SYPHILIS AND AIDS: HISTORICAL AND SOCIAL COMPARISONS

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The thesis is submitted in total fulfilment of the requirements for this degree.

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CANDIDATE'S CERTIFICATE

I certify that the thesis entitled *Syphilis and AIDS: Historical and Social Comparisons* and submitted for the degree of Master of Arts Humanities is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed: 

Date: 5.11.92
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# SYPHILIS and AIDS: HISTORICAL and SOCIAL COMPARISONS.

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SUMMARY

Drawing on the literatures of history, sociology, epidemiology, and microbiology, this thesis compares syphilis with human immunodeficiency virus, with special reference to the social and historical factors likely to be relevant to the control or eradication of acquired immune deficiency syndrome (AIDS).

The sudden appearance of a new disease causing suffering and death in a community, engenders apprehension and fear which is often manifested as hysteria against, and vilification of, those who have the disease. This fear is greatly increased should the disease be sexually-transmitted.

Syphilis in a venereal form, occurred in Europe toward the end of the 15th Century. Initially it was an acute, fulminating disease which rapidly spread through Europe and Asia. Attempts to control the disease have gone through periods of either partial successes or massive failures and have ended in frustration for the authorities.

When the syndrome of acquired immune deficiency (AIDS) was first reported, it was seen in Western countries in homosexual men. However, as non-homosexual community members and children became infected, it became apparent to authorities that a pandemic was occurring. Within a few years, the disease was identified worldwide. Isolation of the virus (HIV-1), and development of tests for detection of carriers, plus restoration of clean blood and blood-product supplies, have reassured the community to some extent.

The history of syphilis shows that neither the epidemiological medical, nor the economic political approaches to disease control work, although there are positive aspects resulting from both. It is social responses that will offer the most hope in the long term for the control of AIDS and other sexually-transmitted diseases.
SYPHILIS and AIDS: HISTORICAL and SOCIAL COMPARISIONS

INTRODUCTION

Throughout history, outbreaks of plagues, pestilence, and disease have occurred with alarming frequency. From the time that humans began to keep records in the Egyptian, Sumeric, and other early civilisations, the devastating effects of diseases on human populations have been passed down through historical accounts as part of the folklore and literature of many peoples.\(^1\) The role that diseases have played in the evolution of living things and human civilisations has often been overlooked or referred to only in passing references.\(^2\)

One well-known example of the impact of disease on civilisations, *Yersinia pseudotuberculosis var. pestis*, has inflicted devastating loss of life over the last 2,000 years. This agent, the cause of the "plague" is still present in all areas of the world, except Australasia. Three large pandemics have occurred: the Justinian Plague 542 A.D., in which an estimated 100 million deaths resulted; the Black Death, 1346 A.D., which lasted over 3 centuries and caused an estimated 25 million deaths, and, finally, the pandemic of 1894 which continued up to the 1930s with considerable loss of lives. These pandemics resulted in enormous social changes due to the devastation of populations and efforts to ameliorate the effects have continued to modern times. The fear of plague and its effect on civilisation has become a focus of historical examination and a subject of literature.\(^3\)

Other lethal infective scourges have, throughout history, accompanied wars, revolutions, and poverty. One of these was typhus. An estimated 750,000 Irish people died during the period of 1844 to 1847 in the time of the potato famine in Ireland, many of them dying as a result of the combined effects of starvation and typhus. The social upheaval so created by this mixture of famine, poverty, and disease resulted in mass migrations of Irish to England, America, Canada, and Australia. The earlier social and political effects of typhus on the progress of civilisations have been fully discussed by Zinsser (1935).\(^4\) Typhus last appeared during the Second World War in Russia and in Nazi concentration camps where people from all over Europe were herded together under shocking, primitive, and unhygienic conditions.

In the era of therapeutic medicine, the development of antibiotics and vaccines has reduced the effects of many of the great epidemic plagues and has resulted in worldwide eradication of one of them, smallpox. Many of the microorganisms that induced diseases
still remain in quiescent roles and of these, syphilis, remains as one of the more intransigent.

Syphilis is one of the diseases that have altered history. From its first appearance in Europe in the 1490s to the present day, its prevalence in a population has also provided a barometer of social mores and religious values. The origins of syphilis are still unknown, but from historical accounts at the end of the 15th Century, a pandemic of syphilis occurred through Europe and Asia soon after the return of Columbus and his crew from the New World in 1493. Venereal syphilis has a worldwide distribution and knows no climatic, racial, or geographic barriers. Syphilis is a disease unique to humans, no other animals being affected. It is among the predominantly sexually-transmitted diseases (STDs). Following treatment and cure, (no vaccine is available), the resulting immunity is transitory and reinfection can occur a number of times in sexually-active people, especially those in high-risk groups. High-risk groups for syphilis, prostitutes and their clients, homosexual/bisexual men, and intravenous drug users, are the same groups at risk for other sexually-transmitted diseases, including AIDS.

When syphilis first occurred in Europe it was an acute, often fulminating disease, known as the "great pox" because of the disfiguring pustules which erupted all over the bodies of sufferers. The name "great pox" differentiated the new disease from the known disease "smallpox" which, although disfiguring, was not responsible for high mortalities like the new disease. Until the cause and pathogenesis of syphilis was found and the resulting knowledge used to develop tests and treatment for the disease, generations of infected people in all continents of the world suffered. Although syphilis appears to be less acute now than in early descriptions, it is still a debilitating, chronic disease which can cause a variety of symptoms, including neurological effects and death.

A study of the history of syphilis from its first appearance provides many parallels with the evolving history of AIDS. Comparison of the two diseases and community responses to them is therefore warranted. While syphilis is not a set of symptoms which occur together like the syndrome of AIDS, they are both primarily sexually-transmitted diseases. What can be learned from past experiences with syphilis? In its more severe forms syphilis has some similar pathological features to AIDS such as neurological damage. Syphilis was greatly feared in the early years of the 20th Century because of the widespread myth that it was casually transmitted from items in daily use. Infection was highly stigmatised and sufferers were looked on as pariahs by many contemporary societies. As a result of attempts to control syphilis it is now known that fear of the disease does not help. In fact it reduces opportunities for finding solutions. Fear acts adversely by arousing unwarranted reactions against those infected and the victims then become the disease in the psyche of the community. How can this information be used to
advantage against AIDS? Syphilis can be cured with modern drug therapies, although there are no vaccines. Why then is syphilis still present? Educators have attempted to make the public aware of the dangers of sexually-transmitted diseases for many decades with little evidence for a reduction in the prevalence of these diseases. Legislation and punitive laws have actually increased the problems of venereal disease. Although syphilis provides lessons for to-day, we must recognise that what was done to control the disease in the past did not work. The control policies for AIDS must be more just and effective.

ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)

As the name indicates, AIDS is a syndrome not a single disease, a medically-defined condition resulting from infection by a retrovirus, the human immunodeficiency virus (HIV-1). After an initial acute illness, a persisting viraemia occurs and results in a chronic infection. There may be no symptoms, so that the infection can be relatively asymptomatic for a prolonged period of time (median 10 years). This is sometimes referred to as the latency period. During this period, however, there may be a gradual impairment of immune and neurological functions as well as impairment of other organs leading to AIDS-related complex (ARC) and AIDS. After infection with HIV, other opportunistic infections usually occur and recur over a period of months or years. It is this sequence of viral infection followed by opportunistic infections, combined with an immunocompromised body defence, that results in AIDS.

Like syphilis, the origin of AIDS remains unknown. There are several theories which point to a genesis in the African continent. However, in 1987, the World Health Assembly stated that human immunodeficiency virus is a "naturally-occurring retrovirus of undetermined geographic origin." The human immunodeficiency virus referred to was isolated from patients suffering from AIDS in France and the US during 1983 and 1984. In France the virus was named lymphadenopathy-associated virus (LAV); in the US it was referred to as human T-lymphotropic virus type 111 (HTLV-111) or AIDS-related virus (ARV). Because of the confusion resulting from the variety of names, it was decided to refer to the viruses as human immunodeficiency viruses (HIV), and the virus discussed above, as HIV-1.

Retroviral infections are chronic in nature, in most cases persisting for life. The virus has been isolated from a majority of normal healthy individuals who have HIV-1 infections despite the presence of antibodies to the virus for up to 69 months after the time that antibodies were first detected.

Since HIV-1 was recognised there have been major developments in the introduction of serological and confirmatory tests for the virus. These tests have been especially valuable
in protecting the general public by screening blood banks, plasma products, and tissues for organ transplantation, ensuring freedom from HIV-1. The tests have enabled epidemiological surveillance to be carried out worldwide and have shown the pandemic dimensions of HIV infection, (see Schupbach,\textsuperscript{11} for details on human retrovirology).

Recent isolations in West Africa of previously-unrecognised retroviruses have been made from patients and people at high risk. These new viruses are related to HIV both in their genomes and in their protein antigens but are clearly different from the prototype virus designated HIV-1. Because of this close relationship they have been designated HIV-2 (HIV-2 can also cause AIDS), to distinguish the strains which respond differently in tests.\textsuperscript{12}

In another area of research into retroviral pathogenesis, Essex and Kanki (1988), studied closely-related human and simian T-lymphotropic viruses.\textsuperscript{13} Captive macaque monkeys in the US developed a syndrome similar to AIDS in humans from which a virus was isolated and named simian immunodeficiency virus (SIV).\textsuperscript{14}

In 1985, the reported rates of HIV infection in areas of Central Africa were extremely high and led to the suggestion that the emergence of AIDS in that region may have predated the emergence of the disease in other parts of the world. At this point, Essex and Kanki made an assumption that the distribution of HIV in African populations may be related to a similar virus distribution in monkeys in Africa. They obtained blood samples from wild-caught chimpanzee, African green monkeys, baboons, and patas monkeys. There was no evidence of infection in chimpanzee, baboons, or patas monkeys. However, over 50 percent of the African green monkeys had evidence of SIV infection. Extensive surveys from several thousand African green monkeys from sub-Saharan Africa and from primate facilities around the world have revealed a prevalence of 30 to 70 percent infection rate to SIV. Despite this high prevalence there is no evidence of adverse effects of the virus. Indeed, these monkeys are among the most successful of the African primates and are noted for their general good health. Although SIV is endemic in wild African green monkeys and causes no apparent disease, when they come in contact with captive Asian macaques, the latter develop a devastating disease. This raises the possibility that the African green monkeys have developed resistance to the virus whereas macaques are susceptible and lack immunity indicating that they may not have previously encountered a similar virus. Studies such as these have indicated that HIV-1, and earlier versions of HIV-2 and SIV, probably originated from a common primate ancestor lentivirus\textsuperscript{15} in the distant past, whereas SIV and HIV-2 were phylogenetically separated more recently.
Isolation of HIV-2 from the blood and cerebrospinal fluid of patients with AIDS and ARC created a great deal of speculation regarding the role of these agents in AIDS in Africa. Based on preliminary serological surveys and identification of patients, HIV-2 appears to be occurring principally in West Africa. Data suggest that HIV-2 is present in similar populations to those infected by HIV-1 and that heterosexual activity is the major method of transmission for both viruses in Africa.

The presence of HIV-2 adds a further complication to the epidemiological surveillance programs for HIV infections and has additional implications for blood donor and tissue-screening requirements indicating the need for more tests, and for changes in research programs to accommodate the different viruses.

Because of the long period of time that often transpires between initial virus infection and the appearance of AIDS it is difficult to predict the course of the epidemic. Also there are variations in the incidence of infections in risk groups in different regions of the world which has led to changes of the categorisation of risk groups in some countries. Of highest priority for most countries was the development of techniques to safeguard the blood and blood product supply. Particularly important was the isolation of HIV-1 and the development of rapid screening and other tests for its detection to protect people dependent on blood and blood products as well as to identify those infected. The emphasis could then swing towards prophylaxis and treatment.

AIDS is not a curable disease at present but it has shown some response to treatments which alleviate symptoms and a number of antiviral drugs are currently undergoing clinical evaluation around the world. The development of a vaccine against HIV-1 infection is an important area of research but not one offering a strong hope for future success. Research on AIDS has been remarkably rapid and progress in understanding the disease has occurred as a result of scientists from around the world co-operating in information-sharing to attempt control and eradication of the infection.

Initially, attitudes towards AIDS were framed within the context of its identification in homosexual groups, first in the US in 1981/1982, and then in other Western countries. Subsequent identification of infections in IV drug users, Haitians, and black Americans, and, finally, haemophiliacs and those receiving blood transfusions or their partners and children, created widespread fears and conflicting moral and political responses in communities. Jeffery Weeks commented in an article in the Social Aspects of AIDS, "In the case of AIDS there was a real, anxiety-making disease for which there was no cure, and which seemed to be localised amongst certain groups of people. Irrationally, but predictably, the form the panic took was the search for people to blame. Those with AIDS were easily divided into two categories: the 'innocent' (haemophiliacs, female
partners of bisexual men, children) and the 'guilty' (drug addicts, the 'promiscuous' and homosexual/bisexual men). But it is above all the linkage of AIDS with homosexuality that has dominated attitudes." 18

Rosenberg (1989), points out that while AIDS provided an occasion for labelling, it was not simply an exercise in labelling. Rosenberg elaborates by illustrating that homosexual leaders who had for decades urged that homosexuality should not be considered a medical problem now found that the homosexual community was anxiously awaiting the findings of medical virologists and immunologists. As AIDS has a fatality rate approaching 100 percent it has helped create a new consensus with regard to diseases in which there are both biological and social factors and, as a result, AIDS emphasises the interaction of these factors. 19 The importance of widespread public understanding of AIDS must be continually stressed. Shifts in social attitudes to sex education and political recognition of the dangers of uncontrolled STDs should help ensure that the principal messages are conveyed to the public. Control of the AIDS epidemic worldwide depends on education and public-health measures to change high-risk sexual behaviour in all countries no matter what forms the behaviour may take or in what cultures it may occur. 20

CONCLUSION

The history of syphilis since the 1800s to the present day offers opportunities for comparison with AIDS, first in the clinical and pathological aspects of both diseases, then in the medical and social reactions to STDs. Also to be considered are social attitudes to the behavioural changes required to limit spread of infection. Finally, there must be an awareness that alienation and stigmatisation of high-risk groups of sufferers within society promotes guilt by association.

Through the ages the historical effects of syphilis on society have provided information for authorities and the community to study. By utilising the accumulated experiences from the past, systematic studies could be developed that have relevance to, and would provide a stimulus towards, control of sexually-transmitted diseases. At this time in the worldwide struggle against AIDS we can ask how well has society learned from the past? Do we have to continue to repeat history? The world community must now be involved in education and control methods in order to contain AIDS and to meet the challenge of all STDs for the sake of future generations. This means that "safe sex" will be the responsibility of individuals and their partners. To achieve that level of co-operation from the community will require a massive commitment towards changing attitudes towards sexuality. Modern communications provide the means, but has society the will?
Chapter 1 Footnotes

15. R.E.F. Matthews, *Classification and Nomenclature of Viruses*, (London: S. Karger, 1982) pp. 124-127. Lentiviruses are a sub-family of the Retroviridae Family. The human immunodeficiency viruses are members of the sub-family Lentivirinae which also includes other animal viruses.


CHAPTER 2

SYPHILIS

ORIGIN AND HISTORY OF SYPHILIS

PRE-COLUMBUS OR COLUMBUS?

As an indication of the social and medical concern that syphilis has generated throughout history, an extensive literature on the origin of the disease has arisen. Debate has centred on the existence of syphilis in non-venereal forms suggested by paleontological research and from Biblical references and other early texts up to the late 15th Century. From this period on there is no doubt that, either coincidentally or causally following the return of Columbus and his crew from the New World, syphilis became, "a great plague sweeping, within a few years, over the known world."¹

The causative agent of syphilis was not known until *Spirochaetum pallida* later renamed *Treponema pallidum* was identified in 1905.² Prior to this, there had been a continuing debate as to the possible causes. The intensity of this debate is emphasised by the comments of Samuel Lane in the introduction to a series of lectures on syphilis to the medical profession in 1841, "there is no class of diseases of equal prevalence upon which the profession is more divided in opinion, both as regards its natural history and the plan upon which its treatment should be conducted."³ In these lectures Lane provided a very detailed and widely-cited history of the events surrounding the voyages of Christopher Columbus. He also quoted from the historical accounts outlining the rapid spread of syphilis throughout the then-known world.⁴

After *T.pallidum* was recognised as the organism responsible for the disease syphilis, a number of skin conditions were also shown to be caused by the same organism. These conditions were referred to by various names usually depending on the region of the world in which they occurred. The clinical diseases of yaws, pinta, and non-venereal syphilis are partly distinguished by the area of the body they affect and are referred to as infectious treponematosis.⁵

Hudson (1965)⁶ advanced a thesis suggesting that treponemal infection originated as yaws in equatorial Africa in Paleolithic times and was spread by hunter-gatherers during migrations. In cooler and drier areas of the world it became the skin infection, endemic syphilis. Development of the village structure during the Mesolithic and Neolithic periods was a social change that occurred among peoples on most continents. Villages expanded as population increased, eventually becoming established as population concentrations in
urban civilisations. Treponemes, like many other human disease agents, have evolved to conform with changing environmental conditions such as climate and social habits of the host.

Using an epidemiological approach, Hudson regards the clinical conditions as four syndromes which develop as separate entities, each with a common aetiology. He supports his hypothesis with references to the diseases; non-venereal (endemic) syphilis is a contagious skin disease of children which lasts about 12 months leaving few, if any, traces of the infection. It commonly occurs in sub-tropical and temperate climates and in rural areas where hygienic standards are low. Yaws was the most common of the treponemal diseases before penicillin treatment and occurred as an endemic infection of children in undeveloped tropical regions of the world. Pinta, the remaining condition, is also an endemic skin infection which produces striking changes in skin colour of people in sub-tropical and temperate areas of South America. All three endemic syphilis forms occur among populations that are poor and live in unhygienic, primitive conditions, usually in rural settings. Despite the availability of penicillin as a dramatic cure for these diseases, the prevalence throughout the world is greater than that of venereal syphilis.

Hackett (1963) compared the clinical characteristics of the treponematoses showing the importance of age differences at infection and the subsequent distribution of lesions. He also speculated on the possible origins of the clinical syndromes. Pinta, he suggested, developed in isolation when the land bridge across the Bering Strait was flooded. Climatic and other conditions in the Afro-Asian land mass led to yaws as a tropical disease, while endemic syphilis was the more common form in temperate and cold regions. Venereal syphilis provided the transition which removed the microorganism from external climatic influences.

Following this line of reasoning, both Hudson and Hackett stressed the social changes that occurred in communities during the transition from rural to urban life as civilisations evolved. Sanitation was not a problem in the village, minimal clothing was worn, and endemic syphilis, yaws, and pinta could spread by contact transmission. As urban living developed, changes in sanitation and water supplies were required and the amount of clothing worn was increased to conform with evolving social changes and mores. Housing required more space to accommodate changes in family living patterns such as eating and sleeping. There was a need for better hygiene within the communities to reduce ectoparasites and other skin infections. Urban societies, in comparison to villages, were congested and, in order to remain viable, had to maintain a minimum standard of personal and public hygiene. Modest improvements such as washing and wearing clothes, were sufficient to reduce the incidence of endemic syphilis and eventually it declined to become an uncommon infection. The minimal immunity
resulting from infection with *T. pallidum* as a skin condition of children, no longer occurred.

The colonisation of genital tissues by the microorganisms was a transition to an environment favourable for growth and maintenance. Also transmission during sexual activity provided an excellent method for future spread to uninfected hosts. For most other infectious agents, populations of towns and cities provided ideal substrates for epidemics. Diseases such as cholera, typhus, smallpox, and the plague often swept through populations as epidemics and then regressed after time as an immune population evolved whereas, because *T. pallidum* induces only transitory immunity, syphilis remained as an endemic infection.

In a discussion of the historical literature and comparisons of the distribution of the treponemal diseases in the world during those periods, Hackett attempted to show the transition from non-venereal to venereal syphilis. Both Hackett and Hudson agreed on the possibility of venereal infections occurring in populations during the growth of cities. Hackett suggested that the cities of the Eastern Mediterranean and south-western Asia developed around 5000 to 3000 BC, when the post-glacial climatic optimum allowed for a favourable, stable climate to occur. After 3000 BC the climatic changes returned the area to the present arid zones.

In village society, where the small family groups are known to one another, the sexes are approximately equal in numbers. Most people are married early in life and females are usually attached permanently to some male. In a few societies polygamy is also accepted. Clandestine promiscuity is possible, but in many cultures, often results in swift penalties. In this setting, prostitution is virtually unknown. However, with the establishment of towns and cities, the close familial relationships of village life are lost, allowing changes in sexual patterns to take place.

Hudson\(^8\) has suggested that in most established cultures, groups of women became devotees of various goddesses, such as Astarte, Isis, Aphrodite, and Venus and were involved in many of the associated religious practices which included fertility rites. From this relationship prostitution gradually developed, initially as an adjunct to the religion. Prostitution became part of the evolution of urban environments. The opportunity for the spread of venereal diseases was thus enhanced in these societies.

Supporters of the so-called unitarian line, or single origin of syphilis include authors such as Alfred Crosby (1969)\(^9\) who proposed that, although treponemes were spread around the world by the movement of primitive peoples, the organism may have evolved differently in different environments, so that for example, although the organisms only infect humans, those in the Americas developed increased virulence and a tropism for
genital tissues along with an ability to be transmitted during sexual activities. Abner Weisman (1966),\textsuperscript{10} following studies in South America, agreed with the unitarians on the basis of lack of paleontological evidence in bone and skeletal malformation or deformation seen in syphilis.

However, the strongest line of evidence for the origin of syphilis in Europe, and one based on contemporary writings, would still suggest its introduction into Europe by Columbus and his crew. Apart from the reports of the time, the poem and descriptions of Girolamo Fracastor\textsuperscript{11} in 1530 provide a contemporary overview by a man with a medical background. The title of the poem, "Syphilis Sive Morbus Gallicus", and the fate of the poor shepherd depicted in the story, eventually led to the naming of the disease that removed national stigmas adopted previously. For example, the nameless disease had been referred to by the Italians as either the French or Spanish disease; the French called it the Italian or Neapolitan disease; the British called it the French disease and so on with no nation claiming responsibility. By all historical accounts, syphilis spread very rapidly, aided by the prevailing social customs, the increased mobility of people, and the movement of armies due to the wars that were a constant feature in Europe at the time. The severity of the pandemic of syphilis was a factor in the gradual abandonment of public baths which were often present in medieval towns and, as a result, bathing became a very rare event.\textsuperscript{12} In addition, there were discoveries of new lands and the development of new trade routes by land and sea. All these changes resulted in the transfer and spread of infectious agents between peoples who, along with their microorganisms and social customs, had previously evolved in isolation from one another.

In his description of the development of the modern concept of syphilis, Ludwik Fleck\textsuperscript{13} traces the historical origins of the disease. Fleck points out that the confusion and the diverse clinical manifestations attributed to syphilis were due to an inability to differentiate common chronic skin ailments, especially those associated with the genitalia, from one another, let alone from other venereal and sexually-transmitted diseases.

Despite the theories for an Afro-Asian origin for \textit{T.pallidum} in pre-historical times and for the association of the four different clinical manifestations of infection caused by the organism, there still remain doubts regarding the origins of venereal syphilis.

Although \textit{T.pallidum} has been known for almost a century, there is still no efficient laboratory-culture system available. Consequently, research on methods of control and eradication are hampered by the lack of information on the nutritional requirements of the organism and its pathogenesis in the human. There is no readily-available means at present for testing vaccines should these be produced in the future. In this respect,
syphilis and HIV will have common ethical problems when safety and efficacy testing is required for new treatments.

Syphilis, like HIV-1 infections and AIDS, still arouses the fears of the righteous elements in society against the "guilty sinners" of their communities. Both diseases act as mirrors, reflecting and confronting humans with their last great taboo - the sexual behaviour of the individual. These venereal agents, both of which are confined to humans, may yet bring sex education into the realm of preventive medicine open to the general public, and discussed freely along with such subjects as dental hygiene and good nutrition.

SYPHILIS FROM THE 16th TO 19th CENTURIES

The end of the 15th Century was a period of turmoil for the peoples of Europe. Astrology was a dominant intellectual force at this time for the analysis of events and for foretelling the future. According to the astrologers of the day Scorpio ruled the genitals and was in ascendancy. Therefore, it seemed logical that the epidemic was a result of these propitious astrological events. In an interesting coincidence the New York Native's astrologer in October 1984, pointed out that," AIDS was a highly appropriate disease to appear when Pluto, the ruler of Scorpio, was in its own sign; linked as it is with death, sexually-transmitted diseases and the so-called darker side of life and the psyche."14

Due to the effect of the Reformation in the Christian communities throughout Europe, religious strife was rampant. Church leaders were eager to describe the syphilis epidemic as a punishment from God for the human sin of fornication. Christian spiritual predictions and astrological mystical admonitions combined to provide the basis for syphilis to be seen as a mysterious, divine punishment by the people.15 As well as the religious and astrological attitudes, there were frequent wars,(often religious in origin), resulting in the movement of armies and their attendant retinues over large areas of Europe. Armies provided a source of many diseases afflicting both animals (cattle plague), and humans (the plague and tuberculosis) which were transmitted to susceptible populations during progress through countries. Sexually-transmitted diseases were often prominent among those introduced into communities.

Throughout the 16th and 17th Centuries, syphilis continued to be an ill-defined yet potent condition. Attempts were made to collate the clinical manifestations in order to categorise and separate these from other similar conditions. Many diseases of the time were skin ailments, such as smallpox, leprosy, treponematosis, ectoparasites (lice and scabies), as well as common conditions like boils, rashes, and fungal infections. Often categorisation was based on a response of the clinical condition to the use of ancient remedies including mercury in various forms. Arabian physicians had used mercury-based ointments for the treatment of skin lesions and it was already in use for a wide range of skin conditions
including smallpox, and as such, was a treatment familiar to the physicians of the time. Up to this period, mercury had been used externally only as an ointment or, less frequently, as a plaster or fumigation. In the early 1500s the internal administration of mercury salts and compounds began to be used for the treatment of syphilis sometimes alone, or as an ingredient in mixtures.\textsuperscript{16}

Mercurial-based medicines continued to be used up to the 20th Century despite the lack of definite evidence that they were efficacious. The zeal of the physicians who were dedicated to the use of mercurial medicines frequently led to overdosing of their patients to the point of causing severe brain damage and violent death. Writing in 1841, Lane noted that following publication of Astruc's treatise on venereal disease in 1737 and in Hunter's work on the same subject in 1786, administration of mercury even to the point of causing salivation, was considered to be absolutely necessary to effect a cure.\textsuperscript{17} There were a number of herbal concoctions which were thought to be effective cures. Principal amongst these was an extract from the plant guaiacum which was introduced to the Spaniards by the inhabitants of the West Indies as a cure for syphilis early in the 1500s. Lane gives an account of its use in his third lecture on syphilis including historical references and comments by Hunter on his experiences with the remedy.\textsuperscript{18}

As well as mercury and guaiacum, a number of other remedies were used and some of these are listed by Lane\textsuperscript{19} and in a retrospective study also by Wyke.\textsuperscript{20} Following the success of vaccination for smallpox, it was natural that some of the more adventurous physicians would attempt to cure or provide immunity to syphilis by the inoculation of material gathered from the secondary syphilitic ulcers of other patients. Many of the "guinea pigs" given this treatment were prostitutes. The series of inoculations were prolonged and, from contemporary accounts, extremely painful and debilitating. There was little enthusiasm from the authorities for such "syphilisation"; the French and British medical establishments were willing to condone treatment for venereal disease, but on moral and religious grounds were not willing to encourage prophylaxis or to find a means of protection.\textsuperscript{21}

**SYPHILIS IN THE 19th CENTURY.**

**PREVALENCE OF SYPHILIS IN EUROPE AND THE UNITED STATES**

The incidence of venereal infections in the civilian population in England could only be approximately estimated due to the lack of reliable statistics. However, in a population of 21 million in 1854, it was estimated that there were 1.65 million cases of syphilis annually. Based on the number of patients with venereal infections, as a percentage of all patients in seven London hospitals, the prevalence ranged between 2.5 and 45.5 percent. It was also estimated that 1 in 14 of the poor requiring medical attention did so for
conditions associated with venereal disease. The situation in England was one in which any form of progress in research, treatment or diagnosis of venereal infections was hampered by the moral stance of the groups responsible for curing and controlling the diseases.

In Europe, in contrast, serious attempts were made to assess the prevalence of syphilis in the population in both France and Germany. In Berlin in 1880 the estimate was 12 percent while in Paris in 1881, it was 15 percent. As these estimates were based on clinical histories only, the availability of specific diagnostic tests may have revealed much higher prevalences.

Examination of Prussian army records from 1876 to 1888 showed a change in prevalence from 7.5 to 9.7 percent and in 1910 to 5.2 percent. In a study of British army records during 1890 to 1910, Moore found that there was a decline in reported primary and secondary syphilis cases from approximately 10.0 percent in 1890 to 2.0 percent in 1910. A study of American Army records from 1820 to 1910 shows rapid increases in reported cases of syphilis associated with wars (Mexican, Civil and Spanish-American wars), but an overall gradual decline from 70 percent in 1820 to 25 percent in 1910.

