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Sexual culture and death in the era of HIV/AIDS:

The HIV/AIDS epidemic and its transmission vectors

in the Western Region [Region A], of the Eastern Cape, South Africa,

with special reference to the

Port Elizabeth, Despatch and Uitenhage urban areas, 1988 to 1998

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paper originally presented to the annual meeting of the

Demographic Association of Southern Africa (DEMSA)

on Wednesday, September 16, 1998, revised November 5, 1998

Abstract: The author attempts to draw attention to the little researched problem of HIV/AIDS in the Western area of the Eastern Cape. The author eschews the traditional methodology of antenatal based incidence studies on the grounds that there are too few antenatal clinics in the rural areas. Second, there are no reliable denominational data. Problems with the '96 census and its anticipated delay in release (and its unanticipated expense) will result in the continued absence of denominational data for all HIV researchers (and all NGOs in the field of demography) in the country. The author used new case level data which has a much broader base than the traditional antenatal data. The author analyses the new data with a view to understand the vectors of the epidemic and to enable policy formulation and to suggest a set of interventions.

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Illustrations:

> "We came to think of AIDS as fundamentally a crisis in human rights that had some public health dimensions, rather than as a crisis in public health that has some important human rights dimensions"—Stephen Joseph, former Commissioner of Public Health in New York City, May 1993.[1]

Introduction

The Human Immunodeficiency Virus (HIV) epidemic is now receiving belated media coverage in Southern Africa, but astonishingly little attention was focused on the heartland of the country, the Eastern Cape, the home of the Xhosa people, until the epidemic had already entered the deadly phase of Acquired Immune Deficiency Syndrome (AIDS).[2] Most HIV/AIDS research has been concentrated on KwaZulu/Natal. Consequently that region has received most media attention and also academic research and funding.[3] This paper attempts to begin to fill the gap in the research literature. It deals with all the magisterial districts of the Western subregion of the Eastern Cape [Region A] with special emphasis on the urban areas of Port Elizabeth/Despatch and Uitenhage.

A critique of the antenatal incidence methodology

Most studies of HIV/AIDS in South Africa rely on antenatal studies to provide comparative indices of incidence for the epidemic. However, there are several methodological problems associated with this approach. The first is that the rural areas are not serviced by antenatal clinics to the same extent as urban areas. This is a particularly important shortcoming for the Eastern Cape, but not as marked in Region A. Second, in the absence of the 1996 census results, there are at present no reliable denominational data from which to draw meaningful regional incidence figures. Researchers naïvely rely on upgraded 1991 census projections and/or the annual October household surveys. Finally, antenatal data privilege pregnant mothers. Consequently, men, pre-teens, young adolescents of both sexes and also women beyond their child-bearing years are only

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[1]As quoted by Nancy Scheper-Hughes, "Aids, public health, and human rights in Cuba," *Lancet* 342 (16 October, 1993): 967.

[2]The SABC3 channel recently aired an eleven minute segment on HIV awareness on their new magazine style program "Special Assignments" on Tuesday 2nd September 1998.

[3]A. Whiteside, "The Impact of HIV/AIDS on Planning Issues in Kwazulu-Natal," Pietermarizburg: Town and Regional Planning Supplementary Report, No 42 (1995).

included in such studies through a flimsy pyramid of assumptions. Therefore, in short, all national comparisons based on antenatal data are suspect.

One must also question whether the incidence figure is the most valuable statistical measure to research in the future. For instance, how have incidence figures helped us in managing the epidemic? One presumes that the incidence statistic was chosen because it promised the most media leverage for intervention. But one must ask, at what level of incidence will meaningful intervention begin? As a nation, we are rapidly approaching holocaust numbers with figures of 3,000,000 positives being routinely reported nation-wide, with 750,000 in the Eastern Cape. Yet there has not been an appropriate set of interventions. The President-elect has begun a new national campaign in a surprisingly low-key ten minute broadcast in English at noon. Perhaps one can hope that his message will be rebroadcast in Xhosa in prime time as the provincial program officially begins after 17th October 1998.

What sort of intervention and where to begin are questions which the antenatal studies cannot answer. In this study an alternative approach is used, based on an analysis of existing case level data of HIV positives. Hopefully, this alternative methodology may result in a more uniform, comprehensive and representative HIV surveillance system for the Eastern Cape. An attempt has been made to obtain HIV case level data from a much broader spectrum of sources. These new anonymised data include results from pre-employment tests, blood donor tests,[4] District Surgeons, MOH's, private doctors, Provincial (and all mental) hospitals, municipal antenatal clinics, insurance companies, the Prison services, the South African Police and the South African National Defence Force (see figure, page 5).[5] Because of the different collection policies of these various institutions, these data are by no means "clean", but a systematic attempt has been made by the author to homogenize the data.

