7 Genitourinary Medicine Services

A Renton, S Hawkes, M Hickman, E Claydon, H Ward, D Taylor-Robinson

1 Summary

This chapter addresses the need for genitourinary medicine (GUM) services, the promotion of sexual health and diagnosis and treatment of sexually transmitted diseases (STDs), excluding HIV and AIDS.

Sexually transmitted diseases – categories and definitions

- A wide range of conditions present to GUM clinics. These conditions may be classified according to the symptoms and signs (syndromically), according to causative agents (for infectious STDs) and according to the long-term sequelae of the conditions.
- The most useful existing classification scheme is that used to report clinic activity to the Department of Health on the KC60 statistical return. This scheme uses information describing syndromic features and causative organisms to classify cases. The scheme is especially useful for infectious conditions. However a substantial proportion of individuals presenting to GUM services do not have an infectious condition. These individuals may be attending, for example with psychosexual problems, or merely for a check-up. Although within some clinics there is provision for allocating separate KC60 codes to different non-infectious conditions and thus disaggregating this important area of activity, these codes vary from clinic to clinic.

Incidence and prevalence of genitourinary conditions and risk behaviours for acquisition of sexually transmitted infections

- The principal source of information on the frequency and occurrence of STDs is derived from a statistical return from GUM clinics to the DOH (KC60). Other possible information sources are described – but none offer data that can be used at a local level.
- Allocation of individuals attending STD clinics to district of residence data is not easy as the KC60 does not record district, and because extensive cross-boundary flows may occur. The paucity of information attributable to district populations is highlighted throughout this chapter and urgently needs to be addressed.
- During 1993/94 over 45 000 new episodes were recorded at 225 STD clinics in England and Wales – corresponding to one in 50 of the population aged 16–64.
- Most GUM clinics are small – over half record less than 1500 episodes a year and 90% recording less than 5000. There is considerable variation in attendance rates between regions, with the highest rate in clinics located in the North Thames RHAs, approximately three times that found in the West Midlands. While the majority of DHAs have one local GUM clinic, there are still a few districts without a GUM clinic. The difference between regions varies less generally for the viral and chronic infections, such as genital

warts and herpes simplex virus. Very large differences occur between DHAs in rates of initial contacts. However these largely reflect differences in the location of clinics.

- About one-third of all new contacts in GUM clinics are classified as D category under the KC60 scheme. This represents individuals attending for one or more of the many different services or problems catered for by GUM services, such as counselling, treatment of rare conditions, sexual health screening, or family planning. It is important therefore that providers are aware of the different types of services offered by the local GUM clinic and of which types are included in the 'catch-all codes' in order to interpret the activity data. The breakdown of GUM clinic activity in the UK in 1990/91 is shown in Figure 1.

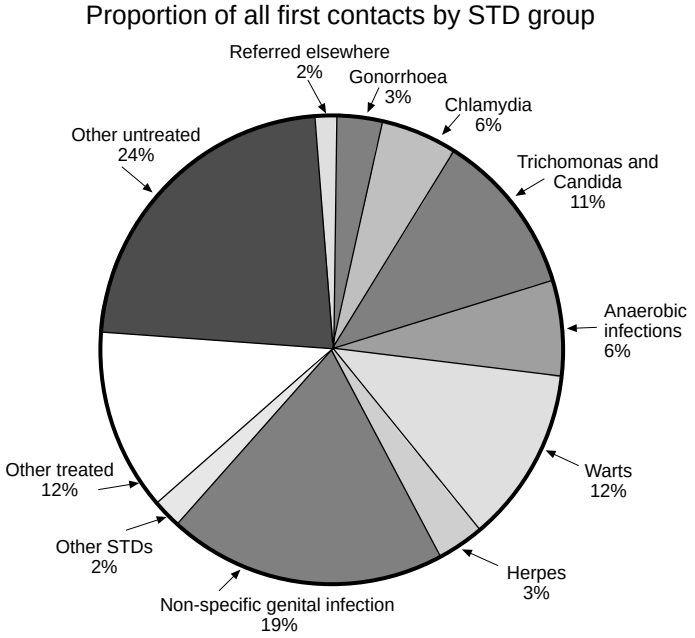

Figure 1: Breakdown of GUM clinic activity in the UK in 1990–91 across KC60 categories.

- The reported incidence of STDs has changed markedly over time. Gonococcal infections were declining in importance over the period 1976 to 1986, the decline accelerating in 1985/86. It is important to note that the fall in gonorrhoea pre-dated recognition of HIV infection. In women *Trichomonas vaginalis* infections also declined. Over the same period the number of diagnoses of genital warts or genital herpes increased substantially. Several explanations can be offered for these trends, including improved diagnosis and treatment of bacterial STDs, changes in sexual behaviour and greater ascertainment of asymptomatic disease. However the extent to which these different explanations account for the observed trends is not known.
- Sexually transmitted diseases mostly affect young people with the bulk of cases occurring in women aged 16–24 years and in men aged 20–29 years. In women the rates of initial contacts among those below 16 years (age of legal consent) are higher than rates in women over 45 years. It follows therefore that GUM services must be acceptable to young sexually active people and that other services sought by young people need to provide advice and information on sexual health and the availability of GUM services.
- People with STDs presenting to GUM clinics may represent the tip of the iceberg of sexually transmitted infection. Unfortunately most available prevalence surveys have small sample sizes and the samples were not selected randomly from the population. They do suggest however that young age is associated with an increased risk of infection and that the difference between asymptomatic and symptomatic infection can be large. Of course not all asymptomatic infection will lead to complications but clearly if untreated the probability of transmission to others remains. Further investigation of STD prevalence via the use of local surveys is needed.

Services available

- Good GUM services remain the cornerstone of any strategy aiming to treat and prevent STDs. These services are based on three key principles:
  a) that they should be open access
  b) free at the point of delivery
  c) confidential.
- Although GUM services represent the principal place of management of people with genitourinary problems, such people may also be managed in a variety of other settings within the health service such as by their general practitioner (GP), ante-natal or family planning clinics. It is necessary to develop a sexual health strategy that encompasses different services and aims to improve co-ordination and collaboration between them. At present there is no method for assessing what proportions of STDs are treated in GUM clinics.
- By now most if not all districts should have a local GUM clinic, or be opening one shortly. If not then need is almost certainly being unmet and serious consideration should be given now to funding a new GUM clinic.
- The central pillars of the GUM service have traditionally been the provision of facilities for the early diagnosis and treatment of individuals with sexually transmitted infections and the contact tracing and appropriate management of their sexual partners. The decline in the relative incidence of the curable bacterial STDs and the increased occurrence of chronic and incurable STDs has been accompanied by an expanding emphasis on primary prevention.
- Key elements of primary prevention within GUM clinics include:
  a) health education and the promotion of healthy sexual lifestyles
  b) provision of condoms
  c) contact tracing services and the provision of appropriate diagnostic and treatment facilities for those contacts traced
  d) the provision of hepatitis B vaccination for appropriate groups.

  All clinic staff must have a role in prevention and health promotion activities although these activities are a particular responsibility of health advisors.
- Key elements of clinical provision within GUM clinics include:
  a) appropriate mix of trained staff
  b) on-site diagnostic laboratory services for instant diagnosis of some GU conditions
  c) access to a microbiological service for diagnosis that requires confirmation and cannot be carried out in the clinic laboratory
  d) facilities and drugs for treatment
  e) contact tracing and follow-up services
  f) provision for referral to other specialties.

  In addition facilities for the management of women with abnormal smears, psychosexual services and contraceptive advice are increasingly being offered within GUM services.
- Many sexually transmitted infections may be asymptomatic and may lead to serious sequelae associated with chronic infection. Therefore the role of the GUM service in screening self-referred individuals who may be asymptomatic but perceive themselves to be at risk of infection is very important.

Effectiveness of services

- Existing evidence for the effectiveness of STD interventions relates primarily to the efficacy of drug treatments which is in general of high quality. Very little information is available on the effectiveness of other key activities involved in the control of STDs such as contact tracing and health education. One exception is hepatitis B vaccination where there is good evidence for its effectiveness, although it is apparently not reaching those at greatest risk.

Models of care

- There is one basic model of care that covers the whole of GUM services in the UK; the provision in each district of at least one specialist GUM clinic within an acute unit or, less frequently, attached to a community unit.
- In recent years there has been a shift away from a disease based approach (which underpins GUM) towards the broader concept of sexual health. This shift has yet to be fully reflected in the provision of services. A few districts have integrated sexual health services where GUM, family planning, termination of pregnancy, psychosexual counselling and related services are provided in one clinic. In other areas there is no unified service but greater links are being established between community gynaecology and GUM. Family planning clinics can also provide screening for sexually transmitted organisms, such as *Chlamydia trachromatis*.
- There is a clear case for better planning of services and liaison between sectors. Primary prevention including health education, condom distribution and hepatitis B vaccination is carried out within GUM clinics but also needs to be co-ordinated across other services within the district. This reflects the widening role of GUM into sexual health which must be carried forward into district models of care where either GUM clinics are integrated with other sites in the delivery of services, or the management of sexual health services is integrated through common protocols and shared care schemes.
- The potential role of GUM services in wider community based screening for STDs needs to be considered. In the first instance questions relating to the potential value of extending screening beyond individuals who present themselves to clinics will need to be addressed at the national rather than district level.

Outcome measures and targets

- National targets for a reduction in gonorrhoea incidence were set in the Government's strategy The Health of the Nation and have been achieved.
- Further development of appropriate outcome measures and targets will require the enhancement of surveillance and information systems from GUM clinics and laboratories. The installation of GUM clinic computers provides the opportunity for collating data at a population level and several regions are piloting new information systems.

Information and research priorities

- Information systems require further development to allow geographical attribution of individuals with STD infections.
- Currently little is known about the amount of STDs diagnosed and treated outside GUM. This must change as districts develop more integrated sexual health services and more extensive screening of people in other settings is carried out.
- Information derived from clinic activity will need to be supplemented by the findings of new sample surveys which establish the prevalence of STDs in different populations.

- Studies are needed into the benefits and effectiveness of selected preventive interventions, including population screening or universal screening for STDs in asymptomatic women.
- Models of shared care and education and the cost-effectiveness of treating chronic viral STDs (excluding HIV) outside GUM clinics needs to be assessed.
- Hepatitis B is currently the only sexually transmitted virus for which an effective vaccine is available but there is evidence that coverage is low. Studies are required to explain why vaccination is not reaching those people who are at highest risk of infection, and to make practicable proposals on how this can be changed.
- Sexual health services are becoming integrated. It is important to establish what role GUM physicians have in the education of other health care workers in the recognition of STDs and the development of local algorithms for the management of STDs outside GUM clinics. Also whether there is scope for managing chronic STDs in primary care with the advice of GUM consultants, following a similar model of other chronic diseases.

2 Introduction

Genitourinary medicine is one part of the services concerned with the sexual health of the population and is one of the key Health of the Nation areas. Sexual health like the WHO definition of health is not merely the absence of disease and any definition must recognize both the positive and negative consequences of sexual activity. Sexual health can be regarded as:

> the enjoyment of sexual activity of one's choice without causing or suffering physical or mental harm.

The undesired results of sexual activity include unwanted pregnancies and the transmission of STDs, which if untreated can have long-term consequences such as infertility, ectopic pregnancy and genital cancers.

Health authorities implementing the Health of the Nation strategy will need to plan integrated and complementary services and to develop alliances to promote sexual health across traditional boundaries. Genitourinary medicine services will play a key role within this strategy and it is important to be aware that:

- an integrated sexual health services package incorporates other health care providers (e.g. family planning, obstetrics and gynaecology, general practice), local government (e.g. health education in schools and management of social services homes) and voluntary organizations (e.g. provision and targeting of sex education in the population)
- complementarity between GUM and other sexual health services must be a primary concern of those commissioning services.

Though the models of care section focuses on sexual health services, the role of non-GUM services in the delivery of sexual health must be the subject of other needs assessment exercises. Moreover planning the future delivery of sexual health services has been addressed by a joint working group.

GUM services have a split role and responsibilities. First they have a responsibility for the alleviation of disease in individuals. Second they fulfil an important public health function to control sexually transmitted infections in the population, through the rapid diagnosis and treatment of symptomatic individuals, screening and treating individuals for asymptomatic infection, contact tracing, diagnosis and treatment of infection in sexual partners and provision of health education materials and advice on prevention. Third they

may adopt a further responsibility for promoting and improving the sexual health of the population, through the provision of psychosocial counselling of sexual health problems and family planning.

A brief description of STDs, still the cornerstone of GUM clinics, follows.

3 Categories and definitions

The linkage of sex and disease has a long history, with lurid descriptions of the consequences of amorous excesses going back to the middle ages, if not antiquity.[1] Popular names for STDs can be equally ancient, for instance 'clap' referring to a 'certain inward heat and excoriation of the urethra' was coined in the late 14th century. Most historical descriptions and sexually transmitted epidemics can be attributed to gonorrhoea or syphilis. Further advances in the definition of STDs and their effective treatment have gone hand in hand with the development of microbiological techniques.

Sexually transmitted disease are described in three ways.

- Level 1 Acute clinical symptoms – early signs of infection.
- Level 2 Infectious organisms – causative agent.
- Level 3 Complications – long-term sequalae.

First the clinical symptoms of patients presenting to GUM services fall into a few well recognized types or syndromes (Table 1). These may be caused by a number of infectious agents, or may be due to non-infectious causes. Deciding the correct treatment for a patient often will require the microbiological diagnosis or exclusion of possible causes.

Table 1: Common symptoms presenting to genitourinary medicine services

Syndrome	Description
Vulvovaginitis	inflammation, irritation in the vagina or vulval area with or without discharge
Urethritis in men	urethral irritation with or without discharge and pain on passing urine
Genital ulceration/erosion	internal or external
Genital warts	internal or external
Pelvic pain (pelvic inflammatory disease (PID))	with or without vaginal discharge, cervical motion, tenderness and toxic features (e.g. malaise, fever)

Second sexually transmitted infections are not always symptomatic and may only be discovered through microbiological screening. Some infectious agents can be transmitted through other routes, in particular intravenously. The main causative microorganisms are shown in Table 2.

Table 2: Important sexually transmitted pathogenic organisms

Type of organism	Name (disease)
Bacteria	*Treponema pallidum* (syphilis) *Neisseria gonorrhoeae* *Chlamydia trachomatis*
Viruses	*Herpes simplex* Human papilloma (warts) Hepatitis B
Ectoparasites	*Phthirus pubis* (crab louse) *Sarcoptes scabiei* (scabies)
Protozoa	*Trichomonas vaginalis*
Fungus	*Candida albicans*

In addition STDs may lead to chronic symptoms or complications if untreated. The main complications which may also have a non-infectious cause are shown in Box 1.

Box 1: Common long-term complications of STDs

- Tubal infertility
- Miscarriage
- Ectopic pregnancy
- Ano-genital cancer
- Chronic hepatitis

A more complete list of STD organisms, together with a description of the common features of acute infection and chronic sequelae, is given in Appendix VI.

Classification of presenting conditions

The principal source of information on GUM clinic activity and STD incidence in England and Wales combines data on syndrome, organism, plus treatment of suspected disease (i.e. clinical diagnosis without microbiological confirmation). Known as the KC60 it is a statistical return made quarterly to the DOH from each GUM clinic. An abridged list of the main conditions are shown in Table 3. A complete list with the recent revisions is shown in Appendix II.

If a patient is admitted into hospital with an STD or genitourinary condition the diagnosis will be coded under the ICD classification system. The hospital information system (HIS) will be less useful for assessing the STD related health service activity because only a small fraction is dealt with in the inpatient setting. A list of relevant ICD 10 codes is given in Appendix I, in the event that health care commissioners or providers wish to monitor GU related hospital inpatient activity.

Much of the information presented on the frequency of occurrence of these infections in section 4 will be based on this summary KC60 classification. The KC60 also provides data on whether selected STDs were acquired homosexually. However not all GUM clinics submit data on acquisition and a review of those that did submit data found it to be highly variable and unlikely to be accurate. The KC60 data on homosexual acquisition, therefore, have not been used. Commissioners and providers wishing to monitor STDs by sexual acquisition will need to review data quality in their local GUM clinic and establish the policy on sexual history taking and routine data collection.

