be made on clinical grounds alone it is not always accurate and does not always conform with classical text book description as mixed infections are common. The diagnosis of primary syphilis was made on the history and clinical features together with positive serology. The incubation period was also very helpful. It varied from 10-30 days with a mean of 18 days. The duration of illness ranged from 7-30 days with a mean of 13.5 days. The later presentation could have accounted for the higher rate of positive serology. The appearance of the ulcer was also taken into account (solitary, painless indurated avascular ulcer) with regional (inguinal) lymphadenopathy which were discrete and non tender. All the patients with primary syphilis were given long acting benzathine penicillin 2.4 MU. Primary syphilis was responsible for 23.5% of genital ulcers diagnosed at the first visit. Patients with secondary syphilis were given the same dose. A total of 99 treatments with penicillin was administered to patients with syphilis. Tetracycline and erythromycin were given to 1 and 3 patients respectively because of penicillin allergy. Patients with latent syphilis of less than one years duration were given 1 dose of penicillin whilst those with history of more than one year were given 3 doses. The Jarisch Herxheimer reaction was not encountered. Failure to respond to penicillin would make the diagnosis of syphilis very unlikely because the organism is very sensitive to penicillin.

Chancroid, the commonest cause of genital ulceration in this study (51.76%) was treated with cotrimaxazole 2 b.d. x 10 days. In addition eusol was used for cleaning the ulcer. If secondary fungal infection was suspected then nystatin cream was used. One was under the impression that the use of nystatin cream and eusol hastened the healing of the ulcer. Positive syphilis serology was present in 10 of these patients (11.7) but the ulcer failed to heal on penicillin therapy alone. As culture facilities for chancroid were not available diagnosis was made on clinical grounds.

The short incubation period proved to be a very useful guide. The incubation period of chancroid was 3-10 days with an average of 4.7 days. The duration of illness varied from 5-21 days with a mean of 11.86. These patients tended to come earlier for treatment because of pain and failure to respond to penicillin. Although the majority of the ulcers were multiple, single ulcers were also encountered. Most of the ulcers were painful with a necrotic purulent base which tended to bleed easily. Another useful sign was the presence of suppurative inguinal lymphadenopathy which was present in over half the number of patients. *Haemophilus ducreyi*, the causative organism of chancroid is also known to be sensitive to erythromycin and minocycline in local trials. More recently studies on the possible single dose therapy for chancroid have indicated that sulfa methopyrazine/trimethoprim and ciprofloxacin may be suitable agents (32).

Herpes genitalis which is a very common cause of genital ulceration in Western countries, varies in incidence from 7-9% locally. In the present study it was responsible for 21% of genital ulceration at Addington Hospital. The diagnosis again was made on clinical grounds on the typical appearance of itchy vesicles. Depending on the time of presentation these may vary from small ulcers to larger ulcers resembling chancroid. The mean incubation period was 10.06 days with the range of 7-15 days. The average duration of illness was 8.18 days with a range of 3-14 days. The definitive treatment for herpes, acyclovir was not used because of the high cost. They were treated with cotrimoxazole to prevent and treat secondary infection. Kinghorn (33) showed that the combination of oral acyclovir and cotrimoxazole was better than acyclovir alone and that the latter was better than cotrimoxazole alone in reducing viral shedding and healing time of ulcers.

Condylomata acuminata was diagnosed clinically. The incubation period of this diagnosis was 21-36 days with a mean of 28 days. The duration of illness varied from 6-30 days with a mean of 28 days. The duration of illness varied from 6-30 days with a mean of 16 days. Nearly all the patients were successfully treated with topical 5-fluoro uracil. One patient was referred for cautery. There were no reported side effects. Because of its association with carcinoma female patients with condylomata acuminata should have cervical PAP smears on regular basis.

T.vaginalis and G.vaginalis were both treated with metronidazole, the latter with 500 mgm b.d. x 7 days and the former 2g as a stat dose.

Casual and regular sexual contacts were the source of infection in 61.3% and 21.10% of cases respectively. Prostitutes accounted for 5.55% and the spouse 11.8%. This differs from both Bello (6) and Latif (5) where prostitutes accounted for 40% and 69.5% respectively. Bello's figure of 12.6% for spouses compares well with the present study. The low percentage of prostitutes as a source could be explained by the fact that the majority of the patients were unemployed (58%) and could not afford to pay a prostitute. The number of prostitutes were distributed evenly between the Coloureds and Whites but the percentage was higher for Whites. The low percentage of prostitutes as a source of infection would suggest that legalised or controlled prostitution would have little effect on the overall prevalence of sexually transmitted diseases in Durban.

As far as the racial status of the contact was concerned the majority belonged to the same racial group as the index patient. However it was noted that 33/184 Coloureds had sexual contact with Africans (17.9%), the majority being casual females. Five Coloureds had contact with Whites. Of the 7 prostitutes who infected the Coloured patients, 5 were Africans, 1 White and 1 Coloured.

Four White males had contact with African females, three of which were prostitutes. The other contact prostitutes in this group were 4 Whites and 1 Coloured. Four African females had contact with 2 Whites (casual) and 2 Coloureds (regular). As far as married Whites were concerned, the sexual contacts were from 8 casuals, 5 prostitutes and 5 spouses. The unmarried group was infected mainly by casual and regular contacts. The 2 White widows in the group contacted their disease from 2 African prostitutes. In the Coloured group 26/57 of the married patients were infected by their spouses suggesting a break down of stable relationship and morals and increased promiscuity.