One may clearly see from the figure that the sex ratio is entirely an artifact of the reporting structure. The well-reported figure that 70% of all HIV cases are female is misleading. It is true

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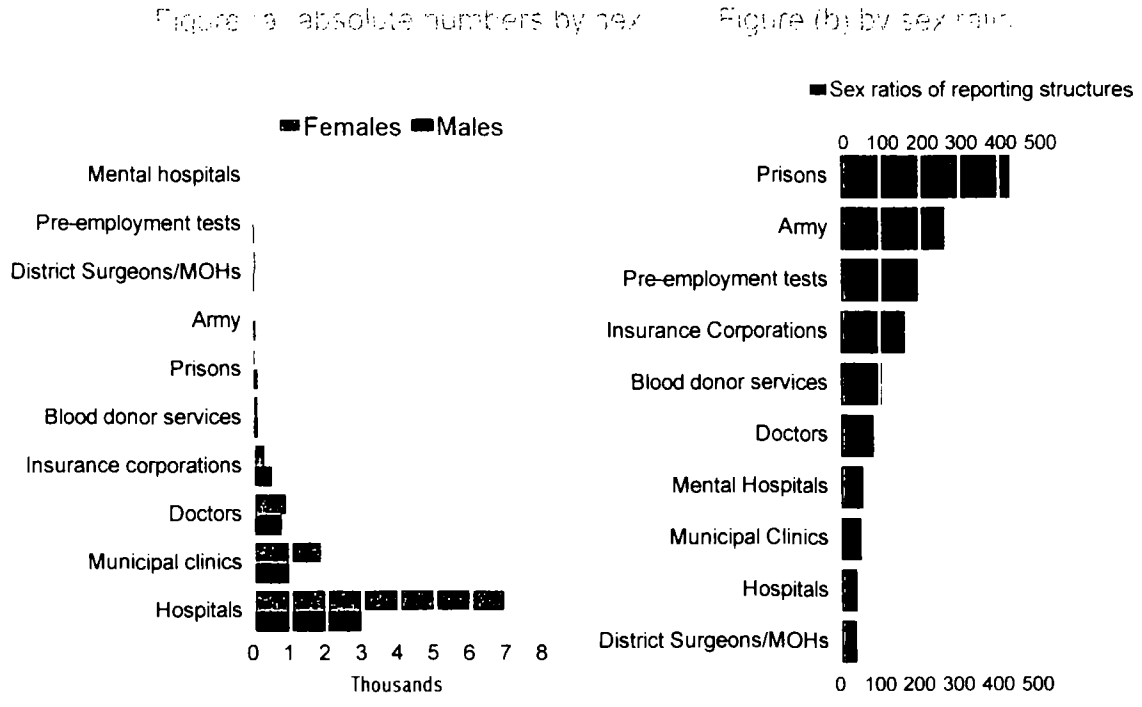
[4]The Regional Director of the Eastern Province Blood Transfusion Service, Dr Santos, has admitted the tests cannot detect people who have contracted HIV in the six months before the test. Therefore, the blood supply of the area is, to a certain extent, contaminated.

[5]I have acquired these anonymised data from the offices of Dr Etienne Du Plessis who has pioneered the collection of such data with the help of the Port Elizabeth ATICC clinic and Sandy Dunstan.

that females are more likely to be infected than males, but their true proportion is much lower, perhaps as low as 53%. The 70% figure is due to the reporting structure and clients (pregnant mothers) of antenatal clinics and the hospital system. The widely reported low sex ratio is much more likely to be a function of widespread denial among males.



Source: Port Elizabeth: Aids Training, Instruction and Counselling Centre (ATICC), 1998

Figure 1: Reporting structures of Region A in absolute numbers and by sex ratio.

Changing assumptions about the vectors of infection

Lateral infection

In approaching any HIV research it is important to realize how new HIV/AIDS is to the scientific community and how misleading it can be to believe in the early theories of HIV transmission. Since the HIV epidemic was first identified and received media attention in the 1980s there have been widely differing and rapidly changing theories about the way in which the virus spread. This should be understandable as the deadly retrovirus similar to the lentivirus (*lenti* Greek for slow)

was new to the human population and their scientists.[6] It was only properly identified and classified in the 1980s.

In the USA it was initially believed that HIV was spread by intravenous drug users and male homosexual intercourse. This is known as Pattern 1, while Pattern 2 is characterized by heterosexual transmission. Vertical transmission (mother-to-child) might be considered as another pattern while intravenous or accidental blood infection must be considered different again. The relative incidence of each type provides a useful index of the shape and depth of the epidemic (see table, page 8).

In the wake of the globalization of the HIV epidemic such specific theories of transmission have broadened to include a much wider spectrum of possible vectors of transmission and increasingly various strains of the virus. There are also two known types of the virus, viz. HIV1 and HIV2. In the early nineties, bisexual males have emerged as important actors in the HIV epidemic in Brazil and the UK, while commercial sex workers have emerged as the most important vectors in Thailand and Kenya. What is increasingly clear is that the vectors have to be understood in each specific regional, cultural and sexual context. There is thus every reason for the HIV researcher in a multicultural and economically stratified society such as South Africa to have to entertain multiple vector models and to suspect that all patterns and strains are present in South Africa, to say nothing about possible emergent mutant strains. All we do know with some certainty is that the virus replicates itself imperfectly, which is one of its most sinister science fiction aspects. HIV researchers should be aware that the epidemic is constantly changing its genetic jacket and may appear in as yet unrecognizable forms.