Table 3: The KC60 classification of STD workload

KC60 code	Condition	Description[a]	Intensity[b]
A1–9	Syphilis	genital ulcers plus complex multi-system chronic sequelae	3
B1.1–4a,5	Gonorrhoea	urethritis in men, vulvovaginitis in women	1
C4a–e	Chlamydia	cervicitis and vulvovaginitis in women (though usually asymptomatic), urethritis in men	1
C4h–i	Non-specific genital infection	urethritis of unknown cause in men only (though Chlamydia may not be tested for)	1
C6a, C7a	Trichomonas and Candidosis	vulvovaginitis	1
C6b–c,7b	Vaginosis and other anaerobic infections	mostly vulvovaginitis (some infection in men)	1
B1.4b–c, C4f–g	Pelvic inflammatory disease (PID)	pelvic pain with or without discharge of gonoccocal, chlamydial or unknown origin	3
C11a–b	Genital warts		2
C10a–b	Herpes simplex	ulceration	2
C13a–b	Hepatitis	serologically confirmed	3
C1–3, C5, C8–9[c]	Other specific STDs and complications	ulcers, infestation and other complications	1/2
D2	Any other condition requiring treatment		
D3	Other episode not requiring treatment		
D4	Other conditions referred elsewhere		

[a] See Table 1.
[b] 'Intensity' refers to service need: 1 on the spot diagnosis, antibiotic treatment, and contact tracing; 2 multiple outpatient visits; 3 may require inpatient management.
[c] Chancroid, donovanosis, scabies, pediculosis, LGV (lymphogranuloma venereum) or sexually acquired arthritis.

4 Incidence and prevalence of genitourinary conditions and risk behaviours for acquisition of sexually transmitted infections

In 1993/94 over 45 000 new episodes were recorded at 225 GUM clinics in England and Wales. Roughly this corresponds to one in 50 of the 16–64 year-old population attending a GUM clinic. Even though over one-third of people who attend are found not to have a STD, treatable STDs at GUM clinics represent only the tip of the iceberg of sexually transmitted infections. Most GUM clinics are small – with over half recording less than 1500 episodes a year and 90% recording less than 5000. The number of GUM clinics in

each RHA is shown in Table 4 on page 408. Inner-city DHAs can have two or three local GUM clinics (which provide a service to a much wider population). While the majority of DHAs have one local GUM clinic, there are still a few districts without one.

Sources of information

There are several other sources of data that may allow an estimation of the incidence or prevalence of genitourinary conditions in the population. Unfortunately the value and interest to commissioners and providers may be only in working on improving them.

- Department of Health KC60 returns on GUM clinic activity.
- Department of Health KH09 returns on GUM clinic activity.
- Special prevalence surveys.
- Public Health Laboratory Service (PHLS) laboratory reporting systems.
- General practice morbidity data.

All GUM clinics are required to report numbers of initial contacts with patients by diagnostic group on a quarterly basis. The figures are used to estimate the number of incident cases occurring in the population. The baseline data do not refer to individuals. A patient may have several episodes recorded at one time corresponding to separate STDs or complications and may have the same STD episode recorded throughout the year corresponding to re-infections.

Aggregate data from this reporting system are published by the DOH and commented on by the Communicable Diseases Surveillance Centre (CDSC). No useful breakdowns of these data have been available below the national level (apart from regional total STD clinic attendances) to date. District of residence data are not collected by the KC60. Cross-boundary flows in GUM service utilization, between health agencies and regions, can be considerable and currently are not possible to track. It is not possible therefore to reach a valid assessment of the actual disease burden falling on any particular district population. In addition there is evidence of variation between clinics in how cases are recorded and classified.

Nationally however the KC60 data represent the most useful and comprehensive information available on the occurrence of GU problems in the population. Districts wishing to gain a wider appreciation of the size and nature of the burden of genitourinary disease in their locality should request clinics within their geographical areas to provide copies of KC60 returns and should work collaboratively with the clinics, and neighbouring health agencies to interpret these data. The continuing implementation of the recommendation of the Monks' Report[2] that GUM clinic information be computerized will provide new opportunities for enhancing information available for needs assessment and planning of GUM services.

Genitourinary conditions seen in GUM clinics in the UK

Analysis is primarily at the national level and by RHA of report (not residence). It aims to show the range of information which is available and the magnitude of the problem. Estimates of incidence applicable directly to local populations are not available.

The distribution of initial contacts has changed markedly over time. Figures 2 and 3 show the trends in number of total attendances at GUM clinics in the UK between 1976 and 1992 for males and females.

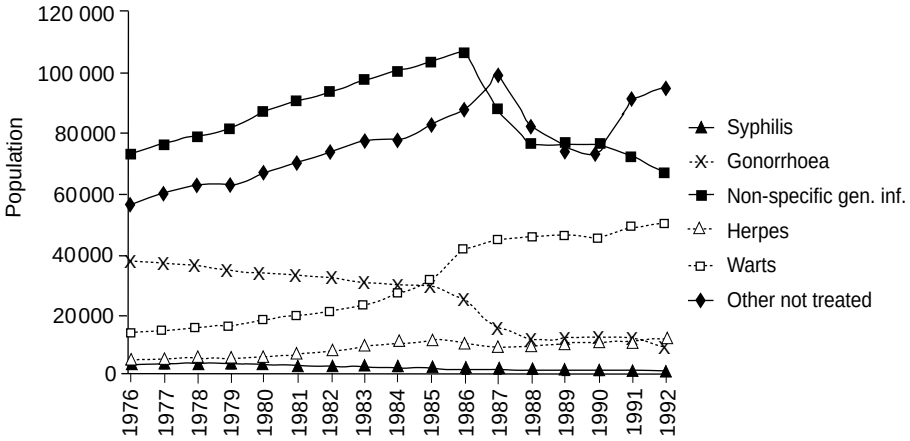

Figure 2: Initial contacts seen in GUM clinics in the UK 1976–92: selected diagnoses: male.

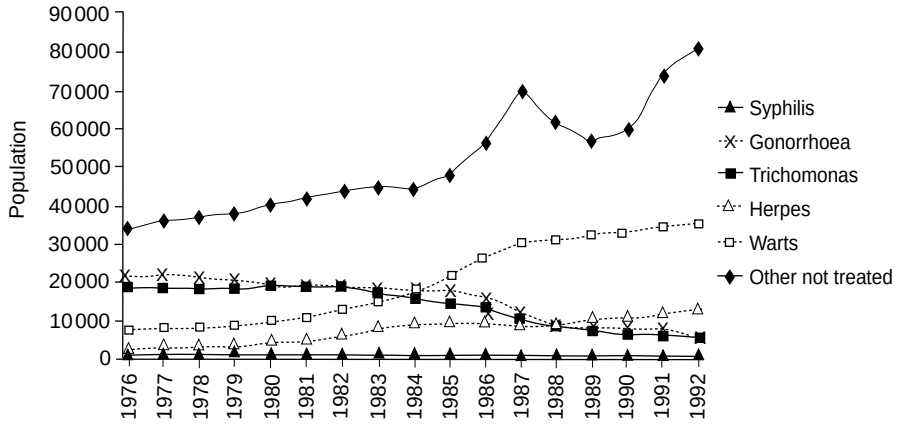

Figure 3: Initial contacts seen in GUM clinics in the UK 1976–92: selected diagnoses: female.

Infectious syphilis is very rare. Gonococcal infections were declining in importance over the period 1976 to 1986 and the decline accelerated in 1985/86. In women trichomoniasis infections also declined. Over the same period the number of initial contacts in whom a diagnosis of genital warts or genital herpes was made increased substantially. Concomitant increases in non-specific genital infection in males (mainly non-gonococcal urethritis) and patients attending with other conditions for which no treatment was required also increased.

Several explanations can be offered for these trends. Bacterial STDs can be controlled effectively through the early diagnosis and effective treatment of index cases and their sexual partners. It may be therefore that improved clinical services throughout the 1970s led to a reduction in the average duration of infectivity of this group of STDs with a consequent decline in incidence. In addition bacterial STDs have declined in incidence as a consequence of changes in sexual behaviour within the population, in particular in response to AIDS awareness, and campaigns promoting safer sex. Indeed this notion has been enshrined within the Health of the Nation strategy setting a target for a reduction in gonorrhoea incidence within the population. This target was set, not to reflect the public health importance of gonorrhoea itself, but because gonorrhoea incidence nationally was measurable, and in the belief that gonorrhoea incidence provided a good indicator of underlying 'unsafe' sexual behaviour within the population. It is important to note that the beginnings of the

decline in gonorrhoea predated the recognition of AIDS/HIV infection by several years, although the response to the latter may be responsible for the acceleration in decline.

The apparent rise in incidence of warts and genital herpes over the time period is clearly not explicable by a move towards safer sex within the population. Initial contacts with untreated non-STD conditions show a similar pattern suggesting that at least for some of these diseases the increase might be accounted for by ascertainment of asymptomatic disease among the increasing overall number of attenders, a feature of greater access to GUM services. Attendance increased by roughly 50% in men over the time period and effectively doubled in women. However an increase in attendance of the order of 50–75% may not explain entirely the four- to five-fold increase in genital warts or the rise in genital herpes seen over the period, although it may explain the increase in non-gonococcal urethritis.

Two further explanations have been offered for the rise in incidence of the viral STDs. First that the different STDs are associated with different types of sexual behaviour, which if they change in frequency will not have any significant effect on the occurrence of other STDs. Second that the viral diseases are in an epidemic phase and have not yet reached a stable endemic equilibrium incidence within the population. The extent to which these different explanations account for the observed trends is not known.

Incidence estimates for genitourinary conditions based on GUM clinic attendance

Estimates of the crude incidence of the important KC60 based groupings of genitourinary conditions averaged for the years 1990 and 1991 are shown in Table 4. An overall attendance rate of over 2% (one in 50) is seen for men and women aged 16–64 years in the UK in 1991 and 1992. There is considerable variation in attendance rates between regions, with the highest rate in clinics located in the North Thames RHAs, approximately three times that found in the West Midlands. It is important to remember that variations between RHAs reflect cross-boundary flow, the number of clinics located within the region and differences in diagnostic or coding practice. The difference between regions varies less for the viral and chronic infections, such as genital warts and herpes simplex virus. The relative frequency of the different conditions in the UK is shown in Figure 1, page 398.

Two of the largest categories of patients are those classified as having other untreated conditions, or treated for any reason other than those classified in the STD categories. Thus one-third of all new contacts in GUM clinics are unspecified, though they could refer to the many different services or problems catered for by GUM, such as counselling, treatment of rare conditions, sexual health screening, family planning, etc. It is important therefore that providers are aware of the different types of services offered by the local GUM clinic and of which are included in the 'catch-all codes' in order to interpret the activity data.

The most common specific diagnoses (excluding non-specific genital infections in men) are candidal infection and warts. In the case of chlamydiae infection it is important to appreciate that the proportion of initial contacts to whom this diagnosis is assigned will be greatly influenced by the availability and extent of testing for *Chlamydia trachomatis* in clinics.

Variation between districts within regions

It is difficult on the basis of current knowledge to explain the observed regional variation. It may reflect real differences in the geographic incidence of specific STDs. Alternatively regional differences may reflect differences in the availability and location of clinics, or health seeking behaviour across the country. Very large differences occur between DHAs in rates of initial contacts. This is shown for a single RHA in Table 5 and largely reflect differences in access and clinic location. The differences cannot be used to reflect differences in population incidence of STD; although STD incidence is likely to be geographically heterogenous it is not possible to say by how much.

Table 4: Initial contacts by KC60 diagnosis per 100 000 population aged 16–64 in 1990/91

KC60 grouping	UK	N Thames East	N Thames West	S Thames East	S Thames West	E Anglia	Mersey	Northern	N Western	Oxford	S Western	Trent	Western	W Midlands	Yorkshire
No. of GUM clinics	205	20	15	18	11	9	10	14	20	10	15	16	12	21	14
Syphilis	1	2	3	3	2	0	1	1	1	1	1	1	0	1	1
Gonorrhoea	65	136	111	115	36	24	25	29	62	49	47	66	34	49	65
Chlamydia	125	182	125	174	72	87	77	109	131	112	140	158	105	116	100
Trichomonas and Candida	240	508	438	382	227	184	101	136	130	289	152	228	242	128	169
Anaerobic infections	139	196	182	260	142	108	70	86	81	164	108	202	120	79	111
Warts	267	399	355	337	219	246	229	226	224	257	238	303	266	169	241
Herpes	70	122	149	101	64	59	37	34	42	64	64	70	82	31	50
Non-specific genital infection	421	794	955	708	433	367	233	237	213	367	271	367	324	206	355
Other specific STDs	51	105	97	84	54	30	39	32	25	37	28	59	39	24	54
Other treated conditions	260	505	657	261	239	163	243	77	170	582	124	251	166	98	130
Other untreated conditions	498	1020	967	695	357	489	423	330	297	482	345	472	432	280	342
Other referred elsewhere	36	89	91	55	36	30	19	43	10	36	18	35	17	16	9
All conditions	2173	4058	4130	3175	1881	1787	1497	1340	1386	2440	1536	2212	1827	1197	1627

Table 5: Initial contacts rates per 100 000 population aged 16–64, for a single RHA and highest and lowest district rates (average for years 1990 and 1991)

	Males			Females		
KC60 grouping	**Average RHA rate per 100 000**	**Highest district rate per 100 000**	**Lowest district rate per 100 000**	**Average RHA rate per 100 000**	**Highest district rate per 100 000**	**Lowest district rate per 100 000**
Gonorrhoea (excluding epidemiological treatment)	131	626	3	58	200	2
Non-specific genital infection	829	2867	18	–	–	–
Warts (first attack)	209	782	33	170	528	41
Herpes (first attack)	75	366	2	73	285	3
Pediculosis and scabies	55	234	1	18	62	0
Other untreated	1083	6256	69	868	4310	46
All conditions	4392	6558	165	3528	7304	186

Districts with relatively low contact rates will need to establish whether these rates reflect problems of access. In addition districts will have to collaborate with their neighbours and the nearest inner-city GUM clinics in order to establish the distribution of clinics serving their population.

Age distribution of initial contacts

The age distribution of individuals with new episodes of STDs is shown in Table 6. A characteristic pattern is seen: the bulk of cases in women occurs in those aged 16–24 years. In men the distribution is shifted to the right by about five years; the bulk of cases occurring in those aged 20–29. In women the rates of initial contacts among those below 16 years (age of legal consent) are higher than the rates in women over 45 years, for all the diagnoses shown.

This has important implications for service configuration. Genitourinary medicine services must be acceptable and accessible to young sexually active people. Equally services sought by young people such as school nurses, primary health care team, family planning, accident and emergency (A and E) and social services, need to be co-ordinated in order to advise individuals (who may still be at school) of the availability of GUM services and to encourage them to attend clinics where appropriate.

Table 6: Age-specific rates per 100 000: initial contacts with GUM services by diagnosis in the UK 1990/91

Infection	Females						Males					
	rate per 100 000						rate per 100 000					
	<16	16–19	20–24	25–34	35–44	>=45	<16	16–19	20–24	25–34	35–44	>=45
Syphilis	0.2	0.6	1.7	1.1	0.5	0.1	0.1	0.7	2.1	2.9	1.3	0.0
Gonorrhoea	7.7	156.0	128.0	43.0	7.2	0.6	3.0	101.0	216.0	126.0	26.9	0.4
Herpes (first attack)	5.0	105.0	136.0	62.9	17.5	2.6	0.9	28.0	97.7	73.3	28.0	5.1
Warts (first attack)	19.7	549.0	514.0	160.0	41.2	5.6	4.9	219.0	624.0	286.0	72.5	12.6
Chlamydia	17.4	393.0	380.0	113.0	18.5	1.8	2.5	123.0	294.0	151.0	35.6	4.7

Clearly the age-specific rates of STD occurrence in the peak age groups are several times that for the whole population aged 16–64. Because the KC60 data are contact rather than person based, it is difficult to estimate the incidence rate of any STD. However there is little doubt that it exceeds 1% per year. The data are not generalizable to individual districts, nor are they available for individual DHAs.

KH09 data

As with other outpatient clinics, GUM clinics collect information on the number of clinic sessions held and the total number of attendances: the KH09 statistical return. KH09 could serve to interpret the KC60 activity between clinics, for example, by comparing the ratio of total KC60 contacts to the overall number of attendances. However in a recent study commissioned by the DOH and carried out by the Policy Studies Institute[3] there were many problems found in comparing KH09 data between clinics. Clinic sessions were defined in different ways: some recorded male and female clinics running concurrently as one session, whilst others recorded it as two clinic sessions and in some clinics telephone consultations were included in the overall workload returns. When districts are assessing the workload of clinics in their area it will be imperative for them to know the method by which the workload is measured before valid comparisons can be made. The KH09 for GUM clinics is not published separately but aggregated with other hospital outpatient returns. Districts therefore must arrange with their local providers for access to this data source.