It is possible that with the abolishing of the Immorality Act and the mushrooming of escort agencies in Durban one will see an increase in the number of venereal disease. On the other hand, the fear of herpes genitalis and AIDS has possibly decreased the incidence of casual sexual contact and promiscuity but this may be a temporary phenomenon.

The frequency of correct diagnosis on clinical grounds will vary depending on the training and experience of the doctor. Valuable studies from Coovadia in Durban and Ballard in Johannesburg have helped to establish a pattern of sexually transmitted diseases on which one could standardise treatment on a regional basis. In the present study a true correlation between clinical diagnosis and laboratory investigation could not be assessed fully because of the non availability of some tests. Of the 85 patients who presented with genital ulceration, 20 were diagnosed as having primary syphilis and this was confirmed by laboratory tests; of the 44 cases of chancroid, 10 had positive syphilis serology in low titre and 1 in high titre. Dark ground microscopy, if available would help in establishing the diagnosis. All the cases of secondary syphilis were confirmed by laboratory investigations. Secondary syphilis requires a very high index of suspicion.

Gonococcal tests were positive with a high degree of correlation 80/90 (90%). *G.vaginalis* was confirmed in the 6 cases diagnosed at the first visit. Three other cases were not diagnosed at the first visit. The typical features of *G.vaginalis*, *T.vaginalis* and candidal vaginitis should alert one of the diagnosis and confirm on a simple wet mount of vaginal smear.

A total number of 64 patients did not attend follow up giving a non compliance rate of 23% expressed as a percentage of the first visit. The majority were Coloureds (64%) and males (89%) with an average age of 29. The commonest clinical diagnosis was gonorrhoea, chancroid and N.G.U. The clinical diagnosis correlated closely with the laboratory tests. An analysis of the treatment given showed that 63/64 of the patients would have been cured.

As mentioned before 54 patients were excluded from the study because they did not have venereal disease. The majority (51.8%) attended the clinic because of the fear of venereal disease. Hypochondriasis, tick bite fever and non specific inguinal lymphadenopathy and tinea cruris were some of the diagnosis. Robinson (34) in 1982 found that 10% attended a S.T.D. clinic for screening purposes and the other 91 for conditions such as tinea cruris.

An analysis of the seasonal variation of venereal disease showed that gonorrhoea peaked around June, July and November which coincides with the holiday season in Durban. Chancroid was most frequent around April. Primary syphilis followed a similar pattern as gonorrhoea.

Although it may not be possible in all cases, attempts should be made to assess each patient and then manage them in terms of all three levels of comprehensive medical care which would involve at the first level taking into account all the possible factors leading to the development of venereal disease, for example migrant labour with resultant breakdown in family life, cheap prostitution, social boredom, unemployment and rapid industrialisation. Some of the factors would be beyond control but promotive and preventative aspect should be at the forefront. This would involve sex education and both primary and secondary prevention. It is important to educate the patient to seek prompt medical attention after exposure, to comply with medication and to refrain from sexual contact until cured.

It suffices to say that quick and accurate diagnosis is a must for venereal disease especially if one considers control and spread of it. Once the patient is cured, the only sure way of keeping him healed is to abstain from sex, but this is not a practical suggestion. The patient should be encouraged to change his sexual habits and stable family relationships should be fostered.

Although contact tracing was not one of the objectives of this study, its importance cannot be overlooked. In South Africa contact tracing has been given scant attention despite the fact that contact tracing is generally agreed to be the most effective of venereal disease control presently available to us. We do not have a control program of S.T.D. in South Africa. The high number of casual contacts are a big problem since the index patient cannot easily find them, so as to inform them to seek medical attention. The high number of patients in the younger age group would suggest that sexual education at secondary and tertiary levels of learning may be useful in reducing the prevalence.

Current S.T.D. control strategies as recommended by the World Health Organisation should be considered, namely, Health Education and promotion, detection of disease, appropriate treatment, partner tracing and partner counselling, evaluation of clinical services, professional training and research.

What is lacking in this country is the number of trained medical personnel specialising in S.T.D., who would commit themselves to the speciality, establish their own training programs so as to increase the number of S.T.D. experts. This would in effect mean better health education, earlier detection and treatment, more training facilities and research and thereby hopefully controlling the disease.

CONCLUSION

In this study it was shown that the main attenders at the "Special Clinic" were males; that the majority of patients were unemployed, unmarried and came from the 20-35 age group (58%). The traditional sexually transmitted diseases namely, gonorrhoea, syphilis and chancroid are still a force to reckon with. Gonorrhoea was the commonest sexually transmitted disease diagnosed but syphilis as a group was diagnosed more frequently. It was also shown that chancroid was the commonest cause of genital ulceration followed by primary syphilis and herpes genitalia, the percentages being 51.76, 23.52 and 21 respectively. Sensitivity tests showed that the gonococcal organism in this study was penicillin resistant in 40.5% of positive cultures. It was also shown that most of the gonococcal organisms were sensitive to tetracycline and all to spectinomycin. The high percentage of positive syphilis serology suggests that the local population is frequently exposed to *treponema pallidum*. Non gonococcal urethritis was diagnosed more frequently in Whites and Coloureds. Candidosis was the frequent cause of balanitis.

It was also shown that diagnostic, therapeutic and preventative care was given in equal proportions.

Casual contact was the main source of infection whilst prostitutes contributed only to a small degree. It was shown that the incubation period was a very useful aid in establishing diagnosis. Seventy patients had multiple diagnosis, chancroid being the most common diagnosis. Where diagnosis was in doubt it was concluded that all possibilities should be treated.