The theories of lateral transmission have also changed. It is no longer necessary to postulate any lesion of the epidermis for transmission of the virus. It has been clinically established with monkeys that SIV transmission can be accomplished with intact vaginal mucous membranes. Observations of HIV infection in women resulting from artificial insemination add further weight to this new theory of easier transmission. The rediscovery of Langerhans cells and their current identification as the key receptor (C4) cells for HIV attachment coupled with their abundance in

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[6]The earliest serum specimen retrieved from archived frozen material, shown to be positive for HIV antibodies was taken from a patient in 1959 in Kinshasa in Zaire, Barry D. Schoub, *Aids &HIV in Perspective: A Guide to Understanding the Virus and its Consequences* (Cambridge: Cambridge University Press, 1994): 13.

the genital mucosa has changed forever the lesion theory of transmission. In short, HIV may be transmitted during normal human intercourse with neither partner having any lesions. However, the presence of lesions as a result of genital warts or STDs will undoubtedly increase the risk of infection.[7]

Tuberculosis

The reciprocal effects of the simultaneous TB epidemic have also to be considered. On the one hand, there is a larger number of Tuberculosis cases in South Africa than ever before. One must remember that half of the sub-Saharan population has had TB. The two very different epidemics (one airborne, one sexually transmitted) are relentlessly attacking the same population—the poor. The possible range and arithmetic force of the demographic combinations are unknown and cannot readily be calculated. HIV positive people provide an open window for the opportunistic invasion of TB. Moreover, once infected, they provide a mobile and stable platform for the dissemination of the airborne disease among people without HIV until the former die. As Barry Schoub, South Africa's leading authority on HIV/AIDS notes: "Tuberculosis, as with other chronic infectious diseases, enhances susceptibility to HIV infection because of lymphocyte activation and immunosuppression. Conversely, the immunosuppression of HIV infection enhances susceptibility to infection with the Tuberculosis bacterium and it also activates latent Tuberculosis in individuals who have previously been infected."[8] With increasing use of antibiotics (and South Africa has one of the highest usages, at least among the wealthier segments of the population), one may expect increasingly virulent variants of TB appearing in the general population. One just has to imagine this combination of factors in an economically depressed and disadvantaged domestic setting. One may therefore anticipate that a broad swath of the poor not at risk from HIV will be exposed to enhanced probabilities of TB infection simply because the disease is concentrated in that class. Those unfortunate people who have contracted TB before they contract HIV may expect a rapid morbidity.

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[7]Barry D. Schoub, *Aids &HIV in Perspective: A Guide to Understanding the Virus and its Consequences* (Cambridge: Cambridge University Press, 1994): 82.

[8]Barry D. Schoub, *Aids &HIV in Perspective: A Guide to Understanding the Virus and its Consequences* (Cambridge: Cambridge University Press, 1994): 107.

In short, early theories of HIV transmission based on clinical observation broadly promulgated and popularized among the powerful US and UK media have little bearing on the way in which HIV is transmitted in Africa and in the Eastern Cape in particular, although a surprising number of influential persons still believe they do. The homosexual and intravenous drug use vectors so important in the USA and Europe are marginal in the Eastern Cape. There are more "needlestick" infections than intravenous drug transmissions in Region A. In the Eastern Cape, the virus is spread almost exclusively by heterosexual contact with vertical transmission in second place (see following table).

Value Label	*Frequency*	*Percent*	*Valid Percent*	*Cum Percent*
Heterosexual	7366	46.1	80.3	80.3
Vertical transmission (descent)	1772	11.1	19.3	99.6
Rape*	9	0.1	0.1	99.7
Needlestick	7	0	0.1	99.8
Bisexual*	6	0	0.1	99.9
Sexual abuse*	5	0	0.1	99.9
Multiple partners*	4	0	0	100
Homosexual*	3	0	0	100
Haemophilic	1	0	0	100
Unknown§	6816	42.6	Missing	
Total	15989	100	100	

** almost certainly under-reported,*
§ early case level data were missing

Table 1: Patterns of transmission

Vertical transmission

The changing age structure of the epidemic is of interest at least as far as the age at diagnosis shows. A high proportion of vertical transmission (mother-to-child) is thought to be a feature of the maturation of the epidemic, but the data from region A shows a slightly more complex picture. As can be seen in the accompanying 100% surface chart, vertical transmission peaked in 1994. The post 1994 data are consistent with the hypothesis that more adults (already positive before 1994) went for testing *after* 1995 (see figure, page 9). There are other reasons to suspect that the diagnostic picture lags far behind the spread of the epidemic.