These marked decreases in the prevalence of syphilis were evident also in the civilian populations of that period as documented by Wyke. The decline, whilst significant, was not due to medical control regimes or to treatments. Mercury was thought at the time to be efficacious. Unfortunately, mercury was neither very effective nor used frequently enough as a standard treatment to be responsible for the changes noted. Also mercury treatment was painful and prolonged, and it was difficult to get patients to complete the course of treatment. Punitive control measures were usually not very specific and most applied only to prostitutes around the main navy sea ports.

The apparent decline in the prevalence of syphilis was more likely due to profound social changes than to treatment methods or control programs prior to the identification of the infectious agent. Social factors alter the course of diseases and exert a continuing relationship on treatments and controls. Among the important social changes resulting from the impact of the industrial revolution was the raising of living standards and the evolution from rural-based to manufacturing economies. These changes resulted in very significant movements of populations both within countries, from rural areas to towns and cities, and through emigration from Europe to the new worlds of America and the Pacific. Along with gradually-increasing living standards, there was a concurrent rise in public education and awareness of the importance of sanitation and health.

To Engels, the English industrial revolution had the same importance for England that the French revolution had for France. Engels described the England of his time as being,
"a country like no other with a capital of two and a half million inhabitants; with vast manufacturing cities, with an industry that supplies the world." He saw the people as industrious and intelligent, with two thirds of the population being employed in trade and commerce. The growing economy created demands for greater literacy and more technical skills while family structures gave way to more complex social arrangements. In attempts to develop formal models for these changes, Smelser\textsuperscript{30} used the general tradition of social disequilibration. That is, the social structures changed in such a way that roles previously encompassing many different types of activities became more specialised. Smelser referred, in particular, to rural cottage industries in which the entire family structure depended on manifold skills within the family unit. Thus, in this period of rapid social development and industrialisation, there was an increasing complexity and specialisation occurring simultaneously in education, politics, religion, and the family structure.

Examination of the records from several continents during this period showed that, despite ignorance of the clinical diseases and lack of a reliable treatment for syphilis, the number of infections in the population declined markedly. The decline also occurred in England, even where, although the disease was reviewed in medical literature and, to a lesser extent, in the newspapers, it remained a matter of severe social stigma, and discrimination towards sufferers. Medical progress was hampered by obstructive attitudes and changes in methods of treatment were restricted by the moral stance adopted by some in the medical profession. As a result, venereal diseases were considered "different" from other medical problems and suffered accordingly as neither scientific nor social studies were encouraged.\textsuperscript{31}

In Europe, on the other hand, there was a perceived need on the part of physicians for clarification of clinical signs and they wanted blood tests to assist them in arriving at diagnoses. The protean manifestations of syphilis often led to confusion with other sexually-transmitted diseases. Its vertical transmission from infected mothers to offspring and the recurrence of latent syphilitic lesions combined to raise awareness of the difficulties of diagnosis and to compound the frustrations of the physicians.\textsuperscript{32} Gradually, the concept of syphilis as a distinct set of clinical syndromes began to emerge in medical circles and efforts were made to differentiate it from gonorrhoea, despite the contrary empirical evidence of Hunter and others that syphilis and gonorrhoea were one disease.\textsuperscript{33}

In Paris, Ricord in 1837\textsuperscript{34} described three clinical stages of syphilis as primary, secondary, and tertiary and Virchow in 1859\textsuperscript{35} demonstrated the disease in many tissues and organs of the body.

The mystical and religious construction for the "carnal scourge" was also abating as educational standards improved and people became aware of the source of the infection.
In an era when evidence for bacterial causes for the initiation of diseases was mounting, an atmosphere was developed for research in this neglected area. For too long, the diagnosis of syphilis had included many skin conditions including leprosy and some diseases now known not to be due to *T. pallidum*. Syphilis was used as a general diagnosis for many similar clinical conditions with which it had been confused and was due to be more correctly diagnosed as soon as laboratory tests could be developed. Part of the riddle was solved when Neisser identified the gonococcus as a cause of gonorrhoea in 1879, thus separating it from syphilis. By 1905, Schaudinn and Hoffmann had succeeded in describing the delicate *Spirochaetum pallida* (*T. pallidum*). While the organism was refractory to all attempts to grow it outside the body, it could be transferred by inoculation into monkeys and into the eyes and testicles of rabbits. A serological test for syphilis was developed in 1906 and was named after the leader of the laboratory team, Wassermann. The Wassermann test, with some modifications, was the standard test for syphilis until darkfield and immunofluorescence microscopy gradually replaced it during the 1930s and 1940s when they became the diagnostic systems of choice. A combination of tests are now used for diagnosis, the rapid plasma reagin test and the *Trepomema pallidum* haemagglutination test are common choices.

Once differential tests were available and diagnosis could be more certain, the pathogenesis and pathology of syphilis could be determined. The clinical manifestations of syphilis were identified and some of the more puzzling aspects of latency and tertiary neurophysical changes could be explained. Treatment remained a problem until solved by the development of "Salvarsan" ("606" arsphenamine) by Ehrlich and Hata. Salvarsan was difficult to administer because it had to be given by intravenous injection and not all physicians were skilled in this technique. As the course of injections was spread over a period of time, there was a high percentage of patients who gave up because of fear of the injections or due to the length of treatment. Despite these problems, a number of good clinical responses were noted although, at the same time, side effects of the drug were also seen.

Improved, less toxic arsenicals were manufactured and these and bismuth became standard treatments up to the introduction of the sulphonamides for gonorrhoea in the 1930's, and penicillin for both gonorrhoea and syphilis in 1943.

**SYphilis IN Europe**

Over the period from 1800 through to the time that the causal organism of syphilis was first identified, a strong moralistic stance, based on the belief of Divine intervention, was adopted by many in the medical establishment throughout the world. Samuel Solly, President of the Royal Medical and Chirurgical Society of England informed a government committee (Report 1868:Q3898) investigating syphilis, "that the disease was self-
inflicted, avoidable, intended as a punishment for our sins and that we should not interfere in the matter."\textsuperscript{42} Others deplored the treatment of venereal patients in hospitals and charitable institutions as such patients were not considered fit objects for charity. However, as venereal diseases were so prevalent in all communities and because these conditions were so difficult to treat, attempts were made to identify the extent of the problem and evaluate possible control methods. Most of these attempts were continually hindered by moral attitudes of the medical and religious groups. The Lock Hospital in London was the only institution devoted to the treatment of venereal patients, treating over 2,600 patients during 1856.\textsuperscript{43} In other regions of England, similar attitudes existed towards venereal disease sufferers and very few hospitals and infirmaries would provide treatment.

Prostitution was registered under police control throughout many regions of the European continent in the 19th and early part of the 20th Centuries and has continued in Europe to the present time.\textsuperscript{44} In the United Kingdom, particularly in England and Wales from 1866 to 1889, similar regulations were administered under the Contagious Diseases Acts.\textsuperscript{45} The purpose of the Acts was essentially to protect the personnel of the armed forces from venereal disease thereby saving the government expense and loss of manpower. The system depended on the identification of infected prostitutes and their detention in quarantine in hospitals for a defined length of time. Official doctors were appointed and special Lock wards established in hospitals in the areas defined by the Acts. These Acts were seen by governments of the time as a move toward preventive medicine, while some concerned citizens saw the laws as an abuse of the basic rights of individuals within the Constitution. Of the many objections by the groups opposed to the Acts, was the one assumption within the regulations that women had a primary role in the spread of venereal disease.

This inference was paramount in arousing opponents to have the Acts repealed. Such gender discrimination was only one of the premises that the Acts were based on. Others were that prostitution was so morally degrading that the effect of further humiliations on prostitutes such as vaginal and other physical examinations would be minimal. By protecting males, it was thought that the spread of venereal disease would be slowed. At that time, the men of the armed services were medically inspected on return from leave or on joining new regiments. For the medical officers this was an unpleasant chore and for the men a degrading experience as it was carried out in public.\textsuperscript{46}

Opposition to the Acts was initially confined to Florence Nightingale and her associates. The only other groups that were separately involved were those working with the ideal of reclaiming prostitutes. Once the Acts were promulgated there was a lull in public interest until the movement for repeal began, eventually becoming intense and involving many
disparate groups, including feminists, religious reformers, and, in particular, the non-conformist Protestant groups, members of Parliament and many local community groups around the areas where the Acts were in force. Nightingale as an early opponent of restrictive legislation, used a positive approach towards raising the moral and physical standards for the Armed Forces by providing institutes and clubs for off-duty entertainment; this was later adopted to improve conditions for enlisted men from 1900 on when military departments had to seek alternatives to regulation.

Discussion of the Acts in the community was based on the unspoken belief that the needs of society were best attended to by an authoritarian, informed bureaucracy, providing disease-free prostitution. Apart from the aspect of health, there was no indication that the women involved in prostitution had any rights nor were there concerns expressed for the fact that women were selling their bodies in this way. To compound the problems, committees and reviews of the Armed Forces had shown that service conditions were appalling. Regulations allowed only 6 percent of the servicemen to marry and as a result, a resort to prostitution for sexual gratification was considered normal. Large numbers of prostitutes, (estimated as 7,339 in 1865), accumulated around the garrison towns and ports covered by the Acts and many of these women were described as diseased.

In the UK the Contagious Diseases Acts of 1866-1889 were the catalysts for changing attitudes by rallying many diverse groups and bringing them together for the purpose of repealing the Acts. At the same time, a number of influential people were forced into examining their attitudes to sexual mores, and to sexuality in the social environment of Victorian England.

Throughout, the challenge to the Contagious Diseases Acts was due to the efforts of pioneering women. "At a time when few women dared to lead independent public lives, to participate in a faintly scandalous agitation was to challenge stereotyped attitudes to women's place in society," Josephine Butler thus insisted that women had to lead the agitation for repeal in order to keep it directed towards the fact that a wrong had been committed to all women not just the poor prostitutes. By doing this she emphasised the lack of equality between the sexes implicit in the Acts rather than a few offensive clauses. Butler maintained her stance on the need for an equal moral position with men but also saw that the lack of voting rights for women was continuing an injustice as well as an immorality. Her role in the establishment of women's rights was an important one for she broke down the double moral standards that were not only tolerated but widely held.

McHugh lists the Principal Repeal Associations as at 1st June 1880: the list included a number of national associations of women, medical groups, religious bodies, and
community groups. Once the Acts were repealed, further interest in them evaporated. The question remains however, did the Acts do what they were designed to do? For a number of reasons no definite answers to the question can be given, although the Acts proved to be largely irrelevant. One reason was that the lack of medical knowledge of the disease stages of syphilis and its diagnosis and differentiation from similar conditions caused major problems. Diagnosis was based on clinical appearances and because of eclipse and latency phases of the disease, where no clinical signs were present, mistakes were often made. Confusion of syphilis with gonorrhoea and other similar conditions and a lack of adequate treatment left the chances of control by regulation with little hope of success. By concentrating on various district regions in the UK for regulation of the prostitute inspection program, the mobility of enlisted personnel was not accounted for in the equation, nor was the ability of the prostitutes to move in and out from these spheres of control considered.

In hindsight, far more important than the punitive approach used in England was the fact that in most other countries of Europe, unlike England, medical studies were identifying stages of syphilis and relating infant mortality and congenital defects in children to venereal infections. Researchers were also identifying the organisms causing some of the other venereal diseases including gonorrhoea. These new findings led to a changes in the social construction of syphilis from an infection which could be casually transmitted to an infection which reflected great cultural fears about sex and disease. At the same time the prevalence of syphilis was falling throughout Europe as a result of the increased social awareness of these diseases.53

SYPHILIS IN THE UNITED STATES

In the US the incidence of venereal disease prior to 1900 was similar to the situation in Europe including England. However, there were some features of the venereal problem that made the situation in the US unique. During the colonial and developing stage of European settlement it was a mainly rural society in which the family unit assumed particular importance. Brandt, in a well-documented overview, describes how, as the society became more industrialised and subsequently more urbanised, new stresses were placed on the family unit. Due to rapid changes in the value of money and subsequently variations in the value of goods and services, irregularities occurred in the economic system. Education standards were increasing, resulting in social changes that led to increased affluence and leisure. These changes in turn led to a trend towards later marriages and smaller families. The average number of children per family fell by 50 percent over 60 years, during which time marriage breakdowns increased by a factor of 15 between 1870 and 1900.54
There was a decline in the Anglo-Saxon component of the population which fell behind other immigrant groups in reproduction, causing the former President, Theodore Roosevelt, to admonish parents for shirking duty to the State by not having larger families. Roosevelt was echoing the social critics and the reformers who saw changes in American life styles caused by immigrants from Europe and Mediterranean countries as threatening. The medical profession, in particular, was greatly perturbed by the prevalence of venereal disease in the community and came to regard itself as the guardian of national morals. Previously the medical profession had been very concerned about the demands of women for new independence and self-fulfilment within marriage, including birth control and abortion. In addition, migration not only increased population numbers, it also prompted social changes. As a consequence physicians became even more concerned about the nation's health and none were more concerned than those who treated venereal diseases.

The gradual accumulation of knowledge of venereal infections enabled physicians to identify many of the chronic conditions associated with syphilis as a systemic infection including cardiovascular and neurological syndromes. Morrow's 1904 translation of Alfred Fournier's "Syphilis and Marriage" and his own publications on syphilis as a social disease of the family as well as a public-health problem did much to alarm as well as inform his professional colleagues and the enlightened community. Later Morrow was appointed chairman of a committee of 7 to assess the problem of venereal disease in New York City. The figures for venereal infections in men were staggering with a prevalence of 80 percent infected with gonorrhoea one or more times during their lives, while the rate for syphilis was lower ranging between 5 and 18 percent. Morrow compared these figures with those of US Army personnel in which a syphilis rate of 20 percent was recorded at the time of admission. Allowing for the fact that no diagnostic tests other than subjective clinical assessments were available, the numbers would have added to the concerns expressed by some members of the medical profession during debates on the problems of the family.

In the US in the late 19th Century and early 20th Century, the effect of venereal infections on the family was a growing concern. Diagnosis relied on clinical assessment and hospitals and health services tended not to report venereal infections because hospital committees did not want venereal patients. In addition, as there were conscious efforts to spare the patients and their families from the social stigma associated with the disease, the prevalence figures were probably too low. Morrow was very influential in New York and allied himself with the eugenics movement. He frequently referred to the transmission of venereal infections and considered venereal disease to be "antagonistic to the eugenic ideal." Seven American states had enacted laws designed to eliminate venereal disease but only the male was required to undergo medical examination as it was
considered that respectable women should not be so insulted. Other medical groups concentrated on migrants from Southern and Eastern Europe for fear that they may carry venereal diseases, and also that they might eventually dilute and contaminate the Anglo-Saxon gene pool. This line of reasoning extended into the health services of the poor areas of the cities where migrants congregated and resulted often, in depriving those neighbourhoods of medical help.

The race problem was an additional concern in the US. As the black races showed higher mortality rates per thousand head of population in infectious and contagious diseases than white races all the elements of paternalism and racial prejudices were evident in the attitudes taken towards the black races. Frederick Hoffman in 1892 carried out a study using statistics on disease incidence in communities with the proviso, "statistics relating to the coloured population are, however, difficult and in many instances impossible to be obtained; and, in consequence, this attempt to present the race problem from the standpoint of vital statistics will necessarily be wanting in completeness."59 He then proceeded to use the statistics to show that the anticipated negro population increase was not happening and, in fact, that the black population was decreasing. There was a high mortality rate amongst the adult blacks which was due to venereal disease and tuberculosis. Hoffman, in the same article, noted the number of still-births in Richmond, Virginia, and Washington D.C., in 1880 and in 1890 as being 1,265 and 3,000 respectively.60 Many of these deaths may have been due to syphilis infection of the fetus and newborn.

During the first World War, the American Army reported a very high rate of venereal disease among coloured troops. Among the white troops approximately 10 percent contracted a venereal disease while the figure was 58 percent for blacks.61 From early in the 20th Century, especially in the Southern states of the US, blacks had been considered to be particularly prone to venereal disease, due in part to their commonly-assumed promiscuity. Such attitudes were implicit in the Public Health Service Staffs' approach to the Tuskegee Syphilis experiment in which a number of black men infected with syphilis were studied over a period of years, during which time the controls, untreated black men, were allowed to die of tertiary syphilis even after penicillin became available.62,63 Misconceptions and injustices surrounded syphilis throughout the 19th and early 20th Centuries and were compounded in all countries by ignorance and intolerance. Ignorance could be partly justified by the lack of medical knowledge of venereal infections. The hypocrisy of some of the medical profession and religious leaders of that period was astounding considering the advantages many of them had in education when compared with the rest of their communities. The worst feature of this hypocrisy was the supposition that prostitutes, the coloured races, and some migrant groups were promiscuous and, as a result, deserved to become infected with venereal diseases.
However, it was the judgement of most of the community and, in particular, men, that women were the source from which venereal infections spread. In this way men became victims of the desires of Eve. Victorian standards of morality required the retention of the "fig leaf" mentality to the detriment of women.

**WOMEN AND SYPHILIS**

Women were not expected to get venereal infections as L'Esperance\(^64\) points out, women could be made social outcasts for lapses from respectable behaviour including extra-marital sex or bearing an illegitimate child, or just overt sexuality. Although this moral double-standard emerged as far back as the 17th Century, it reached a peak in Britain at the time of the Contagious Diseases Acts. Men had elevated women to the highest moral plane and in so doing had removed one half of the sexual equation.

Women were expected to be pure and gentle of disposition and frail of body, so that any departure from the highest moral standards was "unwomanly" and depraved. The passive woman was very important to the male in the Victorian era but not all saw women as being by nature passive, and many questioned the reasons for the distinction between the sexes which was unnatural and had been based on erroneous views of men. They saw the restrictions on the female as an imposition on female liberty and obstructions placed on the development of their bodies and minds. Against this background of social standards and confusion of gender roles the subject of sexuality was rarely discussed. The high prevalence of venereal infections in the community showed that a double standard of morality existed. Venereal disease was seen as sinful and degrading; the word "venereal" was not in common use and the disease itself was not discussed but kept secret. If men were infected with venereal diseases it was tragic or alternatively, perhaps a sign of depravity, but for women it was a crime.\(^{65,66}\)

**WOMEN AND THE MEDICAL PROFESSION**

Throughout the world medicine was evolving as a profession and its members attempting at the same time to become established as a respectable group. In England medical practitioners were not licensed until the Medical Act of 1858,\(^67\) one purpose of the Act being to enable people to distinguish qualified from unqualified practitioners. The new requirement revealed that of the 33,339 medical practitioners in the British census of 1841, only 11,808 had qualifications that were recognised.\(^68\) Similarly in the US, for a large part of the 19th Century there were a number of men without a degree practising medicine. In a survey in New England, only 27 percent of practising physicians between 1790 to 1840 had graduated from a medical college.\(^69\) However, in Australia, State regulation of the medical profession was initiated by an examination board in 1808 and was later followed by a Medical Board with powers of registration and accreditation,
established by law in New South Wales in 1838. The medical profession thus established control over the status and working conditions of the doctor and restricted entry to the profession. In this regard the Australian legislation requiring registration was well in advance of legislation in the UK and the US.

Women as a social group with little status in the community, were given few opportunities to become doctors. The pioneering role of Dr. Elizabeth Blackwell is set out in her autobiographical sketches. After many turbulent attempts by women to enter medical schools, during which the old shibboleths of women lacking physical strength and of menstruation and pregnancy affecting their judgement, the Russell-Gurney Act (1876) was passed in England and women soon became established in medicine. However, the battle was not over as the British Medical Association (BMA) expelled those women members that it could, tolerated the few it couldn't, and excluded other women doctors from joining for 14 years. Eventually the South Australian branch of the BMA prevailed upon the parent body in England to rescind its opposition and allow readmission of women. There was a strong demand for female doctors and midwives from supporters who wanted a change in attitudes to women's medical problems. There was a real need for a more enlightened approach within the medical profession towards women's ailments, as diagnosis and treatment of the female had long been neglected. The entry of women into medicine enforced a new interest in the health of the female and a subsequent improvement in female health-care.

Allen draws attention to the acquisition by the public of the little medical knowledge available in the 19th Century which was largely provided by popular publications. The British Medical Journal was sold publicly and books like Mrs Beeton's Book of Household Management (1859) often contained some good advice. As medical help was not always readily available, the public became reasonably well-informed and competent in dealing with minor ailments. Nightingale, from the time of the Crimean War, worked on establishing a nursing profession and developing trained, educated midwives. Her efforts unfortunately tended to make some in the medical profession feel challenged.

The gradual recognition of women's role in society which had begun with suffrage movements in a number of countries, led to the acceptance of women in some areas of male dominance. Among the professions, medicine was a logical choice as approximately half of all patients were female. Females had the greatest need for the medical professions; they were the child bearers and were responsible for rearing the children. Despite the overwhelming reasons for the place of women in medicine, medical authorities continued to obstruct the entry of women. Through the sheer persistence of the women medical pioneers, eventually they were accepted. Although these changes evolved slowly, they occurred in concert with many other profound social changes.
Although doctors were anxious to do something about venereal disease and its impact on society, public discussions were minimal. The medical profession contributed to this silence by not breaking the rule of the confidentiality of the patient-doctor relationship. Because of the carry-over of the Victorian veneer of respectability and its attitudes, the newspapers, popular journals, and magazines did not discuss the subject of sex or venereal diseases.

Prince Morrow founded the American Society for Sanitary and Moral Prophylaxis in 1905 to diffuse information to the wider public about venereal diseases, hoping to limit further spread. Other groups with the same ideals formed in several American cities and eventually combined to form the American Federation for Sex Hygiene in 1910. Morrow believed the purpose of the association was to direct attention to the related issues of prostitution and public health, but more importantly, to alert the public to the social dangers inherent in the introduction of venereal infections into marriage. Sex education quickly came up against the problems of gender taboos carried over from the modesty of the Victorians. Ultimately the educational programs were aimed at maintaining the standards of late-Victorian morality as Brandt, discussing this point noted, "they (the physicians) destroyed the conspiracy of silence to uphold the conservative sexual mores of their time."  

**IDENTIFICATION OF TREPONEMA pallidum**

At the start of the 20th Century, German scientists had identified the causal agent of syphilis. This was followed within a few years by a functional diagnostic test and a method of treatment for the infection. The identification and verification of *Spirochaeta pallida* (*T. pallidum*) as the cause of syphilis by Schaudinn and Hoffman (1905), was greeted as a scientific breakthrough by the medical profession around the world. Within a year Wassermann, Neissser and Bruck (1907) had announced the development of a complement fixation test for syphilis which detected antibodies to the organism in the serum fraction of blood from infected people.

The medical profession now had available the means of diagnosis for the differentiation of syphilis and gonorrhoea. However, the information was to take a long time to percolate through to the general medical practitioner and there were very few medical laboratories in a position to provide the technical facilities and expertise to carry out diagnosis.

As already noted, the first therapeutic breakthroughs for syphilis came with the discovery of the arsenical compound "606" by Ehrlich and Hata (1909). Ehrlich had described the proteins circulating in the blood and known as antibodies, as "magic bullets". He set out to develop chemical compounds which would assist the antibodies of the body to deal
with foreign invaders, particularly microorganisms. The first product "606" arsphenamine (Salvarsan), was the forerunner of a series of similar therapeutic compounds which led to the vast chemotherapeutic range of products available to modern medicine. 77

One important fact that is often overlooked in the discussion of these series of scientific developments was the demonstration by Metchnikoff and Roux (1903) that material from lesions of syphilis caused a similar disease in chimpanzee. By having an animal model available, the discoveries of the microorganism, the diagnostic test, and, finally the treatment could all be verified in the laboratory. Such a discovery is often basic for the future study of a disease. Many attempts had been made previously to find an animal model, including efforts by John Hunter (1767) and later Klebs (1879) who had inoculated lesion material from syphilis into chimpanzee and probably saw the spirochaete but his work was not acknowledged as significant at that time. What did these series of scientific breakthroughs do for the control of syphilis? Unfortunately not very much, as subsequent history has shown.

Chapter 2 Footnotes

1 William A. Pusey, The History and Epidemiology of Syphilis (Springfield: Chas. C. Thomas, 1933).
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8 Hudson, op. cit., p.894.
10 Abner Weisman, "Syphilis: Was it Endemic in Pre-Columbian America or was it brought here from Europe?" Bulletin New York Academy Medicine 42 (1966): 285-300.
15 Fleck, op. cit., p.3.
17 Lane, op. cit., p.286.
18 Lane, op. cit., p.393.
19 Lane, op. cit., pp.393-396
21 Ibid., p.83.
22 Ibid., p.79.
25 Ibid., p.105.
26 Fleming, op. cit., p.603.
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31 Wyke, op. cit., p.84.
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CHAPTER 3

THE CONSTRUCTION OF A DISEASE

SYPHILIS IN THE 20th CENTURY

Before we examine societal attitudes to the disease of syphilis, there are at least five epidemiological factors to be kept in mind and considered when evaluating the responses of communities to the disease.

- Humans are the only reservoir of the disease agent. Although other animals can be infected, they do not harbour or transmit *T. pallidum*.

- Syphilis occurs as a disease throughout the entire world. No race is immune.

- Prevalence of the disease within communities is usually at about the same level in all social strata. However, there may be local variations in incidence from time to time.

- Movement of large numbers of men in armies has always initiated an increase in prevalence in civilian populations with which they are in contact. There may be other demographic factors which lead to changes in behavioural patterns in communities any of which may alter the incidence of sexually-transmitted diseases.

- The method of spread of the microorganism remains the area in which the most confusion still exists even in modern times. Transmission can only occur when the microorganism is directly transferred from an active infection site to a susceptible environment, suitable for the maintenance of the organism. In the vast majority of cases this occurs during sexual activity.

Moisture and warmth are essential as *T. pallidum* is an extremely delicate microorganism, and does not exist for more than a few hours outside the body. Rare, authenticated transfers have been documented from lesion material, including some to laboratory workers (infection by "sharps", needlesticks), medical practitioners, nurses and dentists, all through breaks in the skin. However, the vast majority of infections occur as the result of sexual contacts. William Pusey (1933) estimated that 99 percent of syphilis cases resulted from sexual encounters. At that time Pusey saw prostitution as the main reservoir of syphilis and its perpetuation was by sexually-promiscuous men and women. He also noted Fournier's findings that 20 percent of syphilis cases in women were contracted within marriage. Having established the known facts of syphilis, its cause,
diagnosis, and treatment and the epidemiological factors required for control, why does it still persist 90 years after much of this information became available?

Syphilis is a reflection of society involving the mores, the attitudes, traditions, and customs as well as the prejudices, morality, and the problems of sexuality and sexual relationships. Facts have little place in this morass of sentiment, sensuality, and gender attitudes as all these factors are emotional and intangible. One obvious approach to better control of syphilis and other STDs is that of prophylaxis. Needless to say there have been numerous attempts at prophylaxis over the centuries and as Pusey (1933) notes, "none of these has been successful; all of them have been repudiated and most of their authors heaped with obloquy, because any method of the sort has been regarded by a part of the community as immoral and an encouragement to sexual licence." 2

As has been noted in the previous chapter, unfortunately syphilis is often regarded as a punishment for sexual misbehaviour, an indication of promiscuity and indulgence in sexual practices, not considered common or normal in the general community. One way to help overcome these prejudices, is to increase information on prophylaxis and control but as Pusey has stated, no method has been successful in the past. Syphilis is a venereal disease problem resulting in high morbidity and low mortality. HIV-1 with its progression to AIDS is a venereal disease problem of high morbidity and high mortality. Therefore, it is imperative that methods of prophylaxis and control should be widely publicised and eventually become part of the reflex responses applied to normal hygiene methods and not disregarded and treated with disdain as Pusey observed.

This raises the question, "in what way has society approached medical problems of venereal disease before? If there have been previous attempts, what was learned from those experiences, and can they help in AIDS control attempts?"

**SOCIO-MEDICAL APPROACHES TO CONTROL**

Among the physicians of the 16th Century the ecclesiastical view that syphilis was a punishment for carnal sin was common, and in order to placate the clergy who were also frequently infected, it was suggested that "corruptions or influences" in the air may be responsible for such cases, thereby maintaining the dignity of the Church. 3 Similar attitudes continued within the medical profession throughout the 19th Century and into the 20th. In England, the repeal of the Contagious Diseases Acts had shown how irrelevant the Acts were in the control of syphilis as the prevalence of all known venereal diseases within the armed services had continued to fall at the same rate and at the same time as the diseases in civilian populations not subjected to the regulations and medical inspections. The defeat of the medical establishment in this arena led to further rebuffs over such medical activities as vaccination and helped usher in the deep philosophical
belief in the rights of the individual so characteristic of Victorian libertarianism. More importantly the military departments recognised that regulations to control sexually-transmitted diseases were ineffective and have never again resorted to this form of control.

In the US, physicians could now claim to diagnose and treat syphilis and as a result it was perceived as a communicable disease to be added to the list of notifiable diseases. This new approach resulted in conflict between public-health officials and most private medical practitioners who continued to assert that medical confidentiality must remain inviolate in the case of sexually-transmitted diseases. Many public-health officials felt that venereal disease should be treated as any other communicable disease, scientifically and dispassionately, as a health threat and not a moral threat. Physicians in private practice complained that reporting cases of venereal infection could hinder rather than help control as most patients remained ambulatory, treatment was lengthy, and patients would be reluctant to be quarantined and thus expose their immoral conduct. Unfortunately, even if physicians did report their patients with venereal infections, there were very few facilities available to treat them. Most hospitals were under the control of trustees who often had the attitude that venereal disease was not a respectable infection and its victims were not worthy of care (Brandt 1987). Despite these prejudices, within communities there was a gradual acceptance that treatment of venereal disease had to be provided on humanitarian grounds and also for the general benefit to the safety of the community. Morrow (1909) outlined the medical approach at the turn of the century in New York emphasising the effect that social diseases, syphilis and gonorrhoea, had on the stability of the family. In particular, the medical approach showed how syphilis affected marriages, children, and, ultimately, society through loss of workers and the costs of treatments.