The importance of diagnosis and treatment at the first visit is emphasised by the fact that 13.2% of patients did not attend follow up. It was found that laboratory facilities were lacking in certain respects. A correlation between clinical diagnosis and laboratory investigations where possible, was good, but this depended on the training of the doctor. Guidelines were laid down for treatment.

RECOMMENDATION

1. Further improvement of services :

- (a) The hours of the clinic should be extended and preferably held on alternate days.
- (b) Clinic staff should be expanded to include a medical technologist who would form an integral part of the team.
- (c) Laboratory facilities should be expanded to include all tests related to sexually transmitted diseases. (This has already been implemented).
- (d) Treatment of S.T.D. should be improved by the following means :
 - (i) cotrimaxozole should not be used to treat any patients with urethritis. Its use should be limited to chancroid and secondarily infected herpes.
 - (ii) tetracycline or erythromycin should be used in patients with urethritis where the diagnosis cannot be confirmed.
 - (iii) genital ulcers should be treated with penicillin and cotrimaxozole where the diagnosis is uncertain or not confirmed.
 - (iv) rosaxicin should be used more frequently in treating gonorrhoea because of the sensitivity of P.P.N.G. strains to it.
 - (v) spectinomycin should be considered as first line treatment for gonorrhoea because of increasing penicillin resistance.
- (e) Contact tracing should be implemented without delay.
- (f) The clinic should be attached to the academic department of microbiology.

2. Further research to be undertaken :

- (a) Research to estimate the true size of the problem of S.T.D. in Durban should be started. A pilot study involving general practitioners and all those concerned in the treatment of venereal diseases should be attempted in the first instance.
- (b) The increasing problem of P.P.N.G. strain in Durban should be monitored on a continuous basis.

ACKNOWLEDGEMENTS

I would thank the Hospital authorities, especially Dr. K. Goodwin, for allowing me permission to use hospital data.

My thanks also goes to the Department of Community Health, Natal University for advice, direction and criticism in the preparation of this paper.

REFERENCES

1. McMillan A : Editorial, Genitourinary Medicine;
Br.J.Vener.Dis.1984; 60:123.
2. Koornhof H.J., Sexually Transmitted Diseases in South Africa
- Greater Awareness Required.
S.Afr.J.Sex.Trans.Dis.Aug 1981; Vol 1 No. 1:1.
3. Annual Report, City Medical Officer of Health, Durban;
Dec. 1984 : 29:33.
4. Centre for Disease Control; Sexually Transmitted Disease
treatment guidelines; M.M.W.R.; 31:355-395.
5. Latif A.S., Sexually Transmitted Disease in Clinic Patients
in Salisbury, Zimbabwe; Br.J.Vener. Disc.;
1981:57:181-3
6. Bello C S S et al, Sexually Transmitted Disease in Northern
Nigeria; Br.J.Vener.Dis.; 1983:59:202-5.
7. Anderson C.J., Effectiveness of the Treatment of Sexually
Transmitted Disease instituted by the Local Authority of
the Western Cape; S.Afr.Med.J.; 1983:64:566-588.
8. Coovadia Y.M. et al, The Microbial Aetiology of Genital
Ulcers in Black Men in Durban, S. Africa: Genitourin Med:
1985:61:266-9.

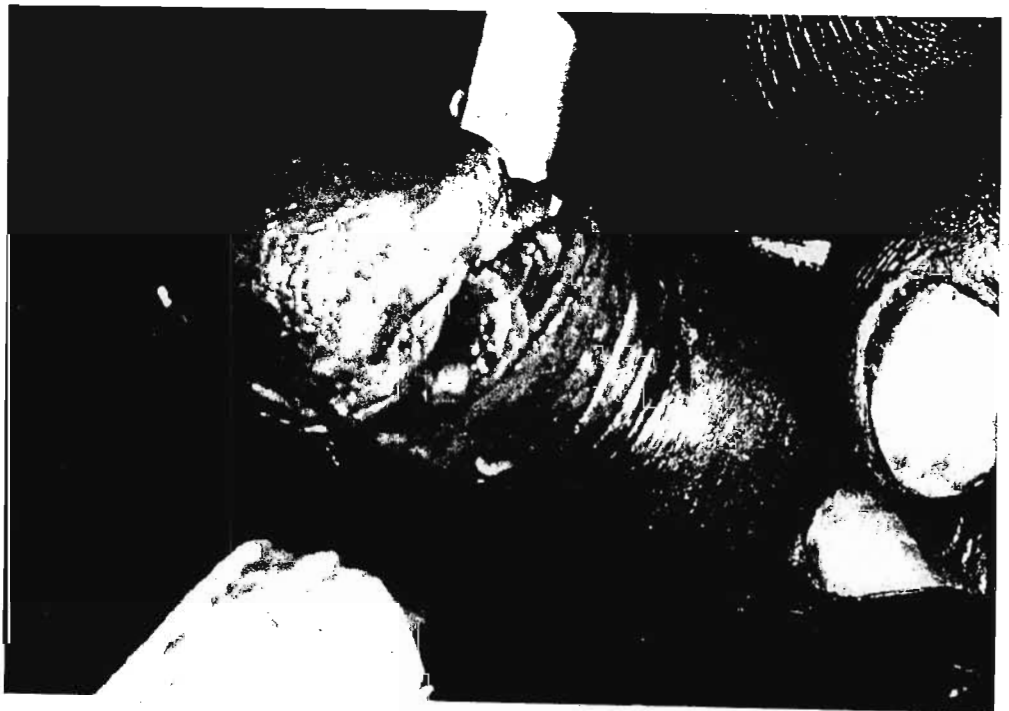
9. Asuzu M et al, Contact tracing in the Control S.T.D. in Ibadan, Nigeria; Br.J.Vener. Dis.; 1984:60:114-6.
10. Annual report 1983 of the Chief Medical Officer Dept. of Health and Social Security; Sexually Transmitted Diseases; Genitourin. Med.; 1985:61:204-7.
11. Cates W. et al; Control of Sexually Transmitted Diseases. Br.J.Vener.Dis.; 1984:60:322-30.
12. Latif A.S., Sexually Transmitted Disease in Harare; S.Afr. J.Sex. Trans.Dis.; 1982.
13. Personal communication, Dr. A. Suleman. 1986.
14. Duncan MO. et al. The Diagnosis of Sexually Acquired Genital Ulcerations in Black Patients in Johannesburg. S.Afr.J.Sex. Trans.J.Dec 1982.; Vol 1 No. 2:20-23.
15. Catteral R.D., Urethritis and Ballanitis Due to Candida. Sym. Candida Infections; Livingstone 1968; 113-118.
16. Coovadia Y.M. et al, Proceedings of the second International Congress of S.T.D. in Southern Africa, Cape Town; Oct. 1985.
17. Ross S.M. Sexually Transmitted Diseases in Pregnancy. Clin. Obstet. Gynaecol 1982; 9:565-591.
18. Naicker S, Moodley J. Serological Diagnosis of Syphilis in Pregnancy. S.Afr.Med.J. 1983; 63:536-537.
19. Manning B., et al - Syphilis in Pregnant Black Women. S.Afr.Med.J. 1985; 67:966-9.
20. Ballard R.C. et al - Urethritis in White Men - A Microbiological Appraisal. S.Afr. Med.J.; 51:702 (1977).