Sexually transmitted diseases prevalence surveys

While KC60 data provide reasonable estimates of the incidence of symptomatic disease, they provide little information on the population incidence and prevalence of total infection (asymptomatic and symptomatic) with sexually transmitted pathogens. Estimates of STD prevalence in a district can be gleaned from information already collected in *ad hoc* surveys of STD prevalence which have been carried out both in STD clinic and non-clinic settings. The results of the most recent of these surveys are presented in Table 7.

It cannot be assumed that these figures are universally valid since the sample sizes are small and not randomly selected from the population but it is of note that many of the surveys give very similar prevalence rates for the asymptomatic carriage of sexually transmitted pathogens. The most common finding in all the surveys is that young age is associated with an increased risk of infection, with the highest prevalence consistently found in young sexually active teenagers.

The difference between asymptomatic and symptomatic infection can be large, suggesting that a very large proportion of the total burden of sexually transmitted infection may remain undiagnosed and asymptomatic. For example approximately 20 000 incident cases of *Chlamydia trachomatis* infection are recorded in the UK annually. Even if it is assumed that all chlamydial infections diagnosed in the clinics occur in women aged 16–30, the figure still represents only three per 1000 women, which in turn represents only 6% of the total caseload (if we assume 5% of women are infected).

Of course not all asymptomatic infection will leading to complications but clearly if untreated the probability of transmission to others remains. Further investigation of STD prevalence via the use of local surveys is needed.

Laboratory reports

Other measures of the prevalence of STDs in a particular district can be compiled from laboratory reports. The only STD which is notifiable under the infectious disease legislation is ophthalmia neonatorum. This was commonly caused by gonococcal disease, transmitted vertically from the mother to child, starting as conjunctivitis in the new born and sometimes leading to blindness. During the 19th century ophthalmia neonatorum occurred in 1 to 15% of infants born in US and European hospitals. However the district prevalence rates for this condition now are so low as to be meaningless for planning services, or for monitoring the prevalence of STDs.

There is a system of voluntary reporting of laboratory data to the PHLS Communicable Disease Surveillance Centre (CDSC) and through the 53 area and regional laboratories which constitute the Public Health Laboratory Service. These collect data on the prevalence of extra-genital *N. gonorrhoeae* and together with the Gonococcus Reference Unit at Bristol carry out specialized typing of strains of gonococci and determine resistance patterns. It must be remembered however that this is a voluntary reporting system and it is recognized that the data set is incomplete and does not refer to district populations. In a recent survey of one region only half of the eligible NHS laboratories reported regularly to the CDSC and samples from one-third of the GUM clinics were tested at laboratories which did not report at all (unpublished).

However steps are being taken to improve laboratory reporting by developing and implementing electronic means of capturing the relevant data from the pathology computer and transferring it to the CDSC (M Catchpole, personal communication). In 1995 the PHLS STD/HIV/AIDS Committee recommended that all gonococcal infection diagnosed by laboratories be reported to the CDSC, in order to provide a more complete picture. The success of this initiative however will depend on the programme to introduce a computerized reporting system.

The data are used by the CDSC in their reports on the epidemiology of STDs nationally. It is not published on a regular basis by area of report, though the CDSC can provide data to individual districts.

Table 7: Summary of results from recent STD prevalence surveys

Investigator	Year	Setting	Sample	Organism	Prevalence (%)	
Ridgway *et al.*[4]	1983	University College Hospital, London	89 women attending for termination of pregnancy	Chlamydia	8	
				Gonorrhoea	1	
				Candida	18	
Southgate *et al.*[5]	1983	General Practice in East London	248 women attending their GP who required a speculum vaginal examination	Chlamydia	8	
				Gonorrhoea	2	
Wood *et al.*[6]	1984	Antenatal clinic, Liverpool	252 women attending for their first clinic visit	Chlamydia	7	
Edet[7]	1988–90	Chatham, Kent	1611 gynaecological patients	Chlamydia (all ages)	6	
				<25	10	
				26–29	5	
				>30	4	
Fish *et al.*[8]	1985	University College Hospital, London	1267 gynaecological patients	Chlamydia (all ages)	4	
				16–20	15	
				21–25	7	
				26–30	3	
				>31	1	
Longhurst *et al.*[9]	1987	Inner-city general practice	169 premenopausal women who required a pelvic examination	Chlamydia	11	
Macauley *et al.*[10]	1989	Manchester	452 women attending family planning clinics	Chlamydia	7	
				Gonorrhoea	3	
				Trichomonas	10	
				Bacterial vaginosis	9	
				Candida	15	
Preece *et al.*[11]	1988–89	Wolverhampton	3309 women in labour attending an obstetric unit	Chlamydia	15	
				<20	8	
				20–24	4	
				25–29	2	
				>30		
Smith *et al.*[12]	1991	Colposcopy clinic and general practice	101 women attending colposcopy clinic; 197 women attending GP for cervical smear		Colposcopy	General practice
				Chlamydia	6	12
				Gonorrhoea	–	1
				Trichomonas	1	3
				Candida	9	17
Blackwell *et al.*[13]	1993	Swansea	400 women attending for a termination	Chlamydia	8	
				Trichomonas	1	
				Bacterial vaginosis	28	
				Candida	24	
Thin *et al.*[14]	1986–87	London GUM and Swansea GUM	121 adolescents (11–18 years) in London and 95 in Swansea		Boys (%)	Girls (%)
					London | Swansea	London | Swansea
				Chlamydia	0 | 18	8 | 9
				Gonorrhoea	23 | 18	17 | 8
				Trichomonas	2 | 0	7 | 0
				Bacterial vaginosis	– | –	13 | 26
				Candida	9 | 18	15 | 19
				Non-specific general infection	49 | 26	25 | 16
				Herpes	4 | 2	0 | 0
				Warts	11 | 16	5 | 20
				PID	– | –	8 | 0
Maini *et al.*[15]	1989–91	London GUM clinic	Analysis of all urethral and cervical cultures		Men	Women
					Homo | Hetero	
				Chlamydia	5 | 3	1
				Gonorrhoea	1 | 6	5
				Non-specific	10 | 18	–
Dimian *et al.*[16]	1990	London GUM clinic	363 women	Chlamydia	9	
				Gonorrhoea	6	
				Trichomonas	9	
				Candida	3	
				Gardnerella	2	
				Herpes	4	
				Warts	10	

Districts should check whether their local laboratories are contributing to this surveillance system and identify how much infection is diagnosed outside the local GUM clinic.

The PHLS is currently implementing a system of sentinel surveillance for STDs. At present this involves just three clinics (two in London and one in Sheffield) but there are plans to extend and expand this to 15 clinics in 1996/97. This surveillance system may provide useful data on the epidemiology of sexually transmitted infections in England and Wales and will be available for district planners to use when assessing GUM service requirements in their area. The CDSC is also planning to set up a collaborative system to monitor the incidence and distribution of congenital syphilis in England and Wales.

General practice morbidity survey

The Office of Population, Censuses and Surveys (OPCS) has recently published preliminary findings from a national survey on patient visits to GPs.[17] This survey takes place once a decade, the most recent being November 1991 to end of October 1992, in 60 volunteer practices in England and Wales. The results are published as numbers of patients consulting per 1000 person–years at risk. The rates for diseases which may be sexually transmitted were 0.6 for syphilis and other venereal diseases, 8.1 for herpes simplex infections and 31 for candidasis.

Whilst it is difficult to comment in detail on these figures, as they are not specific for individual conditions, it would appear that GPs see a substantial number of women whom they diagnose as having candidal infection (thrush) and not many other sexually transmitted diseases. The OPCS will publish further details of the study and its results, including tables of prevalence, incidence and service utilization for the whole study population and for people with different socioeconomic characteristics.

The CDSC in collaboration with the Royal College of General Practitioners is currently looking more closely at the presentation and management of people with STDs in general practice. Through a nationwide network of GPs who are collaborating in this research, information will be available on the specific rates of presentation, and diagnoses and management strategies used by GPs. The results of this survey will be published by the CDSC.

Sexual behaviour surveys

The final source of information relevant to GUM service provision is provided by the surveys of sexual behaviour. The recently published National Survey on Sexual Attitudes and Lifestyles (NSSAL)[18] has, for the first time, provided epidemiologists and planners with detailed information on the sexual behaviour of the UK population. It is planned that information from the NSSAL survey will be presented to district health authorities by standard area in 1995/96 for their own assessments of need.

As shown in Table 8 on average men report more partners than women, and men and women living in Greater London tend to report larger numbers of partners. If 'risk of STD acquisition' is defined as having had more than one partner then about 15% of males and 10% of females aged 16–59 are at risk.

In Table 9 the distribution of reported numbers of lifetime sexual partners is presented; there again being a remarkable similarity across the regions, apart from Greater London. If we define 'lifetime risk of STD acquisition' as having had more than two lifetime partners, then about 50% of males and 40% of females might be deemed to be at risk.

Table 8: Distribution of number of sex partners in previous year of respondents to NSSAL: broken down by standard region

	Males							Females						
Region	*n*	0	1	2	3–4	5–9	10+	*n*	0	1	2	3–4	5–9	10+
	%			%				%			%			
Northern	427	11	77	5	5	1	1	565	15	80	4	1	0	0
North Western	857	11	74	9	3	2	0	1165	14	81	4	1	0	0
Yorkshire/Humberside	638	13	73	8	4	2	0	869	12	82	4	2	0	0
West Midlands	761	12	76	7	3	1	0	904	15	79	5	1	0	0
East Midlands	603	11	76	8	4	1	0	673	11	80	7	2	0	0
East Anglia	316	15	76	5	3	0	1	358	12	83	3	2	0	0
South Western	622	12	76	7	6	0	0	793	10	81	6	2	0	0
South Eastern	1715	12	74	10	3	1	0	1975	14	79	5	1	0	0
Greater London	1059	13	65	11	7	3	1	1243	16	75	5	3	1	0

Table 9: Distribution of lifetime number of sex partners of respondents to NSSAL

	Males							Females						
Region	*n*	0	1	2	3–4	5–9	10+	*n*	0	1	2	3–4	5–9	10+
	%			%				%			%			
Northern	426	6	22	9	24	16	24	565	6	50	18	13	10	3
North Western	854	5	21	9	19	20	26	1165	5	41	19	19	11	4
Yorkshire/Humberside	636	7	20	11	20	18	24	866	5	40	17	18	14	6
West Midlands	759	8	21	12	19	19	21	902	7	40	15	20	13	5
East Midlands	600	6	24	13	13	19	24	674	5	39	19	19	12	6
East Anglia	316	7	24	14	14	19	21	358	6	44	16	15	14	5
South Western	621	5	22	9	19	21	24	791	3	38	17	19	15	8
South Eastern	1704	6	20	10	18	23	23	1969	6	37	16	20	14	8
Greater London	1053	6	13	11	18	19	34	1240	7	28	15	18	18	14

Table 10 shows the number and proportion of respondents in the sample in each standard region who reported ever having attended a GUM clinic. The figures are shown for the whole sample and separately for those individuals who reported more than two partners in the previous year and more than five lifetime partners. It can be seen that larger proportions of individuals with larger numbers of partners report having attended a GUM clinic at least once, though the proportion only reaches greater than one in four for people living in Greater London. Differences between regions in GUM clinic attendance are likely to represent differences in availability and accessibility of services, which should be noted and acted upon by those commissioning and delivering services.

Table 10: Number and percentage of respondents to NSSAL who report ever having attended a GUM clinic: by standard region and number of sex partners in defined periods

	All respondents				Respondents with > = two partners in last 12 months				Respondents with > = five partners in lifetime			
Standard region	**Males**		**Females**		**Males**		**Females**		**Males**		**Females**	
Region	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
North	20	(5)	8	(2)	4	(10	0	(0)	19	(11)	5	(7)
North West	48	(6)	40	(4)	15	(12)	7	(11)	38	(9)	19	(11)
Yorks/Humberside	52	(8)	47	(5)	12	(15)	10	(21)	45	(17)	37	(22)
West Midlands	43	(6)	34	(4)	10	(12)	2	(3)	37	(12)	20	(13)
East Midlands	46	(8)	33	(5)	15	(20)	11	(17)	39	(15)	18	(15)
East Anglia	19	(6)	16	(4)	4	(13)	1	(8)	18	(15)	7	(11)
South Western	52	(9)	45	(6)	13	(17)	8	(12)	42	(15)	26	(14)
South Eastern	144	(9)	107	(5)	40	(17)	20	(15)	108	(14)	68	(16)
Greater London	155	(16)	159	(14)	63	(27)	29	(24)	137	(24)	114	(30)

There are marked differences by age, with both older and younger subjects less likely to have attended. Only a relatively small proportion of young people aged 16–19 reporting at least five partners have attended a GUM clinic (6% in men, 11% in women). Districts need to assess the risk of asymptomatic infection among these individuals and to consider whether positive efforts to encourage these individuals to be screened may be appropriate.

5 Services available

The principles and history of GUM service provision are described briefly in section 7 and the effectiveness of these services are reviewed in section 6. Patients with genitourinary problems are managed in a variety of settings within the health service, though the GUM clinic department is the main one. Some people will seek advice or treatment from their GP, an ante-natal clinic or family planning clinic. Hence there is a need to develop a sexual health strategy which encompasses different services and aims to improve co-ordination and collaboration between them. At present there is no method for assessing the proportion of STDs treated in GUM clinics.

In 1988 the DOH published the Report of the Working Group to Examine Workloads in Genitourinary Medicine Clinics – known as the Monks Report.[2] The terms of reference of the working group were:

> to examine current and forecast workloads in GUM clinics ... to recommend any action which may need to be taken on manpower (including nursing manpower), training, resources and accommodation.

The recommendations of the Monks report are given in Appendix III. The key recommendations are that:

- any person presenting with a new clinical problem suggestive of a sexually transmitted disease or who considers himself or herself to have been in contact with such a disease should be seen on the day of presentation or failing that on the next occasion the clinic is open
- there must be GUM ... provision in every district. Districts lacking a clinic should be able to call on a nominated GUM consultant.

Following publication of the Monks report the DOH has issued yearly executive letters which request health authorities to give an update of progress in implementing the recommendations of the report.

By now most if not all districts should have a local GUM clinic, or be opening one shortly. If not then need is being almost certainly unmet and serious consideration should be given now to funding a new GUM clinic.

In 1990/91 the DOH commissioned a second study carried out by staff from the Policy Studies Institute.[3] Both reports found considerable variations in the work done by members of staff in different clinics and no clear guidelines with respect to working roles. The main recommendations of the second study are given in Appendix IV. The ability of staff to fulfil the multiple functions within GUM will vary widely depending on the patient workload, clinic opening hours and number of trained staff within each department.

The size of individual clinics varies enormously between districts. However because services are open access and little is known about the population prevalence of STDs, it is not possible to determine the appropriate size, or 'norms' of a local service. Instead districts need to obtain knowledge about their own local services and determine where else their population seek treatment and advice for STDs before comparing service provision with other commissioning agencies.

The basic facilities which should be on offer within every clinic follow.

Primary prevention

The epidemiological shift away from curable STDs and towards the diagnosis of a greater number of chronic and incurable viral infections has been accompanied by the realization that a mainstay of public policy towards these diseases should be primary prevention. Thus it has been recognized that education about sexual health plays a vital role in promoting sexual wellbeing and hence in avoiding the risks posed by unsafe sexual activity.

Education is carried out by both local health promotion departments and within clinic settings (especially by health advisers). While in an ideal world every health care professional in a GUM clinic will endeavour to incorporate messages about primary prevention and safer sexual practice time constraints often preclude this. As a result most GUM departments currently employ health advisers whose principal role is generally split between providing education and information to patients, with contact tracing and counselling. A review of the work undertaken by health advisers found that:

- many had received no training in GUM related topics
- increasing amounts of their time is being spent on HIV-related issues (mainly pre- and post-test counselling but also in dealing with HIV-positive patients in some clinics) thus leaving less time for discussing other STDs or for partner notification work.

However the work of health advisers and the primary prevention services offered by GUM departments should encompass the following.

Health education

This is aimed primarily at the provision of information about health risks and their prevention through the development of an individual's skills in making choices and hence changing sexual behaviour and activity.[19] Promotion of safer sexual activity and the maintenance of healthier lifestyles are messages that health advisers must make available and acceptable to all sections of the client population. Depending on the demographic mix of the local population, health education material will need to be targeted specifically at

certain groups who are either at potentially higher risk of STDs or less likely to utilize services effectively. Some groups, who may need special consideration include:

- gay men and men who have sex with men
- injecting drug-users
- adolescents and young people
- commercial sex workers (male and female)
- people from ethnic minority groups.