Gradually, attempts were made to provide hospital accommodation and venereal clinics were established in many of the cities. Some of the clinics carried out diagnosis and counselling only and in New York, the philanthropist Rockefeller gave financial support during 1914 to assist the program to continue. As late as 1915 a survey found New York City clinics deficient, only 7 of 27 meeting minimum standards which were very basic by comparison with what was required.

Thomas Parran (1932) as the Surgeon-General of the US Public Health Service, described syphilis as a public-health problem and instituted controls to isolate the spreaders of syphilis. He also advocated notification of infected individuals to health authorities, as detailed in the Venereal Diseases Act of West Australia, in which the patient remained anonymous but the physician ensured that treatment was continued through the contagious stage. However, a person can become reinfected almost
immediately following a cure as syphilis does not invoke a lasting immune response after infection. Physicians and public-health officials in the US attacked the moralistic precepts of social hygiene by using plain language instead of euphemism, and by addressing the problem as a medical one on scientific grounds. Parran specifically rejected the emphasis on sexual morality and ethics which had previously characterised all the anti-venereal programs. He established methods to combat the disease based on science and medicine with strong epidemiological efforts to find and treat infected carriers. In order to ensure that venereal sufferers were cared for governments were expected to accept responsibility during the period of treatment. It is important to note that by bringing the resources of the nation behind this program, the role of the national government in social and health problems of such magnitude was established for the future.

Franklin Roosevelt was the first American President to speak publicly about venereal diseases and their cost to the community in resources and in the wasted lives of sufferers. The greatest boost to Parran's efforts came with the passage of the National Venereal Disease Control Act, known as the LaFollette-Bulwinkle Act which passed through Congress in 1938. Parran, unfortunately, established within the community a fear of venereal infections especially of syphilis which became known as "syphiliphobia," again demonstrating the power of advertising to operate against the best intentions of those resorting to its use for disease control. Though education of the general public to raise the awareness of venereal diseases was absolutely necessary for the campaign, it, at the same time, encouraged dread of the diseases and stigmatised the sufferers. Such adverse responses operated against Parran's intentions to show that syphilis could be treated and to encourage individuals to come in for treatment. On the contrary, the explicit details of the ravages of syphilis emphasised the message of not risking infection by promiscuous sexual activities and left many of those who did become infected feeling guilty and stigmatised.

Rosenberg,⁵ points to a similar situation when he commented on the social responses to AIDS and noted that a substantial minority of the community see AIDS as a deserved punishment for the sexual transgressor. As the interpretation of scientific knowledge is determined by its consumers, references to behaviour that predisposes people to infection may be seen as uncontrolled or even deviant, while comments that it is the number of sexual contacts that increases the risks, infers deserved punishment and stigmatises those who become infected.

Many medical critics of Parran's campaign saw the emphasis on syphilis as frightening the public rather than educating the more susceptible members into a constructive attitude towards sex and sexuality. Statistical records showing rates of infection and graphic details emphasising venereal disease problems were useful in generating funding and
grabbing political attention but by prolonging fears were ultimately counter-productive. Over-reaction by public officials and authorities to the dangers of venereal infections led to a number of regulations requesting the testing of food handlers and servants for venereal infections. In the US, this resulted in socially-selective attitudes toward workers, ethnic groups and, in particular, blacks. Typical of these attitudes was that of Dr. Morris Fishbein who testified to Congress that there may be 7 to 10 of every 100 persons in the US infected, but among the criminal elements and "dregs of society", 30 to 40 of every 100 will be infected. As is usual in such cases, he offered no evidence to prove his statements. Transfer of infection from this postulated reservoir to the upper classes was implied without any mention of possible modes of transmission.

No matter how hard Parran tried to develop the medical approach on a scientific basis, the ingrained moralistic attitudes of "syphilophobia" kept surfacing. This was particularly apparent in the attitude of physicians in Southern states who suggested that blacks were promiscuous and, as a result, venereal infections were widespread in members of that race. No recognition of socio-economic variation in black and white populations was made and, in fact, such differences were discounted. As previously shown, even the Public Health Service became involved in the Tuskegee Syphilis Study in which untreated syphilis sufferers were clinically followed to determine the effect of syphilis over their lifetime. Strongly held medical views that biological differences between the races were responsible for the pathological impact of venereal disease in blacks were unfortunately current in the administration of the Public Health Service. Even though reports on this study were frequently presented in medical journals it was not until 1972 that the adverse publicity in newspapers finally brought it to an end that year.

Apart from the emphasis on race and the "dregs of society" as sufferers and a source of infection, there was a concerted effort to highlight the dangers of venereal diseases without any serious emphasis on how to prevent infection other than by sexual abstinence. Prevention based on chemical prophylaxis and the use of condoms and other mechanical prophylactics was never mentioned by the Public Health Service. The fact that these methods were also contraceptive in heterosexual sex and would have alienated a large part of the population in which religious constraints were expected to be adhered to, also weakened efforts to control the diseases. As Brandt noted, Parran, as a Roman Catholic, had gone as far as he could in his campaign against venereal disease. Sexual permissiveness in a pre-marital context, was a problem for many countries with a Judeo-Christian morality. Despite the fears of venereal infections and unwanted pregnancies, attitudes to sex were changing in the community. Failure to recognise these changes allowed administrators, the clergy, and the medical profession to advocate a return to a standard of sex within marriage in order to control sexuality.
As Sontag observed, diseases can be used as metaphors for what is feared and in the popular imagination, "corruption, decay, pollution, anomie and weakness", become associated with diseases, "whose causality is murky and for which treatment is ineffectual." Sontag's description is extremely apt for the venereal diseases as they still remain as vestiges of social decay and sexual evils despite the advent of effective treatments for some of them. The same combinations of fear, stigma and taboo still apply to-day and have been transferred and amplified by community attitudes to HIV infections and sufferers from AIDS.

With the outbreak of the second World War there was bound to be a rise in venereal infections and the US took steps to institute control areas ("moral zones"), around Army camps from which alcohol and prostitutes were excluded. However, the Armed Forces Command drawing on their World War I experiences, recognised the limits of sex education to restrict sexual activity and, as a result, set up programs for prophylaxis, issuing condoms and establishing units to provide treatment after intercourse. This approach restricted the rates of infection of venereal diseases in the armed forces to essentially the same level as in the civilian population.

The discovery of the effectiveness of penicillin in the treatment of venereal infections, with cure rates of 90 to 97 percent, meant that by the 1950s venereal infections were no longer considered major public-health problems. Once again, the emphasis on education began to shift back to the sexual mores of the community. However, from the end of the 1950s and into the early 1960s venereal disease rates began to increase again until by 1975 syphilis was the third most prevalent communicable disease after gonorrhoea, the most prevalent. In the US, the sudden rises in venereal infections in the 1960s were attributed to changes in sexual patterns including permissiveness, promiscuity, and contraceptive pills. There had been a steady rise in premarital sex as noted by Kinsey and Masters and Johnson, and the increase in venereal disease prevalence was also attributed to this trend. Unfortunately, these assumptions were too simplistic.

While sexual mores were being liberalised in the 1960s the approach to control of venereal diseases had not changed since the introduction of penicillin, and it was becoming evident that, in the intervening years, antibiotic treatment was not reducing infection.

Because of ready access to antibiotics any clinic or physician could provide treatment and there were no longer the incentives to trace contacts and treat them as there had been in the past. Patients had always been reluctant to identify the sources of their infection and now many saw no point in identifying others as treatment was so simple. Government funding for the control of venereal infections was being steadily reduced because of the greater involvement of private physicians. A rise in STDs is associated with increases in
promiscuity and changes in sexual mores by the community thus offering supportive arguments for those who claim that moral and behavioural approaches are better than medical and public-health approaches when dealing with venereal diseases. In the view of the moralists the answer was to reduce the prevalence of promiscuity and to have people say no to sex outside marriage.

SOCIETAL ATTEMPTS AT EDUCATION FOR THE CONTROL OF VENERAL INFECTIONS

One of the many reasons for the failure of the Contagious Diseases Acts in the United Kingdom was the inadequacy of the medical profession to diagnose venereal diseases despite the confidence of many doctors in their own abilities. Doctors did not understand the relationship between the stages of syphilis and could not distinguish syphilis from gonorrhoea. As a result, the statistics for the incidence of these diseases in the community were incorrect. In fact, as previously stated, venereal disease in the armed forces continued to decline at the same rate as it did in the civilian population despite the Contagious Diseases Acts and it was generally agreed that venereal disease infections continued to diminish throughout Europe from 1860 onward.

The wave of moral revivalism in Britain during the Victorian era created extremist repressive groups who wanted to develop respectable sexual ideologies. Some of the leaders in these groups wanted laws to outlaw fornication. The Metropolitan Police who were instituted to enforce the Contagious Diseases Acts were discredited because of their behaviour and their involvement in the "white slave traffic". Disclosure of these activities enabled concerned members of parliament to have the age of consent raised. The House of Commons continued to be guided by public opinion and set up the National Vigilance Association to guard public morals. Remnants of these movements continue to-day in the UK, often surfacing under different guises as moral watchdogs for the community, ever ready to interfere in other people's lives and bedrooms.

Anthony Wohl carried out a detailed study of the social and physical environment of the people in Victorian England. His study followed the gradual evolution of sanitary reforms. The reforms resulted from the growing awareness of the connections between dirt and disease and the necessity for personal hygiene. As a result of rapid growth in urbanisation during the 19th Century there was overcrowding in unsanitary surroundings which resulted in accumulations of filth. In addition, industrial and generalised atmospheric and water pollution occurred in many cities. Combined with poverty, malnutrition, and disease, the general health of the population became of great concern to the health authorities. Although the lower classes suffered the greatest losses from death and disease from birth to adult ages, not even the upper classes were spared. The Royal Family itself was not immune to the shocking insanitary environmental conditions and
suffered losses of close family members from contagious diseases. An indication of the appalling social conditions was the infant death rate which accounted for one quarter of all deaths in the nation throughout the Victorian era.\textsuperscript{16} Many of these deaths were due to premature and stillborn babies carried by women who suffered severely from malnutrition and poor health.

A public-health movement arose based on the philosophy of Jeremy Bentham and led initially by his former secretary, Edwin Chadwick. The philosophy that the right ordering of society aided individual happiness and certain matters required communal action, certainly applied to sanitation and health. Chadwick was assisted by William Farr who provided the statistics from the Office of the Registrar-General as well as the zeal for sanitation, clean water supplies, and removal of known sources of disease. Between them they galvanised others such as John Simon and his colleagues on the Privy Council and Dr. Southwood-Smith who formed the Metropolitan Health of Towns Association in 1844.\textsuperscript{17} Not long after, the Public Health Act of 1848 was passed and this Act aimed to combat infectious diseases by establishing a range of sanitary services which local authorities could adopt. As well, it provided for the establishment of a General Board of Health nationally in addition to boards at the local level, which could appoint medical officers to supervise and ensure clean water supplies and disposal of refuse and sewage. Cholera was an ever-present fear at all social levels and public-health reform was one way of preventing its spread.\textsuperscript{18}

Eventually the Public Health Act of 1866 and the Public Health Act of 1875 consolidated the sanitary legislation and ensured a slow but steady progress in preventive health care. Although this was true for most diseases, the medical fraternity of the period was particularly ignorant and evasive about venereal diseases and sexuality. As noted previously, doctors found venereal diseases hard to diagnose, particularly in women. Treatment with mercury salts was the most common form but often resulted in toxic side-effects. Other therapeutics using acids and caustics, copper, iodine, salts, and chalks were additional common but ineffective treatments. Hospital facilities for venereal patients were very scarce and of poor standards. Charitable dispensaries would not supply medicines and workhouse infirmaries refused to admit patients with venereal infections. Venereal infections were widespread but not considered subjects for general discussion. Further, as had been observed earlier, there were doctors such as Samuel Solly, senior surgeon at St. Thomas's who opposed research into venereal disease in case a cure was found, because, in his opinion, syphilis was created as a punishment for fornication and without such a deterrent, fornication would be universal. Smith (1975)\textsuperscript{19} places people such as Solly and William Acton in a group he refers to as, the "vociferous lunatic fringe", which obscured any other evidence regarding available medical opinion on sexuality. British medical schools did not have formal instruction on
problems of sexuality although the moral worth of normal sexual relationships in both men and women was accepted and recognised by the profession and their patients.

From 1860 on doctors began to discuss "spermatorrhoea," an imaginary disease resulting from masturbation and in 1870 the Lancet offered advice on methods of detecting young men and boys who indulged in these practices. Similarly, the British Medical Journal endorsed the views of headmasters that cold baths and exercise lessened the proclivity to masturbation. This was preferable, in their opinion, to instructing the boys of the dangers as this may lead to interest in sex with unsavoury results. A theory which gained ground at the time attached importance to the retention of semen which was considered to be the basis of male virility and strength. Masturbation was considered a cause of disease in youths and young men which could lead to homosexuality. Pamphlets and articles dealing with the perils of venery and sexual arousal in the young, for both male and female, were readily available. In the 1870s Charles Drysdale advocated contraception to limit the family size of the poor and to help alleviate their suffering and dreadful child mortalities. The Lancet condemned the letter from Drysdale and although Drysdale continued to advocate controls throughout the 1870s, the subject was only discussed at two formal medical meetings in the 19th Century.

On the other side of the Atlantic, Prince Morrow was trying to draw the attention of authorities to the "social diseases" which he described as having their origin in the social evil. Morrow made the point that the significance of disease in general is measured by its effect on the health and life of the individual, whereas the dangers of social diseases were that they were not confined to individuals but extended from the parents to children and to society at large. In expounding this theme he emphasised the part that ignorance was playing in perpetuation of the social diseases. He appealed for more publicity for these evils and for education of the public of their significance. Morrow quoted John Stuart Mill, "the diseases of society can no more be checked or healed than those of the body, without publicly speaking of them." He then attacked social attitudes that decreed a "holy silence" upon everything relating to sex or its diseases, pointing out that, in order to control the diseases the co-operation of the public was essential. To ensure this co-operation a general dissemination of knowledge of the venereal diseases, their prevalence, and the means by which they are spread had to be carried out.

While Morrow was ultimately concerned with the family as a unit in society, he was promoting a greater involvement of society in disease prevention. Although his thinking had a strong medical bias, he was a supporter of female equality and saw the need to ensure an equal role for women and not to maintain the double standard current in his generation. He had strong convictions "the emancipation of women will never be complete until they are freed from the shackles of a traditional code based on the ethical
heresy that one half of humanity has imperious duties which the other half may repudiate or disclaim." Morrow perceived the end result of such a change as not to debase women but to lift men to the higher moral standards of women. He saw no point in men sowing wild oats which their wives and families may have to reap. Others agreed with Morrow. Members of the American Society for Sanitary and Moral Prophylaxis (ASSMP) which Morrow had founded in 1905, established a committee on education which sponsored programs of lectures and conferences and produced pamphlets for parents and children. In addition, the ASSMP tried to have segregated sex instruction carried out in schools. Unfortunately, very little consideration was given to normal physiological states; in fact there was minimal knowledge or understanding of these states. Continence before marriage was considered to be all important and was the basis of the ASSMP programs. Allied with this approach were the "semen" retention theories, including arguments against masturbation as a cause of debilitating physical illness. Thus the physicians and psychologists of that time had physiological bases for continence. Not satisfied with the physiological argument, Morrow and others added the dread of the "loathsome" effects of venereal infections. A number of ploys were used by the sex educators to get courses of sex hygiene into biology and zoology courses. Sex education for women meant that there would be a significant change in the traditional Victorian standards of modesty and innocence among mothers. Suffragettes joined the campaign to insist on defence against double standards. Women of the working classes were seen as being particularly vulnerable to the dangers of premarital sex, including venereal disease and pregnancy. Many critics of a more enlightened sex-education program continued to claim that genteel girls should be spared details of sex and venereal disease urging that parents should have the responsibility for sex education.

The necessity for sexual controls was the basis of the educational programs and the sexual standards taught were those of the upper and middle class Victorian values of continence and discipline. In this regard education became less a source of information than a means of maintaining standards. No new controls or knowledge were advanced for venereal diseases; however, there were some advantages in sex education in universities and colleges as the prevalence of venereal infections was reduced in the college population. Public-health officials began to insist that venereal infections be added to the lists of notifiable diseases and, gradually, with the development of testing facilities, physicians also began to admit patients to hospitals. However, there still remained strong prejudice toward venereal sufferers. The Wassermann test became widely adopted for women at pre-natal clinics as the best method of preventing congenital syphilis.24 These small steps indicated that community attitudes were changing and despite the strict moral postures which continued to persist, the medical and social educational roles were becoming compatible.
The intervention of World War I placed new pressures on venereal-disease control by raising the concept of the menace of venereal disease to the armed forces and forcing discussion of sexual matters into the public arena. Although this removed the taboo on discussion of sexuality it did little to resolve the problem of double standards in sexuality. As a result of the emphasis on preventive medicine during the war, physicians were seen as important arbiters of the conservation of human resources. Because of the success of educational programs and of chemical prophylaxis programs in controlling venereal diseases in the army the medical profession increasingly became the authority on sexual matters. There were now two well-defined groups; on the one hand those depending on rigid individual responsibility for sexual continence, and on the other those who recognised and were influenced by biological and psychological theories of sexuality.

Following World War I very limited efforts were made to continue educational programs on venereal diseases in the US and the conspiracy of silence on matters sexual once more returned. However, as we have noted, when Parran became US Surgeon General in 1936, he raised the national level of consciousness to the problems of venereal diseases and also re-established the divisions between the medico-scientific approaches and the moralistic idealisms. Parran, used extensive advertising with slogans such as "The Next Great Plague To Go", and forthright language as part of his program of public education. Parran, in this endeavour was following the lead of several European countries, including the United Kingdom and Scandinavian countries, in the control of venereal infections. Parran's approach led to a better-informed public on venereal infections, and to a reduction in venereal disease prevalence in the US and, most importantly, healthy candour in discussion of sexual matters.

Opposed to these positive aspects were the fears of venereal diseases engendered by the written and visual impact of educational programs, the attitude of society stigmatising those who were infected, and the attitudes of those infected who did not want their infection publicised. Parran, unfortunately created unrealistic expectations which were based on very honest motives but failed to recognise the complex social problems of fear and stigma associated with sexual and religious taboos. Compounding these factors were the problems relating to sex and sexual expression which varied between different nationalities and cultures.

When the US entered the Second World War, the US Medical Corps produced educational material on venereal diseases which was very explicit and was again based on motivating fear in the troops to induce avoidance of infection. The Army, however, had recognised the limited value of education alone during the First World War and had learned to take the pragmatic steps of providing prophylaxis in the form of condoms and chemical treatments as well. Recognition that legislation of natural instincts did not work
and that education could only be effective if backed up by adequate risk assessment and control methods, was an enlightened approach. Unfortunately, the effectiveness of this approach has never been tested by governments or medical groups on a national scale.

New effective methods of treatment of venereal infections and early diagnosis led to a fall in prevalence worldwide. Unfortunately, this was short-lived and from the 1960s the prevalence of both gonorrhoea and syphilis began to rise rapidly and to develop into epidemic proportions in many countries of the world. Large cuts in funds for venereal disease control by post-war governments were seen as a factor in the increase in prevalence largely due to negligence of patients in seeking treatment early and the poor co-operation of physicians in supporting venereal-control programs.27

In, Internal Reviews of Medicine in 1959 and 1960, the usefulness of premarital blood tests for syphilis were still being discussed despite the fact that only a very small percentage of "reactors" actually had syphilis. In Cleveland, for example, of 15,000 premarital tests, only 79 were positive for syphilis and 78 of these had had previous infections and treatment and were now non-infectious, leaving only one actual infection. It was estimated that $100,000 had been spent to find the one case. No questions were raised about the embarrassment of false positive reactions and the effect these had on the marriage plans. Premarital tests were not successful in the US as only a few states used this form of venereal disease control. Couples could go interstate to be married, and, as seen in the instance above, the effort and expense involved did not warrant the end results. It was realised that control of venereal infections in the US depended on private physicians collaborating with control authorities.28

The World Health Organisation examined the social and health aspects of sexually-transmitted diseases in a study based on technical discussions of the principles of control measures in 1975. This meeting, in retrospect, was a very good assessment of the concerns of many countries before the advent of HIV infections and AIDS. When an evaluation of the prevalence of different sexually-transmitted diseases was examined, a surprising finding was that a disturbing recrudescence of early syphilis cases had been observed in a number of countries around the world. One feature of these infections was that a large proportion, and in some cases the majority of early infections, were found in male homosexuals in the large cities of North America, Europe, and Australia.29 Several complex factors were advanced as reasons for the prevalence which was as high as 25 to 74 percent in some countries for syphilis but much lower for gonorrhoea (10 to 26 percent). Among the explanations advanced were the congregating together in cities of some homosexuals seeking anonymity, their propensity for group and anonymous sex, the reluctance to seek treatment when infected, and the difficulty of tracing contacts. All these factors combined to make control methods hard to implement. At the same time,
ignorance of the types and range of sexually-transmitted diseases affecting homosexuals and the difficulties of carrying out effective diagnosis in individuals who were highly mobile were also factors.\textsuperscript{30}

Although the health education for sexually-transmitted diseases included consideration of the importance of behaviour patterns as well as the cultural and social requirements of the community in most countries, minimal education in these matters was undertaken. As the WHO document states, "Educational action has many goals; to enlighten the public with regard to the problem of sexually-transmitted diseases within the community; to secure the active collaboration of groups and individuals in control programs; to acquaint groups at risk with preventive and curative measures and to encourage them to take advantage of them; to educate young people to consider the health aspects of their sex life; to train health and other personnel for their role as educators in programs for the control of sexually-transmitted diseases; and to make clinics aware of their patients needs."\textsuperscript{31} Health education for control of sexually-transmitted diseases must provide readily assimilated information about sex and sexuality before it provides information on the diseases and their control. Above all, it must provide motivation and the will within the community to control the diseases.

**STATUS OF SYPHILIS IN VICTORIA**

Historically, Australia and the State of Victoria followed the pattern of authorities in Victorian England in the approach toward venereal infections. Many of the early medical practitioners were from England and, although there were 1,972 medical men in Victoria in 1881, only 454 were registered doctors. Of the remaining 1,518 there were 761 chemists, druggists and assistants, 107 dentists, and 540 midwives. For the rest, 110 were unregistered doctors of a number of different nationalities, herbalists, and various others with claims to medical knowledge and treatment.\textsuperscript{32} From the 1880s, as a result of rising professional standards, the medical profession began to offer the public a better service which continued to improve as knowledge and understanding of illness and its causes became available. Even so, the doctor was usually the last resort for most people. Chemists were cheaper, more accessible and could provide treatment for minor injuries and problems. They also provided treatment for some major conditions including syphilis and gonorrhoea using therapies based on mercury, sandal-wood oil, methylene blue, potassium iodide, or formaldehyde. Because of abuses by chemists in providing treatments such as the above, many of which were poisons, the State Government passed the Venereal Diseases Act in 1916 which prohibited the chemist from dispensing certain drugs without a doctor's prescription. Since that period the medical profession, through the Australian Medical Association, has become a powerful political group within the
community. From this power base, the medical profession has carried out disease control particularly of venereal diseases, through the Department of Health in Victoria.

Through the period from the passage of the Act in 1916 up to the late 1970s, most STDs were bacterial and could be treated, and the contacts traced and treated. Treatment became very effective for syphilis and gonorrhoea in particular after the introduction of the antibiotics. However, with the advent of viral infections including HIV infections and AIDS, there was a need to increase surveillance of STDs and to require notification of diseases under statute. As a result, the Health (General Amendment) ACT, 1988 and the Infectious Diseases Regulations 1990 were promulgated. It is now incumbent on practitioners and medical laboratories diagnosing certain STDs to notify the Health Department of Victoria. Syphilis is one of the diseases requiring notification and although the prevalence of syphilis has been decreasing in Victoria over the last decade, it has remained constant in the years from 1985 to 1988 at around 65 to 71 cases (average 69) annually. In 1989, the number of notifications fell to 33 and although it is difficult to detect, underreporting may be significant in this result. A further group of diagnoses was made at Fairfield Hospital in which 268 cases of syphilis in people resident in Victoria were detected. These were people previously not known to have syphilis; 112 of these had indication of active infection while the remainder had serological evidence of previous infections. One hundred additional syphilis infections were diagnosed in refugees.

Obviously syphilis continues to be a significant sexually-transmitted disease and like other STDs it can contribute to infection with HIV-1 through lesions on the genitalia which enable the virus to cross the mucus membranes. Education programs in which the manner of infection and the risks of infection are explicitly explained and the methods of avoiding infection are demonstrated, are necessary for all "at risk" groups. How these educational programs are to be mounted and developed will depend on the attitudes and the will of the community to deal with diseases affecting individual basic human sexual behavioural patterns and in some cases possibly individual basic rights.

Chapter 3 Footnotes

1 William A. Pusey, The History and Epidemiology of Syphilis (Springfield: Chas. C. Thomas, 1933) pp.68-74.
2 Ibid, p.102.


Brandt, op. cit. Appendix p. 205.


Ibid., pp. 1, 2.

Ibid. pp. 142-145.


Smith, op. cit., p. 300.


Morrow loc. cit. p. 630.

Brandt, loc. cit. pp. 44-51.


Ibid., p. 378.


Herman Beerman, Leslie Nicholas Ira Schamberg and Martin S. Greenberg. "Reviews of Internal Medicine: Syphilis". AMA Archives of Internal Medicine, 103 (1959), 460-483.


British Cooperative Clinical Group, WHO Document WHO/VDT/72:382

WHO Public Health Paper No.65 (1975) op cit p. 44.


CHAPTER 4.
WHAT IS AIDS?

Diseases desperate grown
By desperate appliances are reliev'd,
Or not at all. — Hamlet IV iii 9.

ORIGIN AND HISTORICAL BACKGROUND
AIDS THE DISEASE

Despite the repeated statements that the origin of the human immunodeficiency virus (HIV) is not known, there have been constant attempts in the media to "nationalise" the disease by assigning it a place of origin, and Africa is but one of many examples. A further media trend is to stigmatise sufferers by the use of labels. In America and indeed, most Western nations, the disease was first seen as a "disease of gays" (homosexuals), and when that failed to include all the clinical cases other groups were added such as, intravenous drug users (IVDU), homosexual IVDUs, and prostitutes. It then became apparent that some recipients of blood transfusions and blood products were also suffering from the disease. Because these infections were the result of inoculation of contaminated material and not sexually derived, as was noted earlier, the sufferers were labelled "innocent victims" to distinguish them from the "guilty" who, by their behaviour, became prey to infection. For those not in any of these latter classifications and generally considered to be heterosexuals, the media emphasis was concentrated on their nationalities and races. Haitians, Hispanics or blacks were particularly vulnerable because of the numbers of these peoples compared with other races in the Morbidity and Mortality Tables issued by the US Centers for Communicable Diseases (CDC).

"AIDS where did it begin?" is the startling headline on the first page of the Melbourne "AGE Saturday Extra". Graham Barrett, the writer of the article, "ventured through Africa in search of the origins of the virus that spells death for millions" we are told. His opening paragraph states that there are parts of Africa where grave-diggers are the busiest men in town and that in some villages they are burying whole communities. Further on Barrett notes that Western medical researchers who toil in the hospitals of Uganda and Kenya have said that a third, perhaps a half, of Central and Eastern Africa's population may have been killed by the virus whose origins remain uncertain. This comment comes immediately after a paragraph informing us that detective work in laboratories around the world searching for the virus's origins always seem to lead back to the region around the big lake in Africa where a death sentence has been imposed on every fourth or fifth person and in some districts, on every other villager. A few paragraphs later Barrett puts the World Health Organisation's official position as not knowing where the virus
originated or how, and that we may never know, but immediately after this we read, "many researchers persist in the belief that it is more likely than not that somehow, sometime, the virus came into contact with humans in what early European explorers called Darkest Africa."  

In view of the above, there was no association of AIDS with Africa and this possibility had not been not considered before the first startling reports of a new novel disease in homosexual males in the US was made in the New England Journal of Medicine in 1981.\(^2\) What was so unusual about this report was that the conditions, a pneumonia caused by a protozoa *Pneumocystis carinii* and a fungal infection, mucosal candidiasis, were extremely rare and had only been seen previously in severely immunocompromised people. It was also noted that these young men had evidence of an acquired cellular immunodeficiency concurrent with the infections.