21. Levy I.G. et al, Cost Effectiveness of Alternate Management in the Treatment of Acute Urethritis. S.Afr.J. Sex.Trans.Dis. Sept. 1983; 3:75-79.
22. Fehler H.G. et al, Prevalence of Antichlamydial Antibodies in Johannesburg; A Seroepidemiological Study. S.Afr. J.Sex. Trans. Dis. Dec. 1983; Vol. 3 No. 4 : 111-116.
23. Zur Hausen H., Condylomata Acuminata and Human Genital Cancer. Cancer Research 1976; 36:530.
24. Sher R., Sero Diagnosis of Syphilis S.Afr. J. Sex. Trans. Dis. June 1982; Vol. 2 No. 1:7-10.
25. Young C.N., Candidal Vaginitis. S.Afr. J. Sex. Trans. Dis. Dec. 1982; 2:30-33.
26. Hoosen A.A., et al. The Incidence of Selective Vaginal Infections Among Pregnant Urban Blacks. S.Afr. Med. J. 1981; 59:827.
27. Robins-Browne et al - Antibiotic Susceptibility of N.Gonorrhoea Isolates in Johannesburg, S.Afr.Med J. 1978; 54:601.
28. Coovadia et al Antimicrobial Susceptibility of N.gonorrhoea Isolates in Durban, South Africa. B.J. Vener.Dis. 1984; 60:306-8.
29. Ballard R.C., Duncan M O, Problems in the Management of Sexually Transmitted Diseases in S.Africa, S.Afr.Med.J. 1983; 64:1083-86.
30. Coetzee G.J. et al, The Valuation of Rosaxican in the Evaluation of Gonorrhoea in Cape Town. Proceeding of the 2nd International Congress of S.T.D. in Southern Africa 1985.

31. Schacter J., Clinical Spectrum of Sexually Transmitted Chlamydial Infection, Proceeding of 2nd International Congress of Sexually Transmitted Diseases in Southern Africa : Cape Town 1985.
32. Duncan M O. et al Recent Advances in the Management of Chancroid in Africa, Proceedings of the 2nd International Congress of S.T.D. in Southern Africa 1985.
33. Kinghorn G.R. et al, Efficacy of Oral Treatment with Acyclovir and Cotrimaxozole in 1st Episode Genital Herpes. Genitourin. Med. 1986; 62:33-37.
34. Robinson G.E. et al, the Changing Pattern of Sexually Transmitted Disease in Adolescent Girls. Genitourin. Med. 1985; 61:130-132.
35. Forder A.A., Opening Address, Proceedings of 2nd International Congress of S.T.D. in Southern Africa; Cape Town 1985.