Clearly health education is not limited just to those people who present to GUM clinics but is also targeted at those who may be at higher risk of infection and reluctant to attend GUM clinics (or asymptomatic and hence unaware of their STD). While the majority of work in the area of promoting safer sexual practices in the general community and increasing the uptake of sexual health screening facilities, is carried out by people in health promotion departments, health advisers from GUM clinics also play a significant role in this area. In a number of districts health advisers go out into the community, for example into schools and youth groups and either undertake health education themselves or are involved in the education of peer educators in each community.

Provision of free condoms

The question of resource allocation to establish and maintain this service is something which often requires negotiation at a local level as it can become a significant part of the purchasing budget of a clinic.

Hepatitis B vaccination

At present (1997) hepatitis B virus is the only sexually transmitted pathogen against which there is a safe and effective vaccination (although currently there is research on the development of vaccines against both *Chlamydia* and *Herpes simplex* virus). In 1983 Adler *et al.*[20] concluded that screening and vaccination of homosexual men against hepatitis B is cost-effective in reducing the incidence of the disease and its potentially lethal sequelae. In 1989 a survey by Loke *et al.*[21] found that of 121 clinics in the UK, 81% offered screening for hepatitis B surface antigen but only 30% were able to offer the vaccine itself. Each district should assess the prevalence and uptake of hepatitis B screening and *et al.*Avaccination programmes in its own area.

Contact tracing

Largescale programmes for contact tracing (partner notification) for STDs have been in operation in the UK for over 40 years[22] with the intention of:

- preventing re-infection of the index case
- controlling community spread (as it allows the identification and treatment of asymptomatic and pre-symptomatic individuals who otherwise may not seek treatment)
- providing health education about STDs to the individual.

A description of partner notifications is provided by the World Health Organization. Recently there has been a concerted shift of emphasis from provider to patient referral, i.e. it is the index patients themselves who are encouraged to notify their sexual contacts.

Secondary prevention

This is defined as work to halt the progression of a disease once it is established. In GUM this involves the early detection and early diagnosis of an infection followed by prompt and effective treatment in order to:

- reduce the incidence of STD complications
- reduce the prevalence of STDs in the community.

Case finding and screening

The control of STDs depends heavily on the screening of persons (especially women) for the diagnosis of asymptomatic infections. The relatively large number of people infected asymptomatically also emphasizes the need to co-ordinate screening between different services. The benefits and effectiveness of screening programmes for STDs are discussed in section 6.

Clinical management of presenting STDs

Diagnosis of STDs

When a patient visits a GUM clinic complaining of new symptoms or requesting a sexual health check-up she or he can often expect a preliminary diagnosis to be given on the day of attendance. Genitourinary medicine clinics are equipped with diagnostic facilities on site, mostly using microscopy. In general it is the nursing staff who carry out microscopy but in some clinics it is the medical staff or MLSOs specifically employed for this task. To increase both the sensitivity and specificity of rates of diagnosis, each clinic must also have access to a pathology laboratory with microbiology, serology and virology. Many clinics will use also the services of immunologists.

The diagnostic facilities required for the detection of sexually transmissible pathogens are outlined in Appendix VII, along with the approximate cost of diagnostic tests for each pathogen. It should be recognized that within the laboratory services there are several tiers of facilities available. Those outlined in the appendix include both the general facilities required at district level and the more sophisticated facilities which may be necessary for confirming a diagnosis. The latter will not be cost-effective to run in every district laboratory but it is recommended that district laboratories have the means to contract services from more specialized laboratories for the effective and correct management of individual cases. It must also be recognized that the specialist laboratories offer access to a range of advice from experts in the field, such as consultant virologists.

The field of diagnostics is constantly expanding and changing. New developments will reach commercial and hence widespread use in the near future, such as screening tools for *Chlamydia trachomatis*. Though the cost of these new diagnostic techniques is likely to fall with increasingly widespread use, district planners should take into consideration the possibility of purchasing improved diagnostic techniques and services when planning future budgets. Advice can be obtained from the consultant in communicable diseases and local hospital microbiologists and virologists.

Treatment of STDs

Treatment may be given at the time of the presenting visit. The value of epidemiological treatment (i.e. providing treatment before a diagnosis is established microbiologically or serologically) is based on a number of factors:[23]

- risk of infection being present
- seriousness of the disease
- difficulty of diagnosis
- effectiveness of treatment available
- any side-effects of treatment
- likelihood of spread if not treated
- facilities available for observation.

For a large number of patients treatment regimens will be delayed until the diagnosis is confirmed and therefore a follow-up visit is required.

Treatment of women with abnormal cervical smears

The role of cervical screening programmes in reducing the incidence of cervical cancer is a widely debated issue[24] but targeting women at higher risk is thought to be successful in decreasing the incidence of cervical carcinoma.[25] Women attending GUM clinics will have usually put themselves at risk of acquiring a STD and may therefore also be at risk of cervical carcinoma associated with the presence of sexually acquired papilloma viruses, which cause genital warts.[26,27] The GUM clinic thus provides an ideal environment for opportunistic screening of women at higher risk from cervical cancer in the population.

The management of women with cervical smear abnormalities will depend usually on the grade of abnormality and local management guidelines. Most clinics will refer women with an abnormal smear for a colposcopic examination. Colposcopy is a specialized service allowing magnification and inspection of the cervix. In some clinics this procedure can be carried out on site, while at other clinics it may be necessary to refer patients to other departments (usually gynaecology). Many women will be treated definitively at the time of their colposcopy with laser therapy, electrocoagulation or cryosurgery, which also may be on site.

Psychosexual services

Patients attending for the diagnosis and treatment of STDs may require support, treatment or counselling for psychosexual conditions. The number of trained psychosexual physicians in a district is likely to be small. Therefore if the service is not based in the local GUM clinic, adequate access to psychosexual services needs to be established by the commissioner and local GUM physicians. There are two main treatment modalities within psychosexual medicine: drug treatment and/or psychotherapy.

Contraceptive services

The number of GUM clinics offering these services is gradually increasing as part of a move towards the provision of a holistic sexual health service. However it is important to know whether the service is being offered in an appropriate and acceptable way, through collaboration and review by the family planning service and commissioners.

Services at other sites

The majority of STD services is provided within GUM clinics but there is increasing recognition of the role of other health care providers in the provision of STD services and of the opportunity for GUM clinics to provide other services apart from STD treatment. The role of GUM staff in providing services away from their usual clinic sites is under review in many districts and several are currently implementing innovative models of service provision for client groups who are perceived to currently under-utilize existing service networks. It is also important to recognize that many patients who initially present to GUM clinics will require referral to other departments within the hospital, such as dermatology, gynaecology and urology.

Cost of GUM problems

The structure and components of the costs to society arising from GUM conditions are complex and there is scant information available. They involve not only the direct costs associated with the provision of GUM services directed towards the prevention, diagnosis and management of acute GU conditions but also the costs of management of the serious sequelae of infection which may arise through untreated STDs and the attendant social and economic costs associated with loss of economic activity.

Direct costs of GUM services

There is no published literature on the direct costs of providing GUM services in England and Wales. While all districts included data on GUM funding in their AIDS (Control) Act reports, there is little consistency in the way the data are presented and they should be treated with extreme caution. Not all reports break down funding into mainstream (i.e. general capitation), HIV treatment and care and prevention funding; nor are the costs allocated to the different services provided by the GUM clinics. It is not possible therefore to compare funding levels across different hospitals and commissioning agencies at present.

This situation is unlikely to change until the commissioning agencies themselves encourage the GUM clinics to compile better cost data, as part of their local service specifications and business plans.

Estimating cost per attendance

Data have been obtained from two clinics which allow an estimation of some of the direct costs for 1993/94. These are summarized in Table 11.

Table 11: Cost of two GUM clinic services

Costs	Clinic 1	Clinic 2
Laboratory	186 217	40 626
Drugs	52 600	40 583
Staff	336 200	214 298
Other direct	52 600	20 000
Central overheads @ 40% staff	134 480	85 719
Total cost	762 097	401 226

The costs are indicative only but they suggest that there may be extensive differences in the cost of GUM services between clinics. This makes it all the more important that commissioners obtain detailed cost data and a breakdown of the services offered and activity generated for the purpose of assessing value for money, which we are not in a position to judge here.

Cost to health service of untreated STDs

Inadequate or non-treatment of STDs can have major implications at both the individual and societal levels. Sexually transmitted diseases tend to affect people at a young age. Any assessment of the cost to society of untreated STDs must take into account the loss of productivity and the costs of continuing care. Also the potential physical and psychological consequences of the major complications will affect the infected person and his/her partner, family and children.

However very few cost–benefit analyses have been carried out. One infection that has been assessed in terms of the cost to the health service is that caused by *Chlamydia trachomatis*, which is presented here as an example of the potential cost of untreated STDs versus that of providing a screening service.

Chlamydia trachomatis has the highest prevalence of any diagnosed bacterial sexually transmitted pathogen in the UK. Estimates of current prevalence range from 3 to 8% in asymptomatic populations to over 10% in GUM clinic attenders (Table 7). The potential sequelae of untreated infection are pelvic inflammatory disease (PID), chronic pelvic pain, infection of the cervix (cervicitis), tubal infertility, ectopic pregnancy and neonatal conjunctivitis and pneumonia.

Costs of morbidity associated with *Chlamydia trachomatis* (CT) infection

There have been a number of studies carried out, primarily in the US, which have sought to estimate the costs of CT-associated morbidity and the potential benefits of screening.[13,28–35] There has been some difference of opinion on the interpretation of the results of these studies. Broadly screening programmes among young women are expected to be cost-efficient (to the health service) when the prevalence is above 5%. The advantages or disadvantages to the screened and treated women have not been determined and the value of screening for improving health gain needs to be addressed more thoroughly.

In Table 12 descriptive epidemiological findings with the costs derived from one of the studies in the US[28] are applied to an 'untargeted' screening programme in a region. The assumptions made are as follows:

- all women aged 16–39 are screened (700 000)
- 75% of true-positives are identified and all women identified are treated and cured
- prevalence of CT is 5%
- incidence of PID in untreated women equals 11.5% per annum; 25% of PID treated in hospital; 12.5% of women with PID develop tubal infertility, 1% of women with PID experience subsequent ectopic pregnancy
- 15% of women with undetected CT develop chronic pain
- 10% of babies from infected mothers develop conjunctivitis and 10% develop pneumonia.

Under these assumptions there is a small negative cost to the health service if screening was carried out. Clearly the cost would increase if the screening programme failed to cover all women and the treatment of CT was not 100% successful. Similarly the cost of not screening would be greater if the prevalence of CT was higher than 5% and the incidence of complications was higher. The decision by DHAs on whether to introduce universal screening must wait until it has been fully evaluated.

Table 12: Indicative costs of screening or not screening women aged 16–39 in North Thames (West)

	Number of women	Cost (no screening) (£)	Cost (screening) (£)
Action and gynaecological consequences			
Population women (aged 16–39)	700 000		
Infected with Chlamydia (5% prevalence)	35000		
Detected by screening (75%)	26250		
Tested			4 900 000
Treated			394 000
Trace and treat partner			525 000
Annual CT-related PID cases – 1006			
Treated as an inpatient	1000	1 000 000	250 000
Treated as an outpatient	3000	270 000	67500
Chronic pelvic pain	5250	2 400 000	600 000
Cervicitis	6000	300 000	75000
Tubal infertility (involuntary)	500	2 000 000	500 000
Sub-total		5 970 000	7 311 500
Obstetric consequences			
Live births	44700		
Live births to mother with CT	4470		
Chlamydial conjunctivitis	447	20000	5000
Neonatal CT pneumonia	447	200 000	50000
Ectopic pregnancy	44	88000	22000
Abortions (aged 11–49)	18460		
Post-abortion PID			
Treated as an inpatient	81	81000	20250
Treated as an outpatient	242	21780	5445
Post-abortion infertility (involuntary)	32	64000	16000
Sub-total		474 780	118 695
Total		**6 444 780**	**7 430 195**

6 Effectiveness of services

Scientific peer-reviewed literature on the effectiveness of STD interventions is directed at the efficacy of therapeutic interventions, with much less on the effectiveness of other key activities involved in the control of STDs, such as contact tracing. Data on the cost-effectiveness of specific interventions are meagre also. Definitions of the gradings for the strength of recommendations (A–E) and quality of evidence (I–III) are given in the introduction to the needs assessments series.

Current drugs in use

The treatment of bacterial STDs is a constantly changing field because of the swift development of antibiotic resistance (especially against gonorrhoea) and the development of new drugs. The drugs most commonly in use are given in the Appendix VIII together with a ranking of their level of effectiveness. There are a number of treatment regimens and interventions for each condition. Choice of drug depends not just on local antibiotic resistance patterns but also on the characteristics of the patient (for example, history of drug allergy, pregnancy or lactation and perceived level of compliance).

The decline in the prevalence of bacterial STDs has been accompanied by a steady increase in the number of viral STDs diagnosed.[36] The treatment of chronic viral STDs has become a greater part of the workload of each clinic.

Prevention programmes

The cost-effectiveness of preventing the spread of STDs has not been widely investigated.[37,38] Resources devoted to prevention are small in comparison to both the costs of treatment and the secondary impact of sexually transmitted infections. It is also not known whether the balance of funds between prevention, treatment and research is equitably and effectively distributed.[39]

Health education (AIII)

The effectiveness of barrier methods in preventing the transmission of STDs is shown in Table 13.[40–42]

Table 13: Effectiveness of barrier methods

Method	Mechanism	Efficacy
Condom (male)	protects sexual partner from direct contact with body fluids	reduces risk of gonorrhoea, HSV, genital ulcers, PID, HIV, HBV, *C. trachomatis*
Condom (female)	protects sexual partner from direct contact with body fluids	*in vitro* studies show it is impermeable to HIV; not tested for other STDs
Spermicide	chemically inactivates infectious agents	inactivates gonococci, *T. pallidum, T. vaginalis*, HSV, ureaplasmas
Diaphragm/spermicide	mechanical barrier, covers cervix	appears to decrease risk of acquiring gonorrhoea and PID

Part of the consistency of use will depend on availability and behaviour change, both of which can be addressed by GUM clinics. Surveys of sexual behaviour have shown that sexual lifestyles in some communities have been modified.[43,44] For outcome indicators of health education interventions districts might consider:

- the number of patients presenting to a clinic who have been treated previously for a different infection (who presumably, continued to have unsafe sex)
- *ad hoc* sexual behaviour surveys in clinics to assess changes in sexual behaviour pre- and post- counselling
- patient views on the effectiveness of different health education strategies appropriate to individual communities.

Unfortunately in contrast to drug treatment the effectiveness of health education is a very difficult process to measure, though its benefits may be far reaching.

Hepatitis B vaccination programme

Hepatitis B virus (HBV) has higher prevalence rates in certain at-risk groups: homosexual men, commercial sex workers, injecting drug-users and persons of south-east Asian or African origin (where the disease is endemic). 2–10% of those infected will become chronic carriers of the virus[45] and will be at future risk of chronic hepatitis, cirrhosis and hepatocellular carcinoma. Hepatitis B vaccine is effective in preventing infection in those individuals who produce specific antibodies after immunization.[46] The vaccine is given as a course at zero, one and six months with a follow-up blood test to check that sufficient antibodies are being produced after the end of the course. The vaccine is effective for at least five years in most patients.

Hepatitis B virus infection is currently the only sexually transmitted viral infection for which an effective vaccine is available but it is apparently not reaching those people who are at highest risk of infection.[47]

Case finding and screening

Screening for STD leads to prompt treatment of the affected individual and thus has the potential to reduce the size of the disease pool and the risk of transmission to third parties. The challenge is how to reach women of child-bearing age who may be infected asymptomatically. Screening programmes can either be selective or universal.[29,48]

Syphilis (AII-2)

All pregnant women are screened routinely for syphilis and the current prevalence of syphilis in women of child-bearing age is low. A study in 1985[49] in which the costs of screening were compared with the avoided costs of caring for affected infants or the effects of increased rates of stillbirth and neonatal deaths showed that the screening programme was cost-effective even when the prevalence of syphilis infection was extremely low.