At this time an unusual incidence of a rare cancer was seen in young homosexual men in the same localities of New York and California as those in the previous report. There were 26 cases recorded over a time frame of 30 months. Although the rare cancer, Kaposi's sarcoma, had previously been reported in the US, it was normally present only in aged men of Jewish or Italian extraction. Other relatively rare malignancies such as diffuse, undifferentiated non-Hodgkin's lymphoma and generalised lymphadenopathy were being seen in increasing numbers in young homosexual men. Common to all these cases was a severely compromised immune system. This collection of clinical conditions was recognised as a new syndrome in 1982 as acquired immune deficiency syndrome (AIDS).\(^3\)

Epidemiological surveillance for the syndrome was adopted by the CDC who defined the parameters by requiring that any individual developing Kaposi's sarcoma or any of a few rare opportunistic infections, such as *P. carinii* were to be notified to CDC. The restrictive definition worked very well initially, and the number of patients reported soon ensured that by 1984 the human immunodeficiency virus (HIV-1) had been identified as the causal agent for the initiation of AIDS.\(^4\)

As many of the patients with the syndrome had a number of factors in common such as age, sexual orientation, city of residence, and race, as well as similar clinical conditions, and because there were other patients whose clinical status was not as severe as those with AIDS but who exhibited similar infections, the CDC instituted a nationwide epidemiological surveillance for the syndrome. By June 1982 there was further evidence that an infectious agent was involved and that it could be transmitted during sexual activities among homosexually-active men. Study data obtained from the sexual partners of men with AIDS in Los Angeles, showed that 9 had sexual contact within the previous 5 years with men who later developed either Kaposi's sarcoma, or *P. carinii* pneumonia
or both. Additional cases of AIDS were described in people who had received blood or blood products but had none of the risk factors associated with homosexuals at that time. It became apparent that people with haemophilia, blood transfusion recipients of all ages, and drug users using hypodermic needles to inject drugs (intra-venous drug users), could also become infected with AIDS.\(^5\) These reports highlighted the need to identify the cause of the disease syndrome and to prevent people with a high disease risk from donating blood or blood products. By 1983 female partners of IV drug users had been identified with AIDS and towards the end of 1983, AIDS cases were diagnosed in people from Africa and Haiti who were heterosexual and had no history of homosexuality or IV drug use.

As there was so much controversy surrounding the disease syndrome AIDS, it was not unexpected that a dispute would occur as to who was the first to identify the HIV virus. As a consequence an international scientific enquiry was instituted to ascertain who had precedence of discovery between French and American researchers.\(^6\) The scientists who isolated and identified the causal agent were assured of international scientific recognition, considerable prestige, and guarantees of substantial financial support for their research. In addition, there was the incentive of possible commercial profits from the developments of tests, treatments, and vaccines which could result from patents taken out on the products of their findings.

After the isolation of the virus, serological and other ancillary tests were developed or adapted to detect antibodies and antigens to HIV in the blood and other tissues and it became possible to identify silent infections. Before the virus was isolated and testing procedures developed, a series of new clinical cases had been reported. Further studies of the sexual partners of the first homosexual men with AIDS had shown that of 13 of the first 19 in the Los Angeles area, 9 had sexual contact with people who later developed Kaposi's sarcoma or \textit{P. carinii} pneumonia.\(^7\) The 9 were also linked to another interconnected series of 40 AIDS patients in 10 different cities by one individual who developed lymphadenopathy and later Kaposi's. This person was designated Patient O with little justification by Randy Shilts in his book, "And the Band Played On".\(^8\) Additional cases showing modes of transmission other than sexual contact continued to be reported and included haemophiliacs and recipients of transfused blood.

Also in this category were intra-venous drug users (IVDUs referred to as injecting drug users, IDUs in Australia) who shared needles and syringes with others. One aspect of these reports was the length of time that often existed between receipt of the contaminated blood transfusion or injection and the onset of clinical signs which, in some cases was up to two years. From the data it was apparent that AIDS was transmitted through blood or by direct sexual contact and was due to an infectious agent. Following isolation of the
virus and the development of reliable tests for detection of persistent infections, the means of transmission of the virus has been closely studied.

Transmission of HIV requires a combination of many factors some of which are not fully understood, but infection depends on the closeness of contact with, and the frequency of exposure to, a source of the virus. Transmission is predominantly by sexual contact, parenteral inoculation and vertical infection. Isolation of the virus has been made from many body tissues and from body fluids and secretions, including blood, bone marrow, lymph nodes, neurological tissues, cerebrospinal fluid, semen, saliva, urine, cervical secretions, breast milk, and tears. Although virus has been isolated from body secretions there has been no evidence of transmission from these latter fluids.

It has now been consistently shown that HIV is transmitted most efficiently by the administration of infected blood or body products (90 percent), but on a global scale the most important is sexual transmission. Sexual transmission occurs by contact through anal, and to a lesser extent, vaginal penetration, or artificial insemination. Transmission can occur from an infected mother during pregnancy and during the time of neo-natal care. The virus can also be contracted by intravenous drug users through needle sharing, and by health care workers through accidents with needles, "sharps" (cutting instruments, broken glass etc.), or infected blood directly onto any open wound. Blood and semen are the main sources of HIV infection.

Despite some initial alarms, there is no evidence for casual spread through food, water, or during normal daily contact among people in the work place, at schools, or in public transport or toilet facilities. Although there have been individual reports and occasional rumours to the contrary, investigations and studies have been conducted to demonstrate that HIV is not transmitted by casual contact and there is no evidence for insect vector transmission. HIV is not an arbovirus and there was no viral life cycle in the insects that have been examined, including mosquitoes.

Fear of syphilis transmission in the early 20th Century was based on the assumption that it could be casually transmitted from encounters with objects used regularly. Drinking cups, bedding, towels, toilet seats, pens and pencils were among some of the items accused of being sources of contagion. The US Navy removed door knobs from ships because of fear of infection of venereal disease among sailors. Fear of casual infection was based on deep cultural attitudes to sexuality and disease, still apparent in society from the Victorian era, and reflect concerns related to hygiene, dirt, and contamination. In retrospect, the social upheavals of the time, growth of cities, changing family patterns, and new social mores, produced troubled, apprehensive, and fearful communities.
Similar persistent fears about casual transmission of AIDS occur to-day but have their origins in a different set of social concerns and cultural phobias which will be examined later along with the role of the media in formulating and expressing those phobias.

Because of the numbers of AIDS patients that did not fit the CDC definition for surveillance of AIDS, CDC revised the definition in collaboration with public-health and clinical specialists in 1987. As a result, many clinical syndromes previously referred to as AIDS related complex (ARC), now fall under the new criteria for AIDS.

Although much has been learned about AIDS in the last few years, many questions remain. Some examples are transmission pathways for HIV, its action on cells, and cellular response to infection, what treatments are available, what can be done to prevent infection, why did it occur, where did it come from, who is to blame? One recurring question concerns where AIDS began? The reason this question is asked so frequently sometimes appears to be not solely out of curiosity, but rather to find culprits when it should be to identify original strains of the virus. After 500 years the culprits first responsible for the spread of syphilis, have not been identified. What does this insight into the history of disease reveal about attitudes in societies, then, and now?

WHERE DID AIDS BEGIN?

One of the facts emerging from the studies of HIV-1 is that the virus may have been spreading undetected through extensive numbers of the world's population prior to its detection. After infection, a person may remain free of clinical signs and symptoms for many months or years as the median progression rate has been estimated to be about 10 years. Immediately after infection there may be a brief illness in which a fever, skin rash, and lethargy may be apparent. This is similar to symptoms of mononucleosis and a number of other diseases and symptoms usually occur two weeks to two months after infection. After this episode there may be long periods of latency during which the infected person may lead a relatively healthy life. Depending upon the source and size of the initial dose of virus, this period can be as long as 8 or 9 years on average before AIDS is fully developed, or with very high infective doses and in babies or immunocompromised people, it may be as short as a few months. However, the factors which alter the progression rate of HIV-infection are not clear and some transfusion recipients do not appear to have a rapid progression to AIDS.

From a study of 68 homosexual men in San Francisco who were infected with HIV prior to 1983 and have been followed for a mean interval of 6 years, it was found that 30 percent developed AIDS. Of the remainder, 46 percent had developed generalised lymphadenopathy, oral candidiasis, weight loss, persistent fever or diarrhoea or both. Only 24 percent had no signs of disease. Current predictions based on this study,
suggest that 15 percent will develop AIDS over 5 years of infection, 24 percent after 6 years, 31 percent after 7 years and 36 percent after 7 years and 4 months. The data from Hessol et al. (1987) and the incidence of AIDS among recipients of HIV-contaminated blood were used for a statistical model. This model predicts progression to AIDS in HIV-1 infected individuals with a median-latency period and a standard deviation of 5 years.

One hypothesis suggests that declining immune function in infected people may be associated with increased viral replication resulting in enhanced infectivity. Concurrent with this event may be an accelerated rate of HIV-transmission due to increasing numbers of infected people resulting from the prolonged lag time between infection and appearance of AIDS. This would help to explain the rapid increases in cases in many countries. By the first of January 1988, 129 countries had reported at least one AIDS case to the World Health Organisation. AIDS cases have now been reported from all major areas of the world.

TABLE 1  WHO - AIDS CASES REPORTED TO DECEMBER 1990

<table>
<thead>
<tr>
<th>Continent</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>77,043</td>
</tr>
<tr>
<td>Americas</td>
<td>185,595</td>
</tr>
<tr>
<td>Asia</td>
<td>843</td>
</tr>
<tr>
<td>Europe</td>
<td>41,564</td>
</tr>
<tr>
<td>Oceania</td>
<td>2,334</td>
</tr>
<tr>
<td>Total</td>
<td>307,379</td>
</tr>
</tbody>
</table>

It is clear from the above figures that there are approximately 60.4 percent of all reported cases in the Americas. When the totals from the Americas are further analysed, over 70 percent of the cases recorded come from the US. Unfortunately, this result is more a reflection of the efficiency of testing and reporting in the US rather than an indication of the true incidence. WHO estimates that there are 1.5 million AIDS sufferers worldwide. Reporting of AIDS from Africa and some other areas has been incomplete and does not reflect the real picture. It has been suggested that perhaps only 10 to 20 percent of all adult cases of AIDS that have occurred in Africa have been reported to WHO.

There has been a reluctance by some governments to officially acknowledge the existence of AIDS, in particular, in Eastern Europe (Romania), some countries of the Middle East (Iraq, Yemen, Bahrain, Afghanistan), and Africa. In Africa, reporting of AIDS has been incomplete for a number of reasons, including a reluctance to officially recognise the existence of the disease or the magnitude of the epidemic. However, the main reasons
are a general lack of diagnostic facilities where AIDS might be diagnosed and reported, poorly developed public-health reporting systems, and limited access to health-care facilities available to large segments of the populations.

In some Latin America countries extensive under-reporting, estimated to be as high as 50 percent of diagnosed cases, has occurred. In many others there is a wide variation in the completeness of reporting. If the numbers of AIDS patients from the US and Canada are subtracted from the reported figures to December 1990 for all the Americas, only 29,000 cases remain and of these, the Dominican Republic, Haiti, Brazil, and Mexico, provide 21,500 of those reported.

It is difficult to imagine why there should be reticence in reporting AIDS, particularly in the regions of the world where large populations are at risk and lack of reports are probably due to lack of facilities. By April 1991, more than 345,000 AIDS cases had been reported to WHO, but WHO estimates that when under-diagnosis, under-reporting and delays in reporting are taken into account, more than one million AIDS cases may have occurred in adults world-wide. In Africa, in particular, in the regions south of the Sahara, AIDS has become one of the major health problems of urbanised areas. In the West African countries, HIV-2 infections occur more frequently than HIV-1 infections. In these areas there is an increase in the numbers of AIDS cases and comparison of the pathogenicity of the two virus groups has become a matter of epidemiological and clinical concern. In the countries of central and east Africa in urban areas of the Congo, Rwanda, Zambia and Zaire, it is estimated that from 5 to 20 percent of the sexually-active age group have been infected with HIV-1.

Systematic studies of sexual behaviour in Africa have not been conducted on a wide basis as yet. In comparison with control groups, males with AIDS were shown to have had a greater number of sexual partners or contacts with female prostitutes or both. From some studies of sexual practices in Africa, vaginal intercourse is the dominant behaviour which reinforces the premise that it is the number of partners, combined with the frequency of exposure, that increase the risks of infection. Reports of the infection rate for HIV-1 among prostitutes range from 27 percent in Kinshasa, Zaire, to 66 percent in Nairobi, Kenya and 88 percent in Butare, Rwanda. There are other social factors contributing to the spread of HIV in Africa including large population shifts from rural to urban centres, and an increase in poverty.

Figures for the prevalence of AIDS in the general population in several African states have been alarming. Ugandan Government figures from national surveys in 1987 and 1988, are that 800,000 people are HIV-positive, including 12 percent of rural adults in one area and 29 percent of urban adults in another. The estimate for Uganda is that one million people or 6 percent of the population are already infected with HIV. The
Zimbabwe Health Service tested adults in the capital, Lusaka, and found 32 percent HIV positive. Zimbabwe has a well-developed health service and a good blood-transfusion service. In the course of screening blood donors, it was found that 15 percent of first-time donor adults, most of whom were factory workers, were HIV positive. When laboratory criteria of HIV infection is added to the existing WHO "Bangui" case criteria for diagnosis, reporting of AIDS cases becomes much more accurate.

The long-range forecast for the numbers of sufferers from HIV/AIDS cannot be made with confidence but WHO estimates suggest that during the 1990s, 10 to 20 million new HIV infections will occur in adults, mostly in developing countries.

**SURVEILLANCE FOR AIDS. SEROLOGICAL SURVEYS FOR HIV**

Surveillance for AIDS is being carried out by most countries of the world and reported to the WHO Global Program on AIDS. In several studies in Africa, after clinically-defined cases of AIDS were confirmed by serology, serology was found to be reasonably specific (80-90 percent) in areas where the prevalence of HIV infection is 1 to 2 percent of the adult population, but specificity was extremely poor in those areas where the prevalence of HIV infections was lower.

Serological surveys for HIV-1 antibodies have been carried out in a number of countries using the enzyme-linked immunosorbent assay (ELISA) and other tests (Western blot, radioimmunoprecipitation) as verification. Recently, the polymerase chain reaction (PCR) has been utilised for viral antigen testing. From these surveys, data have been extracted which indicate the geographical and to some extent, the temporal spread of HIV-1 throughout the world communities.

In the US, studies to evaluate the specificity of the CDC/WHO definition indicated that it was very specific with few false positives being found. Serological surveys that have been carried out during the 1980s however, require that the seroprevalence data obtained have to be interpreted with extreme caution when comparing results. The reasons for this are the differences in survey methods used and the types of populations examined. Because of the importance of public-health surveillance for AIDS and serology for HIV infections, the WHO is recommending adoption of sentinel systems for routine public-health surveillance of HIV infections.

There are additional factors which complicate surveillance for AIDS. To begin with, there are wide variations in prevalence within communities; AIDS has a variable incubation period which may be very long; AIDS is a debilitating and usually fulminating disease; and there are often extreme personal and social complications for sufferers. As a result, HIV infections have to be treated confidentially and with a great deal of
compassion by authorities partly because of the fear and discrimination they arouse. At the same time, it is essential that the authorities have precise information on the epidemiological trends associated with HIV infections within the community in order to provide public-health programs including education, prevention, control, and treatment.

Data available on the serological prevalence of HIV-1 infection, and the number of reported AIDS cases, have provided a means of examining the world distribution of HIV-1 infection. This resulted in 3 distinct epidemiological patterns which were based on the relative frequency and social features of the types of transmission. In Pattern 1, homosexual/bisexual men and intravenous drug users are the major affected group, whereas in Pattern 2, heterosexuals are the main population group affected. Finally, in Pattern 3, the spread follows recent introductions of the virus into groups with multiple sexual partners.37

**TABLE 2  PATTERNS OF HIV-1 INFECTION IN THE WORLD (Piot et al, 1988)**

<table>
<thead>
<tr>
<th>PATTERN 1</th>
<th>PATTERN 2</th>
<th>PATTERN 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homosexual/bisexual men and intravenous drug users (IVDU) are the major affected groups.</strong></td>
<td>Heterosexuals are the main population group affected. <strong>Period when introduced or began to spread extensively</strong> Early to late 1970s.</td>
<td>More recent introduction with spread among persons with multiple sex partners. Early to mid-1980s.</td>
</tr>
<tr>
<td>Mid-1970s or early 1980s.</td>
<td>Predominantly homosexual. Over 50% of homosexual men in some urban areas infected. Limited heterosexual transmission occurring, but expected to increase.</td>
<td>Both homosexual and heterosexual transmission just being documented. Very low prevalence of HIV infection even in persons with multiple partners, such as prostitutes.</td>
</tr>
<tr>
<td></td>
<td>Transfusion of HIV-infected blood is major public-health problem. Non-sterile needles and syringes account for undetermined proportion of HIV infections.</td>
<td>Not a significant problem at present. Some infections in recipients of imported blood or blood products.</td>
</tr>
<tr>
<td></td>
<td>Intrauterine transmission</td>
<td>Perinatal transmission</td>
</tr>
<tr>
<td></td>
<td>Documented primarily among female IVDU, sex partners of IVDU, and women from HIV-1 endemic areas. Western Europe, North America, some areas in South America, Australia, New Zealand.</td>
<td>Significant problem in those areas where 5 to 15% of women are HIV-1 antibody-positive. Distribution Africa, Caribbean, some areas in South America.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Currently not a problem. Asia, the Pacific Region (minus Australia and New Zealand), the Middle East, Eastern Europe, some rural areas of South America.</td>
</tr>
</tbody>
</table>

Although this table sets out the approximate epidemiological patterns for HIV-1 infection in the world, it must be seen as being an arbitrary classification which does not explore any predisposing factors, nor any underlying cultural behavioural practices which could
account for some of the variations and, as a result, it can become outdated quickly. Also
because HIV-1 infection and progression to AIDS are still relatively-recent events, often
the emphasis is placed on one or more of the predisposing factors without attempting to
bring all the evidence together. Solving medical problems requires examining all
available evidence from clinical, laboratory and research findings against the social and
economic conditions in which the patients live. Often medical problems are looked at
during the overt disease stages whereas the early infection and incubation periods when
the agent is being transmitted unwittingly by apparently healthy people, are the most
dangerous times. This is particularly so with HIV-1 infection because of its long
incubation and the fact that so many infected people are unaware of their infection and
may not use precautions against transmission with the same diligence that they would
apply if they knew. The importance of counselling and advising precautions against
transmission in at-risk groups, is an essential part of the health programs in the US and
European context. Unfortunately, in many parts of the world, there are not the trained
personnel nor facilities to diagnose and advise behavioural modification early in
epidemics nor the resources to provide basic protection such as condoms.

The WHO sentinel system for routine public-health surveillance for HIV infection has
much to recommend it, and in particular, the fact that it would be of equal value in
underdeveloped countries with limited resources as it is in the more-developed
countries. Large scale serosurveys require considerable time and resources and the
results are always subject to bias and, therefore, of limited accuracy. Even in areas of
high incidence of infection they rapidly become outdated.

HISTORICAL RECORDS AND ASSUMPTIONS.

It is possible that HIV viruses have existed in humans in less virulent forms for centuries
in isolated areas of the world. It is equally possible that spontaneous mutations could
have occurred in some of these strains. When conditions arise which enable
multiplication and dispersion of a pathogen to occur, groups in which focal infections are
present can rapidly spread infection to others to cause the epidemic. The important
concepts here referring to conditions include changes from accepted behaviour standards,
altered environments, concentrated populations, and many additional factors that are
necessary for the initiation of an epidemic.

The recognition and report of what is now known as AIDS from California in 1981 may have been pre-dated by the presence of AIDS in Zaire 22 years before. Serological
evidence obtained from a retrospective study of stored-blood serum in Zaire was checked
for evidence of AIDS and several samples contained HIV-reactive antibodies. Even
more dramatic was the use of the polymerase chain reaction (PCR), a new technique
which amplifies pieces of DNA. This technique was used on tissues from a seaman who
died in Manchester Hospital in 1959 and indicated that he probably died of AIDS. In 1966, a Norwegian sailor who had travelled extensively in Europe and Africa, developed persistent lymphadenopathy and dark skin spots. He was 30 years old, married, and had 3 children when he died of dementia in 1976. Two other members of this man's family, his wife and their youngest daughter, both died exhibiting similar syndromes.

During the 1950s and 1960s, there was an increasing emphasis on the immunodeficiency diseases which were generally referred to as "leukemias" and may have included some AIDS cases. Moreover, additional evidence comes from serum samples collected in the West Nile district of Uganda in 1972 and 1973. Seventy-five serum samples were tested using an ELISA for screening and all positive samples were then confirmed using a Western blot system. Of the 75, 50 were positive. The authors of this survey suggest that the high prevalence of positive sera in these samples which were from young, healthy, normal, children (average age 6.4 years), may predate or coincide with the spread of HIV in the population of this part of Africa at that time.

Increases in some of the indicator diseases for AIDS such as obscure fungal diseases, Kaposi's sarcoma, and diarrhoea diseases occurred in parts of Central Africa mostly in the larger cities where recent statistics have shown marked rises in the incidence of AIDS cases. The prevalence of HIV-1 in rural Africa remains relatively stable in contrast to the larger cities, but, should conditions enhancing spread occur, then the position will change rapidly. To some extent this has been seen in Uganda following national surveys during 1987 and 1988. The Ugandan Government estimates there are 1 million people (6 percent) of the total population infected. In the same report, prevalence of AIDS in Zimbabwe had increased rapidly to 2,375 cases, 3 times the number reported 9 months previously. Truck drivers have been identified as helping to spread the disease because of their mobility over long distances and their association with bar girls and prostitutes. In a survey of prostitutes along two of the main road routes between Zambia and Zimbabwe, 210 of 300 (70 percent) were HIV-1 seropositive.

Similar levels were found in groups of prostitutes and bar girls tested in Uganda, Rwanda, and Kenya where 67 to 90 percent were found to have antibodies to the virus. Fortunately Zimbabwe has a well-developed health service including screened blood supplies and programs to prevent use of unsterilised needles. Lack of the latter aspects as well as deficient health services generally are of great concern in many other countries of Central Africa. The Malawian survey data indicate 17 percent of sexually-active adults in rural areas and 19 percent in towns have HIV-1 infections and from Mozambique 24 percent of refugees were found to be infected.
In the Caribbean, Haiti, in particular, has a high prevalence of AIDS and Haitian immigrants and refugees in the US are a risk group in the heterosexual transmission studies, accounting for 51.9 percent in male/female transfer and 100 percent in female/male transmission. Some of the reasons for the high prevalence in Haiti are outlined in the "Case for Haitian Origin of the AIDS Epidemic" by Alexander Moore and Ronald LeBaron. Numbers of well-educated Haitians, who are French-speaking, filled posts in the bureaucracy of Zaire at the time of, and subsequent to, independence and this association provides a common factor in the spread of AIDS between the two countries. The Haitians in Zaire mingled with the local upper and middle class elite groups, many of whom were exogamous and also polygamous. In these people, heterosexual transmission of AIDS was the method of spread involving multiple partners. Once introduced into populations where individuals are likely to have multiple sexual partners and to be exposed to unscreened blood supplies and unsterilised needles and syringes, HIV-1 can spread rapidly.

In Haiti itself, homosexual practices may occur in some voodoo-ceremony rituals and the voodoo religion is widespread in all levels of the population. Homosexual guest-houses and facilities were advertised as good places for tourists to visit in gay magazines in the US, so that, although the method of spread has been predominantly heterosexual, there has been, nevertheless, a small number of homosexual men infected. The standards of health care in Haiti are generally poor. Combined with the common problems of parasitism, both external and internal, malnutrition and multiple predisposing factors resulting in poor individual health, could all contribute to the high infection rate which has occurred in the population. Heterosexual cases of AIDS and HIV infection now greatly outnumber those resulting from homosexual males and IDUs.

Heterosexual infection introduces another dimension to the problem of AIDS as millions of women of child-bearing age worldwide are now infected. Estimates are that between 2 percent and 15 percent of pregnant women in some areas of Central and West Africa are HIV-1 seropositive. In Western countries women in the IVDU group are the common source of HIV infection from mother to child. Infection in-utero appears to be the most common route of transmission and limited studies have shown an infection rate of 30 to 65 percent of infants from HIV-1 seropositive mothers, in North America and Europe. The efficiency of transmission from mother to child is now estimated to be 30 percent.

Studies in Africa have shown that in Nairobi, 51 percent of 100 infants born to virus-infected mothers were infected with HIV-1. Similarly in Kinshasa, in a group of 600 infants from infected mothers, HIV-1 was isolated from cord-blood samples of 46 percent. The death rate in these infants was nearly 20 times higher than among infants
born to sero-negative mothers. The WHO predictions for the year 2000, is that there could be as many as 10 million orphaned children in Africa resulting from parental deaths due to AIDS.

CO-FACTORS AND PROGRESSION RATES OF HIV-1 INFECTION.

Studies on the natural history of HIV-1 infection in North American and European homosexual males has demonstrated an annual rate of disease progression ranging from 2 to 5 percent. A similar rate has been observed in heterosexuals in Africa. Six percent of HIV-1 seropositive female prostitutes developed AIDS within a 12-month follow up in Nairobi, while in Zaire, of 56 people who became seropositive to HIV-1 between 1984 to 1986, 4 developed AIDS-related complex and 3 AIDS.

Africa more than other continents, needs to have accurate serological prevalence figures for HIV-1 because HIV-2 has been isolated principally in West Africa although it appears to have spread to Central Africa and has been diagnosed in some expatriate Europeans. The role of HIV-2 is not yet fully assessed. However, it does appear to cause disease in humans as the virus has been isolated from patients with evidence of AIDS.

The obvious predisposing factors for HIV-1 are infections with other sexually-transmitted diseases. Studies in the US have shown that HIV-1 infection is positively correlated with genital or anal lesions in homosexual men. Also the high prevalence of STDs, including syphilis and chancroid ulcers in both males and females in Africa and in countries where similar infections are common in the population, provides several possible reasons for the rapid spread of HIV-1. In people where these sexually-transmitted conditions exist there has to be unprotected sexual activity and ignorance of the types of infections they may be carrying. Before AIDS was detected in the US, health authorities had noted an increasing prevalence of syphilis, rectal gonorrhoea, hepatitis B, amebiosis and other STDs among homosexual urban populations. These populations had adopted a liberated political and social stance during the late 1960s and 1970s which featured freedom of sexual expression. A number of establishments for gay men proliferated in some of the larger cities in the US and other western countries and became meeting places for homosexuals who previously had often led covert lives. In a study published in 1988, it was shown that as the number of establishments for homosexual men increased so did the prevalence of the STDs among this population.

Similar background problems to the above also occur in heterosexual communities in which there is a high prevalence of STDs and multiple sexual partners. Large population shifts in many African countries from rural to overcrowded urban areas, combined with wars and political unrest, have provided the environment for transmission of disease.

Impairment of the body immune system also predisposes to HIV-1 infection. Burdens of intracellular and internal parasites are common in many African communities. Combined with poor nutrition, and other diseases including STDs, many adult urban and rural Africans are essentially immunocompromised and additionally have poor general-health care. One common condition in Africa is the disease schistosomiasis caused by a multicellular internal parasite that burrows through tissues and lives in the bloodstream.

These parasites are spread in water and are especially prevalent in Zaire and Burundi although they occur commonly in most African states. French researchers have shown that schistosomes and HIV-1 produce a similar protein. This protein, virion infective factor (VIF) appears important for HIV to enable the virus to infect cells. Antibodies to the schistosome protein also bind to HIV and antibodies to HIV bind to schistosomes. If this proves to be an additional condition increasing susceptibility to HIV-1 among Africans, it could answer many puzzling features of the spread in some areas of Central and West Africa.59

The West African city of Abidjan, Ivory Coast, in which both HIV-1 and HIV-2 infections occur in the population, showed a minimum annual incidence of AIDS at 1447 cases per million adult men and 340 per million adult women.60 Cadavers admitted to
morgues associated with the two largest hospitals which received 60 percent of all deaths reported in Abidjan, were examined using a series of criteria to diagnose AIDS post-mortem. The study sample contained approximately seven percent of annual deaths. From this sample it was found that 41 percent of male and 32 percent of female cadavers were infected with HIV. Fifteen percent of adult male and 13 percent of adult female annual deaths were due to AIDS. The conclusions from the Abidjan study were that AIDS was the leading cause of death and limited the years of potential life for men. It was second only to deaths due to pregnancy and abortion in women. As these rates were minimal the true AIDS specific-mortality rates could be higher. Official Abidjan mortality statistics showed an increase in mortality rates (deaths per 100,000 per year) of 54 percent in men aged 20 years and older and of 28 percent in women aged 30 years or older.