PRIMARY
SYPHILIS
clean looking
ulcer



PRIMARY
SYPHILIS
indurated ulcer

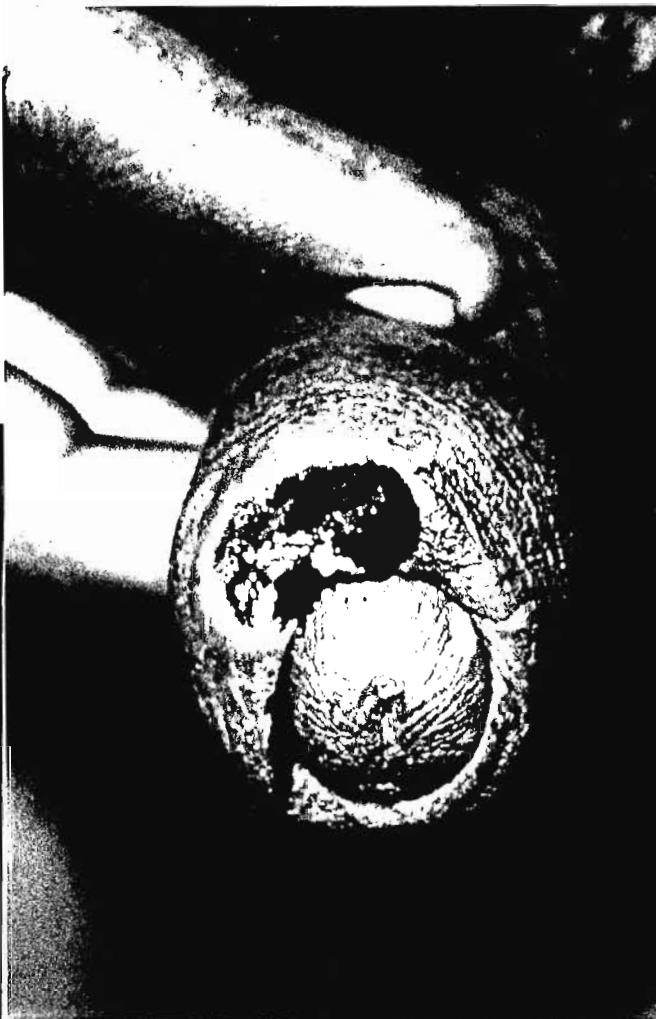


PRIMARY
SYPHILIS
early ulcer

CHANCROID



three
common ulcers

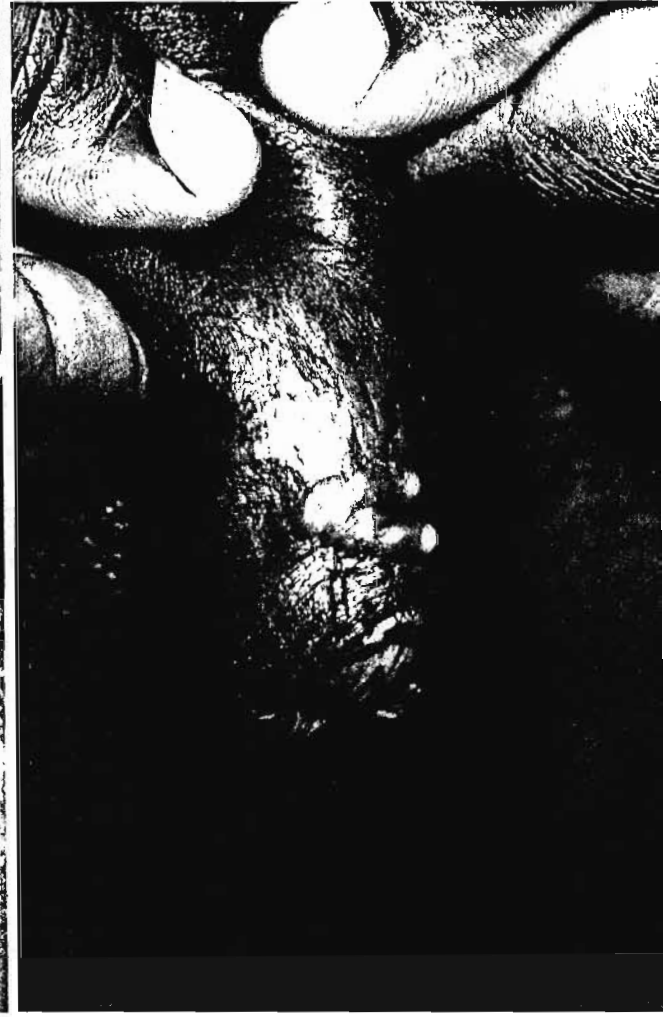


CHANCROID
on treatment with
cotrimaxozole