Chlamydia trachomatis (BII-2)

Screening programmes for *Chlamydia trachomatis* have been assessed in a variety of settings in both the US and the UK. A study in Swansea [13] compared the cost of screening and prophylactic treatment for all women attending for termination of pregnancy with the cost of treating the well-recognized sequelae of undiagnosed chlamydial infection in these women. Overall 8% of the women were infected with *C. trachomatis* and there was a high incidence of chlamydia-associated pelvic infection requiring treatment (including hospital admission). The estimated costs of hospital admissions for complications of chlamydial infection were more than double the cost of providing routine screening and prophylactic treatment. Similarly work in Scandinavia[35] showed that pre-termination screening and treatment was cost-effective when the prevalence of chlamydial infection in the population was 4.3% or higher.

In order to decide locally the best policy for targeting screening it is essential to assess the prevalence of *C. trachomatis* in defined populations (e.g. women attending family planning clinics, ante-natal clinics and gynaecology outpatients) and which women are most at risk. This work is of particular importance because the benefits of universal screening are unproven.

Partner notification (AII-2)

Partner notification developed as part of routine case management in order to assist in the control of these infections in the population. The recognition that much disease was asymptomatic, particularly in women, led to the need for 'case finding' to identify and treat individuals who may otherwise develop serious sequelae, to reduce reinfection in the index patient and to prevent further transmission in the population.

- **Does partner notification contribute to the control of STD in the population?** 'Evidence' to support the common sense supposition that good partner notification must improve the control of STD in the population is largely unavailable for two reasons. First a lack of carefully designed studies. Second the fact that partner notification is only one part of a control programme and it is difficult to distinguish its contribution from that of, for example, free treatment, antibiotic therapy, health education, changes in contraceptive norms and secular trends in sexual behaviour. An additional problem is that a good partner notification scheme will improve case finding, and therefore routine surveillance systems are likely to show an increase in the rate of infection.[50]

  The specific contribution of partner notification to STD control is difficult to measure because it occurs invariably alongside other aspects of a control programme. Sweden, for example, has an aggressive partner notification programme rooted in legislation for gonorrhoea, syphilis and more recently chlamydia. How much of the decline in gonorrhoea is due to partner notification is therefore hard to determine.[51] Talbot explored the relationship between two measures of 'efficiency' in contact tracing and the incidence of gonorrhoea in the population in Sheffield.[52] There was no correlation between the incidence of gonorrhoea and either the mean infectious patient days (between start of contact tracing and attendance of contacts), or percentage of 'source' contacts brought to examination within 30 days, something described in the article as a paradox.

  It is easier to show that where new infections, or new strains of a pathogen in an endemic infection, appear in a community causing distinct outbreaks, partner notification can play an important role in control. In an outbreak of infectious syphilis in Alberta in the mid-1980s, Romanowski reported that: 'contact tracing played an important role in controlling the outbreak with 16% of men and 45% of women being diagnosed and treated as a result of this activity.'[53] While it is difficult to find empirical evidence of a causal relationship between partner notification activities and declining rates of STD in the population, epidemiological models may be able to indicate the likely impact.[54] A broader 'ethnographic' approach to partner notification, working with groups of people linked socially and sexually, can locate members of the 'core' group that are sustaining the disease in the population.[55]
- **Does partner notification improve patient management through reducing repeat infection?** There is some evidence to support this. In an observational study of contact tracing for *C. trachomatis* in Sweden, 10.2% of women who had no partner notification were found to be reinfected (within the 3–15 months follow-up period).[56] The reinfection rate was lower in those who had patient referral accompanied by health worker verification that the contact had attended (4.8%). These data must be interpreted with care as they are based on a review of routine practice over a ten-year period and it is probable that the patients receiving different types of contact management were not comparable. While the data suggest that the provision of scripts for male partners of women with chlamydial infection may be effective in some populations (with a low rate of transmission perhaps), they do not permit further identification of the chain of transmission. It also goes against the principles of most GUM practice (diagnosis before treatment, test for other STDs, follow-up to ensure clinical and microbiological cure, trace contacts and investigate).
- **Does partner notification identify previously unrecognized cases of infection and, through treatment, prevent the development of serious sequelae?** The result of almost all studies of partner notification show that the prevalence of infection in traced partners is higher than in the general, or clinic, population. This reason alone makes partner notification a useful method of case finding within a control programme.

  Burgess reported in 1963 that 342 (27%) of 1248 'VD' contacts were found to have an infection, of whom only 31 were already having treatment prior to contact tracing.[57] Early discussions of the importance of partner notification concentrated on asymptomatic infection in women, but asymptomatic infection in men, while less common, may play an equally important role in sustaining infection in the population. Studies of male sexual contacts of women with PID show relatively high levels of

asymptomatic disease – in one study 59% of 86 gonorrhoea-positive male partners (of women with PID) were asymptomatic.[58] This and other findings suggest that there may be as much male as female untreated disease which partner notification could help identify and treat.

- **What are the most effective methods of partner notification?** A review by Oxman identifies comparative studies and reveals the lack of good randomized controlled trials, though there are various observational studies which provide some 'evidence' of relative effectiveness.[59]
- **Is provider referral better than patient referral in ensuring that contacts are informed and screened?** Observations in many reviews indicate that provider referral achieves a higher rate of attendance than patient referral, in some studies fewer contacts are reported.[59]
- **Do trained health advisers obtain better outcomes from partner notification than doctors or nurses?** The early reports of contact tracing showed an increase in the attendance of contacts if a trained 'VD social worker' carried out the interview and the follow-up.[60] However the comparison is usually between doctors issuing contact slips and social workers or health advisers carrying out more intensive investigation and follow-up. Potterat supports this argument, adding that trained ethnographers also can achieve good results in bringing contacts and others who are at risk into the clinic.[54] Clearly doctors and nurses, if they are to support trained health advisors, need training to recognize that a contact slip alone is not enough. In one study of contact tracing for ocular chlamydial infection, without health advisers, 87% of partners who were given appointments attended and reportedly 67% of those given contact slips attended other clinics.[61]

7 Models of care

The basic model of GUM service provision

There is one basic model of care that covers the whole of GUM services in the UK, namely the provision in each district of at least one specialist GUM clinic within an acute unit or, less frequently, attached to a community unit.

The clinics are based on the following key principles:

- services are open access and self-referral
- services and treatment are free at the point of delivery
- patients receive a confidential service.

These principles have guided the provision of services since 1916, when a network of clinics was established following a report of the Royal Commission on Venereal Diseases.[1] The Commission recommended that county and borough councils provide free and confidential treatment for patients at convenient hours. These recommendations were translated into law by the Venereal Diseases Act of 1917[62] and reaffirmed in 1988 by the Report of the Working Group to examine workloads in GUM clinics (the Monks Report)[2] and a subsequent NHS Executive Circular.

The clinics are run by specialists in GUM together with trained nurses and health advisers and have a combined role of providing clinical care for those who present to them and a public health role in relation to case finding and disease control in the population through partner notification, outreach programmes and health promotion programmes in the local community.

The minimum level of provision is one clinic per district, though some urban districts, particularly in London may have several clinics. The large variation in GUM provision (several districts had no clinic at all

at the time of the Monks report) is due to various historical factors, including the level of demand for services locally. However the relationship of the numbers of clinics to the need of the population as expressed in rates of STDs in the population is difficult to measure, as much of the information on population STD rates is inferred from the workload of these clinics. In general as the number of clinics and clinic sessions increases, so the number of cases of STD identified will also rise.

The NSSAL data show higher rates of STD attendance, particularly in London but this is associated with higher levels of risk behaviour. Indeed that survey suggests that only a minority of people at risk of STD (defined by recent sexual behaviour) attend clinics and therefore there may be considerable unmet need.

Greater provision of GUM services will be needed in:

- districts with higher rates of STD
- districts with greater proportions of the population which are likely to be at increased risk of STDs (e.g. gay men, tourists, migrant workers and other migrants, prostitutes, injecting drug users, young homeless).

In general these occur in larger urban areas, in addition to ports and some tourist areas. Ideally each district should have a profile of the local population and be able to describe sections of the population at increased risk and ensure that the GUM services meet their needs. At the very least each district should ensure local GUM provision.

A broader model of sexual health service provision

While the general model outlined above is common to all districts, it does not cover all GUM care. Patients with STDs and related problems may present and be managed in a number of other sectors of the health service. As outlined in section 4, GPs see an unknown number of cases of STD and other patients present to family planning services and specialists in gynaecology, urology, A and E, dermatology, infectious diseases, general medicine and mental health.

In recent years there has been a shift away from a disease based approach (which underpins GUM) towards the broader concept of 'sexual health'. This was initiated in health promotion work, where there is an obvious overlap between the prevention of STD/HIV and the prevention of unplanned pregnancy.

This shift has yet to be fully reflected in the provision of services. A few districts have integrated 'sexual health' services where GUM, family planning, termination of pregnancy, psychosexual counselling and related services are provided in one clinic. In other areas there is no unified service but greater links are being established between community gynaecology and GUM. Many GUM clinics now provide some contraceptive services and some family planning clinics (FPCs) provide screening for sexually transmitted infections, such as chlamydial infection.

Full integration into a sexual health service, as exists in parts of Australia for example, is controversial but there is a clear case for better planning of services and liaison between sectors.

Two models are proposed as follows.

1 The integration of sexual health services, with a specialist sexual health clinic providing a full range of sexual health services under one roof. This would need to be linked to satellite clinics (current family planning clinics) where part of the service is provided closer to the local population with easy referral into the specialist centre. The sexual health clinic would remain open access, self-referral and free. This would require the inclusion of consultants in GUM and community gynaecology in the senior staff and the management of such a clinic would have to be located appropriately (in acute or community sector).

The aim would be to make the service more convenient for patients (they would no longer need to visit different sites) and potentially reduce the stigma of the 'special clinic'.

2 The maintenance of GUM and family planning as distinct services (physically, managerially and professionally) but with a far greater level of integration, including reciprocal clinics at the other site(s), development of common protocols specifying indications for referral and standards of management for conditions seen in both settings.

The role of general practitioners

As outlined in previous sections, GPs see an unknown but probably relatively large, number of patients with STDs. They also provide a large proportion of family planning services to patients. The standard of care provided for STD in primary care is unlikely to be the same as in specialist clinics, given the lack of facilities for diagnosis, knowledge about current effective treatments and opportunities for partner notification. However many patients will continue to present initially to their GPs and may prefer not to attend the local GUM (or sexual health) clinic. In order to promote good standards of practice, GPs should be involved with genitourinary physicians in the development of guidelines for diagnosis and management of common conditions, including the provision of partner notification and indications for referral to specialist services.

Commissioning and the role of specialists in public health

GUM services should continue to be core funded and open access and therefore should be excluded from GP 'total fundholding'. In each district a forum of GUM, family planning and GPs should be established to enable the integration of services and develop common guidelines and audit tools for improving standards of care. Public health specialists should play a lead role in initiating this discussion in an attempt to reduce problems of 'territoriality'.

As GUM deals primarily with infectious disease it is important that the perspective of control is maintained in the planning of services, specifically the involvement of public health specialists in the commissioning agencies, including the CCDC.

Commissioning agencies should consider contracting out some control (e.g. partner notification and outreach programmes) and health promotion (e.g. work with at risk populations and in schools) initiatives, to local GUM services, using the skills of the health professionals. They should also develop guidelines for the reporting and management of patients diagnosed with STDs outside of GUM clinics where responsibilities are statutarily defined. This will be increasingly important as more screening (e.g. for *C. trachomatis*) takes place in general practice, family planning and gynaecology clinics.

Resources

The proposals above have not been costed as they are dependent on the extent of provision in any locality and cost of GUM care is difficult to separate from HIV and AIDS care in many places. There is no *a priori* reason why a shift to more integrated services, including a fully integrated sexual health service, should involve greater recurrent expenditure, although some areas would need initial capital investment. The further expansion of existing services must go hand in hand with work to improve information on the extent of STDs in the population and where the local population is currently being diagnosed and treated for STDs.

8 Outcome measures and targets

Health of the Nation

The Government's targets for sexual health[63,64] outline the following objectives for STDs:

- to reduce the incidence of STDs
- to develop further and strengthen monitoring and surveillance
- to provide effective services for diagnosis and treatment of STDs.

The specific target applies to gonorrhoea:

To reduce the incidence of gonorrhoea among men and women aged 15–64 by at least 20% by 1995 (from 61 new cases per 100 000 population in 1990 to no more than 49 cases per 100 000).

In response to these objectives the Association for Genitourinary Medicine (AGUM) produced a document *Goals, indicators and targets for the management of sexually transmitted diseases: guidelines for purchasers and others.* Recommendations from their guidelines are shown in Appendix IX as they give the most comprehensive guide to setting and measuring structure, process and outcome targets for GUM services.

The most important barrier to measuring outcomes, or informing the commissioning process lies with the current method of collecting GUM clinic data (section 9).

9 Information and research priorities

Problems with GUM clinic information

The KC60 is the primary source of information on STDs in the UK and was used as the baseline for the Health of the Nation targets on gonorrhoea. Though one of the most comprehensive routine systems in Europe, it has several shortcomings. First it cannot provide data by place of residence. Second there is heterogeneity in the way the KC60s are compiled, in terms of the case definitions and attribution of new episodes. Third it does not reflect the true activity levels of GUM clinics. As a form of reporting the KC60 fails to capture and exploit much of the information already recorded in local provider units which would be of value for commissioning and ignores the IT developments occurring in most provider units. Taken together the above create major problems for district population based commissioning and describing the local epidemiology of sexually transmissible infections. In addition it makes the identification of denominators for the calculation of incidence and prevalence rates almost impossible.

KC60 GUM clinic returns report each new episode as a case. Multiple STDs are common and a person may have multiple episodes of different STDs during any reporting period. In addition for the chronic STDs, misclassification of follow-up visits as new episodes may bias the figures considerably in an upward direction.

Towards a solution

The primary responsibility for service development lies with the individual commissioning agencies. However the key features of the epidemiology of sexual health and patterns of sexual health service utilization make it essential that an information strategy be co-ordinated over a larger geographical area than the DHA. People with sexually transmitted infections regularly cross administrative boundaries in their use of services (and in the course of their sexual activities). Therefore local surveillance and needs assessment initiatives cannot be relied upon solely for planning sexual health services.

Current developments in the contract minimum data set will not be extended at this present time to GUM clinics. This is partly because many GUM clinics remain separate from hospital information systems and partly because of concerns over confidentiality and VD legislation.[62] At least two RHAs have begun to collate data on STDs across GUM clinics (West Midlands and S Thames East), though largely for epidemiological purposes, they have not been explicitly involved with service development or commissioning. The computerization of GUM clinics does provide the opportunity of improving routine data. A further pilot study in North Thames aims to provide information both for public health surveillance and commissioning.

Non-GUM STDs

Currently little is known about the number of STDs diagnosed and treated outside GUM. This must change as districts develop integrated sexual health services and more extensive screening of people in other settings is carried out. For this reason districts should examine laboratory reporting with the view to improving its coverage and use the data to monitor overall numbers of STDs, positive rates by source of request and provide a sampling frame for clinical audit of the management of specific STDs.

National, regional and local studies of prevalence and incidence rates of STDs

There is a gap between the information obtained from GUM clinics on people presenting for screening and/or treatment and the information obtained from population surveys of STDs, often on self-selected or serial samples from hospital clinics. Several areas require further work:

- examining how the current surveys could be generalized for use by district populations
- establishing the level of infection diagnosed and treated by GUM clinics, in order to set targets and inform the commissioning of GUM
- commissioning new population surveys which could establish the population levels of STDs in different populations in the UK that can be used for planning by DHAs.

Is gonorrhoea the best marker for sexual activity?

The national Health of the Nation target for reducing the incidence of gonorrhoea by at least 20% has already been met. Before setting new targets, which have a crucial influence on the research and development agenda, it is necessary to be sure that gonorrhoea trends are sensitive to changes in sexual behaviour. This in turn relates to HIV incidence and whether other sexually transmitted infections or a range of such infections (such as chlamydial or herpes simplex virus) would not be better indicators of the level of risk and behaviour change in the population.

Studies into costing and the cost-effectiveness of GUM services

There are no reliable studies on the costs of different ways of delivering specialist services for the treatment of STDs. These are required to inform the development of commissioning sexual health services, in particular the diagnosis and treatment of STDs in other settings (primary care, obstetrics and gynaecology, casualty, family planning) and the treatment of chronic conditions. In addition the variation in the costs of GUM clinics can be addressed only by assessing the different costs and components of the service.