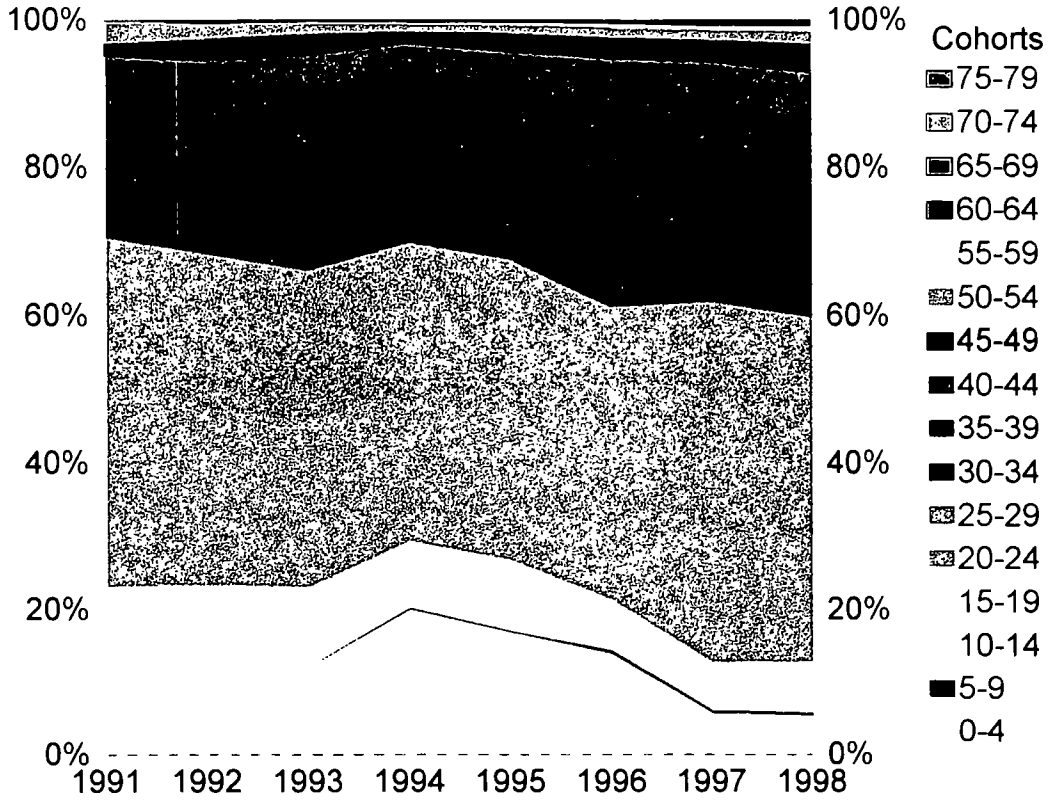

Figure 2: 100% surface chart showing age composition of epidemic, 1991-98.

Breast-feeding

HIV is bound to create complications in the debate about breast-feeding in South Africa. The discovery that 33% of infants may be infected postpartum by their mother's milk or colostrum has severe implications for the developing world. On the one hand, breast-feeding has a known contraceptive effect through the secretion of prolactin with each episode of suckling. This results in what is known as lactation amenorrhea (LAM) which is universally seen as a low-cost and natural way to reduce fertility. Unlike the rest of Africa, safe water can be readily obtained in most of South Africa to make safe formula substitutes. But to proscribe breast-feeding for HIV+ mothers (and undiagnosed mothers and all mothers-at-risk) will certainly have a long-term effect on increasing the fertility rate as the birth intervals between children will probably shorten in the absence of breast-feeding. Since breast milk has disease-protecting antibodies and diluting infant formula with unsafe water poses sizable health hazards, it is difficult to set sound policy on breast-feeding and problematic for health workers to counsel HIV infected mothers and those at high

risk of HIV infection. The HIV epidemic will undoubtedly change breast-feeding habits and thereby change fertility patterns.[9]

In 1985, WHO public health officials advised HIV infected mothers to bottle feed. They eventually amended their position by claiming the guidelines only applied to the US and the UK where safe water exists. Now WHO recommends that the only HIV infected women who should use a breast milk substitute are those in countries where infectious diseases are not the leading causes of infant death or those in countries with widespread malnutrition and infectious diseases which do cause infant death, but whose conditions would allow an appropriate alternative.

In Rwanda, a study on HIV transmission via breast milk shows infants seroconvert during the same month as do the mothers. So the researchers advise mothers at high risk for seroconversion not to breast feed; yet all women in Rwanda are at high risk. In Haiti, where all women are also at such risk and have no breast milk substitutes, the HIV transmission rate among breast-fed infants is 25%, equalling that of non breast-fed infants in the US and Europe. A European and Australian study reveals a higher risk of HIV transmission via breast milk in mothers who acquired HIV postpartum than in those who acquired it prenatally. Some research shows that 24% of the colostrum of HIV infected mothers has P24 antigen, while there is no P24 antigen in 4-day post partum breast milk. There are also the costs to consider: breast-feeding is free whereas substitute formula feeding is bound to be an extra burden on African household budgets already strained to their utmost.