serial studies
one week apart





HERPES GENITALIA

LYMPHOGRANULOMA VENEREUM

healed primary lesion

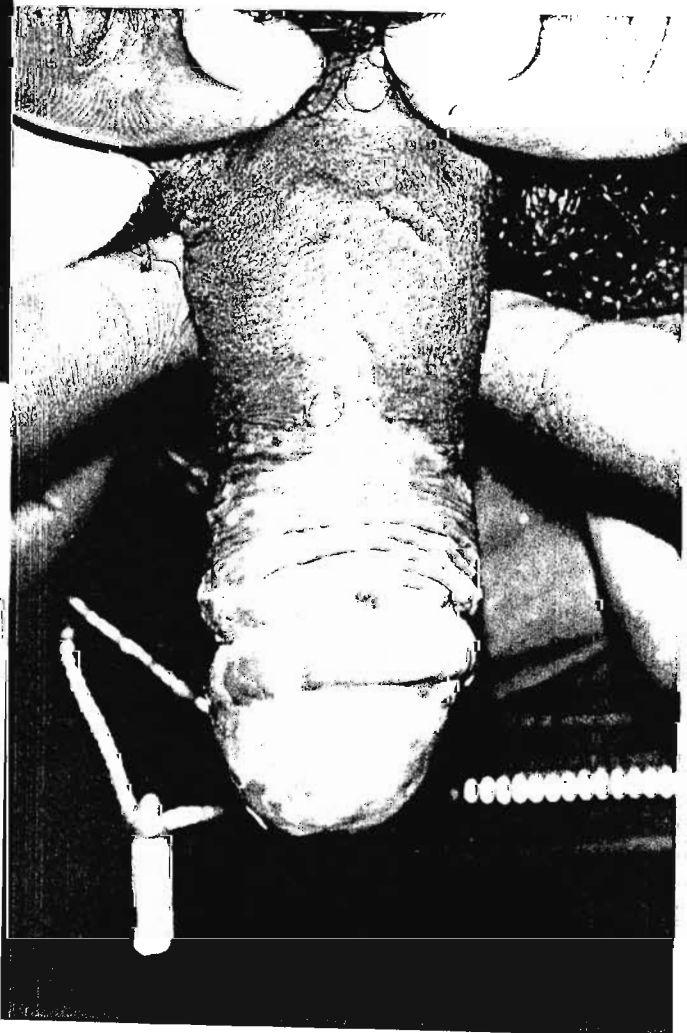
.....>

suppurative lymphadenopathy

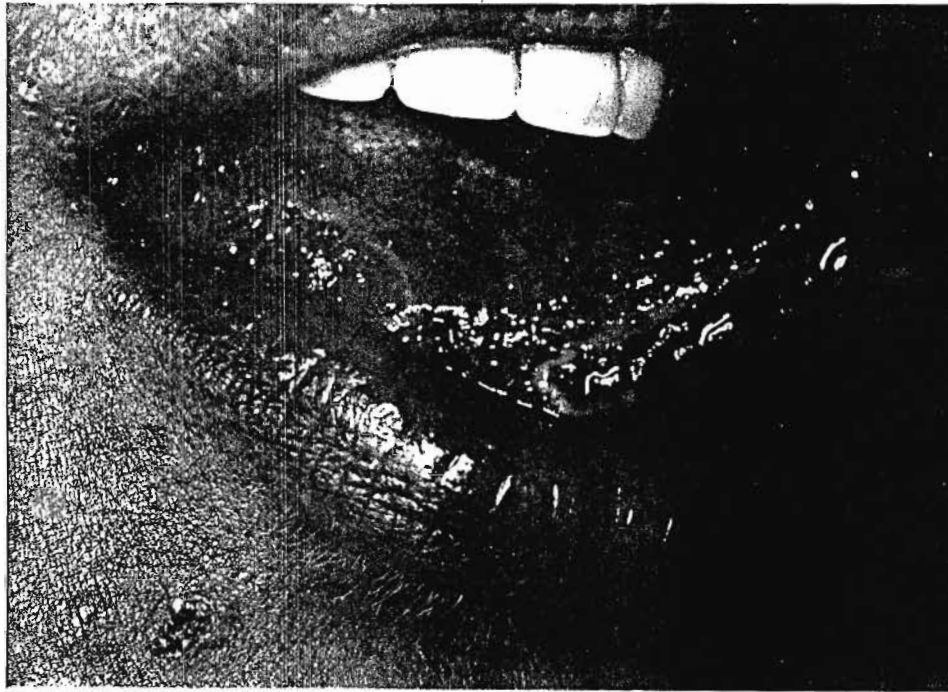


EROSIVE BALANO-POSTHITIS

.....>