TABLE 3

PREVALENCE OF HIV INFECTION IN CADAVERS AND AIDS-SPECIFIC AND AIDS-PROPORTIONAL MORTALITY IN ABIDJAN, 1988 TO 1989

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Observed HIV-positive cadavers/total cadavers tested (%)</th>
<th>Observed AIDS deaths/total deaths of known cause (%)</th>
<th>Expected annual AIDS deaths/total deaths of known cause (%)</th>
<th>Population</th>
<th>Expected annual min. AIDS-specific deaths per 100,000 pop/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>1/10 (10%)</td>
<td>0/10</td>
<td>0/56</td>
<td>103,425</td>
<td>43</td>
</tr>
<tr>
<td>20-29</td>
<td>46/110 (42%)</td>
<td>18/95 (19%)</td>
<td>97/542 (18%)</td>
<td>227,535</td>
<td>123</td>
</tr>
<tr>
<td>30-39</td>
<td>88/165 (53%)</td>
<td>32/150 (21%)</td>
<td>182/886 (21%)</td>
<td>147,553</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>353/93 (38%)</td>
<td>12/84 (14%)</td>
<td>62/502 (12%)</td>
<td>71,314</td>
<td>87</td>
</tr>
<tr>
<td>50+</td>
<td>27/102 (26%)</td>
<td>8/97 (8%)</td>
<td>46/590 (8%)</td>
<td>37,627</td>
<td>122</td>
</tr>
<tr>
<td>Total</td>
<td>197/480 (41%)</td>
<td>70/436 (16%)</td>
<td>388/2,576 (15%)</td>
<td>587,454</td>
<td>66</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>4/18 (2%)</td>
<td>2/12 (17%)</td>
<td>10/75 (13%)</td>
<td>123,125</td>
<td>8</td>
</tr>
<tr>
<td>20-29</td>
<td>22/57 (39%)</td>
<td>6/51 (12%)</td>
<td>35/335 (10%)</td>
<td>205,865</td>
<td>17</td>
</tr>
<tr>
<td>30-39</td>
<td>25/63 (40%)</td>
<td>10/58 (17%)</td>
<td>52/363 (14%)</td>
<td>108,547</td>
<td>48</td>
</tr>
<tr>
<td>40-49</td>
<td>10/34 (29%)</td>
<td>3/28 (11%)</td>
<td>16/162 (10%)</td>
<td>46,886</td>
<td>34</td>
</tr>
<tr>
<td>50+</td>
<td>8/46 (17%)</td>
<td>7/44 (16%)</td>
<td>45/270 (17%)</td>
<td>31,323</td>
<td>144</td>
</tr>
<tr>
<td>Total</td>
<td>69/218 (32%)</td>
<td>28/193 (15%)</td>
<td>158/1,204 (13%)</td>
<td>515,746</td>
<td>31</td>
</tr>
</tbody>
</table>

AIDS is among the major causes of death in other African cities, too. The demographic and reproductive effects of AIDS will have long-term consequences on the populations of some countries of Africa. The consequences of drastic mortality rates in the populations, will be the long-term effects on the economic and social framework of those African societies in the future, due to the enormous losses of young people from the workforce.

**WORLD AIDS-FOCAL EXTENSIONS**

In an examination of possible scenarios for the worldwide spread of AIDS, Grmek (1990), sees a consensus on the African origin and spread of HIV-2 virus and an AIDS pattern associated with that agent. However, the relationship between the main AIDS epidemic pattern and the HIV-1 virus and its origins is not so clear. Grmek identifies three possibilities, two of which place the origin in either Africa or the United States of America. If in Africa, the extension to the US may have come through Haiti, or through US citizens who had lived and worked in Africa in agencies such as the Peace Corps, or into the Caribbean through Cuban troops returning from Africa.62

If the origin was in the US, New York has been the most important link in the worldwide spread. Early epidemiological studies indicated the spread geographically in homosexual networks originating from New York and Miami and linked in the west with Los Angeles and San Francisco.

The third possibility is that there were concurrent outbreaks on both continents.

Speculation on the source of HIV does not solve the immediate problems. However, it could be of value for future research to know the origin of the original viral strains as studies of these viruses often provide details of their evolution which assist in the development of vaccines and other therapies. Putting speculation to one side, the facts are, that highly pathogenic, virulent microorganisms arose among particularly-susceptible human groups and these have since spread from those infected into general populations throughout the world.

Such an environment was present during the 1832 cholera epidemic in Paris and led Francois Delaporte to observe, "I assert, to begin with, that 'disease' does not exist. It is, therefore, illusory to think that one can 'develop beliefs' about it to 'respond' to it. What does exist is not disease but practices". Similarly with AIDS, it is not the disease but the behavioural practices that expose individuals to infection that have to be changed in order to respond to the epidemic.63

As Douglas Crimp noted commenting on Delaporte's assertion about cholera, "it is difficult to accept such a statement when the sufferers of the syndromes are known personally. However, there are scientific facts and there is, and has been, ignorance of
these and often gross misrepresentation of them. AIDS does not exist apart from the practices that conceptualise it, represent it, respond to it. AIDS is only known in and through those practices. The HIV viruses, infections, and responses to those infections and transmission routes all exist, as does the reality of illness, suffering and death.64

Behind the facts of the epidemic exists the politics of AIDS and the social constructions representing AIDS to the community. These have to be recognised and studied in order to control the epidemic. AIDS is a syndrome without a cure at present and the currently available treatments only alleviate the symptoms. In this regard, AIDS resembles the early pandemic stage of syphilis.

**TREATMENT**

Many remedies were tried for the treatment of syphilis without a great deal of success up to the time of the introduction of antibiotics. In most cases, treatments had been adopted because they appeared to relieve some symptoms or removed such superficial lesions as chancre. Mercury in several forms, even though it was of little use, was ultimately the treatment of choice until the discovery of arsenicals. Mercury treatment was usually in the form of salts, commonly calomel, applied to the offending areas and, after repeated applications and internal dosing, often resulted in salivation and mercury poisoning. According to Dr. Alexander Patterson, surgeon to the Glasgow Lock Hospital, syphilis became less virulent between the 1860s to 1880s. He judged this change by the reduction in the number of cases of mortification (gangrene) of leg bones and destruction of nasal bones. He speculated alternatively, that the changes may have been due to a reduction in the use of mercury which, itself, could also cause bone changes.55

Treatment for AIDS was initially inhibited by the lack of knowledge of the aetiology of the syndrome and was limited to alleviation of opportunistic infections and to attempts to increase immune-system responses. For patients with Kaposi’s sarcoma and lymphomas, treatment with irradiation and chemotherapy was also included. After 1983 and in 1984, when HIV was implicated as the initiating cause of AIDS, there were considerable doubts about the chances of finding suitable pharmaceutical products for use as treatments because of the elusive nature of retroviruses. These viruses can infect a large variety of tissue cells including some in the central nervous system, where they are sheltered by the blood-brain barrier from most drugs. Retroviruses, can integrate their DNA into the genome of lymphoid and other cells and remain undetected for extended periods of time.

The first treatments for AIDS used immunosuppressant drugs based on the hypothesis that T-cell destruction was possibly due to an auto-immune reaction rather than
destruction of the T-cells. Drugs such as cyclosporin and interleukin-2, a biological modifier of T-lymphocytes, were tried but proved ineffective or too toxic.

From 1984, the search for drugs with activity against HIV, began in earnest and some drugs that had been tested previously against mouse retroviruses were tried. By 1985, a group at the US National Cancer Institute had tested 300 drugs in cell-culture systems and had selected 15 for further trials. One of these was 3'-azido-2'; 3'-dideoxynucleoside, AZT (also called azidothymidine or zidovudine). AZT prevents the reverse transcription of viral RNA into viral DNA.

AZT has been assessed in a number of trials around the world which has resulted in its widespread clinical use. The drug is produced by Burroughs Wellcome under the commercial name Retrovir, and has become the drug of choice for treatment of AIDS. However, as further experience with its use accumulates, it is apparent that, in spite of the beneficial effects of AZT, there are a number of toxic side-effects. Also, although it inhibits reverse transcriptase, thus preventing viral replication and probably stimulating the immune defences, it does not cure AIDS. Because of side-effects, it damages cellular elements in the bone marrow interfering with both red and white cell production. An even greater problem for the future is the evidence of resistance to AZT developing in some strains of HIV-1.

A large number of drugs are undergoing evaluation and alternate treatments and drug combinations are being studied in clinical trials. Some of the drugs are similar to AZT and of these candidate dideoxynucleosides, one, 2', 3'-dideoxyinosine (ddI, didanosine, trade name Videx), has been used as an alternate therapy to, or in conjunction with, AZT for patients who cannot take AZT continuously. While some drugs are improving the quality and, to an extent, the quantity of life for people infected with HIV, that is the best that can be expected. Neither AZT nor ddI will cure AIDS. They slow viral activity and retard the degradation of the immune system for limited periods.

Drugs undergoing development aimed at affecting the multiple steps in viral replication will be available in the future, but progress in the field of antiretroviral therapy will depend on basic research and scientific and statistical controls in clinical trials. AIDS homosexual activists find the speed of research too slow and view clinical trials in which some participants receive the drug under test while others receive placebos as ethically immoral.

Yet until an animal model can be found to increase the rate of progress and provide an alternative to the use of human volunteers in trials, the pace of progress must be slow.
Because of political pressures in the US, apart from the recognised clinical trials for the drugs AZT and ddl, ddl has been available on expanded access programs. Many more people are taking the drug on the access programs than there have been volunteers for clinical trials. Further, a protein extract from a tuber grown in Asia called Compound Q, (the purified plant protein tricosanthin GLQ223), has been shown to inhibit viral replication infected T-cells and macrophages in vitro experiments. The drug firm producing GLQ233 has been granted permission for limited toxicity trials. However, an unauthorised trial was being conducted which the Food and Drug Administration (FDA) stopped. Obviously the political aspects of unauthorised drug trials are causing considerable problems for the FDA in the US.70

VACCINES

Apart from the search for retroviral drugs, and other forms of chemotherapy against HIV, the ideal of prevention has loomed large. It is preferable to prevent disease rather than attempt to cure an infected host. Because so many viral vaccines have been successful in reducing the incidence of diseases such as polio, smallpox, measles, mumps, rubella, and yellow fever, and more recently hepatitis B, HIV infection was a prime candidate for a vaccine.71 Unfortunately the difficulties with a vaccine for HIV are:

- the elusive nature of the virus which can be present in cells and not detected due to its ability to alter the outer-coat proteins, and to instil its own genes into host chromosomes.
- the lack of a suitable animal model for the disease which severely hampers research against these retroviruses.
- the ethical concerns, scientific evaluation problems, and possible lack of enthusiasm by people to enter clinical trials to test vaccines.

Several early vaccines have been developed using whole inactivated HIV and have been used in limited trials in infected people with no results reported so far. Other so-called chimeric vaccines which use structural antigens or regions of the HIV envelope either extracted from the virus or synthesised in the laboratory have been mooted for trials. Another approach has been to use a vaccinia virus-HIV recombinant vaccine.

Cells infected with an HIV recombinant have also been developed. The greatest barrier for vaccine research is the lack of a suitable animal model. Other human viral diseases have analogues in laboratory-animal models but most animals do not get AIDS from HIV. Chimpanzee can become infected with HIV but show no signs of disease. If the reasons for this could be found, it may assist in developing a means of protecting humans.
There are some aspects of HIV infection that have proved extremely perplexing. One is the fact that infected people may not develop signs of immune deficiency for many years. Over this time, difficulty has been found in isolating the virus. However, viral antigen has been detected in the blood and it is estimated that one percent of the circulating T4 cells contain the antigen. If the mechanisms that cause HIV to remain quiescent were discovered and the reason the virus replicates also found, it may be possible to design treatments to prevent activation of the viral DNA in host cells. Some evidence has shown that mitogens (plant substances that stimulate cell growth) and cell-growth factors can cause T-cells to activate HIV, inducing it to replicate. There are obviously some factors causing HIV to replicate rapidly under some conditions (in an infected person). One possible mechanism could be that there is a simultaneous infection of cells with another virus or viruses. Included in such a range could be, herpes simplex, cytomegalovirus, Epstein-Barr virus, hepatitis B, and others. If any of these agents infect a cell that already contains HIV, they may stimulate further production of HIV.\(^\text{72}\)

Regulatory genes of other viruses interact with HIV either directly or indirectly utilising signals that the infected cell uses to carry out its normal functions. This is a theory supported by many scientists to account for the rapid replication of HIV under some circumstances. Cytokines are substances produced by T cells and monocytes during immune responses to activate other helper and antibody-producing cells. Interleukin-2 is a cytokine as is tumour necrosis factor-alpha (TNF-alpha), both produced by monocytes. In response to infections, TNF alpha could cause HIV to reproduce and, in this way, overwhelm the T4 cells and, eventually, other immune functions of the body. Once the integrity of the body-immune defences has been lowered, there is an influx of microbiological agents which then act as additional pathogens. Because the T-lymphocyte hierarchy is now depleted and disorganised, its former synergistic role with antibody-producing B-lymphocytes, is also reduced.\(^\text{73}\)

The precise manner in which HIV devastates the immune system of the infected person is probably the greatest challenge for human biology. Without this knowledge, cures and the prevention of extension of infection in people will not be possible. Two unique groups of experiments, in which the preliminary results may indicate how HIV causes such destruction of T cells, have evoked a great deal of excitement in AIDS research and may provide some pointers for future avenues of research.\(^\text{74}\) Canadian researchers injected mice with T cells taken from a second line of mice never infected with HIV virus. The inoculated mice developed antibodies to the proteins designated GP24 and GP120 of the AIDS virus. The GP120 protein of the AIDS virus is attached to a receptor site CD4 on the surface of lymphocytes, macrophages, and some cells of the nervous system. GP120 acts like a key to gain access to the cell through this entry point. Thus HIV utilises this ability to infect the cells of the immune system. The mice made antibodies to
a mouse protein which very closely mimics the GP120 protein of AIDS. From this, it is possible to suggest HIV does the same in humans, causing a protein similar to GP120 to be produced and antibodies to this new protein to be raised which serologically are indistinguishable from antibodies to GP120 of HIV. As the proteins are displayed on the surface of infected cells and also on the surface of "normal" T-cells, the body immune killer T cells cannot distinguish between them and destroys all the cells, infected and non-infected alike. A study which corroborates the experiment in mice was carried out in macaque monkeys (Macaca fasicularis). In this experiment, 4 macaques were vaccinated with inactivated simian immunodeficiency virus (SIV) infected T cell culture cells, and 4 with non-infected T cell culture cells. All animals were challenged with SIV 6 weeks later. Three animals in the first group and two in the second control group were protected from the virus. As the researchers in this latter group have observed, "We are not aware that antibody against cell components has been shown to protect in vivo against any other type of virus infection". They add that the results, if confirmed, may reveal further unique properties of immunodeficiency viruses and may alter understanding of these agents and approaches to their control. However, several weeks after this report other research results in rhesus monkeys (Macaca mulatta), were published from France and the Netherlands. The vaccine experiments showed that the original findings had been interpreted on antibody crossreactivity, whereas there should have been a closer regard to the choice of cells used for controls. Irrespective, these more recent experiments partly confirm the original study, but with the added findings that some protection comes from cellular antigens on the envelope of the human peripheral blood mononuclear cells (PBMC) on which the SIV were grown. In addition, in a SIV-macaque experiment in Holland vaccinated monkeys were protected from infected PBMC obtained from other infected animals.

What direction research into AIDS may now take remains to be seen but if this new insight is correct, Peter Duesberg's skepticism has been partially vindicated. AIDS may be an autoimmune disease caused by HIV and not by viral destruction of cells as previously thought. Duesberg has described HIV as an innocuous, or only slightly harmful retrovirus, which could be accepted as a reliable indicator of exposure to risk. However, while Duesberg's criticisms allow for an alternative explanation to that of a virulent agent, he has not provided any alternatives. Perhaps these more recent insights will provide the clues for the development of new strategies for the control of AIDS.

In 1988, it was known that people infected with HIV produced antibodies to the lymphocyte receptor CD4 to which the virus GP 120 protein bound. The fact that HIV attacked the cells that were responsible for defeating the virus and preventing further infection, added more problems for vaccine development. There was a concern that vaccines could actually enhance the infectivity of the virus and even facilitate its spread.
The first trial of a vaccine utilising the protein p24 presented on the surface of a virus-like particle (VLP) carrier is to be conducted in England in 20 serologically negative, healthy volunteers. As p24 is a core protein of HIV, it was considered unlikely to act to suppress the immune system. At least three large AIDS organisations are in the process of choosing sites for vaccine trials. WHO AIDS vaccines group has selected four countries, Rwanda, Uganda, Brazil, and Thailand, the National Institutes of Health together with CDC has chosen Zaire, while National Institute Allergies Infectious Diseases is planning on using high-risk populations in the US. The greatest vaccine successes so far have been the whole, killed SIV vaccines which have protected monkeys and were discussed above. Genetically manipulated vaccines which utilise subunits of HIV have also worked in a few cases. Many researchers favour this latter approach because it poses less risk than whole-cell, killed, virus vaccines. There are still many questions remaining, which vaccines are to be tested, where will they be tested, when will they be tested? At present there is no ideal vaccine and the start of testing could still be several years away. What effect the new findings that indicate the possibility of an autoimmune response will have on vaccine trial studies such as these, remains to be seen.

AIDS and the CENTRAL NERVOUS SYSTEM

Neurosyphilis occurs in 20 to 25 percent of untreated syphilis cases and can be diagnosed during the secondary and tertiary stages of the disease. Syphilis of the central nervous system affects most areas of the brain and spinal cord and has been responsible for sending many patients to institutes for the insane.

Infection with HIV is often complicated in its latter stages by AIDS dementia complex, a neurological syndrome characterised by abnormalities in cognition, motor performance, and behaviour. This neurological reaction is delayed until immunosuppression is developed, despite the fact that the virus is present throughout infection in macrophages, glial cells, multinucleated cells and not, apparently, in other brain cells. The pathogenesis of this condition has not been well understood and, although HIV infection of the brain occurs in all cases, only in some, however, does the neurotropic effect of the virus become manifest in the dementia complex. Finding HIV in the brain, has caused great concern as similar retroviruses such as Visna are known to cause severe neurological disorders in sheep. Although techniques have been suggested to treat and remove viruses from blood and to restore the immune system, any improvements with these methods would only be temporary while the brain remained infected. The suggestion that HIV may trigger an autoimmune response could account for the neurological reactions and the subsequent pathology.
However, it makes the need for a cure or prevention even more imperative as the association of AIDS and neurological impairment may have an enormous impact on world health-care systems.

Evidence of neurological disease is seen in most people with HIV infection and increases in severity with time, becoming evident as dementia at the onset of AIDS in many sufferers. Figures on the incidence of neurological problems in HIV-infected people reveal that about 10 percent have signs as the first manifestation of infection and approximately 40 percent in the early stages of AIDS with the remaining 50 percent developing neurological changes during full AIDS. Pathology of the central nervous system is present at postmortem examination in the majority of people who die from AIDS.

ETHICS AND AIDS THERAPIES

There have been a number of critics who have questioned the ethical conduct of placebo-controlled trials using HIV-infected patients. Some groups are adamant that people with HIV infection should have access to any therapies that may have potential even though the efficacy of the treatment has not been validated in randomised-controlled trials. It would be a retrograde step to provide access to ineffective therapies with toxic effects that are greater than any potential benefit. Organisations for AIDS patients advocate the development of innovative approaches to drug trials and list a series of defects in trial design. Some of the deficiencies include the length of trials, often to death or onset of opportunistic infection, unrealistic eligibility criteria for recruitment of volunteers, a need for more relevant data for both physicians and patients on dose, and the toxicity levels of new drugs. They also claim that the clinical and social realities of AIDS patients have often been overlooked in previous trials. However, the inclusion of advice from AIDS advocates in design of recent trials should help to redress these defects.

If there is a possible category for "innocents" in the AIDS epidemic, it should be reserved for the children. The number of AIDS-infected children under 13 years of age in the US at the 30th June 1989, was 1681; this represents two percent of all cases reported in the US to that date. However, the impact of HIV infection in children is rapidly increasing and AIDS is already among the 10 leading causes of death in children and could rise to be among the top 5 causes in the next few years. Currently, 78 percent of pediatric AIDS is due to mother-to-child transmission and reflects the increase in the number of women of child-bearing age who are infected with HIV. The severity of the disease in children, often combined with cerebral infection, results in rapid progress to death. Of newborn children, infected while in-utero, approximately 20 percent will be sick in the first year of life and eight percent will become ill each year from then on. The high incidence of sero-positive (three to four percent) newborn infants in New York, Newark,
and Miami hospitals, is an indication of the numbers of young adults, aged 20 to 29 years, with AIDS in the community, and an indication of the problems yet to come.

When these figures are compared with those in Central and East Africa, where 5 to 10 percent of women of child-bearing age are HIV-seropositive, the numbers of probable cases in children worldwide are horrifying. In the West, most perinatally-transmitted cases occur in women who are IVDUs (52 percent) or who are partners of IVDUs (21 percent). In the US, approximately 79 percent of women with AIDS are of child-bearing age. Added to these figures are the huge numbers of adolescents in the population who are not in stable family relationships and in which a propensity for risk-taking behaviour exists. It is apparent that the incidence of AIDS in adolescents, young children, and infants will be the disease wave of the next few years. It is impossible to predict, the rate of progression from the diagnosis of HIV-seropositive to the terminal stages of AIDS. Experience to the present however, indicates that there is a pessimistic prognosis for all HIV-infected people.

Despite the progress that has been made in knowledge of, and development of, therapies, the eventual onset of immunodeficiency seems to be irreversible. From cohort studies and morbidity and mortality findings, almost 50 percent of patients die within a year of the onset of AIDS, after three years approximately 85 percent will be dead and in the remaining 15 percent, only rare cases will survive for a few more years.

Harvey Fineberg notes that AIDS exposes the hidden weaknesses in human society, and believes that how the epidemic is dealt with will have a profound effect on society's future. He sees the crucial issue to be protection from discrimination. This latter criterion is, in essence, a repeat of Parran's approach in his attempts to control syphilis.

Crucial to the control of AIDS has to be the will of societies worldwide to develop educational approaches to ensure information and counselling are available to protect the vulnerable and the sexually-active populations from infection. Treatment strategies that have been established have improved both quality and length of life for those infected. Treatments are being refined continually with emphasis on early treatments and community-based care programs. Meanwhile, despite all the advances in the treatment of people with HIV and AIDS, many are facing aspects of disease for which active treatment is no longer relevant. The need for palliative measures and sophisticated approaches for those in the final stages of the disease, is one of the most urgent challenges for clinical medicine.
Chapter 4 Footnotes

1. "AIDS Where did it Begin?" Age (Melbourne) 22 September 1990.


10. Ibid pp.33-34.


19. Ibid., p.530
Ibid., p.530,531.


Ibid., p.63.

Ibid., p.63.


Ibid., p.10.

Ibid., p.10.


J.Chin op. cit. p.530.


The sensitivity of an HIV antibody test is a measure of its accuracy to detect HIV antibodies that are present in a sample; the specificity of the test is its accuracy in confirming the absence of HIV antibody when none is present. Ideally, a test should be 100 percent sensitive and 100 percent specific. Under good laboratory conditions, most commercially-available HIV antibody tests have greater than 99 percent sensitivity and specificity.

The predictive value of a positive HIV antibody test is the likelihood that an individual really has HIV antibodies if the test is positive. The predictive value depends on the specificity and sensitivity of the test but also on the prevalence of infection in a given population. In a population with no HIV infections, any positive HIV antibody test would be a false positive, and the predictive value of the test would be zero. As the prevalence of HIV infection approaches 1 percent of the population, the predictive value becomes very high.
In surveillance when the population prevalence of HIV is very low, all positive specimens should be routinely retested, using supplementary tests, because the predictive value of a positive test is very low under those circumstances.

Gottlieb, 1981 op.cit. p.1425,


N. Nzila, op.cit., p.158; Francis, op.cit., p.214.


HIV replication involves a number of steps. The virus outer coat of glycoprotein first binds then fuses to the membrane of the host cell. This enables the viral RNA, along with the special enzyme reverse transcriptase, to invade the cell's cytoplasm. There the reverse transcriptase synthesises DNA from the viral RNA. The DNA then inserts into the host cell chromosomes. At some future time, the "viral DNA" can be transcribed to RNA which the cell can then convert into viral proteins. The proteins reassemble into virus particles, emerge from the host cell and can infect other cells. Such a complex life cycle enables retroviruses to evade the cells of the immune system while remaining secreted and infecting other cells.


The most important effector systems of the immune defence require the assistance of helper T-cells which exhibit the surface marker CD4(T4). The assistance is provided by the lymphokines, interleukin 2. (IL-2), and gamma interferon (IFN) produced by T4 cells, when they are activated. The stimulus for T4 activation, is provided by presentation of foreign antigens from microorganisms by antigen presenting cells (APC). The APC ingest, partly degrade or modify the pathogens or parts of them. This processed antigen complex is recognised by the antigen receptors on the T4 cells. In order to complete the activation process, interleukin 1 (IL1), is excreted by the APC.

The critical immune defect of AIDS patients is the inability of T4 cells to recognise soluble antigen presented to them. This defect results in an additional failure of all T-helper cell-dependent effector systems. HBIV also infects macrophage and other monocytic cells of the APC type and this close contact of APC and T4 lymphocytes required for antigen presentation may facilitate cell-to-cell transmission.


78 Matthews, op. cit., 1988 p.102
85 Ibid., p.317.
CHAPTER 5.

SYPHILIS 1490s — AIDS 1990s. WHAT HAVE WE LEARNED?

What is hardest of all to do?
What seems to you the easiest:
To see with your own eyes,
What your eyes lay before you.

Goethe.

In comparing syphilis then and now what has been learned that may help to deal with AIDS? For instance, what were the social conditions that provided the environment for syphilis to spread when it first appeared in Europe? What were the social conditions that prevailed in the United States at the commencement of the AIDS outbreak? What were the social factors in Africa that provided the impetus for widespread dispersion of the HIV virus in the general population?

Although there have been many educational programs providing information on syphilis and effective therapies are readily available, syphilis still exists and in some areas the prevalence is increasing. So even if effective vaccines or therapies are found for AIDS, from the experience of syphilis what else has to be done? Where does the AIDS epidemic go from now on?

SYPHILIS IN EUROPE

The first reports of syphilis began at the end of the 16th Century, a period of exploration to new lands and places during which there were large movements of people. These major migratory movements were created by wars and the social stresses that followed, such as religious persecution, population pressures, and food shortages.

Syphilis, as a disease, was seen to be dangerous and there was a natural revulsion towards those infected because of their disfiguring skin lesions. It was obvious to the people of the time that syphilis was transmitted sexually and from mother to child at birth although the means of infection was not understood. The disease was labelled as sinful. As a result, the strong moral and ethical implications motivated the communities to institute controls such as the closing of communal bathing places and places of suspected debauchery. Churches and governments had a major role in attempting to segregate and quarantine sufferers, and the inference that those infected were to blame for their disease has always made syphilis a disease of great shame. The alienation of sufferers because of their behaviour led to their identification as sinners.
In many countries of Europe, a system evolved of policing brothels which were licensed and came under the administrative control and jurisdiction of the authorities. These procedures were generally accepted by the community and have remained in force.

The authorities in Britain did not condone prostitution and it was considered a vice and even to-day carries that connotation.

SYPHILIS IN BRITAIN

In Britain, following the repeal of the Contagious Diseases Acts of 1864, 1866, and 1869, prostitution remained an unregulated, free-market activity, subject to occasional criminal persecution. This absolved the authorities as they were not officially recognising sexual vice.¹

After identification of the aetiological agent of syphilis and the development of tests and treatment for the disease, there were attempts to reduce the prevalence of syphilis which, by 1913, was estimated to infect half a million people in London.² To the authorities, the impending outbreak of World War 1 and the prospect of an influx of servicemen from many areas of the world, raised fears of an epidemic of venereal disease.

The Royal Commission on Venereal Diseases was established in 1913 and reported to the British Parliament in 1916. From the Report it was acknowledged that early detection was essential to prevent spread.

- Voluntary, active co-operation of infected persons was required to ensure treatment.
- The stigma of official notification would hinder rather than help effective control.
- A system of Venereal Disease Clinics for men and women would be established.
- Attendance would be voluntary, anonymous, and confidential and there would be no formal connection with hospitals.
- The task of public education was to be the responsibility of the National Council for Combating Venereal Disease which later became the British Social Hygiene Council.

Since that time, efforts to educate the public that venereal diseases are preventable have been dogged by prudery, hypocrisy, and cant.

Simple behavioural changes informing the public that a condom will give a high degree of protection if abstinence from sex is not possible, have met with outcries from some religious groups and other self-appointed moral guardians.³
In Britain, to reduce levels of infectious diseases, the State has suspended the right of habeas corpus in order to prevent an individual from infecting his or her fellow citizens. For diseases that are transmitted through social contact, restriction clauses remove the infected persons in order to prevent disease spread among the healthy. In the case of STDs the patients, once informed of their condition, could not spread infection unless by deliberate choice so there was no ground for segregation. This situation applies also to those infected with HIV despite occasional calls for the enforced quarantine of AIDS patients.

During the Victorian era, the balance was delicately poised between individual liberties and the higher public good for the prevention of spread of infectious disease. As Porter points out, the argument that won in the British context for not notifying, had less to do with personal liberty than with the power of the clinical medical profession to maintain their private contractual relationship with individual patients. The problems resulting from, and public outrage associated with, the Contagious Diseases Acts caused subsequent medical and political attitudes to move away from public health. These attitudes forced the medical officers of health to review community medicine and the role of health enforcement became a program of low-level priority in comparison to private clinical medicine.

The Department of Health's AIDS policies in Britain do not require compulsory notification. Compulsory screening is not carried out. Education programs and information leaflets inform the general public about AIDS and its modes of transmission and issue warnings regarding the disease. These programs make explicit statements condemning social prejudices against AIDS sufferers, and are emphatic that it is not a disease of social groups or races. The programs emphasise that it is the general population that is at risk, and advocate safe sex practices including behavioural changes. Using these approaches, the British Department of Health has achieved a considerable degree of support from responsible citizens and the medical profession.