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[9]W. R. Finger, "Should the threat of HIV affect breastfeeding?" *Network* 13, 2 (October, 1992): 12-14.

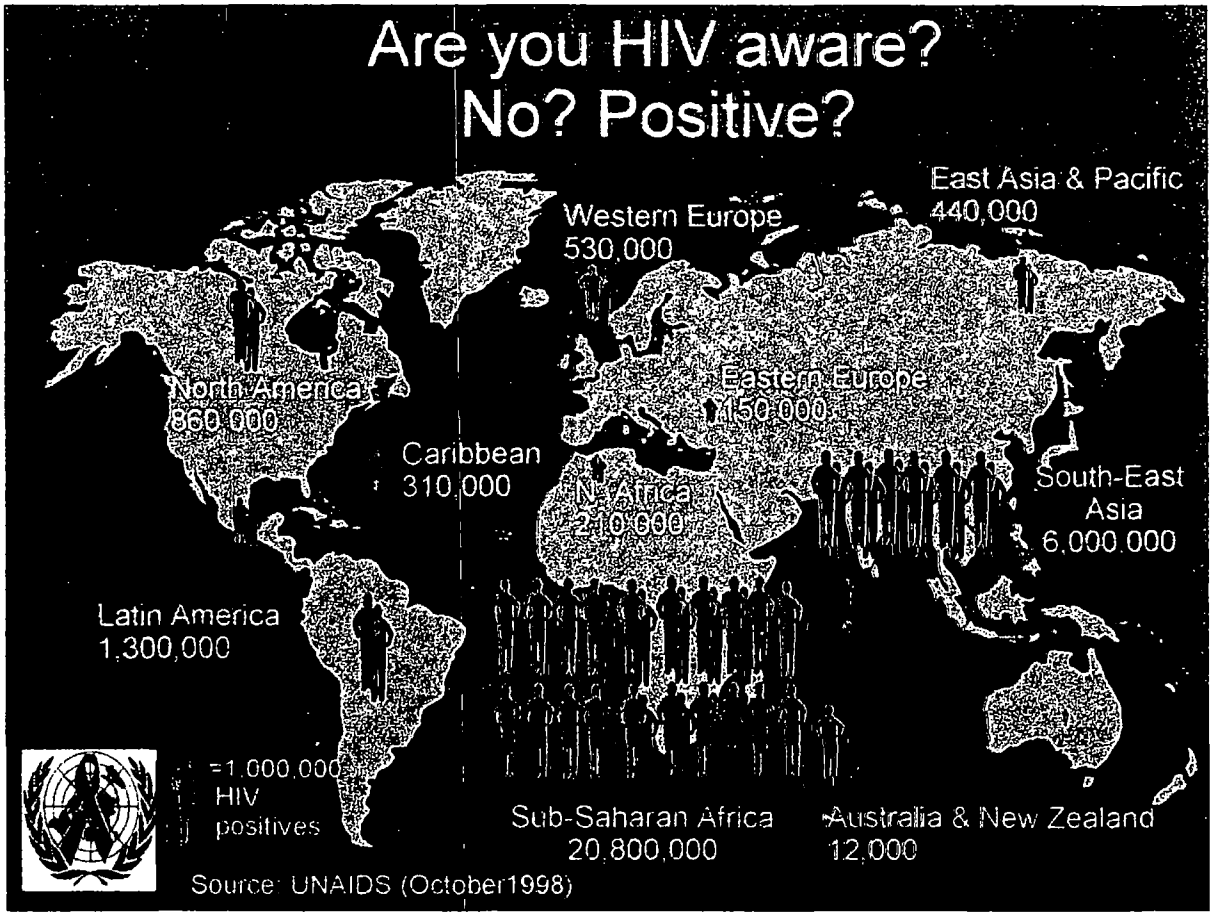

Figure 3: The global HIV epidemic

The regional vectors of the epidemic

The global picture

According to the figures of the World Bank and UNAIDS released in October of 1998, Sub Saharan Africa has more than two thirds of the World's 30 million HIV positives. The World bank figures are slightly lower. Underlining the differences in the vectors of the epidemic based on cultural aspects, North Africa and the Middle East has only 210,000 positives. Further, while it is true that the Eastern Cape has lower incidence levels than KwaZulu Natal, it is chastening to note that the city of Port Elizabeth has more HIV cases than the whole of Australia and New Zealand combined.