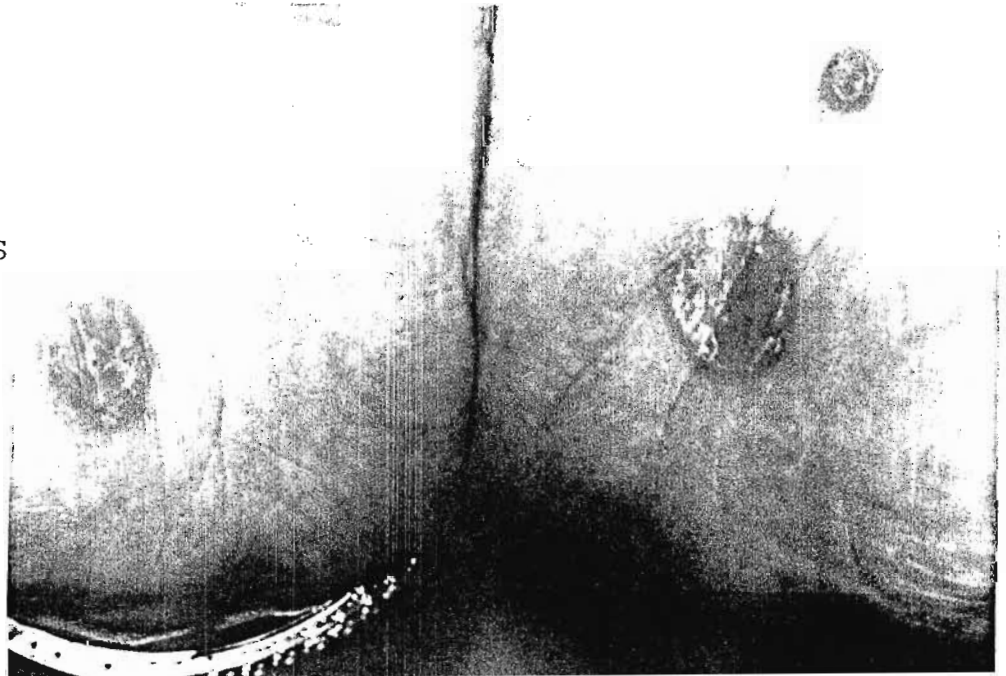


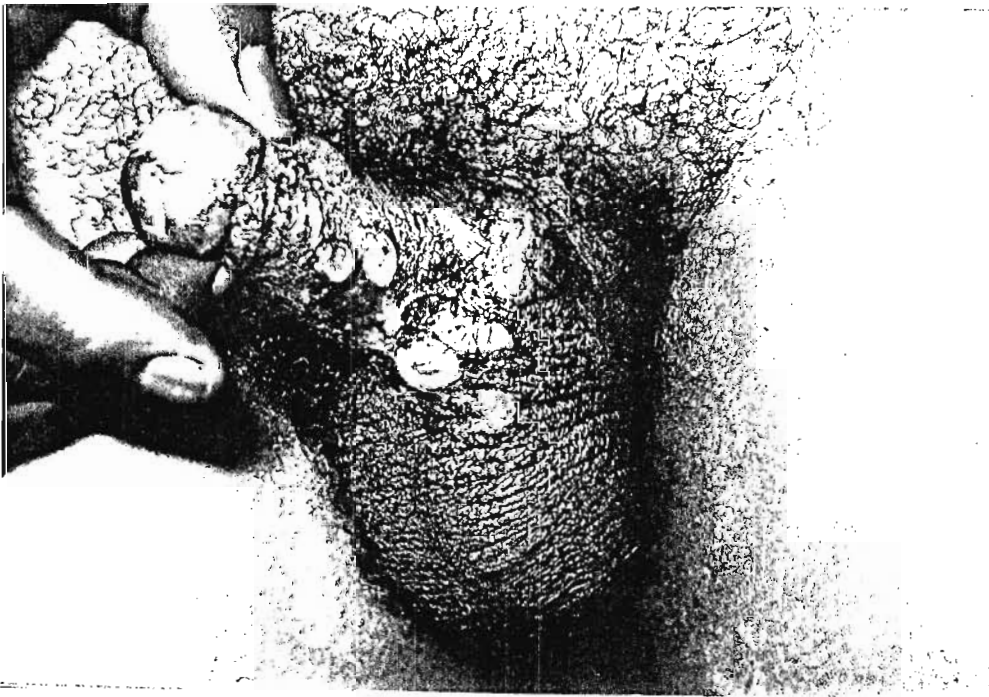
SECONDARY
SYPHILIS
before treatment



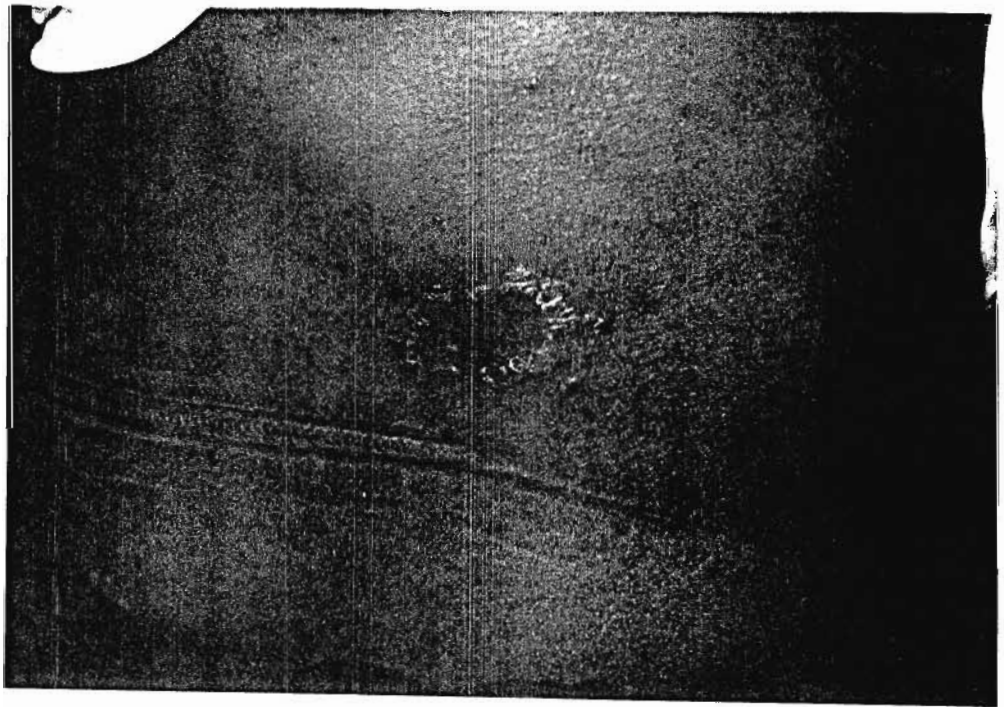
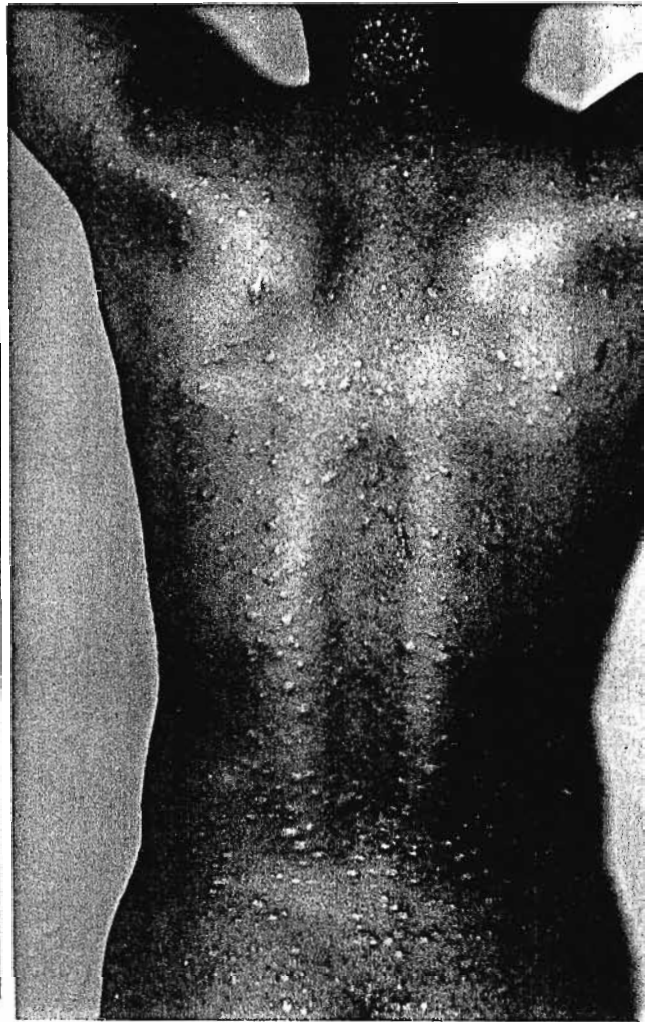
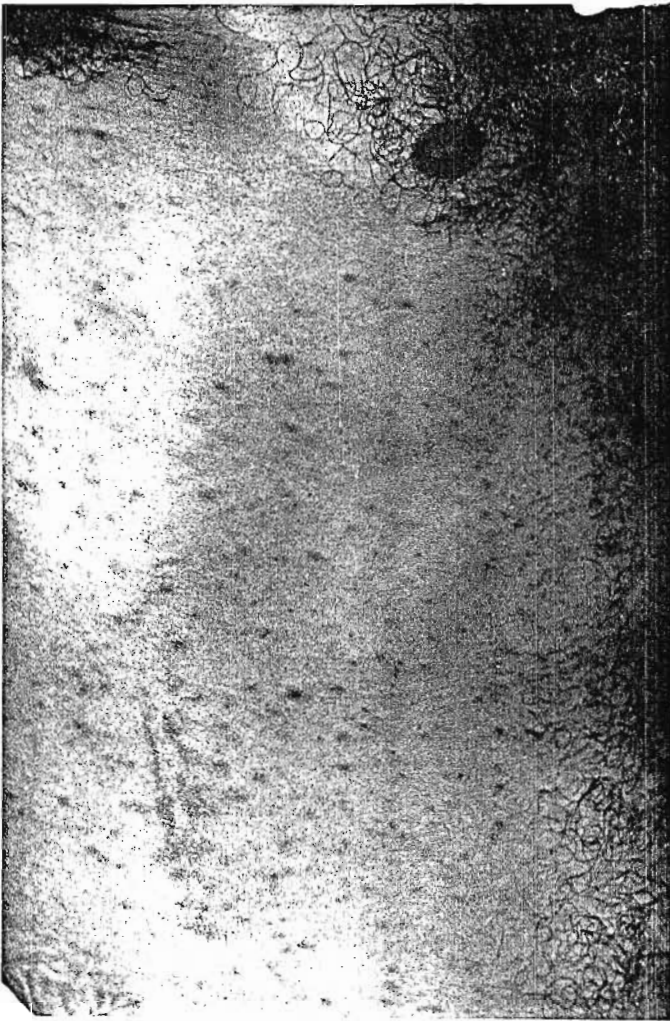
after treatment
1 week later