In this respect, the failed policies of the past that had relied on coercion and authoritarian rules for control of syphilis ultimately had to be rescinded and rejected as unworkable. However, these policies have ensured that a more compassionate and enlightened approach which relies more on the individual citizen, has been adopted by authorities in Britain for the control of AIDS.

**SYPHILIS IN THE UNITED STATES**

In the United States, there were not the opportunities to approach AIDS control in the same rational manner as the British, as the then-unknown disease appeared suddenly in several widely-separated areas and involved people outside the main, societal groups. By
contrast the authorities in Britain had time and the experience of the US to assist them frame controls.

Allan Brandt (1988a and b), has reviewed the basic scientific, medical, and public-health approaches to syphilis in the 20th Century in the US. He points out significant comparisons between medical and public-health approaches to syphilis and AIDS. Brandt traced the attempts at control and treatment of syphilis, ranging from premarital testing, public education, and contact tracing to the discovery of the efficacy of penicillin as a treatment. Despite a dramatic fall in the incidence of syphilis in the 1950s, it began to rise again in the 1960s, consequent on changes in society such as the advent of the contraceptive pill, and more permissive sexuality and promiscuity. At the same time, the US Federal Budget for venereal diseases was reduced to very low levels and much of the infrastructure for public education, case-finding, tracing, and even diagnosis, was severely cut.

Effective as the antibiotics are in the treatment of syphilis (Brandt refers to them as "magic bullets" in the terminology of Ehrlich), they have not eradicated or even controlled the disease in the US as demonstrated when there was a dramatic rise in prevalence during the 1980s.

The Social Hygiene Movements in the US which had amalgamated in 1913 and developed as a force in venereal disease control during World War 1 strongly advocated adherence to a social ethic that prevented infection, which in essence, restricted sexual relationships to marriage. In the 1930s Thomas Parran saw this as an improbable ideal and provided an alternative approach in which individuals were provided with the means of preventing infection. However, should they become infected, appropriate treatment would be provided. This latter approach was very successful during the Second World War in keeping the prevalence of venereal disease in service personnel at the same level as that of the general population. It demonstrated that intensive education programs can inform the sexually active of the risks and the programs can be commenced as early as pre-pubertal ages to ensure that the most susceptible population groups are informed.

**SYPHILIS IN AFRICA**

The prevalence of yaws, bejel, and venereal syphilis in Africa has been noted previously. Several theories suggest that venereal syphilis resulted from the evolution of the common causal bacterium *Treponema pallidum* from an epidermal pathogen to a systemically-induced venereal infection.

Syphilis was then spread more rapidly by changes in people's life-styles and living conditions. Syphilis is endemic in Africa and along with other sexually-transmitted
diseases, has been suggested as one of the factors facilitating the rapid spread of AIDS in many areas. After becoming infected with HIV-1, people with concomitant infections, such as syphilis and tuberculosis, may develop a more fulminant response, leading to increased rates of transmission within the population. Prostitutes also are a major reservoir of STDs in Nairobi and play an important role in the spread of HIV in this and other cities in Africa.

WHAT WERE THE SOCIAL CONDITIONS IN THE US AT THE START OF THE AIDS EPIDEMIC?

From a few puzzling cases of obscure infections in young men which ended as fulminating diseases, the US became the centre of worldwide concern as the full impact of the horror of this new syndrome became apparent. Under the acronym of AIDS, the syndrome and its manifestations had become a symbol of death to many groups of people. Unfortunately, at this time no one could advance a satisfactory scientific answer to the question posed by David Durack in the New England Journal of Medicine (1981): "Why now, and why not before?" This title preceded a report in which, of 180 cases of the disease, 75 were already dead.

For the answer to Durack's question posed in a medical context, we have to examine what was happening to the prevalence of syphilis in the US when from an all-time low in the 1950s, the prevalence rates began to climb rapidly in the 1960s. Concurrent with the increase in detection of venereal diseases, there was a general liberalisation of social mores and new contraceptive methods prompted earlier sexual relationships in adolescents. Referred to by authorities as the three "ps", the new era ushered in permissiveness, promiscuity, and the "pill". From this counter-culture arose more liberal attitudes to both drugs and sex. Primary and secondary syphilis cases increased from an annual rate of 10.9 to 13.3 per 100,000 population, the greatest increase in more than a decade.

American society through the 19th and early 20th Centuries had a low tolerance of homosexuals. Homosexuality was also repressed during this time in most countries of the world. The Kinsey report showed that, despite this repression and low tolerance of homosexuality, it was present, albeit, as a small percentage of the population, in American society in 1948. Homosexuals were part of the new wave in society and became more overt and politically organised during the 1960s in order to achieve their social rights as members of society.
The "Stonewall riots" of 1969, when homosexuals defended themselves against a police raid in New York City, were soon followed by recognition and a greater tolerance of their life-style by the general community, thus signalling their acceptance as a group. What resulted was a revolution in life-style and like most revolutions, it contained periods of social unrest and an increase in sexual expression.

The infrastructures needed for these social changes began with vast population shifts of homosexuals from within the US to three major cities, New York, Los Angeles, and San Francisco. The migration of homosexuals can be assessed from demographic accounts which estimated that, by 1982, ninety-eight thousand homosexuals were in San Francisco, of whom approximately half lived in one area of the city centre.\textsuperscript{14} To provide for this rapid population expansion there was an equivalent increase in the numbers of newspapers and magazines catering for homosexuals, their bars and clubs, discotheques and bathhouses, as well as pornography outlets, sex shops, cinemas and video shows. In addition, these generally affluent, mobile people had opportunities to travel to other countries and to meet with people of similar sexual persuasion. In this manner, the homosexuals in the US created the environment in which virulent pathogens could multiply.

As Grmek (1990)\textsuperscript{15}, referring to San Francisco, noted "never in human history had one city known such a concentration of homosexuals, nor such promiscuity. The search for physical pleasure and multiple partners passed for fundamental expressions of individual rights. Meeting places made room for those who wished to have sex with several anonymous partners in a single day and to play both the active and receptive roles".

Before AIDS was apparent, this promiscuity had shown as an increase in the numbers of sexual partners and sexual contacts among homosexuals. It was also obvious from medical records that there were sudden increases in syphilis and gonorrhoea cases and other viral infections such as herpes simplex, cytomegalovirus, and hepatitis A and B, had also increased. Intestinal parasites and chronic diarrhoeas became common. The increasing incidence of these diseases in the homosexual communities in New York, Los Angeles, and San Francisco was indicative of the potential for an explosive epidemic to occur. When AIDS appeared, its spread in these locations during 1981 and 1982 was faster than anywhere else in the Western nations, and it was in the homosexual communities that the epidemic passed the point of no return.

From these US focuses, AIDS spread to homosexual populations in Europe and several cities in Australia. In addition, there were possible extensions into the Caribbean through Haiti and also into urban populations in some South American countries.\textsuperscript{16}
To return to Durack's question, "Why now, and not before?" Part of the answer appears to be due to massive population movements of homosexual men into a number of locations along with profound changes in their life-styles and behaviour. These life-style changes resulted in the spread of a number of diseases, not the least of which were the sexually-transmissible diseases. In the environment of sexual liberalisation it was possible for the biological modifications that enabled HIV-1 virus to be transmitted so readily. The French physician Jean-Paul Escande commented, "AIDS mushroomed not because they (homosexuals) transgressed certain sexual taboos, but rather certain rules for living which, until then, had concurred to maintain a relative biological equilibrium."  

Several homosexual writers appear to agree with Escande. Dennis Altman commented that, "the equation of sex and disease suggested by AIDS can best be compared to 16th Century fears of syphilis, and not surprisingly, it is having a deep impact on the ways in which we think about sex. The spectre of death and disease haunts us even when we are fairly sure that both our partners and our practices are safe." Altman confronts the problem of fear of disease re-emerging as one of the most powerful forces determining sexual morality and sees the problem for homosexual men as needing to develop ways of thinking about sex that has literally to balance questions of death and desire.

AIDS, by reintroducing many of the strictures of past eras, has had a profound effect on sexually-active people in altering their attitude to sex. To a generation that believed it was liberated from the idea that there may be limits to their ability to satisfy sexual desires, the sudden imposition of restraints on sexual activity due to a disease which seems beyond human control has come as a profound shock.

Cindy Patton attempted to justify homosexual behaviour in the continuing sexual debate, when she wrote, "now, at a time when sex and health seem mutually exclusive, it is essential for women and men to reaffirm the vision of lesbian and gay liberation: we were not wrong to attack the anti-sex morality of our society by discussing and exploring our sexuality." She sees AIDS and the apparent increase in homosexuality as being viewed by society as surpassing technology's ability to adjust to the styles of unnatural sex, with some people ready to blame the liberal society which allowed homosexuals to be part of society and homosexuals for "causing" AIDS.

AIDS AND THE ELECTRONIC AND PRINT MEDIA

Unfortunately, the early association of AIDS and homosexual populations set the agenda for much of the media coverage and, to a lesser extent, for health care and research in the US.
James Kinsella has attempted to examine the role of the media coverage of AIDS in the US.\(^{20}\) His book was written from the proposition that AIDS became news, not because of the horrifying death rate of young men or because it provided a medical mystery, but when it became apparent to journalists that the disease threatened heterosexual communities. He berates the editors and journalists of the major daily newspapers in the US, and alternatively, calls the Nation's top doctors, including the epidemiologists from CDC Atlanta, inept at sending out information about the epidemic. The electronic media and the news desks of the television and radio networks also come in for considerable adverse comment. Kinsella relies throughout for his evidence on reports in medical journals such as the "New England Journal of Medicine" and the "Journal of the American Medical Association". These are clinical journals describing diseases for clinicians. The research of AIDS and HIV viruses is conducted through scientific journals in which the virus and its genetic code and chemical details are examined. If he had also followed the science of AIDS and the contributions of research in scientific journals many of the problems encountered in the pursuit of treatments and a cure would have been defined, and many of the technical difficulties of AIDS research made more meaningful.

In many other respects, Kinsella's conclusions are correct as much more is now known about disease prevention. Governments and the media should be engaged in preventive education, not only for AIDS but for other diseases and conditions affecting public health. Although journalists cannot be expected to act as public-health experts, they should endeavour to cover medical and public-health news in a responsible manner and not exaggerate or report material which unduly frightens and alarms the communities they serve. Many of the headlines in newspapers, and news stories on TV and radio on AIDS, were later shown to be incorrect, yet there were very few retractions. In concluding, Kinsella asks for the use of clear language without euphemisms to assist explanation of medical problems and in public education. But above all, he calls for the recognition that AIDS is now entering the teenage population in young Americans from 13 to 21 through heterosexual contact at twice the rate of adults. In this respect, AIDS could prove to be as devastating in the US as the disease is in parts of Africa.

Susan Sontag defines the problem with HIV infections as not being the number of people who are likely to develop AIDS within a relatively-short time, but rather the maximum interval that could elapse between infection with HIV and the appearance of the first signs of AIDS. In this time period there will be large numbers of people unaware of the fact that they are harbouring a lifelong infection until inevitably they develop disease.\(^{21}\) Although the problem of metaphors weighs heavily in Sontag's writings on medical subjects, she provides no other alternatives to the fact that mammalian immune systems do fight disease agents. It is difficult to find words in a linguistic idiom which could
substitute for "military metaphors", and metaphors also can be equally good as well as bad.

Education is critical in the control of AIDS. Fear and prejudice do stigmatise sufferers. So it becomes important for governments, public-health authorities, and educators to realise that, until the public is correctly informed and encouraged to adopt safer lifestyles, it will be difficult to convince communities to help control the disease.

Many books and articles written about AIDS are very misleading and dangerous in their content. Some authors frequently attack homosexuals and drug users for getting AIDS. Often these articles are the cause of spreading community paranoia to people ("innocents"), such as those infected through blood transfusions, organ transplants, and blood-factor treatments, and later even to children who are infected while in utero.

Those professing a moral stance, including some in the media, see AIDS as a natural punishment for promiscuity or the revenge of a wrathful God against homosexuals, deviant behaviours, and drug users. What role they attributed to a Deity judging those who were not drug users or were infected by non-sexual routes is a moot point.

Before HIV was identified as the aetiology, there were various attempts to identify the cause. Among the candidates was African swine-fever virus which was extensively pursued as a possibility by the New York Native, a Gay publication. As African swine-fever was prevalent in pigs in the Caribbean islands at that time (1980s) it all seemed to fit. There was a connection to Haiti, pigs, and third-world living standards.

Following similar trails, the Native then ran a series of cover stories on the possibility of syphilis being the cause, from information supplied by a Dr. Stephen Catiazzo, medical practitioner in Greenwich Village. Dr. Catiazzo is a homosexual and, because of the incidence of syphilis among his patients, he had extensive experience with its treatment. He was encouraged by the results of large-dose antibiotic treatment of AIDS and consulted with other like-minded doctors in America and overseas. The possibility of syphilis as the aetiology, was followed further by Jad Adams, an English journalist. Adams based most of his theories on the parallels existing between the signs and symptoms of syphilis and the opportunistic infections of AIDS. Antibiotic therapy produces responses in a number of patients, providing temporary relief of symptoms only, but does not cure. He was supported in part by Peter Duesberg, who is sceptical of HIV as the aetiology, but as a virologist and scientist he provides no alternative agent or idea as to a cause. Adams followed several lines of scientific political manoeuvres which he interpreted as acquisitions in the vested interests of the viruses that were being promoted and as blatant attempts to silence any opposition. The claims of Adams and the publishers, MacMillans, on the contrary, have been described by Charles Farthing, a
London medical doctor prominent in AIDS research as, "arrant and dangerous nonsense. There is no valid science in these claims". Farthing claims that if people were foolish enough to believe some of the material in Adams's book, it could lead to more distress and deaths from AIDS.23

Some of the problems with Adams's book concern factual inaccuracies and misquotations on statistics of HIV-1 antibody positive AIDS patients. Adams claims that almost anything could be causing AIDS. Both he and Duesberg question the concept that neutralising antibodies to HIV can be present in the bloodstream at the same time as a circulating virus, although from other viral infections this is a well-known fact. But Adams ignored evidence collected before his book was published, evidence which showed there was a positive correlation between the presence of HIV antibodies and the progressive development of immune deficiency. These studies used infected and non-infected matched groups as the source of data. Of the infected groups, approximately half have gone on to develop AIDS and most of the remainder have signs or symptoms of immune deficiency. The most damning criticisms of Adams came from many patients who variously described the book as "dangerous rubbish", and "an undisguised attack on people with AIDS". 24

Probably one of the more dubious books published so far on AIDS is, "The Myth of Heterosexual AIDS" by Michael Fumento,25 in which the author sets out to show that the "ratings hungry" media have sided with homosexuals who tried to obtain research funds by portraying AIDS as running riot and decimating American society. In order to illustrate this conspiracy he must first claim that AIDS is rarely transmitted through heterosexual intercourse. Partner studies, epidemiological observations, and the evidence from African heterosexual AIDS transmission, show his claims to be patently wrong.

In his book he implies that AIDS is a disease of disgrace and, along with the transmission of HIV, a stigma is also bestowed on those so infected. Like most authors of this genre, his footnotes and bibliography are heavily loaded with personal communications or quotes from lesser-known and dubious sources. He uses this material to condemn the scale of funding for research in AIDS, and for public education, particularly that concerned with safe sex practices, and compares it unfavourably with funds spent on cancer. Fumento is not a scientist, and his hypothesis regarding heterosexual transmission is incorrect, so that it is, therefore, dangerous and possibly the worst myth of all.

The spate of popular books and articles on AIDS continues with many still propagating inaccuracies and patent untruths. Several of these authors are medical doctors with international reputations and include Masters, Johnson and Kolodny, whose book, "Crisis: Heterosexual Behaviour in the Age of AIDS", perpetuates the fear of casual
transmission of HIV through saliva and social contacts in addition to the recognised transmission routes. Another such book written for the Consumers' Association in Britain by John Starkie and Rodney Dale, contains general statements, "HIV first appeared in Central Africa some time before 1979 but probably not before 1960". The first description of the AIDS syndrome was 1981 in the US, not 1979, and its origins are still not known. Confusion over the original isolation of HIV between the French and US researchers is further compounded in this book by describing ownerships of patents for vaccines. The problem was not vaccines as these are not yet available, but concerned antigens for antibody tests. Such tests were urgently needed to screen blood supplies and to check the status of patients worldwide. The authors renew public fears by postulating transmission by insects such as bed-bugs, and spread through mosquitoes via malarial parasites, (Plasmodium falciparum), when, in fact, there is absolutely no evidence to substantiate either claim.

There will no doubt be many more books on AIDS and the social and medical efforts being developed to cope with the disease throughout the world. As knowledge of AIDS accumulates, the quality of the information is becoming more reliable and the methods for controlling the spread of HIV better understood. From now on the important educational emphasis must be aimed at the groups at most risk, particularly the adolescent and young adult population groups as well as the sexually-active homosexual and heterosexual populations.

Science and medical reporting have improved considerably as a result of AIDS. Scientific endeavours are aimed at discovering and uncovering hidden information and, although progress sometimes appears slow, it comes from trial and error after constant rechecking of results. Good journalism is similarly dependent on the reliability of data supplied and sources should always be rechecked. Journalists should be especially wary of institutes or researchers who are over-enthusiastic about new findings before these have been verified. At present, people with HIV infection and AIDS live with a death sentence. Irrespective of the manner in which they became infected, the community must view them with compassion and tolerance and assist them wherever possible. There are to-day, the opportunities for individuals to alter their lifestyles and to control their own health as far as possible. Governments are not always welcome in health-advice areas where sexual behaviours are being questioned. However, journalists and writers can, through media outlets, present research data in an informative, entertaining, and popular way to the public. In these presentations, science programs, real-life dramas, popular current affairs, newspapers, magazines, and journals the authors can use even the most explicit educational material including basic sex education and methods for protection against sexually-transmissible diseases. In this way, responsible journalism can do much to ensure that information gets to the widest community audience.
Public-opinion polls can assist in assessing the level of awareness to AIDS in the community and the effects that educational efforts are achieving. A New York Times/CBS poll in the US in 1985, found that 47 percent believed AIDS could be transmitted by shared drinking vessels, 28 percent believed toilet seats a source of contamination, while 34 percent felt it was unsafe to associate with HIV-infected people, even when no physical contact occurred. If syphilis had been substituted for AIDS, the same responses could have been made in the 19th and early 20th Centuries.

The results of a survey in Australia in 1990 showed that 55 percent of men and 43 percent of women supported the quarantining of AIDS patients, (these figures had risen by 10 percent over 3 years). A similar poll in the US showed that 26 percent favoured quarantine for AIDS patients.

Disturbing responses, such as these examples from survey polls, reveal the difficult but urgent role required to educate the community that AIDS patients, as well as being at risk of death, also have to deal with social perceptions and attitudes which discriminate and isolate. In Australia, the Commonwealth Government is considering a new campaign aimed at promoting community awareness of the difficulties experienced by AIDS sufferers.

Sexuality is a powerful, biological force, partly, not wholly, dependent on rational, personal will. The history of sexually-transmitted diseases such as syphilis, has shown how difficult it is to get humans to change their behaviour. Behavioural changes are thought to be entirely voluntary and once people become informed of risks, they can then appropriately modify behaviour. In many respects, drug dependence is also difficult to control and similarly not wholly dependent on will. The slow progression of conversions from tobacco-related addictions, aided by a strong anti-smoking lobby and other efforts to curtail tobacco smoking, has recently been strengthened by the Federal Government stance in Australia. Such dramatic behavioural shifts involving large numbers of the community, require substantial experience of methods to assist people to make and maintain alterations in behaviour.

Health promotion and preventive medicine have had inadequate attention in modern medicine but there are now some indications that in future health care, these aspects will play a greater role. Sex education has always been an area of great controversy and because of programs about the AIDS epidemic aimed at schoolchildren of various ages, it has aroused opposition. The fears that safe sex practices could be misconstrued as an endorsement of promiscuity or homosexuality, are similar to the attitude of the legislators during the Victorian period in England, when public-education programs on venereal disease were seen as condoning vice.
As Brandt points out, "History is not a predictive science. AIDS is not syphilis and the historical moment has shifted. But one thing is certain: The response to AIDS, as can already be seen, will not be determined by the disease's character; rather, that response will be deeply influenced by our social and cultural understanding of disease and its victims."\(^3\)

Brandt suggests that there are two criteria by which any proposal must be evaluated. First, effectiveness, there must be considerable evidence that any particular policy offers substantial benefit. Second, justice, is this the least restrictive of all possible positive measures?

To those who would control sexually-transmitted diseases such as AIDS through moral rectitude, the above would be anathema. Control through individual conduct failed to stop venereal diseases which are still viewed to-day as the result of sin and sinful behaviour. Because of the stigmatisation of homosexuals and IVDUs, AIDS has often become equated with those at highest risk and in the public mind, homosexuals and IVDUs cause AIDS, not the HIV-1 virus.

Biomedical methods have also failed and although behavioural change and biomedical methods reduce infection levels in the community, other factors also contribute.

AIDS, more than any other disease in history, has illustrated the fact that infectious diseases constitute a bioecological complex involving hosts, parasites, and a number of environmental and social forces which interact. Because all these factors involved in the complex are never static but are constantly changing, there is no single medical or social intervention to adequately control the disease.

In a recent editorial in the *Australian Financial Review*, an optimistic account of the epidemic in Australia was presented. The reason for the optimism was based on a lowering of the 1982 prediction that up to 150,000 people could become infected by HIV, down to around 20,000 on current case figures. The writer compares the AIDS death totals to the annual rate of death due to heart disease, lung cancer, and road deaths. A list of factors which have contributed to the lower than anticipated figures is then given. The list includes behaviour change to safer sex practices in high-risk groups, needle exchange and counselling for IVDUs, Government-funded campaigns to educate and make the general population aware of the dangers, and ways of avoiding infection. The fourth and fifth factors are the general high standard of health in the community, the screening of blood and blood products and, finally, the requirement for all migrants to pass an HIV test.
No mandatory controls interfering with individual rights have been required in Australia, except in the case of two prostitutes with AIDS in Sydney who continued their profession and were confined to their homes for a few weeks during counselling.

Several important lessons have emerged. Governments and regulatory bodies do not belong in the bedrooms of consenting adults. Government education programs, however, can assist individuals to make their own well-informed decisions to limit the spread of AIDS. The point should be made that these changes have been achieved at small cost to the taxpayer and to civil liberties, and the national response has been generally mature, compassionate, and tolerant. The challenge remains for politicians, health professionals, and AIDS workers to maintain the emphasis on ensuring even greater control over the AIDS epidemic during the 1990s.

As a result of treatments, HIV-infected people now live longer and continue to be infectious, so even if the incidence of new infections is reduced, the prevalence of the disease in the community may still continue to rise. In Australia, the potential for an explosive outbreak of HIV remains and governments cannot become complacent. They must maintain funding of education in all appropriate forms for each age group in order to get total community involvement in overcoming this lethal disease.32

Chapter 5 Footnotes

5 Porter, op. cit., p.115.


CHAPTER 6
SOCIETY'S DILEMMAS

SUBTLE PARASITES

Disease epidemics throughout history have followed similar patterns in which a virulent pathogen evolves or is transmitted into a pool of susceptible hosts. In order for a pathogen to continue to persist in a virulent form, the environmental conditions must be suitable for its maintenance. This requires sufficiently large populations in which there can be a continuing transmission from infected to susceptible hosts. The mechanisms enabling transmission are preceded by significant social and cultural changes in communities. These changes establish the optimum environmental conditions within the population and the social impetus for spread of infection.

Although AIDS differs in so many respects from syphilis the two share many common features such as -

• both are mainly sexually-transmitted.
• there is no satisfactory protective-immune response by the body to either agent.
• both cause debilitating diseases which can result in nervous-system damage and death.
• treatment provides no cure for AIDS, although it alleviates symptoms in both diseases.
• both agents are difficult to work with in the laboratory. Research requires unusual precautions and is, therefore, extremely expensive.
• there are no vaccines to provide protection from either agent.
• there are potent social stigmas attached to both.

There are also major differences in the two diseases. Syphilis is caused by a single agent, \textit{T.pallidum}. AIDS is a syndrome resulting from an initial infection with HIV virus then in time by multiple infections, often due to commensals present among normal body flora.

Human immunodeficiency viruses act in a stealthy manner usually infecting T-cell lymphocytes and killing them, and, in this way, gradually reducing the effectiveness of the body-defence mechanisms.
The capacity of the HIV retroviruses to alter surface antigens makes their recognition difficult and further complicates the problems of the lymphocyte defences. To a lesser extent, *T. pallidum* also has this ability, but, because a number of antibiotics still provide satisfactory cures for syphilis, these antigen changes can be overcome. *T. pallidum* does not enter cells and thus evade the body defences like HIV, but uses its coat antigens to mimic cell-surface antigens. In this way it eludes the immunological defences.

While the medical and biological similarities and differences provide good opportunities for comparison of the two diseases which may lead to methods for control, ultimately the societies in which they occur have to make the decisions to either accept their presence or take steps to control them.

No country has been able to control syphilis since its first appearance. Some countries have attempted authoritarian control, others have used voluntary notification and treatment, and still others have tried both methods. The level of cultural sophistication, acceptance of moral standards and behaviour by a society have determined attitudes toward control methods for syphilis and have set the style for what are acceptable presentations of educational material for the public.

The economic and social costs of venereal infections have been alluded to by many authors in the US, and at Government level in the UK and other Western nations. However, no country has identified the actual costs to society and defined the categories as financial, social, losses in productivity and manpower, and the cost to society of treatment, hospitalisation, debilitating sickness and deaths. Until these estimates are calculated, governments and the public are operating in a virtual knowledge vacuum. Once the individual costs are available priorities can be set and the most cost-effective, appropriate, controls adopted.

When satisfactory treatments for syphilis became available with the advent of antibiotics, there were opportunities to develop controls for all bacterial venereal infections. These opportunities were not taken and by default communities opted to continue to exist along with venereal disease. Perhaps AIDS, for which the cost to the community may yet prove to be too high, and for which there is currently no cure, may provide the catalyst for genuine attempts to control sexually-transmissible diseases.

**HISTORICAL STIGMAS**

From the historical accounts,¹ it is apparent that societies have endured the presence of syphilis for 500 years and only carried out sporadic attempts to control the disease.² Over the same time-scale, many other diseases have been controlled, and either reduced in incidence, or eliminated, from within the populations in which they occurred. This has
been achieved by the application and dedication of medical biologists and the political will of the populations in co-operating to overcome infectious agents. In this manner, the incidence of infections such as tuberculosis, brucellosis, poliomyelitis, and the childhood diseases have been drastically reduced in many countries. Venereal diseases have not been afforded the same sustained application of effort and dedication, although, in contrast to some of the above, they are responsible for far more distress and suffering in the community. None of the other diseases carries the stigma and shame that is accorded the venereal diseases. Neither are they seen as punishment for sin nor as a result of deviance or perversion. Again no particular race or group has been shown to be more susceptible than any other to these particular diseases, whereas venereal-transmitted diseases are commonly accepted as being problems of deviant groups (prostitutes, homosexuals), or races (Negroid, Hispanic), within populations. Depending on the country of origin involved, the accusation of natural promiscuity or cultural deviance can be extended to embrace whole populations.

As long as social stigmas apply and individual or group scapegoats are blamed for the transmission of STDs because of their sinful conduct, society will continue to have a problem with these diseases. In this prejudicial atmosphere the remainder of the community does not have to feel responsible for what it perceives as indulgence on the part of those who become infected.

However, not all venereal infections have been "self-inflicted". The agents have to be transferred from an active infection in one person to susceptible individuals. Alternatively, the infection can be transmitted inadvertently through contaminated tissues and semen, blood and blood products, and to the fetus while in-utero. Because of the long incubation times for HIV-1, infected people can continue to shed the virus and be unaware of their infection for extended periods of time. Who then is innocent and who is guilty? But rather than attach stigmas which end in confrontational arguments, why not approach the problem of venereal disease as one of a community-health responsibility involving all age groups and through mass education programs increase awareness of STDs and try to develop new attitudes towards these diseases in society?

**TO CONTROL OR NOT TO CONTROL**

In the policy discussion paper, "AIDS: a time to care, a time to act, towards a strategy for Australians", produced by the Australian Department of Community Services and Health (1988), three objectives of a national AIDS strategy were proposed:-

1. to minimise transmission of the HIV virus,

2. to support, care for and to treat people with HIV, and
3. to educate and prevent the infection of people who care for HIV-infected individuals.

The document then sets out a proposed list of guiding principles for development of the strategy.

In order to minimise transmission of HIV, the proposals list obvious preventive measures and legislative changes. The sweeping statement that education about HIV needs to reach every Australian through a consistent national education program, while laudable, is also too idealistic and expensive in the current socio-political environment. This environment is determined at present, by the fact that AIDS is seen as principally affecting homosexual/bisexual men and IVDUs. Both groups are regarded by the general community as deviating from normal behaviour and this has had a profound effect on social attitudes towards those infected with HIV, adding to the potential for stigma and divisiveness. Brandt commented on the importance of Charles Rosenberg's forceful analysis of the social and cultural significance of the AIDS epidemic in the US. Because disease is not solely a social construction, historians have to recognise the importance of biological factors involved in shaping human existence. In this disease, AIDS, some of the basic responses are being developed by powerful community values and attitudes toward sexuality, disease, medicine, and politics. As Rosenberg wrote in conclusion, only a full recognition of the social forces shaping the epidemic will make it possible to develop effective, humane measures.