Studies into the benefits and effectiveness of selected or universal screening for STDs in asymptomatic women

Of particular importance is genital chlamydial infection which may present the greatest health burden of a sexually transmissible infection in the UK (excluding HIV infection). It is unlikely that the findings from studies in the US and other European countries can be transposed to the UK. Therefore largescale intervention must wait until properly designed population trials of screening have been carried out in the UK.

Models of shared care and education

Sexual health services are becoming integrated. It is important therefore to establish what role GUM physicians have in the education of other health care workers in the recognition of STDs and the development of local algorithms for the management of STDs outside GUM clinics. Also whether there is scope for managing chronic STDs in primary care with the advice of GUM consultants, following a similar model of other chronic diseases.

Develop surveillance of STDs from GUM clinics and laboratories

Throughout this chapter it has been emphasized that there is a paucity of data for commissioning agencies to make informed choices over service development. It is essential that studies are started with the aim of improving the routine STD/GUM data available to all DHAs (in addition to sentinel surveillance initiatives which serve a national agenda) from both GUM clinics and laboratories. Of course an important part of any evaluation will be to show the added value of improved surveillance on policy.

Audit of hepatitis B vaccination

Hepatitis B virus infection is currently the only sexually transmitted infection for which an effective vaccine is available. Studies are needed in order to understand why vaccination is not reaching those people who are at highest risk of infection and to make practicable proposals on how this can be changed.

Appendix I ICD codes for GUM-related conditions (excluding HIV/AIDS and neoplasia)

ICD 9

Herpes simplex	054.0–054.9
Viral hepatitis	070.0–070.9
Molluscum contagiosum	078.0
Viral warts	078.1
Congenital syphilis	090.0–090.9
Early syphilis, symptomatic	091.0–091.9
Early syphilis, latent	092.0–092.9
Cardiovascular syphilis	093.0–093.9
Neurosyphilis	094.0–094.9
Other forms of late syphilis, with symptoms	095
Late syphilis, latent	096
Other and unspecified syphilis	097.0–097.9
Gonococcal infections	098.0–098.8
Chancroid	099.0
Lymphogranuloma venereum	099.1
Granuloma inguinale	099.2
Reiter's disease	099.3
Other non-gonococcal urethritis	099.4
Candidiasis	112.0–112.9
Trichomoniasis	131.0–131.9
Pediculosis and phthirus infestation	132.0–132.9
Scabies	133.0
Inflammatory diseases of prostate	601.0–601.9
Orchitis and epididymitis	604.0–604.9
Disorders of penis	607.0–607.9
Other diseases of male genital organs	608.0–608.9
Acute salpingitis and oophoritis	614.0
Chronic salpingitis and oophoritis	614.1
Salpingitis or oophoritis, not subacute, acute or chronic	614.2
Inflammatory diseases of uterus	615.0–615.9
Inflammatory disease of cervix, vagina and vulva	616.0–616.9
Malposition of uterus	621.6
Non-inflammatory disorders of cervix	622.0–622.9
Non-inflammatory disorders of vagina	623.0–623.9
Non-inflammatory disorders of vulva and perineum	624.0–624.9
Pain and other symptoms associated with female genital organs	625.0–625.9

ICD 10

Congenital syphilis	A50
Early syphilis	A51
Late syphilis	A52

Other and unspecified syphilis	A53
Gonococcal infection	A54
Chlamydial lymphogranuloma	A55
Other sexually transmitted chlamydial diseases	A56
Chancroid	A57
Granuloma inguinale	A58
Trichomoniasis	A59
Anogenital herpes viral infection	A60
Other predominantly sexually transmitted diseases (nec)	A63
Unspecified sexually transmitted disease	A64
Molluscum contagiosum	B08.1
Acute hepatitis A	B15
Acute hepatitis B	B16
Other acute viral hepatitis	B17
Chronic viral hepatitis	B18
Unspecified viral hepatitis	B19
Malignant neoplasm of vulva	C51
Malignant neoplasm of vagina	C52
Malignant neoplasm of cervix uteri	C53
Malignant neoplasm of corpus uteri	C54
Malignant neoplasm of uterus, part unspecified	C55
Malignant neoplasm of penis	C60
Malignant neoplasm of prostate	C61
Malignant neoplasm of testis	C62
Malignant neoplasm of other and unspecified male genital organs	C63
Benign neoplasm of vulva	D28.0
Benign neoplasm of vagina	D28.1
Benign neoplasm of male genital organs	D29
Hyperplasia of prostate	N40
Inflammatory diseases of prostate	N41
Hydrocele and spermatocele	N43
Torsion of testis	N44
Orchitis and epididymitis	N45
Male infertility	N46
Redundant prepuce, phimosis and paraphimosis	N47
Other disorders of penis	N48
Inflammatory disorders of male genital organs (nec)	N49
Other disorders of male genital organs	N50
Salpingitis and oophoritis	N70
Inflammatory disease of uterus, except cervix	N71
Inflammatory disease of cervix uteri	N72
Other female pelvic inflammatory diseases	N73
Diseases of Bartholin's gland	N75
Other inflammation of vagina and vulva	N76
Polyp of female genital tract	N84
Other non-inflammatory disorders of uterus, except cervix	N85
Erosion and extropion of cervix uteri	N86
Dysplasia of cervix uteri	N87

Other non-inflammatory disorders of cervix uteri	N88
Other non-inflammatory disorders of vagina	N89
Other non-inflammatory disorder of vulva and perineum	N90
Other abnormal uterine and vaginal bleeding	N93
Pain and other conditions associated with female genital organs and menstrual cycle	N94
Special screening examination for infections with a predominantly sexual mode of transmission	Z11
Special screening examination for neoplasm of cervix	Z12
Contact with and exposure to infections with a predominantly sexual mode of transmission	Z20
Carrier of infections predominantly sexually transmitted	Z22
Need for immunization against viral hepatitis	Z24.6
Contraceptive management	Z30

Appendix II Summary list of KC60 codes

Current codes

Syphilis (primary)	A1
Syphilis (secondary)	A2
Syphilis (latent in first two years of infection)	A3
Syphilis (cardiovascular)	A4
Syphilis (of the nervous system)	A5
Syphilis (all other late/latent stages)	A6
Syphilis (congenital aged under two years)	A7
Syphilis (congenital aged two years and over)	A8
Syphilis – epidemiologically treated	A9
Gonorrhoea (lower genitourinary tract)	B1.1
Gonorrhoea (mouth and throat)	B1.2
Gonorrhoea (eye infections, adult)	B1.3
Gonorrhoea (upper GU tract) excluding PID and epididymitis	B1.4a
Gonorrhoea PID/epididymitis	B1.4b
Gonorrhoea and chlamydial PID/epididymitis	B1.4c
Gonorrhoea (systemic complications)	B1.5
Gonorrhoea (pre-pubertal infections)	B2
Gonorrhoea (ophthalmia neonatorum)	B3
Gonorrhoea – epidemiologically treated	B4
Chancroid	C1
Herpes simplex (primary infection)	C10A
Herpes simplex (recurrent infection)	C10B
Herpes simplex (primary or recurrent?)	C10C
Warts (first attack), sexually acquired	C11A
Warts (recurrence), sexually acquired	C11B
Warts (first attack/recurrence?)	C11C
Hepatitis B (antigen positive)	C13A
Hepatitis (other viral)	C13B
Lymphogranuloma venereum	C2
Granuloma inguinale	C3
Post-pubertal uncomplicated Chlamydia	C4A
Other complicated Chlamydia	C4B
Pre-pubertal Chlamydia	C4C
Chlamydial ophthalmia neonatorum	C4D
Chlamydia – epidemiologically treated	C4E
Chlamydial PID/epididymitis	C4F
Non-specific PID/epididymitis	C4G
NSU (Chlamydia negative, or not known)	C4H
Non-specific genital infection (NSGI)	C7B
NSGI with arthritis	C5
Trichomoniasis	C6A
Bacterial/anaerobic vaginosis	C6B
Other vaginosis/vaginitis/balanitis	C6C

Candidiasis	C7A
Scabies	C8
Pediculosis pubis	C9
Other treponemal diseases treated	D1
Previously treated conditions requiring further treatment	D2.2
Epidemiologically treated conditions	D2/3
Dermatological conditions requiring treatment	D2/4
Herpes simplex (not sexually acquired)	D2/5
Ulceration	D2/6
Carcinoma	D2/7
Urinary infection/urethral syndrome	D2/8
Psychosexual problems	D2/9
Hepatitis (non-viral)/hep. B vaccination	D2/10
Enteric pathogens	
Bartholinitis	D2/12
Prostatitis	D2/13
Psychiatric/psychological	D2/16
Neurological	D2/17
Gynaecological	D2/18
Cardiological	D2/19
Renal	D2/20
Rheumatological	D2/21
Bartholin's cyst	D2/22
Behcet's disease	D2/23
Cervical erosion	D2/24
Erythroplasia of Queyrat	D2/25
Foreign body in vagina	D2/26
Haemorrhoids	D2/27
Hydrocoele	D2/28
Conjunctivitis	D2/29
Paraphimosis	D2/32
Pediculosis corporis	D2/33
Phimosis	D2/34
Plasma cell balanoposthitis	D2/35
Pregnancy	D2/36
Pyogenic infection	D2/37
Sebaceous cyst	D2/38
Undescended testicle(s)	D2/39
Lymphocele	D2/40
Peyronie's disease	D2/41
Cytological abnormality of cervix	D2/42
Venerophobia	D2/70
Dental	D2/72
Drug addiction	D2/73
Urological	D2/84
Anal fissure	D2/85
Other conditions not requiring treatment	D3
Other conditions referred elsewhere	D4

Appendix III Recommendations from the Monks report

Genitourinary medicine workloads

Recommendations

The following recommendations are addressed in particular to health authorities, both at district and at regional level and to the DOH. While some of them quite clearly call for action from only one of these bodies others require more than one body to take action. Moreover it is the team's view that the current situation, which demands an urgent response, has arisen to a large extent either because it is not clear who is responsible for some area of work or because the various people who are acknowledged to have responsibilities have not co-ordinated their efforts.

In the team's view therefore it would be useful for readers to consider all the recommendations carefully before dismissing any of them as being someone else's responsibility. However we have first listed five priority recommendations and then 13 further recommendations.

1 The GUM service must be designated as a priority.
2 Additional resources must be made available to implement the team's recommendations.
3 Ministers and the NHS should give a lead in developing this service.
4 Any person presenting with a new clinical problem suggestive of a sexually transmitted disease or who considers himself or herself to have been in contact with such a disease should be seen on the day of presentation or failing that on the next occasion the clinic is open.
5 There must be GUM provision in every district. Districts lacking a clinic should be able to call on a nominated GUM consultant from another district, until such time as they establish their own clinic.

Other recommendations.

6 GUM clinics should be situated in the general outpatient department of a district general hospital.
7 Clinics should be clearly signposted from all patient entrances to the hospital and use the title Genitourinary medicine department.
8 All areas where patients may wish to discuss confidential matters should be soundproof.
9 The individual roles of the doctor, nurse, health adviser, clerical and other staff should be examined, together with their interaction with the working of the whole GUM clinic.
10 Guidelines for staff requirements based on patient attendances and time required per patient should be established.
11 Staffing levels should then be reviewed and adjusted to give adequate time for each patient and allow for the change in the type of cases currently being seen.
12 Every clinic should have at least one health adviser. A certificate course for health advisers needs to be established, which will be run regularly and be of sufficient content and duration to cope with the complexities of health advising.
13 All clinics should have access to the support of clinical psychologists or psychiatrists.
14 New patients and repeat patients presenting with a new clinical problem, should be clinically examined by a doctor rather than a nurse.
15 Regions should be required to review the distribution of their main GUM services and improve distribution where required.

16 Additional funding should be made available to assist in the completion of the KC60 return. Districts should make funds available either for computerization or for increased clerical help. Computers should be compatible with those in other districts within each region.
17 All clinics should continue to provide comprehensive counselling for patients and clients.
18 In accordance with the recommendation of the Venereal Disease Regulations 1916,[1] arrangements should be made for some clinic sessions to be held after 5pm.

Appendix IV Policy implications and key findings from a study of work roles and responsibilities in GUM clinics

This study was carried out by the Policy Studies Institute and examined in detail the work roles and responsibilities of staff in 20 GUM clinics in the UK.[3] The policy implications of the key findings and recommendations of the researchers are listed as follows.

1 In developing GUM clinic services, there should be a fundamental review of the aims and objectives of the clinics themselves and of their place within the wider health service.
2 There should also be a review of the most appropriate skill mix within GUM clinics to meet the aims and objectives, with the recognition that GUM clinics are by no means homogenous in terms of the populations they serve, the conditions they see, the staff they can attract, the physical conditions in which they are housed and the areas of the country in which they are situated.
3 There is a need for a review at a national, regional and local level of the balance of work in GUM clinics between HIV/AIDS and other sexually transmitted diseases. The nature of the work should be assessed and measures taken to ensure that the appropriate staff time is spent equitably.
4 It is essential to institute a reliable statistical basis by which the workload of GUM clinics can be measured so that accurate forecasting and strategic planning can be developed.
5 There is a need for a clearer understanding and assessment of what constitutes workloads in GUM clinics.
6 There is an urgent need for a review of workload measurements. This should cover both sets of Korner returns – the KH09 and the KC60.
7 The KH09 review should aim for a clearer definition of clinic sessions, cancelled clinic sessions, attendances, non-attendances, telephone consultations, etc. There is a need to be able to measure (a) the number of individuals attending the clinic in any one year, (b) the number of occasions on which each individual attends the clinic and (c) the number of 'threshold crossings' in any one year. There is also a need to be able to make proper distinctions between new and old patients.
8 The KC60 review should determine the nature of the information currently required, and should recognize the present wide anomalies and inconsistencies in allocating codes in GUM clinics.
9 Both reviews should examine the process by which data are collected and collated, with special attention to how diagnostic coding of conditions is recorded, supervised and checked in GUM clinics. There is a need for guidance and agreement on the level and type of staff who should be responsible for the allocation of the diagnostic codes. All diagnostic coding should be checked by the senior doctor.
10 Guidelines should be compiled and issued to aid the understanding of the requirements of the statistical returns and to facilitate collection and collation of the data. They should include clearer definitions of component categories. The guidance should cover both the KH09 and KC60 requirements in one document.
11 A basis is needed for a more accurate audit of the workload of the clinic as a whole, as well as the workload of the different types of staff and individual members of staff.
12 Individual clinics must be able to audit their work with reference to regional needs and national policy.
13 A review is needed of the skills in GUM clinics and the numbers and types of staff needed to fulfil these roles. There is a need for leadership in designating these skills and for assessing the skill mix required.
14 All staff employed in GUM clinics should have job descriptions. These should be drawn up in consultation with staff in post and with their professional managers, and regularly reviewed and revised as necessary. The job descriptions should reflect the demands and the 'culture' of the clinic and the post.
15 There is a clear need to provide proper clerical and administrative support for medical, nursing and health advising staff to avoid inappropriate use of their skills.

16 There is an urgent need to review the recruitment, retention, training and support of reception staff in some clinics.
17 The personal and professional development of all staff in GUM clinics is a high priority. Training and continuing education should be offered and maintained. There should be recognition of particular skills and aptitudes which should be developed fully. The value of interdisciplinary courses should be acknowledged.
18 A comprehensive audit and activity analysis is required of the tasks carried out by individual members of staff.
19 A system of individual performance review should be instituted for all staff.
20 The study indicated a need for a clear management structure within each GUM clinic, however small and whatever the local conditions. The relationship between this management structure and the wider hospital or community context within which it is placed should be made explicit.
21 The research showed the need for clear lines of management and professional accountability for all types of staff in GUM clinics. Staff should be made aware of the identity of the managers to whom they are both managerially and professionally accountable.
22 Professional staff should be professionally accountable to suitably qualified managers from the same professional discipline.
23 The study indicated a need for a designated clinic manager to take charge of all routine administrative and day-to-day needs of running a GUM clinic, and for a designated 'business' manager of audit, performance measurement, finance and organizational matters such as business plans.
24 The study underlined the need for a clinical director to be responsible for the clinical policy and supervision of the clinic. It is unlikely that any consultant can supervise more than two clinics adequately.
25 Adequate soundproofing of all parts of the clinic is essential to ensure confidentiality.
26 Adequate space is necessary to ensure that staff can carry out their designated responsibilities.
27 There is a need to review and rationalize the counselling work undertaken within GUM clinics. All staff should be made aware of the policy of the clinic on counselling in connection with different conditions, the definition of counselling and the respective functions of all staff as far as counselling is concerned. The differences between advice, information and counselling should be made clear to all staff.
28 The role of GUM staff, not only in controlling the spread of infection but also in creating and maintaining sexual health in the population by means of education and health promotion, both within the clinics and in the wider community, should be developed.
29 The role of GUM clinic staff in giving education in sex and personal relationships and about contraception, especially to young people, should be developed. Young people are noted for wanting 'one door to knock on' and every opportunity should be taken to give contraceptive advice and information to people who are clearly 'at risk', not only from infection but also from unwanted pregnancies.
30 Questions regarding the supply of condoms by GUM clinics should be reviewed as a matter of urgency.
31 The unique role of GUM clinics in relation to the sexual health of the nation should be recognized. The contact they have with sexually active people should be used as a basis from which to develop their services and to maximize their contribution. Encouragement should be given to GUM clinics to extend the boundaries of their work. The provision by GUM clinics of treatment and advice in areas closely related to sexual health should be encouraged, given the necessary training and expertise among staff.
32 Close and continuing links should be fostered with all professionals and agencies who may refer patients to GUM clinics and to whom GUM clinics may refer. Issues of confidentiality, which are of paramount importance to GUM clinic staff should be discussed as a matter of routine with all external agencies.
33 There is a need to conduct research into the views and experience of patients using GUM clinics. Many of the issues examined in the study need to be looked at through the eyes of the consumer.