rash of
SECONDARY
SYPHILIS
palms

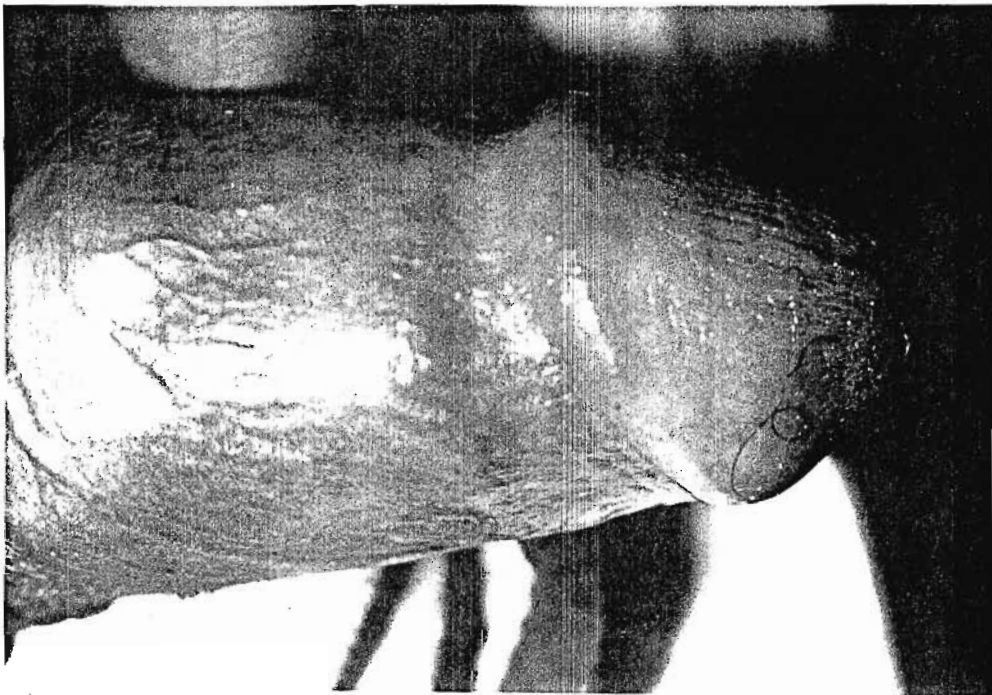




SECONDARY SYPHILIS - CONDYLOMATA LATA



SECONDARY SYPHILIS - SKIN RASH



CONDYLOMATA ACUMINITA before and after treatment