Most of the objectives and guiding principles proposed for the Australian National Strategy fulfil the requirement for effective, humane measures. The question still remains, how can the message be delivered throughout the population? Initially, there was a perceived need to draw public attention to the serious nature of the disease, AIDS, and its potential to become a deadly epidemic. Television advertisements such as the "Grim Reaper" and subsequent advertisements on TV and in the media, certainly managed a high level of awareness in the community. But these advertisements aroused considerable fears in the community. The question then becomes, was the instillation of fear the best approach? Scare tactics and subtle inferences concerning the need to question the past history of sexual partners, bypasses the majority of the population because they do not equate themselves as similar to the people in the groups depicted nor do they see themselves in the same risk categories. Even worse, fear converts to resurrection of phobias within communities against reviled groups.

A model for public education can be seen in the role of the Victorian Anti-Cancer Council in gradually changing public perception from social acceptance of smoking tobacco to a view where smoking is now seen as a health hazard. People who continue smoking now know they are at risk to their own health and that of others. The important achievement
of anti-smoking education has been the emphasis on personal responsibility, both for the
effect that smoking has on the health of oneself and passively on the health of others. An
analogy between smoking and infection with HIV is, at best, tenuous, but it has the same
social responsibility message, people infected with HIV who continue to indulge in
unsafe sexual practices or needle sharing in drug use, are a danger to the health of others.

While they remain relatively healthy and continue to function as members of the general
community, there is a potential risk and it is only when the debilitating stages of AIDS
become apparent, that their risk to society lessens. However, the analogy to smoking
must stop there because it is the group of people infected with HIV-1 who do not know,
(or don't want to know), that they are carriers, who pose the greatest threat to the
community. Originally, these people became infected through not practising safe sexual
methods, so that their behaviour has to be changed. If it is not, they become dangers to
society. In a study to ascertain factors associated with tests for HIV antibodies 2249 men
and 1153 women attending an STD clinic in an Australian city were put into two groups,
those requesting HIV tests, and those offered a test. None of the participants were
previously known to be HIV-positive. Among the men tested, 1.2 percent (9/771) who
requested a test, and 0.6 percent (7/1177) of those offered a test, were positive. The
findings are consistent with a failure to associate the risk of HIV infection with risks
associated with other STDs. None of the women participating in the study were HIV
positive.6

Strict controls over the donors of blood, blood products, semen, tissues, and organs and
an elaborate testing regime of donors and the products have now removed the likelihood
of HIV-infection from these sources. However, transmission of HIV from infected
mothers to neo-natal children still remains as a potential problem for the future in Western
cultures, while in developing countries it is rapidly turning into a series of national
tragedies. Testing would identify HIV-infected women during pregnancy and provide
opportunity for counselling and for decisions regarding continuation of the pregnancy.
The monitoring of pregnant women for syphilis has played an important role in reducing
congenital syphilis in the past, so why not institute monitoring of pregnant women for
AIDS too?

STDs THE BAROMETER FOR AIDS

While some of the people in categories of high risk of HIV infection have adopted safer
sex behaviours, there are still many who have not, as shown by the AIDS-STD Unit
Report 1990, of sexually-transmissible diseases in Victoria, (1989).7 In this document,
the two main sources of data on the occurrence of gonorrhoea in Victoria are notifications
of clinical cases and isolations of N.gonorrhoea at the Microbiological Diagnostic Unit
Comparison of the data shows that a marked under-notification of gonorrhoea has occurred. As STDs are notifiable diseases, this trend is disturbing. There has also been an increase in the number of isolates of *N. gonorrhoea* at the MDU from homosexual and bisexual men. Isolates from these men comprise 45 percent of all the male isolations, many of the isolates came from oral-pharyngeal and urethral swabs, and there were fewer isolations from rectal swabs. However, 16 percent of the isolates were from rectal swabs indicating irresponsible behaviour. The changes in the number of isolations from different sites are an indication of behavioural modification in some homosexual men from anal sex to oral-pharyngeal sex. But, further modifications are required, and in particular, the use of condoms to reduce the opportunity of STD transmission. Although there was a decline during 1990 in the incidence of gonorrhoea in homosexual men in Victoria from the peak in 1989 it shows unsafe sex practices are still occurring.

In the figures for syphilis, the number of new notifications does appear to have fallen during 1989, although the number of newly-acquired infections diagnosed at Fairfield Hospital has not changed significantly over the past three years. As the figures reveal, the trend towards safer sexual practices may have commenced, but will have to improve markedly to be effective over time.

With respect to educational needs, those in high-risk categories obviously must be made aware of the dangers of unsafe sexual practices as rapidly as possible. Many of these people can be counselled through groups to which they have affinities, e.g. prostitutes through sex workers' collectives, homosexual men, through gay communities and clubs, and drug-dependent people, through needle exchange outlets. However, there are people who remain at risk in the above groups, and some who are occasionally involved in the above categories, or who are bisexual, and have little pressure on them to change their behaviour. Included among these people are overseas visitors, some of whom may be prostitutes on short visits to the country. Other visitors in Australia on short stays, include workers in travel industries, sailors and airline employees, and groups entering the country for business or conferences. Obviously, there is a need to ensure that all these people are given AIDS education materials as they come through immigration. Australians travelling abroad also have to be cautioned and provided with educational material outlining the risks of sexual-disease contacts while overseas. As an indicator of the serious nature of this source of infection, 112 (21 percent) males and 48 (9 percent) females from a total of 536 isolates of *N. gonorrhoea* in Victoria during 1989 contacted the infection overseas.

In order to stress the need for safe-sex practices and to provide counselling and education about STDs, and, in particular AIDS, large numbers of people would need to be involved. Some of the urgent requirements for education of people in high-risk
categories can be met through involving members of peer associations and including people with HIV-infection. Adolescents and students in secondary and tertiary educational facilities can be reached through education programs at their places of study and many programs of this type are already functioning in Australia.

Education which encourages fear is of limited effectiveness and is eventually counterproductive. Effective AIDS education has to be explicit and designed for specific-risk groups. But, as Brandt has noted, even more importantly, education must achieve a positive impact. To do this the programs will need to be far more sophisticated, creative and bold than in the past.11

The massive task of educating the general public can only be carried out by a dedicated resolve on the part of the Australian community. How can this be achieved? There are many complex social schisms which appear in society in response to attempts to promote sex education and sex hygiene.

Most people, including those who oppose sex education, watch television, see films, read magazines, books, and newspapers in which characters are depicted as engaging in sex or sexual actions, which are explicit or are alluded to as part of normal behaviour.

How many of these media encounters are prefaced by any reference to the need to take preventive actions towards ensuring safe-sex practices? It would make mass education so much easier if producers, directors, and writers who are responsible for popular television series, would include, as a matter of course, the need for safe sexual practices whenever applicable. If the same precautions could also be included in popular magazine articles and in radio programs, and highlighted by regular comments in newspapers, perhaps the community would then be much better informed and, hopefully, sex as a topic, would be subjected to fewer taboos and perhaps more enlightened discussion.

WHAT IS KNOWN ABOUT HUMAN SEXUAL BEHAVIOUR?

Human sexual behaviour has not received the attention that it warrants and has virtually been neglected as a science. Unfortunately, Alfred Kinsey's12 words still stand as a testimony to inaction after 40 years, "Human sexual behaviour represents one of the least explored segments of biology, psychology, and sociology. Scientifically, more has been known about the sexual behaviour of some of the farm and laboratory animals". Kinsey's studies were based on volunteer samples and doubts have remained as to the relevance to the general population. Recently, questions have been raised regarding the veracity of Kinsey's studies and even the little information available in this work is now considered unreliable.13
Despite the sexual freedoms introduced in the 1960s in Western countries, and the more frank and explicit treatment and discussion of sexual behaviour in literature, art, and in society, there are little reliable data on the sexual habits of the people of these societies. The lack of this information was one of the problems that Thomas Parran struck in attempting to control venereal disease in the US during the 1930s.

Parran's efforts were repeatedly hampered by social conventions that maintained that public discussion of sex or venereal diseases was inappropriate.\textsuperscript{14} Discussion of these subjects still arouses hostility, obstruction, and outmoded conventional attitudes.

Attempts to carry out research in the areas of sexual behaviour are perceived as the domain of voyeurs, perverts, and gatherers of pornographic material by some segments of society. Researchers have been obstructed, slandered, and their findings treated with disdain or suppressed. The pioneers in this research have lacked funding and facilities, and have lost professional status by being victimised through slander and innuendo. The same attitudes still persist to-day in the social and political environments of most countries.\textsuperscript{15} AIDS has shown the need for this data, as it is almost impossible to predict epidemiological trends for STDs because of the lack of information on sexual behaviour.\textsuperscript{16} Attempts to control AIDS will continue to be hampered until the data is obtained, as constructive plans cannot be formulated without predictive models to detail the areas requiring urgent attention. Because of the necessity to define epidemiological trends for AIDS in differing cultures, the World Health Organisation has developed research protocols for surveying sexual patterns in various countries, and some surveys have already commenced in Europe, Africa, and Asia.\textsuperscript{17} When the results of some of these surveys become available, there will be many opportunities to compare aspects of cultural sex differences, behaviour variations, and age patterns.

A large British survey\textsuperscript{18} was devised in 1987 to provide data to assist in predicting the future spread of sexually-transmitted diseases including HIV with the aim of prevention and control. The survey was based on a random-sampled population of 20,000 drawn from the general community. The sample was obtained using a multi-stage random sample stratified by socio-economic characteristics, obtained by using the UK Post Office small-user postcode-address file. This system is commonly used for market research.

Each address was visited by an interviewer and all members of the household from 16 to 59 years noted. One person was then chosen by random selection and invited for interview. A response rate of 65 percent was obtained which compares favourably with surveys carried out in other countries. An exception occurred in the 45 to 59 age group of men, in which a higher refusal rate than usual was recorded.
The findings of the questionnaire, which concerned the way questions were phrased and asked, proved interesting and contributed to a more relevant design and interview method. Sexual behaviour is not commonly spoken about publicly and, as a result, there is an inadequate and often inappropriate choice of language available. As the researchers point out, many terms used in the English vernacular double as terms of abuse in the language. The interviewers found that most respondents preferred formal terms (sexual intercourse, penis, vagina). There were problems with some terms, and words, used in the health-education literature (penetration, vaginal, and heterosexual). These language idioms were misunderstood frequently, even to be sufficient to threaten the validity of the response. Also, there was a tendency to attribute to unfamiliar terms meanings associated with unorthodox or bizarre sexual practices.

A wide variation in meaning was given to phrases like, "sexual partner", and "having sex". This problem was surmounted by providing a glossary, in which sexual partners were defined as, "people who have sex together just once, or a few times, as regular partners, or as married partners". Terms such as masturbation were disliked by all respondents. Heterosexuals equated "having sex" with sexual intercourse, whereas homosexuals included a broad repertoire of sexual acts in the definition.

Other problems encountered included forgetting, particularly details of numbers of sexual partners over periods of time. The researchers found that incidence is easier to recall than frequency. Devices to assist recall were built into the questionnaire and to deal with the problem of honesty. Questions were scheduled in sequential order so that events such as first sexual experience, childbirth dates, assisted in providing a framework and influenced ability to recall.

All the preliminary work in this survey was tested in a feasibility study which has since undergone rigorous analysis. Problems relating to the ability of people to recollect accurately and to report honestly, are the same in many other investigations of human behaviour. In some peculiar way, the issues of veracity and recall become particularly pertinent to people who have doubts concerning the validity of sexual-behavioural surveys. People with doubts of this nature are often more concerned with politics and moral turpitude than they are with truth.

The results are directed towards the concerns of science rather than the concerns of politics or morality so that the ability of the survey design to produce reliable scientific data can only be assessed after the results of a detailed, thorough sampling, and the interviews and responses from respondents have undergone rigorous analysis.

Medical epidemiologists urgently require answers from differing cultural backgrounds on details such as the average age of people when they first have sex and how frequently do
people change partners? Do people who use condoms use them every time that they have sex? The list of questions is extensive and it is a major deficiency of modern society that so little is known about a biological function as universal and common as human sexual activity.

In order to anticipate future trends, epidemiologists need to know certain facts including, for example, the period of time that the HIV-infected are infectious, the average number of sexual partners per year for individuals in each age group in the sexually-active population, and the chances of infecting sexual partners during one or more sexual encounters. With such data, epidemiologists can then estimate the probable rate of spread of HIV infection through a given population. However, even more important than the data obtained during studies of specific population sub-groups, (homosexuals, drug users, prostitutes, adolescents, and others in risk categories), will be base rates obtained from general-population surveys. It will be against these base rates that the meaning of the data collected from sub-groups can be assessed. Population-base rates provide cross-sectional parameters which enable other studies to be examined in context.

The British pilot survey (1990)\(^{19}\) sampled a broad representation of the demographic structure of the population. Results from the survey were compared with independently-derived data where possible. From the survey it was found that 1.4 percent of respondents had visited a sexually-transmitted disease clinic during the past year, and 3.4 percent during the last five years. Homosexual experience of some kind was reported by 9 percent of men and 4 percent of women and 5 percent of men and 1 percent of women reported having a sexual partner.

The survey also revealed a marked generation difference in sexual attitudes and behaviours. In the youngest age group of women (16 to 24 years) median age at first intercourse was 4 years earlier than it was for the oldest group (45-59 years). Questions concerning normally taboo subjects, such as anal sex between men and women, which is usually socially censured, elicited honest answers and a sizeable minority reported this experience. Reporting oral sex was less consistent but the researchers thought an ambiguity in the question may have been responsible for this result.

The results from this feasibility study, using modern sampling methods, showed the importance of general-population surveys. The National Study of Sexual Attitudes and Lifestyles in Britain, which plans to survey 20,000 British people, will utilise the design and methods of the study. Results are expected to be available within two years and will be eagerly awaited.

The only existing information goes back to the Kinsey Report on sexual behaviour of Americans in the 1940s, which itself is in doubt, and some small subsequent surveys
carried out in Britain, and the US, in the 1960s and 1970s, on people of specific ages or sexual persuasions. The British study will be the first study of a general population.

Since the study by Kinsey, there have been enormous cultural and social changes throughout the world, including major migrations of peoples between continents, and within countries, from rural areas to cities. International transportation moves people rapidly around the globe, electronic communications now ensure almost instantaneous transmission of news worldwide, but the most profound changes have been in population increases, and in political and social attitudes, and standards.

As well, wars have occurred in many parts of the world and have involved massive troop movements between countries. During the period since the 1940s, there have been sweeping social changes to many structures of societies, not the least of which have been the changes in attitudes, and mores, to sex and contraception. The lessons from the historical experiences of syphilis epidemics, when exacerbation of the disease has followed social and behavioural changes in communities, should have enabled authorities to anticipate the outbreaks and increase of venereal infections in many countries. STDs, like other pathogens, are spread rapidly under advantageous conditions. In the social environment of the 1960s and 1970s, an increase in STDs preceded the appearance of HIV thus providing part of the environmental substrate for the introduction and growth of an additional new, deadly element into the epidemic.

Because of HIV/AIDS, the need for knowledge of patterns of sexual behaviour and the extent of these patterns within the general population is obvious. However, opposition to surveys has been mounted at a political level in Britain and the US. Political opposition in Britain was reputed to have resulted from a veto on funds from the Department of Health by the then Prime Minister, Margaret Thatcher. Fortunately, the survey was immediately funded by the Wellcome Trust as a scientifically-sound project, and the research has continued. In the US, Congress voted to withdraw funds for a major national study planned by the National Institute of Allergy and Infectious Diseases, and the plans are still under review. In the US, pilot studies are presently being conducted for this survey.

The Social and Behavioural Research Unit of WHO Global Program on AIDS, is coordinating and funding research by scientists in a number of under-developed countries. Surveys often encounter problems in developing countries which may not occur or be considered serious hurdles to overcome in Western societies. The problems may be as basic as selecting random population samples, lack of literacy in respondents, religious and cultural taboos, and locating data with which to verify statements. Allowing for these difficulties the first phase of the partner-relations studies are being carried out in
some African and Asian countries where there is a high illiteracy rate. Phase two is intended for European and North and South American countries, and some European surveys are already in progress.

When the questionnaires and results of interviews have been evaluated and compared, much more should be known about human sexual behaviour and sexual patterns in different cultures. With this information, control strategies for AIDS prevention can be adjusted to the requirements of the countries in which they are being used. Apart from the obvious advantages of this information for AIDS control, there will be additional insights into the use and types of contraception methods, levels of risk in sexual diseases, and practices. Furthermore, aspects of misunderstanding of sex knowledge may also be exposed.

The Commonwealth Government Department of Health has signalled that it will be carrying out a survey into the sexual behaviour, sexual attitudes, and knowledge of sex as a national project to be completed in 1993. No date has been given as yet for the commencement of this project. Perhaps Australia will be able to utilise some of the information from the European studies before the Australian project commences.

THE IMPORTANCE OF CONDOMS

"AIDS: A time to care", Objective 1, sets out policies to minimise transmission of HIV and, in the absence of a vaccine or cure, promotes education as the primary means of minimising transmission. The paper lists preventive measures and stresses the need for quality biological medical supplies to be made available. It also calls for the ready accessibility of condoms. However, a satisfactory mechanisms of ensuring accessibility of condoms is not suggested in the policy discussion paper.

The importance of condoms for control of STDs, not just HIV, should be spelled out clearly in all AIDS-education programs. Condoms are the only barrier that can currently be used to prevent HIV transmission during most sexual activity. Condoms have been advocated as an integral part of safe-sex guidelines to the Gay and Lesbian communities and these groups have claimed responsibility for producing guidelines for safe sex. However, as discussed earlier, probably the largest experiment in the use of condoms occurred during the second World War when condoms were issued freely to all male servicemen and the necessity for using condoms for prevention of disease and instructions for their use were promoted by all Western military authorities. By adopting this approach, the incidence of venereal infection in the armed forces never rose above that of the civilian population.
Female sex-workers in Australia who attend STD clinics and who have regular (normally 3 monthly) blood tests for HIV, have an excellent record of freedom from HIV. The prevalence of HIV infections is very low and no female prostitute has been identified with sexually-acquired HIV infection up to June 1990. A small number have been infected through IV drug use. In addition, there has been a marked decline in the prevalence of other STDs in the Australian sex industry.28 The factors responsible for these results include the low numbers of HIV-infected clientele visiting brothels, high rate of use, and insistence on, correct usage of condoms to minimise exposure to all STDs, including HIV. Widespread use of condoms in the sexually-active community would reduce the spread of HIV and, at the same time, reduce the spread of other STDs. Universal adoption of condom usage by people in high-risk categories could quickly bring the AIDS epidemic to a controllable level.

How can the use of condoms be promoted? So far, in the strategies for control of AIDS, condoms have been relegated to a lesser role than education and counselling and yet knowledge of, and correct use of condoms, remains the most positive approach available for control of STDs. Promotion of the use of condoms remains a relatively-covert activity in Western society.

Advertising is discreet, even coy, and restricted largely to mens' magazines and other low circulation outlets. While this may have sufficed for other STDs which were not life-threatening and could be treated, in the case of acquired HIV infections, an individual can be condemned to suffering and an early death through ignorance of the necessity for condom use.

The US Surgeon General's Report on Acquired Immune Deficiency Syndrome29 which was sent to each household in America, deals adequately with the use of condoms by those in high-risk categories, but does not mention the need to use condoms if in doubt about the status of sexual partners for those in the general population.

The "Straits Times" newspaper of 13 June 1991 carried a large banner headline, "Condoms: Pros and Cons".30 The article deals with proposed legislation of the Singapore Government which will include mandatory testing of condoms and require a "use by date" to be placed on condom packets. Following this introductory information, the article then discusses some of the moral dilemmas of advertising and promoting the use of condoms. The ban on condom advertisements was removed from all media, including print, television and radio but due to public outcry the Government had to restrict advertising after only a month to the print media. In the article the moral debate follows closely the same lines of reasoning used worldwide from "no sex outside
marriage" to the pragmatic approach that sexually-active teenagers do not ask for permission, nor do they seek parental approval in matters of sex.

A popular argument often used to promote condoms aims at those in high-risk danger of acquiring HIV-infection but this argument misses the point that any person who is sexually active with more than one partner can be at risk. Other critics of condom use point to the failure rate of condoms in contraception. Condoms for contraceptive use have a preventive success rate of at least 90 percent and a higher success rate for prevention of venereal disease.

Britain, the US, Thailand, Hong Kong, and many other countries, have now endorsed the use of condoms as part of the preventive programs for AIDS.

The World Health Organisation Global Program on AIDS, recommends the use of condoms and the World Bank is now funding several AIDS-prevention programs in which condom availability is a key strategy. However, in 1989, the US Public Health Service issued a warning that emphasised that intercourse, with a person infected with HIV, even when using a condom, is so dangerous that alternate methods of expressing physical intimacy should be considered. Condom use can reduce the risk of acquiring other STDs with people not known to be infected with HIV, but obviously intercourse with people known to be HIV-infected increases the risks of possible infection considerably.

Condoms are an integral part of AIDS-control strategies and educational emphasis should be on the necessity for their use and methods for correct use, especially in high-risk groups and in young, sexually-active people.

SAFE SEX - WHAT IS IT?

Educational programs on AIDS in Australia have stressed the important part played by sexual intercourse in the spread of HIV infection. However, although some of the people in high-risk categories, (homosexual men and IVDUs), have altered their sexual behaviour, there are still many who have not.

Even more disturbing is the attitude of sexually-active people in the general population who do not see themselves at risk and, therefore, do not see the need to change to safe-sex patterns.

Health authorities in Australia have indicated that they are going to promote a more aggressive AIDS campaign in 1992 to overcome complacency among high-risk groups. Another campaign has been suggested to encourage the general population to show more compassion and to reduce discrimination against HIV-infected people. Stuart Challender,
the former conductor of the Sydney Symphony Orchestra, who died of AIDS, was featured in a segment of the ABC television program, "Four Corners", in which his homosexuality and infection with HIV were discussed.31 Geoffrey Barker, writing in the Age newspaper suggests that it would not have been an invasion of Challener's privacy to ask him, during interviews given towards the end of his life, how his sexual behaviour was affected when he learned he had AIDS.32

Brad Davis, an actor resident in Los Angeles, California, was infected with HIV during intravenous drug use and received treatment for 6 years before dying with AIDS. During this time he was fearful of his future job prospects should he reveal the fact of his infection. Davis makes the point that Hollywood is proud of its charitable contributions to AIDS research and care programs, but actors who have HIV infections get no support, no sympathy, and no work.33

These two examples illustrate how deeply cultural antipathy to people considered deviants could hamper AIDS-control strategies unless acceptance and tolerance become more widespread in society.

A nationwide survey carried out by the National Centre for Epidemiology and Population Health, Canberra, provides some sobering information for education-program designers of AIDS strategies.34 This survey has revealed that of the 1,626 Australians in the survey, one in ten claims to know someone who has died of AIDS. Ninety percent of the respondents thought they were unlikely to get AIDS and over two-thirds had no sympathy for homosexuals with AIDS, although almost everyone felt sympathy for people who contracted AIDS through a blood transfusion.

Health-educational programs in Australia cannot be considered successful when AIDS is seen as someone else's problem which can be blamed on the sufferers as the result of their deviant sex practices or excesses in sexual behaviour. Homosexuals, promiscuous people, and intravenous drug users are all blamed for getting infected with HIV. The results of the survey can only be taken as an indication of the enormous change that will have to be made in community attitudes to HIV-infection and the risk that this infection poses for the population who are so eager to see this disease as a problem for others and not themselves.

Thomas Parran35 was adamant that his programs on syphilis must avoid the traditional moralistic perspectives that held that syphilis was the result of moral turpitude. Parran was dealing with a disease of heterosexual people (homosexuals were not recognised). How much more difficult the educational problem is to-day when groups outside the mainstream of the population are the sufferers.
Prince Morrow noted in 1906, "Social sentiment holds that it is a greater violation of the properties of life publicly to mention venereal disease than privately to contract it". At that time, and over the next 50 years, venereal diseases remained shrouded in a conspiracy of silence and were subjects not to be discussed in respectable society, let alone debated in public forums.

Are we dealing with HIV infections in the same way?

Why cannot subjects dealing with sexual hygiene be brought forward?

Information on venereal diseases should be brought into the public arena as a matter of urgency through all possible avenues of communication. This information has to be seen as vitally important for future control of all such diseases but especially for HIV/AIDS.

The electronic and print media are the means of informing the general population of the problems of venereal infections including AIDS. Ignorance should no longer be an excuse for infection with a venereal-transmissible agent. Safe-sex promotion does not differ from any other form of health promotion.

If abstaining from sex by "just saying no" was the answer for all sexually-active people including adolescents, control would be simple, but this does not allow for the reality of natural inclinations or curiosity. Telling people to "say no" to sex has never worked.

Unless valid reasons pointing out the dangers are provided, people will have unsafe sex. Information on methods of safe sex should be universally available to all adolescents through school and tertiary-education programs and to the general public through as many educational and media outlets as possible.

Most current safe sex educational material for heterosexual people is attuned to penetrative sexual patterns and should be extended to include other risky sexual behaviours and, in addition, provide information on alternate minimal risk behaviours.

Safe sex implies a heavy connotation of suspicion regarding possible previous sexual experiences of a partner. It does not generally apply to people in stable sexual relationships where implicit honesty has been present in the partnership. In these relationships, safe sex is the result of having a safe partner. A large proportion of the population would consist of safe partnerships of over 5 years standing. To try to get the message of venereal-infection risks across to these people who mostly wish to remain very private about their sexual behaviour, will be a difficult enough task. But it will be even harder to get their co-operation in bringing sex education to their children in general-education programs.
In order to promote the interest of the people from the high-risk groups who feel alienated, and to ensure they understand the dangers of venereal infections, such diseases need to be depicted in popular television series or other similar venues, with the backing of the television industry, sponsors, and management. An approach of this type will require a unified national effort to be successful. It should be run in conjunction with the print media which could increase the coverage given to sex-educational material and discuss and advertise the TV segments.

In this way a major proportion of society could be reached. Finally, talk-back radio offers many opportunities for the various groups concerned with AIDS education to get time on radio to discuss the needs and problems with audiences and to interact with them by getting and giving direct feedback.

Looking at AIDS from an historical perspective Brandt proposes that there are four lessons to be learned from the history of sexually-transmitted diseases. He describes them as:

- Fear of disease will powerfully influence medical approaches and public health policy.
- Education will not control the AIDS epidemic.
- Compulsory public-health measures will not control the epidemic.
- The development of effective treatments and vaccines will not immediately or easily end the AIDS epidemic.

While Brandt has correctly outlined the problems to be faced from the lessons of the past with syphilis, he has not offered suggestions for the present or the future, other than that there is no single solution to the problem of STDs. In the next chapter we will examine Brandt's lessons from STDs.

There are information channels available to-day to reach almost every household. Education alone may not be enough, but it can change attitudes in people sufficiently for them to understand the problems of HIV/AIDS and to see the necessity for the majority of the population to co-operate in control strategies for STDs.

The dilemmas for society are that, until there is a cure or a vaccine for HIV, there is no alternative but to recognise that the problem of AIDS is also each individual's problem.
Chapter 6 Footnotes


10. Ibid., p.9.


17. Phyllida Brown, "Is sex too important to keep quiet about?" New Scientist, 2 June 1990, pp.10-11.


19. Ibid., p.278.


32 Geoffrey Barker, "Why Professor Hollows was right about AIDS." Age (Melbourne) 10 March 1992, p.13.

33 "Don't tell them I'm dying," Age, (Melbourne) 28 September 1991, Extra, p.5.


CHAPTER 7

DISCUSSION AND CONCLUSIONS

The lessons from the history of syphilis and by default, other STDs, have been analysed and studied. What has been learnt from the historical accounts of these diseases that could be used to advantage in approaches to the control of HIV infections and AIDS?

Before the past experiences with STDs can be examined for useful examples, the problems and questions that HIV and AIDS pose for the present should be stated.

HIV infections and AIDS have extremely poor prognoses. This fact raises major problems for the infected individuals and for the communities in which they live. At present, HIV-infection imposes a life-sentence on the individual. As there are no efficient treatments or cures available, alleviation of symptoms and counselling for life-style modification is, initially, all that can be provided. Either sooner or later, as the disease progresses, this is followed by treatment where necessary, and, when required, sympathetic and compassionate nursing care.

During the period between infection and the serological diagnosis of HIV, each infected person is a carrier and a potential transmitter of the virus. Unfortunately, the majority of HIV-infected people in Australia had not previously used safe-sex practices routinely, thus indicating that educational promotions regarding safe sex are not being universally heeded by risk groups, despite educational promotions being aimed particularly at those in high-risk categories. An unknown response which needs to be examined is the reaction of people once they know they are infected. Do they notify sexual partners and change their behaviour and practice safe sex from then on? Do they become responsible for others as well as themselves in their subsequent behaviour?

An obvious corollary from the above, is that there is a large, as yet unknown, number of people who are infected with HIV and do not know that they are infected. There are others who suspect that they are infected but probably do not want to know.

As we have noted, AIDS has become almost synonymous with deviant behaviours in the minds of many people and is generally seen as a disease of homosexuals and IVDUs. Fear of becoming infected is so strong that it induces antipathy towards, and a great anxiety to avoid, contact with those who are infected. Old phobias have been resurrected and moralists encouraged to voice their criticisms of what they see as the erosion of moral standards. Such intolerant attitudes are still present in the community despite the publicity and assurances from authoritative sources regarding the known, established routes of transmission of HIV.
Social changes that had developed in the community in the years after the Second World War, such as sympathy, tolerance, and a more enlightened social attitude to others, have now been slowed as a result of AIDS.