There are no tests for foreign nationals coming into South Africa for work purposes as there are in the United States. A high proportion of workers on South African mines are domiciled in other countries. These workers (mostly bachelors) have high sex ratios (many more males than females) and during their sojourn in South Africa they have a variety and unknown number of sexual contacts. Our own migrant workers work and socialize in the same pool. Estimates of illegal aliens from elsewhere in Africa range from 400,000 (STATSSA) to figures as high as 4,000,000 being regularly reported in the media. South Africa also has a segment of its population which regularly travels across the world. In short, the South African population is the most mobile in Africa. The international vector of HIV into South Africa is wide open and characterized by few checks on HIV. Immigrants to this country are not tested and there are indications that many of our military personnel in South Africa were not tested after their return from highly infected areas in Africa. Ironically our well-developed national roads have become excellent corridors for accelerating the epidemic, perhaps faster than elsewhere in Africa. South African incidence figures are climbing rapidly and Robert Dorrington, an actuarial expert at UCT, has warned at the annual meeting of the Demographic Associations of South Africa (DEMSA) that South Africa could be the worst hit country in the world.

The national picture

The Department of Health estimated in 1996 that up to three per cent of the overall population and 7,5 per cent of the sexually active population are infected by HIV which is spreading rapidly in South Africa. This means that approximately 700 people were becoming infected each day with the rate of new infections doubling every 15 months. By 1998 these projections have proven to be too modest. In terms of numbers of people infected with HIV South Africa is half way to the holocaust figure of 6,000,000 Jews killed in the thirties and forties. There is a rapid increase of HIV infection amongst young women, which reflects their vulnerability in sexual relationships as well as high risk behaviour. The problem of children orphaned by AIDS is increasingly becoming an everyday domestic issue with disturbing reports of ostracism and even abandonment of HIV positive infants.

The nature of the demographic and economic consequences of HIV and AIDS in a society is determined by how many people are infected, their place in society in terms of skill and productivity and for how long they are ill. It will take a number of years before the full impact

of the AIDS epidemic will be felt, although the socioeconomic costs of this epidemic are already quite evident.

The most direct demographic consequence of AIDS is an increase in the deaths of adults and children aged 0-4 years. The effects on fertility are indirect through the infection of women of the reproductive age group who will either die before fulfilling their childbearing intentions or who do not bear children at all. One wonders how a positive male could safely inseminate a woman. The quantitative effects of HIV/AIDS on fertility are imperfectly understood especially as they effect such heralded processes as the demographic transition. HIV mothers will have lower fertility but there might be compensating demographic replacement processes such as occurred after the first and second world wars. The accumulation of these direct and indirect effects causes changes in other demographic indicators, such as population growth rates, dependency ratios and orphanhood.

AIDS increases mortality in age groups that typically have the lowest mortality rates. Since AIDS is primarily spread through sexual transmission, the majority of people will be infected in their late teens and twenties and will fall ill and die in their late twenties and thirties. The peak ages of HIV infection are between 20 and 40; the peak ages of AIDS deaths are five to ten years later.

The concentration of AIDS deaths in this age group has important consequences for the number of AIDS orphans and for economic growth. HIV-infected pregnant women might infect their newborn children during delivery or through breast-feeding. Infant and child mortality rates will increase since most of these children will develop AIDS and die within a few years of birth. Although the potential increase in the infant mortality rate is estimated at about five infant deaths per 1000 live births, the net effect will be smaller since some children might die from other causes. However, about a 20 per cent increase in the under five mortality rate could be expected.

Life expectancy at birth is particularly sensitive to AIDS because deaths occurring among young adults and young children result in a large number of years of life lost. Robert Dorrington, the country's leading actuarial expert on HIV, has recently estimated that life expectancy at birth by the year 2020 for South Africa will be below forty years of age.[10] Before the AIDS epidemic,

[10]Robert Dorrington, "A New Actuarial Model for HIV for South Africa," paper presented to the annual meeting of the Demographic Association of Southern Africa (DEMSA) on Monday, (continued...)

South Africa had been enjoying a drop in mortality and an increase in life expectancy. A Roman slave had a life expectancy of 30 years of age.

The dependency ratio is expected to increase because of the increased number of young adults who die from AIDS. One of the worst consequences of AIDS is that large numbers of children are orphaned because their parents die from AIDS. To quote Dorrrington again, South Africa might expect 100,000 orphans in 1998. The health and development of these children may be neglected as grandparents, extended families and communities may not be able to carry the burden of so many orphaned children. However, as AIDS also leads to an increase in the number of child deaths, the net result is that the dependency ratio does not change dramatically in the presence of an AIDS epidemic, but it will increase. In other words, since parents and children are more or less simultaneously eliminated from the population, the overall dependency ratio is not dramatically changed.

As suggested earlier, the effects of AIDS on fertility are indirect. The number of births may be affected if many women die before reaching the end of their child-bearing years. However, most births occur to women at a relatively young age. Since the average age at the time of death from AIDS is usually around 30 or higher for women, the effect of AIDS deaths of potential mothers on the birth rate is not likely to be large if the total fertility rate remains constant.