Appendix V Genitourinary syndromes, aetiologies and complications

The majority of patients present describing one of a number of symptoms which can be classified within a syndromic approach. The major syndromes and their aetiologies are listed as follows.

Vaginal discharge

- **Infective causes**
  Candida albicans
  Trichomonas vaginalis
  Gardnerella vaginalis
  Anaerobic organisms
  Chlamydia trachomatis
  Neisseria gonorrhoeae
  Cervical *Herpes genitalis*
  Syphilis (*Treponema pallidum*)
  Toxic shock syndrome
  Mycoplasmas
  Haemolytic streptococci
- **Non-infective**
  Cervical ectropion
  Cervical polyps
  Retained products
  Trauma
  Allergy

Urethral discharge

- **Infective causes**
  Neisseria gonorrhoea
  Chlamydia trachomatis
  Ureaplasma urealyticum
  Trichomonas vaginalis
  Candida albicans
  Other bacteria – *E. coli*, Proteus
- **Non-infective**
  Intraurethral lesions – syphilis, herpes, warts
  Physical or chemical trauma
  Allergy
  Non-specific causes

Genital ulceration/erosion

- **Infective causes**
  Herpes genitalis
  Syphilis
  Chancroid
  Granuloma inguinale
  Lymphogranuloma venereum
  Candida albicans
  Trichomonas vaginalis
  Scabies
  Folliculitis
  TB
- **Non-infective**
  Reiter's syndrome
  Leukoplakia
  Carcinoma
  Lichen sclerosis et atrophicus
  Balanitis xerotica obliterans
  Bechcets syndroms
  Erythema multiforme
  Stevens-Johnson syndrome

Complications

- Pelvic inflammatory disease
- Tubal infertility
- Ectopic pregnancy
- Miscarriage, premature delivery
- Fetal and perinatal morbidity and mortality
- Ano-genital carcinomas
- Chronic hepatitis, hepatoma
- Neurological and cardiovascular disease

Appendix VI Acute presentation and complications of sexually transmitted pathogens

Organism		Acute presentation	Complications/chronic sequelae
BACTERIA			
1 *Treponema pallidum* (syphilis)		1 Syphilitic chancre (ulcer) 2 Secondary syphilis – systemic illness with fever, malaise, adenopathy and rash.	1 Tertiary syphilis – gummas – cardiovascular damage – neurological: meningitis tabes dorsalis, general paresis – congenital: miscarriage stillbirth Neonatal death Child infected (early and late complications)
2 *Neisseria gonorrhoeae* (gonorrhoea)		**Men** Urethral discharge Dysuria Acute prostatitis Pharyngitis Acute epididymitis Disseminated infection (arthritis-dermatitis syndrome) Conjunctivitis	**Men** Chronic prostatitis Lymphangitis and urethral stricture Infertility
		Women Vaginal discharge Dysuria Intermenstrual bleeding Menorrhagia Pharyngitis Rectal infection (usually asymptomatic) Disseminated infection Perihepatitis Abscess of Bartholin's gland	**Women** Acute salpingitis (PID) leading to: infertility, ectopic pregnancy Complications of pregnancy/ delivery spontaneous abortion – premature rupture of membranes – acute chorioamnionitis – infection of other mucosal sites – arthritis
3 *Chlamydia trachomatis*	**A**	**Men** Urethral discharge Prostatitis Proctitis Reiter's syndrome Conjunctivitis	**Men** Infertility

		Women Cervicitis – discharge Urethritis Abscess of Bartholin's gland Endometritis Perihepatitis Salpingitis	**Women** PID – leading to: infertility, ectopic pregnancy Possible – spontaneous abortion – prematurity – amnionitis Puerperal infection Post-abortion salpingitis Ophthalmia neonatorum
Chlamydia trachomatis	**B**	Lymphogranuloma venereum Primary: genital papule or ulcer Secondary:	
		i. inguinal syndrome lymphadenitis with bubo formation ii. Anogenitorectal syndrome – acute haemorrhagic proctitis	Genital elephantiasis Genital ulcers and fistulas/ Rectal stricture Perirectal abscesses Anal fistula
		Other: Urethritis Cervicitis Salpingitis Parametritis Conjunctivitis Regional lymphadenitis Meningitis	 Frozen pelvis Scarring
4 *Haemophilus ducreyi* (chancroid)		Genital ulcer inguinal bubo ± dysuria pain on defaecation rectal bleeding dyspareunia vaginal discharge urethritis	Genital fistulas
5 *Calymmatobacterium granulomatis* (donovanosis)		Genital ulceration Tissue lymphoedema Involvement of distal sites – lesions on head, liver, thorax and bones	Tissue destruction Residual scarring and fibrosis
6 Genital mycoplasmas (*Mycoplasma hominis, Ureaplasma urealyticum, Mycoplasma genitalum*)		**Men** Urethritis Prostatitis Epididymitis Reiter's disease	 Decreased fertility

	Women Bartholin's abscess Viginitis (bacterial vaginosis) PID (possible) Endomyometritis (post-abortion) Endometritis – postpartum fever	Disorders of reproduction: Chorioamnionitis Low birth weight [Possible: spontaneous abortion]
7 Enteric bacterial pathogens (Shigella, Salmonella and Campylobacter)	Bacillary dysentery Acute gastroenteritis Systemic invasion: septicaemia	Persistent infection – asymptomatic carrier state
VIRUSES		
8 Herpes simplex	Primary attack – genital ulcers – cervicitis – systemic symptoms – vaginal/urethral discharge – dysuria – pharyngitis	Primary attack – central nervous system involvement (meningitis, radiculopathy, myelitis) – extragenital lesions – direct extension of disease PID Pelvic cellulitis Suppurative lymphadentis **Recurrent attacks** Generally more mild than primary attack **Effects in pregnancy** spontaneous abortion premature delivery (mainly with primary attack) Intrapartum transmission
9 Human papilloma	Anogenital warts	Association with cancers of cervix, vulva, penis, anus
10 *Molluscum contagiosum*	Papular skin lesions	Bacterial superinfection of lesions Molluscum dermatitis
11 Viral hepatitides	Hepatitis A – acute hepatitis	Hepatitis A Fulminant hepatitis (0.1–0.2% mortality rate)
	Hepatitis B – acute hepatitis – asymptomatic (majority) – serum-sickness-like syndrome	Hepatitis B Acute hepatic failure (75% mort.) Persistent carrier state – chronic persistent hepatitis

	Hepatitis C – asymptomatic infection – acute hepatitis – chronic persistent hepatitis – chronic active hepatitis – cirrhosis – hepatocellular carcinoma	 – chronic active hepatitis – cirrhosis – hepatocellular carcinoma
ECTOPARASITES		
12 *Phthirus pubis*	Pubic lice	Secondary bacterial infection of lesions
13 *Sarcoptes scabiei*	Scabies	
PROTOZOAN INFECTIONS		
14 *Trichomonas vaginalis*	Vaginal discharge Urethral discharge Dysuria Vaginal pruritis	
15 Intestinal protozoa (*Giardia lamblia*)	Diarrhoea Upper abdominal pain	Malabsorption Bloating and flatulence
Entamoeba histolytica	Acute recto colitis Symptomatic non-invasive infection	Chronic non-dysenteric intestinal disease Toxic megacolon Fulminant colitis and performation Amoeboma Perianal ulceration Liver abscess ± peritonitis, empyema pericarditis, lung/brain abscess Anogenital fistulae/ulcers
FUNGAL INFECTIONS		
16 *Candida albicans*	Vaginal discharge Urethral discharge Acute pruritis Dysuria	Recurrent and chronic vulvovaginal candidiasis Dyspareunia

Appendix VII Diagnostic techniques and their approximate costs

Organism	On-site diagnosis	Central reference laboratory
1 *N. gonorrhoeae*	Direct smear, with Gram stain	Culture and isolation (£2) Screen for B-lactamase Antibiotic susceptibility Antigen detection Serological testing
2 *C. trachomatis*		Antigen detection (£6.20–£10.40) (1) Direct immunofluorescence staining of smears (£8.30–£20.90) (2) Enzyme immunoassay (£10.00)
3 *T. pallidum*	Darkfield microscopy	Definitive serological tests for syphilis (£4) Rapid plasma reagin card test
4 *M. hominis*		Culture and isolation Antibiotic susceptibility
5 *G. vaginalis*	Wet mount, Gram stain	
6 *T. vaginalis*	West mount	Culture and isolation
7 *C. albicans*	Direct smear	Culture and isolation
8 *H. ducreyi*		Culture and isolation (variable success) PCR (experimental)
9 Herpes simplex virus	Clinical	Virus culture (£20–£30) EIA (£10) Antigen detection
10 *Molluscum contagiosum*	Clinical	
11 Hepatitis A virus		Antibody screen (£4–£6.80)
12 Hepatitis B virus		Serology for screening (£20–£30) pre-immunization acute hepatitis (£27.50) carrier status (£26.80)
13 Hepatitis C virus		Antibody screen (£4-£6.80)
14 Human papilloma virus		Clinical cytology of PAP smear (£6.80–£10.80) (histopathology) DNA detection

Appendix VIII Current STD treatment guidelines

Disease treatment	Treatment effectiveness (reference) [grade of evidence]
1 **Chancroid**	
– Azithromycin 1 g or Ceftriaxone 250 mg im (no resistance yet reported) – Erythromycin 500 mg qds × 7/7	High[65-67]; [A]
2 **HSV**	
–Acyclovir 200 mg × 5 × 7/7 (1st attack) –Topical treatment with acyclovir is substantially less effective, and its use is discouraged –Supressive treatment in those with frequent (> 6 yr) episodes	Treatment effective in first attack but probably does not reduce the % of persons who subsequently develop clinical recurrences. Will need i.v. treatment for those with severe infections (e.g. aseptic meningitis)[68]; [A]
3 **LGV**	Medium-High[69,70]; [A]
–Doxycycline 100 mg bd × 21/7 –Erythromycin 500 mg qds × 21/7 –Sul fisoxazole 500 mg qds × 21/7	
4 **Syphilis**	
–Parenteral penicillin –Doxycycline 100 mg bd × 2/52 –Tetracycline 500 mg qds × 2/52 non-pregnant allergic patients	High (may be reduced in immunosuppressed); [A]
5 **Non-gonococcal urethritis**	
–Doxycycline 100 mg bd × 7/7 –Erythromycin 500 mg qds × 7/7	Moderate in non-chlamydial NGU[71]; [A]
6 **Chlamydia**	
–Doxycycline 100 mg bd × 7/7 –or Azithromycin 1 g stat –or Erythromycin 500 mg qds × 7/7 –or O floxacin 300 mg bd × 7/7	High[69-71]; [A]
7 **Gonococcal infections**	
– **Uncomplicated**: Amoxycillin 3 g stat. plus Probenecid Ceftriaxone 125 mg im –Ce fixime 400 mg o –Cipro floxacin 500 mg o –O floxacin 400 mg o – **Pharyngeal**: Ceftriaxone 125 mg Ciprofloxacin 500 mg	High, but need access to antibiotic sensitivity testing[72]; [A]

8 **Bacterial vaginosis**	
(MTZ = metronidazole)	Moderate -> High[72,73]
– MTZ 500 mg bd × 7/7	[B – reservations over long-term effectiveness]
– MTZ 2 g stat	
– Clindamycin cream 2% (5 g) pv × 7/7	
– MTZ gel 0:75% (5 g) pv × 5/7	
– Clindaymcin 300 mg bd × 7/7	
9 **Trichomonas vaginalis**	
– MTZ 2 g	High[72]; [A]
– MTZ 500 mg bd × 7/7	
10 **Vulvovaginal candidiasis**	
– Clotrimazole 1% (5 g) pv × 7–14/7	Acute attack – 70–90% cure rate with topical treatment;[72]
Clotrimazole 100 mg tab pv × 7/7	[B] – recurrent attacks may require prolonged treatment as prophylaxis
Clotrimazole 100 mg tab bd pv × 3/7	
Clotrimazole 500 mg tab × 1.	
or miconazole *or* terconazole	
11 **PID**	
– Cefoxitin 2 g iv qds *plus* doxy 100 mg bd	Good results with respect to eradication of organisms and clinical recovery if treatment started early.[74,75]
– Clindamycin 900 mg tab iv *plus* gentamycin 1.5 mg/kg tds	
– Ceftriaxone 250 mg im or cefoxitin 2 gm (+ probenecid) plus doxy 100 mg bd × 14/7	[B – questions over prevention of sequelae]
– Ofloxacin 400 mg bd × 14/7, plus Clindamycin 450 mg qds *or* MTZ 500 bd × 14/7	
12 **Epididymitis**	
– Ceftriaxone 250 mg stat (im)	[B]
– plus Doxycycline 100 mg bd × 10/7	
– Ofloxacin 300 mg bd × 10/7	
13 **HPV**	Poor to moderate[76]
– cryotherapy	[B]
– podophyllin 10–25%	[B]
– podofilox 0.5%	[A/B]
– TCA 80–90%	[B]
– electrocautery/other surgery	[B/C]
14 **HBV**	
– Management depends on clinical presentation	
15 **Ectoparasitic infections**	
– Lindane 1%	High, if used according to instructions;[65] [B]
– Permethrin 1%	
– Pyrethrin with piperonyl butoxide	
16 **Scabies**	
– Permethrin 5%	High, if used according to instructions;[65] [B]
– Lindane 1%	

See [66]

Appendix IX Goals, indicators and targets for the management of STDs

Indicators

Indicators	Examples of source of data (for UK)
1 Nos of GUM clinics	AIDS Control Act Reports
2 Nos of GUM clinics with health advisors	AIDS Control Act Reports
3 Nos of new infections	KC60
4 Total attendance	KH09
5 Nos of complications in OPs	KC60
6 Nos of complications admitted, e.g. PID	ICD codes

Data needed in GUM clinics and simple to collect

1 Speed of referral – interval between patient's realization of need to attend and actual attendance (self-referrals, contacts, GP and other referrals to be considered separately).
2 Use of condoms (two surveys outside GUM clinics have already provided some data).
3 Efficacy of partner notification: numbers named, numbers attending, numbers infected, speed with which contacts attend (for source and secondary contacts).

Data needed but more difficult to collect

1 Level of knowledge of sexual behaviour, pregnancy, efficacy of condoms, STDs and HIV infection in the population in general and especially in teenagers and GUM clinic patients. Surveys such as the National Survey of Sexual Attitudes and Lifestyles, surveys by the HEA, and the General Household Survey provide some information.
2 Attitudes to attending GUM clinics, e.g. is attendance:
'Just like any other hospital department?', 'anonymous and confidential?', 'best place to discuss personal matters such as sex?'.
3 Demographic and epidemiological data on those individuals who present repeatedly to GUM clinics with fresh episodes of infection.

Indicators within GUM clinics

1 Locations of clinic, signposting and access.
2 Ease of first visit, i.e. walk-in or by appointment.
3 If by appointment, delay in obtaining appointment.
4 Within-clinic waiting time for first visit.
5 Appointment or walk-in for subsequent visit.
6 If follow-up by appointment, delay in obtaining appointment.
7 Within-clinic waiting time for subsequent visits.
8 Total time for visit, i.e. time from leaving home or work to time of arriving back.
9 Responsiveness of staff, especially regarding discussion of diagnosis and treatment.
10 Layout, decor, lighting, furnishings, reading material and facilities for small children.