Huge investments in time and finances have been made in research studies of HIV and AIDS in many Western countries. An enormous depth of new knowledge on retroviruses and their effects on the immune system of the human body have been discovered. Behind many of the fears lies the knowledge that, despite all the efforts of medicine and science, there is as yet, no cure or preventive for AIDS and nothing definite apparent in the near future, although this still remains the area of greatest hope.

Added to these sobering facts, are media reports which detail the continuing rise in the numbers of AIDS sufferers worldwide and the devastation of many populations caused by AIDS in a number of countries, and, in particular, in Africa.

AIDS has spread relentlessly through many countries of sub-Saharan Africa and WHO has estimated that by now two-thirds of the total world cases (six million), have occurred on that continent. Heterosexual transmission is the dominant means of spread in Africa, and, as a consequence of infection of women of child-bearing age, millions of infants with HIV infection will be born and many of those that survive will do so as orphans. The prospects for the future for some African countries are very grim. Spread of HIV is increasing rapidly in heterosexual populations in India and South-East Asia and already WHO estimates that one million people are infected. Latin America is another region of the globe in which the infection rate of HIV appears to be increasing and it is estimated that already up to ten thousand children are infected.

Populations of Western nations have not had recent experience with disease pandemics (the last was the influenza pandemic of 1919/1920) and are not accustomed to the trauma and devastation that follows such incursions. Moreover, most Western nations have adequate medical and health services that are highly organised and technically efficient and from which "miracle" cures are usually expected. To suddenly be confronted with a disease agent that is beyond the present skill of medical science to prevent or cure, shatters the confidence of the community. All that remained for society was to find scapegoats to blame as the source of the problem. The initial identification of HIV was in homosexuals who were the first diagnosed with AIDS, followed by IVDUs and through this association those "guilty groups" were seen to have infected the "innocent victims", via contaminated blood, tissue, and semen.

The community has yet to measure the cost of AIDS, in financial terms and in diversion of resources, and eventually in the loss of many of its highly-educated and productive
members. Irrespective of the logic, the majority of people in the community resent these costs which are seen as the result of deviant behaviour on the part of a few.

When confronted with the series of steps that are required to carry out a risk evaluation of becoming infected with HIV, most people are confused and react illogically. This is evident in the attitude and response of parent groups associated with schools and kindergartens, in ostracising children with HIV infections contracted as a result of contaminated blood or blood products.

How much more difficult will it be for communities to be tolerant when congenitally HIV-infected children become more numerous? The tribulations and prejudices encountered by HIV-infected people within the work force are well known. Even when those infected with HIV need to seek minor treatments for common dental or medical problems they frequently find prejudice. Just to be part of normal social circles places considerable constraints on the infected.

The requirement for simple-risk assessments, such as these above, pale into insignificance when the evaluation has to be carried out based on sexual behavioural patterns. An illustration of the significant risks young sexually-active people are confronted with, is revealed by the rates of new HIV infections diagnosed in Victoria to June 1991, where 20 percent were in people under 25 and 22 percent in people 25 to 29 years. Infections in this age-range have doubled over the last year (1991) and now represent a cumulative total for Australia of 21.3 percent of all HIV infections. In Victoria, 81 percent of HIV seropositive people are homosexual males and 3.4 are IVDUs, while 3 percent are heterosexual and of the latter, 81 are women.³

In simple terms, there is ample evidence that HIV is not casually-transmitted, therefore the risks are minimal of becoming infected through social inter-relationships in schools, workplaces or normal social contacts. There is no comparison to the much greater risks involved in casual promiscuous sexual encounters, particularly when such contacts are male homosexual, or in the communal sharing of equipment and use of intravenous drugs, or chance encounters. Even in these high-risk categories, judicious care and the use of protective precautions including modification of high-risk behaviour can reduce the chances of infection considerably.

Another aspect of risk assessment is the number of times high to medium risk behaviour is carried out. The more frequent the occurrence, the greater the chances of encountering HIV infection. By modifying very high-risk behaviours and introducing available protective measures, such as condoms in penetrative sex, or single use sterile needles and syringes in intravenous drug injecting, the prevalence of HIV infection could be reduced.
Often, however, there is unfortunately a social message in engaging in such dangerous activities and the risk evaluation then assumes an aspect of bravado, similar to pursuits akin to "bungee jumping", where the thrill of danger involved becomes a considerable incentive factor.

Brandt has endeavoured to look at AIDS in an historical perspective and has proposed four lessons to be extracted from the history of STDs. The first of these is that the fear of disease will powerfully influence medical approaches and public-health policy. Brandt then compares the fear of casual transmission of syphilis in the early 1900s with the fear of casual transmission of HIV to-day. In Western societies, because of an association of AIDS with homosexual men and IVDUs, HIV infection has deep moral implications. Despite reassurances from authoritative sources, many people harbour deep distrust of the information available concerning transmission of the disease. In response to these fears, an increase in education has been mooted as a method of allaying public apprehensions. Despite vigorous education campaigns against syphilis in the US from the early 1900s to the end of the 1940s when penicillin became available, there was little evidence that education had played a significant role in lowering the prevalence of STDs.

How the vast majority of the general community, not in high-risk categories, are to be educated to be able to differentiate the illogical from the logical fears they may have, will require constant reiteration and patience over time. One possibility which may prove useful would be the incorporation of suitable episodes into films, plays, stories, and real-life drama situations in popular television series or documentaries, thereby introducing an element of reality. There has to be a degree of involvement on the part of the audience in believable situations to bring the reality of the problems of HIV/AIDS to public awareness. Another approach proposed is that of imaginative public education which carries a morality message and enables the listeners or readers to understand the possible effects of their behaviour on others. An example is the use of ethical if-then statements, "We have discussed the pros and cons of engaging in behaviour X. If you choose to do X, then in order to avoid harming others, you should adopt measures A, B and C".  

Education has little impact on people who see no relevance in the information for them or their life-style. Education cannot be targeted to reach every person, despite several strong efforts to achieve this goal. Therefore, educational aims have to be modified to reach individuals that are at risk and presented in such a way that it is relevant to these individuals. Can authorities determine who the people are that are at risk without understanding the basic patterns of sexuality within a society? Education will not control the AIDS epidemic is Brandt's next point.

A national survey into injecting drug use and AIDS, has found that IVDUs in Australia have an HIV-infection rate 13 times greater than that of the general population. In the
Melbourne study of 356 IVDUs, of whom 4 (1.3 percent) were HIV-infected, it was found that, in this group, despite a good understanding of HIV transmission and the need for behavioural changes, there was a disturbing level of unsafe-sex and drug-use patterns. Australia-wide, about 2,500 IVDUs took part in the survey. The number of regular IVDUs in Victoria has been estimated at between 10,000 to 15,000 people, with a further 15,000 using drugs on a recreational basis. Frequently these people may be in situations where their judgment regarding safe sex or drug use may be reduced. Although HIV infection in this group is, at present, low, it was considered that the respondents were taking fewer precautions than was desirable from the consideration of public health. A recent report from Edinburgh, Scotland showed disturbing figures for HIV-infections in which 1094 (60 per cent) of 1840 infected individuals were from that city. The majority of whom had acquired their infection as a result of IV drug use. In the United Kingdom between 1989 and 1990 AIDS increased in homosexuals by 39 per cent, in IVDU by 89 percent, and in heterosexuals by 91 per cent. From these figures it appears that HIV is spreading in heterosexuals at an alarming rate from the reservoir of infected IVDUs and there is an urgent necessity for heterosexuals to adapt to the presence of the virus in society. According to the report, the authors see Edinburgh in a unique position to provide information which may enable accurate predictions of HIV spread to be made in heterosexual populations in developed countries.

A gap in AIDS education in homosexual communities has been noted as being due to class differences between highly-educated, affluent members compared to homosexuals from working-class backgrounds. There was a need to develop specific educational material for the latter group and to promote it through unions, local councils, schools, and local-area networks. Working class education for AIDS is complex and would fail without the involvement and co-operation of the people being targeted in the campaigns.

A survey of STD clinic results in the Medical Journal of Australia found that there was a failure to associate risk of HIV infection with risks associated with other sexually-transmitted diseases. One important reason for this may be the perceived stereotype for HIV infection in the homosexual and IVDUs groups and a mistaken impression that heterosexuals are at less risk. The people who see themselves as not fitting the homosexual, IVDUs group categories, underrate their own risk behaviours.

As a result of the identification of HIV as essentially a sexually-transmitted infection, with only minor transmission due to other means, it was compared to the STDs and especially syphilis. Public-health efforts to control syphilis in Europe have relied on voluntary notification similar to the approach adopted in England. Although prostitution is condoned in Europe and virtually ignored by authorities in Britain, STD levels are comparable.
Several important public-health crusades against venereal diseases were mounted in the US during the 20th Century without much success. In the approach to sex education during World War 2 the US Military Authorities accepted that abstinence from sex was an impossible expectation and adopted a pragmatic approach to venereal disease control.

However, no country has eradicated syphilis and, with or without controls, the prevalence of syphilis (where it is known), varies only in minor degree from country to country.

A cogent example of the self-help approach is the attitude of the Prostitute Collective in Victoria which has counselled their sex-worker members to carry out protective measures that have ensured that there has been no HIV-infection in these people.\(^9\)

When these results are compared to results from cohorts of prostitutes in the US, at Newark, New Jersey, where 51.7 percent were HIV-positive and Miami where 14.7 percent were HIV-positive, the value to all concerned is evident. Infection rates of the magnitude shown in the above examples mean that the prostitutes have imperilled their health, their clients' health, and any sexual partners the clients may have. In Nevada, on the other hand, where prostitution is legal and the health of sex workers monitored, the incidence of HIV infection is extremely low.\(^10\)

Legal recognition of prostitution and its regulation, and the requirement for health monitoring of sex workers, display respect for the autonomy of adults to perform acts that affect only the people involved, while at the same time, they reduce the risk of transmission of STDs. Ethically this approach is preferable to treating prostitution as a vice and evoking punishment for sex workers and not their clients. Throughout history prostitution has never been stopped by laws or persecution.

Groups as obvious as prostitutes and their clients could be counselled and educated but often these people are considered to be immoral and either ignored by authorities or harassed and persecuted. On the other hand, when an enlightened approach is used, and brothels can be accepted as registered business by society with concerns for the physical health and well-being of the sex-workers, and with necessary legal constraints and regular health monitoring included, sex-workers then become important advocates among their clients for the control of STDs because it is in their own best interests.

Such an honest confrontation with human sexuality is often avoided and fears and moral turpitude substituted. Religious groups, often relying on dogma developed in earlier centuries, call for abstinence and place restrictions on the use of male and female condoms in sex. Condoms are the only method currently available for reducing the risk of transmission of STDs during sex. Are these religious leaders concerned with the
contraceptive use of condoms? The debilitating results of STDs, particularly HIV and AIDS, in some faiths are viewed as punishment for carnal sins, or as disobedience of moral laws, and deviation from religious rules.

Education has to be combined with realistic programs which detail aspects of sexuality suitable for each age group and it should be structured to meet the requirements of different standards of education within risk groups. Education on sex hygiene, sexual protective methods, means of avoiding activities which place individuals at risk, and avoidance of needle sharing in drug use, should be part of all school programs. The sexually-active teenage group, from 13 to 20 years, are often aware of HIV infection and AIDS but lack the maturity or social awareness to avoid risky situations. In particular, it is this age group that has the highest risk potential for the spread of AIDS in the future. The better educated these young people become about STDs, the greater the chances are that HIV and AIDS may be controlled. Education to alter dangerous behaviour in adult risk groups has helped, but education to prevent risk behaviour is far more appropriate for younger age groups.

As Brandt in his third point has noted, the obstacles to establishing effective public-health policies for AIDS are considerable and compulsory public-health measures will not control the epidemic. There are many reasons why AIDS presents difficulties for medical science since it is a new disease with many unknown features. The problems it causes for societies worldwide are complex and expose religious, ethical, and moral differences which have to be resolved as unique problems to each culture. The political aspects of AIDS have already created considerable problems for many countries and in some developing countries, especially in Africa, will probably continue to do so for decades to come. AIDS is spreading in regions of the world in which it has previously been at a low prevalence. This spread is continuing despite knowledge and awareness of the modes of transmission.

In public-health approaches there is a need to constantly evaluate a substantial range of educational programs and to evaluate the impact of these programs for risk populations with differing requirements. To achieve successful controls through education, authorities need to know the patterns of normal sexual behaviour in community groups to accurately define the education model needed. These behavioural pattern results are the "Rosetta Stone" against which the risk-group activities can be evaluated and strategies developed to minimise spread of STDs. As Brandt comments, "If education is to have a positive impact we need to be far more sophisticated, creative, and bold in devising and implementing programs".
If normal sexual behaviour is poorly or incorrectly understood, then such worthwhile objectives become meaningless as the lessons from the history of STDs have already shown.

During the early stages of the AIDS epidemic and after the development of antibody tests, there were demands to quarantine the infected. The next demand was for compulsory community blood testing as an extension of the testing for HIV beyond the requirements for medical purposes, (blood and blood products, organs and tissues and semen) to the general population. These demands were shown to be potentially counterproductive, and logical appraisal of the task involved showed that there would be little advantage and probably massive harm and financial disaster in such an approach. Financially, compulsory testing would place an impossible burden on the medical and health care systems to the detriment of the nation. Worse, nothing would be achieved for the enormous expenses involved as was shown during compulsory pre-marital testing for syphilis in some states of the US.13 In the US, pre-marital testing for syphilis failed to identify a significant percentage of the infected population and the cost of the programs proved out of all proportion to the level of detection of positive carriers. Despite the failure of such programs, some elements of society see them as providing political and cultural benefits.

At present in Victoria and in Australia generally, there is a methodical testing schedule for HIV which monitors the following :-

- Blood donors, tissue and organ donors, and semen donors.
- Health care workers (including doctors, nursing staff, and others).
- Occupational and health safety workers (police, ambulance, and laboratory staff).
- Ante-natal and pre-surgical patients.
- Coronial autopsies.
- Immigrants.
- Defence force personnel.
- Prostitutes (brothels registered with prostitute collectives).
- Prisoners.
- Life Assurance (medical discretion and premium level).

There is a provision for voluntary screening in Victoria which was used in 1991 by approximately 100,000 people. From this large sample of the population, a reasonably-
accurate assessment of the numbers of HIV-infected or potentially-infected individuals could be made. An additional group that should be included in monitoring for HIV are pregnant women, because STDs and HIV are a source of congenital infections which often cause considerable physical distress and very often death of infants.

This is an extensive testing program which screens a large percentage of the adult Australian population. The prevalence of HIV infections in the general population is so low in Australia that detection results would not warrant the huge expense required. Also, although false positives or false negatives occur at a low level in the tests, these aberrations create great problems in interpretation. An incorrect diagnosis with HIV can be devastating for people. In risk groups, with a relatively-high incidence, such false results can be checked easily, but in general populations such results cause considerable unnecessary trauma and confute the statistical assessments.

When the causes of AIDS were determined and the basic pathogenesis of the disease caused by HIV-1 was understood, attempts were commenced to find treatments or cures. The initial hopes were to develop a vaccine. Although many attempts have been tried and some prototype vaccines have undergone pilot trials, none has so far proved effective. The lack of satisfactory animal models for HIV severely hampers the search for a vaccine. Indeed this deficiency also hampers the search for a cure.

As Brandt makes clear in his fourth point, "the development of effective treatments and vaccines will not immediately or easily end the AIDS epidemic".14

Penicillin was identified in the 1940s as a cure for syphilis and gonorrhoea, and proved to be extremely efficient, as antibiotic therapy soon reduced the incidence of syphilis from 72 cases per 100,000 population in the US during 1943 to 4 cases per 100,000 in 1956. Despite this decline in incidence, by the 1960s the incidence of syphilis was rising again. Even during the shock era of a rapidly rising AIDS prevalence in the 1980s, the figures for syphilis rose to 13.3 cases per 100,000 population and there was a rise in congenital syphilis.

The rationale for syphilis serology programs in the US was to find infected people and to treat them, thus reducing the incidence of infection. However, in any HIV serology detection program, treatments would at present be palliative at best and would not reduce the incidence of infection.

Even if treatments and cures are found for HIV and AIDS, these agents will continue to circulate in the community as evidenced by the history and continuing presence of syphilis and other STDs.
The most important factor concerning HIV infection and its spread is the large number of people who carry the virus but have no signs or symptoms of the infection. It is from these people that the disease spreads. Education on preventive measures and counselling for changes to sexual-behaviour patterns are essential for control of disease in these people. The problem for the medical disease-control authorities is how to identify this HIV-infected group.

Although partner notification may not be a desirable part of control schemes, if it was undertaken as a voluntary notification of possible sources of infection by people identified as infected, and accepted by high-risk groups, it could help to reduce the unknown pool. Also it would be of considerable benefit if members of high-risk groups could recognise their individual responsibilities as important for the lives of others to know whether or not they were HIV-positive. For this reason alone the dangers of anonymous sex are manifestly obvious. Partner notification by patients identified with HIV infection (index notification), and in turn, notification of their partners by AIDS counsellors (provider notification) could rapidly reduce infective foci. The importance of identifying partners who are unaware of their risk of infection combined with counselling those continuing in high-risk behaviours is crucial for control of HIV transmission.15 The risk of transmitting HIV must be eliminated as there is no acceptable level for this risk. Lower or lesser-risk behaviour is an inadequate goal.

Education to avoid anal sex and any high-risk behaviour has to be reinforced in order to produce stronger messages illustrating the significant dangers and the threat to life of anal sex, multiple partners, and other high-risk behaviours.

Conscientious use of condoms can reduce the transmission of HIV/STDs, but until condom use has been established as a recognised method for saving lives similar to seat belts in cars, and accepted by the community, condoms will only have a minor role in control strategies. Condom use does not eliminate the risk of transmission and therefore it has to be viewed as an important but secondary strategy.

Legalisation of prostitution and registration of brothels as businesses subject to health standards, with regular monitoring of the health of sex workers would be desirable. Also the development of a code of practice including established safer-sex practices for sex-workers is essential. Street prostitution is a high-risk activity and should be replaced by legal brothels as soon as possible. This can only be assured if the Prostitutes Collectives are given the opportunity to have an input into how a reduction in this dangerous activity could be achieved and still safeguard the interests of their members.

Another high-risk group, IVDUs, must be regularly provided with counselling and instructions in safe behaviour for both drug use and for sexual activities. Intra-venous
drug users may respond to peer advice in addition to advice from counselling services but because of their drug dependence are unlikely to always be reliable in responding. As a group they have the most potential to spread HIV-infection into the heterosexual community.

Standards for safe sex cannot be based on sexual orientation, or on community or religious ethics. Standards for safe sex can only be based on the HIV-infection status of people.16

There is an urgent need to develop awareness in the community of the importance of safe sex through all available media channels particularly through those in the electronic media, television, radio, and in the theatre through plays and films. However, there is a danger that the educational material can express viewpoints that reflect the problems of high-risk groups without recognising that the vast majority of the population practise safe sex. A high level of public knowledge is especially required for the 13 to 20 year age-group who are particularly vulnerable to peer pressures. The emphasis on education for this group should be on normal sexual development and not based on the promiscuous behaviour of any group within heterosexuals, homosexuals, or IVDUs.

At this time in the AIDS campaign the national interest should be considered above all other factors. Australians are attempting to ensure that their children are free of congenital STD infections, and that their young adults are not infected with STDs during the reproductive years. While campaigns have been mounted extolling the benefits of healthy life-styles and pointing out the importance of good nutrition, regular exercise, the need for precautions against many contagious diseases, cancer, and other community health problems little, or nothing has been said or been done about venereal diseases until AIDS occurred. It would be unfortunate if at this stage in the AIDS campaign, education for safe sex promoting condom use was turned into propaganda for the promiscuous as was suggested in an article in a popular magazine.17

However, there is a real danger that some of this material in its presentation may substitute the condoning of promiscuity and use of condoms for responsible natural biological responses and social constraints normally exhibited by young people. Promiscuity, while hard to evaluate and define, has been accepted as part of the sexual revolution. STDs and HIV present the other face of this revolution and this should be emphasised.

Among the major studies remaining to be carried out in Australia are surveys of sexual-behaviour patterns in the general community. Until these surveys have been conducted, epidemiologists and scientists will have to continue to rely on the suspect evidence supplied many years ago by Kinsey and others.
Surveys of the general population, based on a model devised by Wellings et al. (1990) in Britain, could produce the information which will enable guidance for behavioural modification, identify vulnerable population groupings, and provide a basis for comparison to the sex patterns of high-risk groups. Such studies will lift the veil of secrecy on sex in our society and allow free and open discussion of the findings.

The ramifications evolving from the knowledge that these studies could provide, go well beyond the need for more valid information for campaigns to deal with AIDS. The information is certainly necessary for approaches to the control of STDs and HIV infections, and obviously the medical and epidemiological benefits would be of profound assistance in the campaign.

Important though this aspect would be, there would also be multiple benefits to society through more accurate educational data on male and female sexuality. Psychology and sociology would benefit considerably from scientifically-sound information on such a basic biological function as human sexual activities. Sexual relationships in humans remains as one of the last barriers for many biological and social sciences. Perhaps AIDS may yet teach humans a great deal about themselves.

Chapter 7 Footnotes

3. Sally Heath, "HIV is hitting the young", Age (Melbourne) 15 October 1991.
9. Dorota Gertig, Epidemiology Unit MacFarlane Burnett Centre for Medical Research, Melbourne. Personal communication.
10. Walters, op.cit., p.598.
12. Ibid., p.369.

14 Brandt, op. cit. p.370.


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GLOSSARY OF TERMS

AEROBE
An organism that grows in the presence of oxygen.

AIDS
The term AIDS (Acquired Immune Deficiency Syndrome) refers only to a subset of the illnesses which may occur after infection with the HIV virus. It was defined by the Centers for Disease Control, US and the definition adopted by Australian authorities.

ANAEROBE
An organism (usually a microorganism) that can live without oxygen.

ANTIBODIES
A class of proteins produced in body fluids which combine specifically with foreign molecules and bacteria, viruses and other microorganisms and help to defend the body.

ANTIGEN
Any molecule whose entry into an organism provokes the synthesis of an antibody (immunoglobulin).

AZT
Antiviral agent whose chemical action is to inhibit replication of HIV. Now named zidovudine, formerly azidothymidine. Its trade name is Retrovir.

BISEXUAL MEN
Men who have sexual relations with both women and men. This includes men who normally relate sexually to men but who may also have sexual relations with women, as well as men who may be married to or normally have sexual relations with women but who may also have sexual relations with men.

CHROMOSOME
Structure carrying a linear sequence of genetic information. In a prokaryocyte such as bacteria it is a molecule of naked DNA, in a eukaryocyte such as animal and plant cells it is a complex of DNA and protein which, at cell division, can be seen as a morphological entity. Whereas bacteria have a single chromosome, higher organisms such as animals and plants have many, e.g. human cells have 23 chromosome pairs.

COFACTOR
A factor, other than the basic causative agent of a disease, that increases the likelihood of developing that disease.

COMMENSAL
Organisms living on or within another, but not causing injury to the host.

CONTACT TRACING
The identification and notification of people who may have infected, or have been at risk of infection from a known infected person.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>DIDANOSINE</td>
<td>Antiviral agent, didanosine (ddI), with similar properties to AZT which can be used instead of, or to supplement, AZT treatment.</td>
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<tr>
<td>DNA PROBE</td>
<td>A single strand of DNA that can be used to indicate the presence of a DNA or RNA complementary strand. Probes are either labelled with radioactive isotypes or fluorescent molecules. The reaction between two complementary single strands is called hybridisation.</td>
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<tr>
<td>ENDEMIC</td>
<td>A disease of low morbidity that is constantly present in a human community.</td>
</tr>
<tr>
<td>EPIDEMIC</td>
<td>The occurrence of a group of illnesses of a similar nature clearly in excess of normal expectancy.</td>
</tr>
<tr>
<td>EPIDEMIOLOGY</td>
<td>The retrospective study of the spread or incidence of disease or disability.</td>
</tr>
<tr>
<td>FULMINATING</td>
<td>Of disease, to occur suddenly with great intensity.</td>
</tr>
<tr>
<td>GAY MEN</td>
<td>A subgroup of homosexual men who identify themselves with the gay community. It is a reference to membership of a community sharing a common identity more than to behaviour.</td>
</tr>
<tr>
<td>GENETIC ENGINEERING</td>
<td>A term which has no precise definition, but which is used to refer to all techniques which manipulate an organism's genotype. Often used in a narrow sense as a synonym for recombinant DNA techniques alone.</td>
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<tr>
<td>GERM CELLS</td>
<td>Reproductive cells produced by males and females which fuse to form an embryo; the embryo thus carries one set of genes from each parent.</td>
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<tr>
<td>HIV</td>
<td>The term &quot;HIV&quot; is the universally agreed name for the Human Immunodeficiency Virus, the virus responsible for the epidemic. The virus was previously referred to as LAV (Lymphadenopathy-associated virus); HTLV-III (Human T-cell Lymphotropic virus type III) and ARV (AIDS-related virus). The phrase &quot;the HIV virus&quot; has been used to facilitate the reading of the text.</td>
</tr>
<tr>
<td>HIV-RELATED ILLNESS</td>
<td>The range of illnesses which may occur as a result of HIV infection. It replaces previously used expressions such as AIDS-related condition (ARC) and includes those illnesses referred to as AIDS.</td>
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</table>
HORMONE A class of potent biological compounds which control important body processes. Some of these are small poly-peptides coded for by single genes. The application of recombinant DNA techniques has allowed a number of these to be synthesised in microorganisms e.g. insulin, growth hormone, relaxin and inhibin.

HOST/VECTOR SYSTEM The combination of a host cell which receives foreign DNA and the vector which is used to transfer it.

HOMOSEXUAL MEN Men whose sexual orientation is towards other men. Their sexual activities are exclusively with males.

INCIDENCE The number of new cases of infection or illness in a given population within a particular period of time.

IMMUNE SYSTEM The system of cells and antibodies which in combination defend the body against invading bacteria, viruses, parasites, and tumour cells or organ grafts.

IMMUNOGENIC (Substance) - one which stimulates immune system.

INTERFERONS A class of proteins produced by tissue cells in response to invasion by viruses.

INTERLEUKIN A protein secreted by particular white cells in the blood and concerned in the immune response of the host.

INTRANUSOUS DRUG USERS IVDU(s), injection of drugs directly into the bloodstream.

MUTATION A change in the sequence of bases in DNA.

NEEDLE AND SYRINGE SHARING DRUG USE The activity which places intravenous drug users at risk of infection with HIV is the sharing of unsterilised needles, syringes or, possibly, other equipment.

ONCOGENE A gene which causes cancer or is potentially capable of doing so.

PALLIATIVE Treatment affording relief but not cure; An allieving medicine.

PANDEMIC A widespread epidemic disease.

PATHOGEN A disease-causing organism, such as a bacterium, virus fungus or parasite.

POLYMERASE CHAIN REACTION A technique which enables fragments of DNA to be multiplied in the test tube allowing measurable quantities of DNA to be obtained for subsequent use.
<table>
<thead>
<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>PREVALENCE</td>
<td>The number of cases of infection or illness in a given population at a particular point in time.</td>
</tr>
<tr>
<td>PROTEIN</td>
<td>A molecular complex made up of one or more folded and superfolded polypeptide chains.</td>
</tr>
<tr>
<td>RECOMBINANT DNA</td>
<td>A molecule of DNA consisting of DNA from two different sources, often a vector with an insert of foreign DNA.</td>
</tr>
<tr>
<td>RETROVIRUSES</td>
<td>A family of viruses, which includes HIV, characterised by the method of replication in the cells they infect. This replication involves the transfer of genetic information in a direction which is the reverse of that which usually occurs.</td>
</tr>
<tr>
<td>RNA</td>
<td>Ribose nucleic acid. Similar in structure to DNA except that the sugar, ribose, replaces the sugar, deoxyribose and the base uracil replaces the base thymine. RNA is often single stranded.</td>
</tr>
<tr>
<td>mRNA</td>
<td>Messenger-RNA. The RNA which is transcribed from the DNA and then translated at ribosomes to make proteins.</td>
</tr>
<tr>
<td>SAFER SEX</td>
<td>Sexual activity where transmission of HIV by semen, blood, vaginal or cervical secretions is minimised. This may be through a change in sexual practices or through the correct use of quality condoms.</td>
</tr>
<tr>
<td>SEROCONVERSION</td>
<td>The appearance of antibodies to the HIV virus. This usually occurs between 6 and 12 weeks after infection.</td>
</tr>
<tr>
<td>SEROPOSITIVE OR HIV-POSITIVE PERSON</td>
<td>A person who has antibodies to HIV, as revealed by testing.</td>
</tr>
<tr>
<td>SYNDROME</td>
<td>A set of symptoms which occur together; the sum of signs of any morbid state; a symptom complex.</td>
</tr>
<tr>
<td>TESTING</td>
<td>The testing of blood or other tissues to find out if antibodies to the HIV virus are present or to isolate the virus.</td>
</tr>
<tr>
<td>VACCINATION</td>
<td>Inoculation of a vaccine for the purpose of inducing immunity.</td>
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