Age at marriage may also be affected and could, in turn, affect fertility rates. AIDS could lead to a lower age at marriage or first union if young people seek early marriage as a protection against premarital sex with a number of different partners. This could raise fertility rates if women are exposed longer to the possibility of pregnancy. Alternatively, AIDS could lead to higher age at first intercourse as the dangers of unprotected sex become known, which would lead to lower fertility rates. Examination of potential changes in the proximate determinants of fertility concluded that the most likely result is that an HIV epidemic will slightly reduce fertility but no one really knows.

The effect of HIV/AIDS on population structure is more dramatic than on fertility, with a relative decline in the number of people in specifically younger cohorts (0-4,15-34). Over time, these

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[10](...continued)
14 September, 1998.

cohorts will move up the age pyramid and so, with increased mortality and deferred births, the structure of the age pyramid will change. The impact of AIDS manifests at various levels and to varying degrees. Before death, at the household level the effect of HIV infection increases certain kinds of long-term expenditure. If the infected person is an income-earning adult, his/her illness/death will reduce the household income capacity. Special medical treatment and care, nutrition and eventually untimely funeral costs also constitute a major financial burden on the household budget, which may lead to a further degradation in the household economic status, adversely affecting the living standard and quality of life of all surviving members. Household members with AIDS who need special care and treatment may place a special burden on women, who traditionally take responsibility for the care of family members and children.

There will also be a burden on the national and provincial coffers. It has been estimated that the cost of treating a terminal case of AIDS with an AZT cocktail per month (R4,300.00) is equivalent to placing 19 schoolchildren in primary school per month. Then there is the double stigma and sorrow of an AIDS-related death beyond the reach of any simple-minded calculus.

The measurement of the impact of AIDS on firms and enterprises is more complex. The actual cost of AIDS cases to employers varies greatly. Productivity will be affected when skilled or experienced staff fall ill, stay absent, or die. Medical Aid societies will probably suffer first as their operations are dependent on actuarial assumptions of normal populations. Positives already in Medical Aid schemes are unlikely to inform their societies for fear that they will be deprived of benefits. Those patients will be an unexpected burden on all such societies. Costs and actual expenditure will increase if employers have to pay for additional employee benefits, such as group life insurance, pensions and Medical Aid schemes. Absenteeism, lower productivity and loss of experienced staff will add to the indirect cost of AIDS in the workplace. The epidemic may eventually affect macro-economies through the illness and death of productive members and the diversion of resources from savings (and eventually investment) to health care, which may significantly reduce the rate of economic growth over time.[11]

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[11]If one assumes that there are 3,000,000 HIV positive cases in South Africa and that the currently quoted figure for the monthly costs for the AZT cocktail (R4,300.00) is correct, one must assume that the minimum costs of medication alone per year for treating advanced AIDS cases in say, five years will exceed R750,000,000,000.00 [sic]. This figure does not include any depreciation of the Rand, nor does it allow for an increase in the number of AIDS cases. This is the numbing, budget-breaking burden of the future financing of health services which will impose

(continued...)

Even if a cure is found, the only intervention which can now be contemplated is the swift and effective dissemination of specific knowledge about prevention. This is a problem of communication which is bedeviled by the nature of AIDS, its intimacy and the human shame associated with any sexually transmitted disease (STD). Yet every person, young and old, in Southern Africa must become aware of this, the fiercest epidemic in human history.

The overall effect of AIDS will be to reverse hard-won development gains and make all people in the country worse off. It is certain that these effects will last for decades. The people who fall ill and die are the parents and leaders in society, which means that a generation of children may grow up without the care and the rôle models they would normally have had. If we recall that the children who grew up in the last years of apartheid were called the "lost" generation, we must conclude that there will be two such "lost" generations one after the other. Few countries have endured such consecutive inter-generational calamities.

The provincial picture

There is every reason to suspect that both push and pull forces are speeding up the velocity of the migration vectors within the Eastern province. Since complex circulatory and step migration systems exist in the Eastern Cape, the overall impact of the epidemic in the region could be catastrophic. The burgeoning taxi industry has in itself changed migration patterns by changing the velocities and opportunities of transit. A recession (which is looming in 1998) will accelerate both urban and rural rates of infection. One can see (from the figure on page 23) that the epidemic is growing fastest in the "locations", townships and site and service schemes.

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[11](...continued)
horrible decisions of triage on policy makers of this country.