11 Provision of 24-hour information service including staff on call and a recorded telephone message.
12 Patient and staff satisfaction with hospital, e.g. location, transport, facilities, signposting, cleanliness, layout, cafeteria facilities, standard of toilets, and for patients, responsiveness of non-GUM clinical staff.
13 Time to written reponse to referral letters.
14 Efficacy in diagnosis, e.g.
   – agreement between Gram stain and culture for urethral gonorrhoea in men
   – proportion of cases of uncomplicated gonorrhoea in women diagnosed at first or subsequent visit
   – chlamydia detection techniques and rates.
15 Efficacy of treatment, e.g.
   – antibiotic resistance patterns of gonococci and cure rates for first-line treatment of uncomplicated gonorrhoea
   – therapy for uncomplicated chlamydial infection, NSU and NSGI
   – indications for oral acyclovir
   – use of epidemiological treatment.
16 Management of STD in other facilities, e.g. general practice and gynaecology departments.
17 Counselling, e.g. in herpes, warts.
18 Provision of psychosexual/clinical psychology services.

Targets

Educational

1 GUM to be involved in alliances with other health educators in setting targets for health education on the following:
   – school leavers knowledge, including:
      a) names of common STDs
      b) methods of catching and spreading, and avoiding STDs
      c) need for early medical care of STDs
      d) safe and safer sex, and value of condoms
      e) relationship skills
      f) where and how to obtain information locally.
2 Information as above to be available to all GUM clinic attenders before discharge from clinic, plus more detailed information on their own conditions as appropriate (targets to be set locally).
3 The establishment of a formal training course for health advisors in STD.
4 Following the establishment of new course (or courses) for nurses working in GUM – at least 50% of GUM nurses to have attended an appropriate specialist course.
5 All clerical staff to receive training on confidentiality and departmental procedures before starting work in a GUM clinic.
6 All members of GUM clinic staff to receive continuing education (details to be agreed locally) every year.
7 Target – all GUM budgets to include provision for training for all clinic staff.

Process targets

1 Easily accessible GUM clinic/GUM provision for residents of every district should continue to be a priority within the NHS. In addition clinics to be open for a minimum of two days each week – 95% after three years, but higher regional and local targets might be considered. (This target is based on the districts in 1988; review may be needed with amalgamation of districts.)

2 Early morning/evening clinics should be available if there is a need, provided adequate resources are available to maintain the quality of service.
3 Follow-up visits to be arranged on a day:
– suitable for medical care and
– convenient for patient.

Outcome targets

1 Overall to reduce uncomplicated gonorrhoea reported from GUM clinics to 49 cases per 100 000 of the population aged 15–64 years in three years. Local targets to be agreed and regional targets may be considered.
2 Overall to reduce uncomplicated chlamydial infection reported from GUM clinics to 100 cases per 100 000 of the population aged 15–64 years in three years. Local targets to be agreed and regional targets may be considered.
3 Maintain the number of cases of congenital syphilis in England and Wales under the age of two years at not more than two per year.
4 All clinics to make KC60 returns within time limits set by health departments to allow more timely national KC60 publication.
5 Hepatitis B immunization to be available for all GUM clinical staff and for patients in at risk behaviour groups.
6 In collaboration with GPs and other services to ensure that cervical screening is available in accordance with national guidelines. In collaboration with other services to ensure that women have ready access to a colposcopy service with a maximum waiting time of eight weeks for a first appointment – local targets may be set to improve on this.

References

1 Royal Commission on Veneral Diseases. London: HMSO, 1916.
2 Department of Health. *Report of the working group to examine workloads in genitourinary medicine clinics.* London: Department of Health, 1988.
3 Allen I, Hogg D. *Work roles and responsibilities in GUM clinics.* London: Policy Studies Institute, 1993.
4 Ridgway GL, Mumtaz G, Stephens RA *et al.* Therapeutic abortion and chlamydial infection. *BMJ* 1983; **286**: 1478–9.
5 Southgate LJ, Treharne JD, Forsey T. *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections in women attending inner city general practices. *BMJ* 1983; **287**: 879–81.
6 Wood PL, Hobson D, Rees E. Genital infection with *Chlamydia trachomatis* in women attending an antenatal clinic. *B J Obs Gynae* 1984; **91**: 1171–6.
7 Edet EE. The prevalence of *Chlamydia trachomatis. C. trachomatis* infection among gynaecological patients. *BJCP* 1993; **47**: 21–2.
8 Fish ANJ, Fairweather DVI, Oriel JD *et al. Chlamydia trachomatis* infection in a gynaecology clinic population: identification of high-risk groups and the value of contact tracing. *Eur Obs Gynae Reprod Biol* 1989; **31**: 67–74.
9 Longhurst HJ, Flower N, Thomas BJ *et al.* A simple method for the detection of *Chlamydia trachomatis* infections in general practice. *JRCGP* 1987; **37**: 255–6.
10 Macauley ME, Riordan T, James JM *et al.* A prospective study of genital infections in a family-planning clinic. *Epidemiol Infect* 1990; **104**: 55–61.
11 Preece PM, Ades A, Thompson RG *et al. Chlamydia trachomatis* infection in late pregnancy: a prospective study. *Paed Perinatal Epid* 1989; **3**: 268–77.
12 Smith JR, Murdoch J, Carrington D *et al.* Prevalence of *Chlamydia trachomatis* infection in women having cervical smear tests. *BMJ* 1991; **302**: 82–4.
13 Blackwell A, Thomas PD, Wareham K *et al.* Health gains from screening for infections of the lower genital tract in women attending for TOP. *Lancet* 1993; **342**: 206–10.
14 Thin RN, Whatley JD, Blackwell AL. STD and contraception in adolescents *Genitourin Med* 1989; **65**: 157–60.
15 Maini M, French P, Prince M *et al.* Urethritis due to *Neisseria meningitidis* in a London GUM clinic population *Int J STD & AIDS* 1992; **3**: 423–5.
16 Dimian C, Nayagam M, Bradbeer C. The association between STDs and inflammatory cervical cytology. *Genitourin Med* 1992; **68**: 305–6.
17 *Morbidity statistics from General Practice, 1991/92* . MB5 94/1. London: OPCS publications (HMSO), 1993.
18 Johnson AM, Wadsworth J, Wellings K *et al. Sexual Attitudes & Lifestyles.* London: Blackwell Scientific Publications, 1994.
19 Curtis H. Sexual Health and Health promotion. In *Promoting Sexual Health* (ed. H Curtis). London: BMA foundation for AIDS & Health Education Authority, 1991.
20 Adler MW, Belsey EM, McCutchan JA *et al.* Should homosexuals be vaccinated against hepatitis B virus?: cost and benefit assessment. *BMJ* 1983; **286**: 1621–4.
21 Loke RHT, Murray-Lyon IM, Balachandron T *et al.* Screening for hepatitis B and vaccination of homosexual men. *BMJ* 1989; **298**: 234–5.
22 Department of Health guidelines. *Guidance on partner notification for HIV infection*. London: Department of Health, HMSO, 1992.
23 Rothenberg RB, Potterat JJ. Strategies for management of sex partners. In *Sexually Transmitted Diseases* (eds KK Holmes *et al.*). 2nd edn. New York: McGraw-Hill, 1990.
24 McCormick JS. Cervical smears: a questionable practice? *Lancet* 1989; **2**: 207–9.

25 IARC Working group. Screening for cervical cancer: duration of low risk after negative results of cervical cytology and its implication for screening policies. *BMJ* 1986; **293**: 659–64.
26 zur Hansen H, Schneider A. The role of papillomaviruses in human anogenital cancer. In: *The Papovauiridae Vol. 2: the papillomaviruses* (eds NP Salzmann, PM Howley). New York: Plenum, 1987, pp. 245–63.
27 Dalgleish AG. Viruses and cancer. *Bri Med Bull* 1991; **47 (1)**: 21–46.
28 Trachtenberg AI, Washington E, Halldorson S. A cost-based decision analysis for Chlamydia screening in California FPCs. *Obs Gynae* 1988; **71**: 101–8.
29 Handsfield HH, Jasman LL, Roberts PL. Criteria for selective screening for *Chlamydia trachomatis* infection in women attending family planning clinics. *JAMA* 1986; **255**: 1730–4.
30 Humphreys JT, Henneberry JF, Rickard RS *et al.* Cost-benefit analysis of selective screening criteria for *Chlamydia trachomatis* infection in women attending Colorado family planning clinics. *Sex Transm Dis* 1992; **19**: 47–53.
31 Weinstock HS, Bolan GA, Kohn R *et al. Chlamydia trachomatis* infection in women: a need for universal screening in high prevalence populations? *Am J Epid* 1992; **135**: 41–7.
32 Randolph AG, Washington AE. Screening for *Chlamydia trachomatis* in adolescent males: A cost-based decision analysis. *Am J Pub Hlth* 1990; **80**: 545–50.
33 Nettleman MD, Jones RB. Cost-effectiveness of screening women at moderate risk for general infections caused by *Chlamydia trachomatis. JAMA* 1988; **260**: 207–13.
34 Buhaug H, Skjeldestad FE, Backe B *et al.* Cost-effectiveness of testing for chlamydial infections in asymptomatic women. *Med.Care* 1989; **27**: 833–41.
35 Skjeldestad FE, Tuveng J, Solberg AG *et al.* Induced abortion: *Chlamydia trachomatis* and postabortal complications: a cost-benefit analysis. *Acta Obstet Gynecol Scand* 1988; **67**: 525–9.
36 Department of Health. *New cases seen at NHS GUM clinics in England*. Summary information from form KC60. 1992 annual figures. London: Department of Health, 1992.
37 Scitovsky A, Over M. AIDS: Costs of care in the developed and developing world. *AIDS* 1988; **2 (suppl.1)**: 571–81.
38 Scitovsky A, Rice D. Estimates of the direct and indirect costs of AIDS in the US, 1985, 1986 and 1991. *Public Health Reports* 1987; **102**: 5–17.
39 Godfrey C, Tolley K, Drummond M. The economics of promoting sexual health. In *Promoting Sexual Health* (ed. H Curtis). London: BMA foundation for AIDS & HEA.
40 Drew WL, Blair M, Miner RC *et al.* Evaluation of the virus permeability of a new condom for women. *Sex Transm Dis* 1990; **17**: 110–12.
41 Stone KM, Grimes DA, Magder S. Primary prevention of STDs. *JAMA* 1986; **255**: 1763–6.
42 MMWR Update: Barrier protection against HIV infection and other STDs. *MMWR* 1993; **42**: 589–97.
43 Winkelstein W, Samuel M, Padian NS *et al.* The San Francisco men's health study. III Reduction in HIV transmission among homosexual–bisexual men 1982–1986. *Am J Public Health* 1987; **76**: 685–9.
44 Johnson AM, Gill ON. Evidence for recent changes in sexual behaviour in homosexual men in England & Wales. *Philos Trans R Soc Lond* 1989; **325**: 153–61.
45 Leman SM, Newbold JE. Viral hepatitis. In *Sexually Transmitted Diseases* (eds KK Holmes *et al.*). 2nd edn. London: McGraw-Hill, 1990.
46 Schultz KF, Murphy FK, Patamasucon P *et al.* Congenital syphilis. In *Sexually Transmitted Diseases* (eds KK Holmes *et al.*). 2nd edn. New York: McGraw-Hill, 1990.
47 Department of Health. *Immunisation against infectous disease*. London: HMSO, 1992.
48 Sellors JW, Pickard L, Gafni A. Effectiveness and efficiency of selective vs. universal screening for chlamydial infection in sexually active young women. *Arch Intern Med* 1992; **152**: 1837–44.
49 Williams K. Screening for syphilis in pregnancy: an assessment of the costs and benefits. *Comm Med* 1985; **7**: 37–42.
50 Wigfield S. 7 years of uninterrupted contact tracing: the Tyneside scheme. *Brit J Vener Dis* 1972; **48**: 37–50.

51 Gonorrhoea and Syphilis in Sweden – past and present. *Scand J Infect Dis* 1990; **69**: 69–76.
52 Talbot MD. The relationship between incidence of gonorrhoea in Sheffield and efficiency of contact tracing: a paradox? *Genitourin Med* 1986; **62**: 377–9.
53 Romanowski B, Sutherland R, Love EJ *et al*. Epidemiology of an outbreak of infectious syphilis in Alberta. *Int J STD AIDS* 1991; **2**: 424–7.
54 Potterat JJ, Meheus A, Gallwey J. Partner notification: operational considerations. *Int J STD AIDS* 1991; **2**: 411–15.
55 York JA, Hethcote HW, Nold A. Dynamics and control of the transmission of gonorrhoea. *Sex Trans Dis* 1978; **5(2)**: 51–5.
56 Ramstedt K, Forssman L, Johannisson G. Contact tracing in the control of genital *Chlamydia trachomatis* infection. *Int J STD AIDS* 1991; **2**: 116–18.
57 Burgess JA. A contact-tracing procedure. *Brit J Vener Dis* 1963; **39**: 113–15.
58 Potterat JJ, Phillips L, Rothenburg RB *et al*. Gonococcal pelvic inflammatory disease: case-finding observations. *Am J Obstet Gynecol* 1980; **138**: 1101–4.
59 Oxman AD, Scott EA, Sellors JW *et al*. Partner notification for sexually transmitted diseases: an overview of the evidence. *Can J Public Hlth* 1994; **85**: S41–7.
60 Dunlop EMC, Lamb AM, King DM. Improved tracing of contacts of heterosexual men with gonorrhoea. *Brit J Vener Dis* 1971; **47**: 192–5.
61 Patel HC, Viswalingam ND, Goh BT. Chlamydial ocular infection: efficacy of partner notification by patient referral. Int J STD AIDS 1994; **5**: 244–7.
62 *Veneral Diseases Act, 1917*. NHS (Venereal Diseases) Regulations, 1974.
63 Department of Health. *AIDS and HIV: service objectives 1990/91*. Annex to EL (90) P/30. London: Department of Health, Feb. 1990.
64 Department of Health. *HIV/AIDS and sexual health*. Key area handbook for the health of the nation. London: Department of Health, 1993.
65 Holmes KK, Mordh P-A, Sparling PF *et al*. (eds) *Sexually Transmitted Diseases*. 2nd edn. New York: McGraw-Hill Publications, 1990.
66 MMWR 1993 STD Treatment guidelines. *MMWR* 1993; **42**: 1–102.
67 Ronald AR, Corey L, McCutchan JA *et al*. Evaluation of new anti-infective drugs for the treatment of chancroid. *Clin Infect Dis* 1992; **15 (Suppl. 1)**: S108–14.
68 Corey L, McCutchan JA, Ronald AR *et al*. Evaluation of new anti-infective drugs for the treatment of genital infections due to Herpes simplex virus. *Clin Infect Dis* 1992; **15 (Suppl. 1)**: S99–107.
69 Handsfield HH, McCutchan JA, Corey L *et al*. Evaluation of new anti-infective drugs for the treatment of uncomplicated gonorrhea in adults and adolescents. *Clin Infect Dis* 1992; **15 (Suppl. 1)**: S123–130.
70 Handsfield HH, Ronald AR, Corey L, McCutchan JA. Evaluation of new anti-infective drugs for the treatment of sexually transmitted chlamydial infections and related clinical syndromes. *Clin Infect Dis* 1992; **15(Suppl. 1)**: S131–9.
71 Bowie WR. Effective treatment of urethritis. A practical guide. *Drugs* 1992; **44(2)**: 207–15.
72 McCutchon JA, Ronald AR, Corey L *et al*. Evaluation of new anti-infective drugs for the treatment of vaginal infections. *Clin Infect Dis* 1992; **15 (Suppl. 1)**: S115–22.
73 Sweet RL. New approaches for the treatment of bacterial vaginosis. *Am J Obstet Gynecol* 1993; **169(2)**: 479–82.
74 Westrom L, Mardh P-A. Acute Pelvic Inflammatory Diseases. In *Sexually Transmitted Diseases*(eds KK Holmes *et al*.).(2nd edn). New York: McGraw-Hill, 1990.
75 Cates W, Rolfs RT, Aral SO. Sexually transmitted diseases, PID and infertility: an epidemiologic update. *Epidemiol Re* 1990; **12**: 199–220.
76 Holmes KK, Mordh P-A, Sparling PF *et al*. (eds) *Sexually Transmitted Diseases*. 2nd edn. New York: McGraw-Hill Publications, 1990.