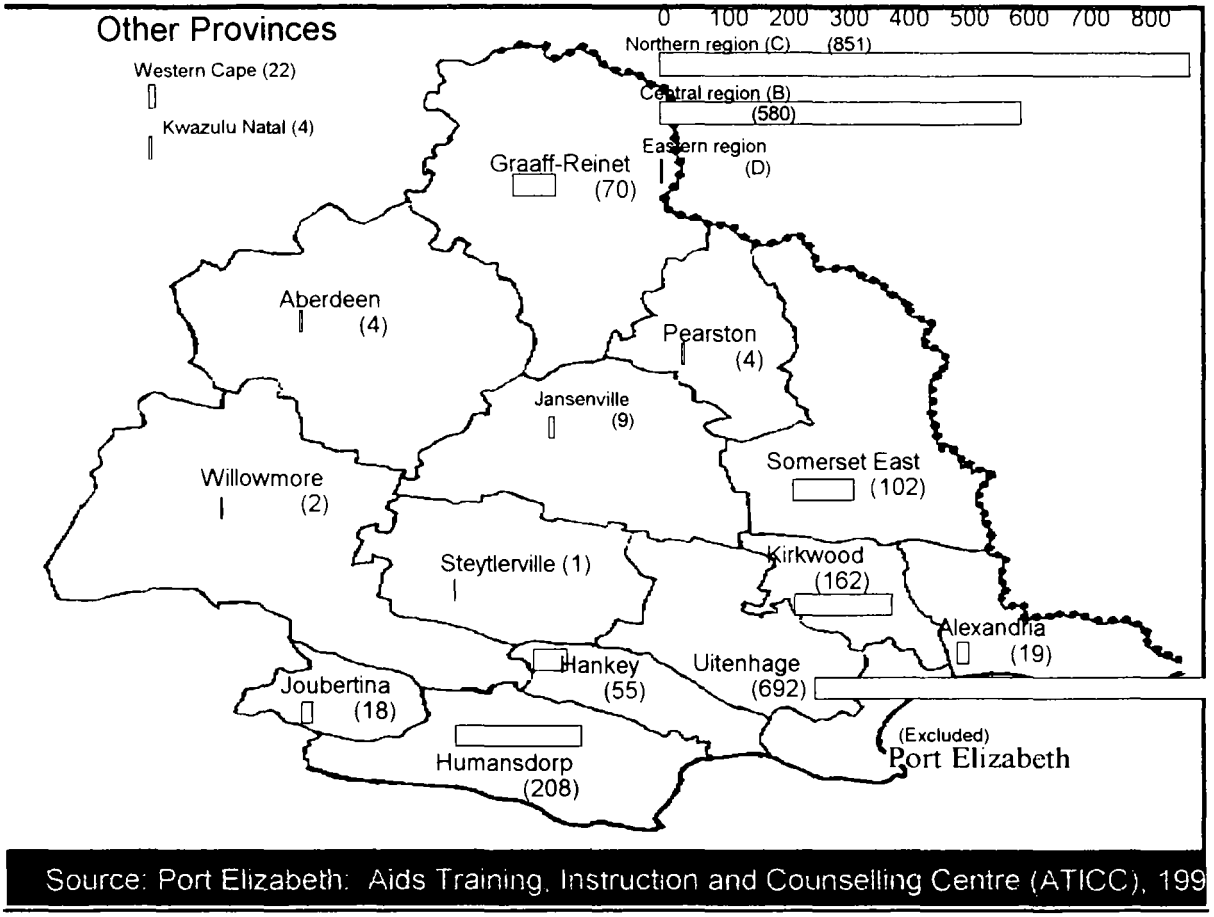

Figure 4: HIV positives in Region A

The sub-provincial region level

Looking at the incidence of HIV positives in Region A, one can readily appreciate that the vectors of the disease are emerging from the North-East. Villages and towns in the Western half are reporting few cases.

Hardly any cases are reported from the Western Cape, one of the main targets of out-migration from the rural areas of the province. Indeed, hardly any cases come from other provinces. The main vectors are within the Eastern Cape, but one must consider that many positives may have been diagnosed elsewhere. There is no way from the ATICC data set to determine their numbers. Also, where there are no clinics and hospitals there are unlikely to be any reported HIV cases.

The rural areas

To paraphrase Bishop George Berkeley's metaphysic, if a tree falls there has to be an ear to hear its falling. Since there are few antenatal clinics in the rural areas HIV incidence among the rural population of Region A remains a mystery. There is anecdotal evidence from farmers that long distance truckers stop in the lay-bys at night and honk their horns with two long bursts. Young women appear from the farm houses, climb on board the pantechnichons—some equipped with sleeping compartments—and return within a few days after the truck has done its round trip with some extra money in their pockets and possibly unsuspected viral baggage. Considering the distribution of clinics in Region A, it is possible for a woman to be infected in a rural area, to have children, and to die of AIDS without ever having an HIV test.

The city level

While Port Elizabeth has no higher incidence than the rest of the country, this should not be a cause for complacency. As noted above, Port Elizabeth alone has more people with HIV than Australia and New Zealand combined.

The absolute number of HIV cases within suburbs reveals further evidence of a North East vector. The huge Truckers' Inn and Service Station on the National road (N2) is a popularly suspected site of infection, but there is no direct evidence of this. Still, it could well serve as a site for HIV awareness and publicity, perhaps with billboards. Overwhelmingly, HIV is prevalent among the African and Colored populations in the North-East suburbs. Consequently, the HIV map of Port Elizabeth looks like a relic of the urban architecture of apartheid.

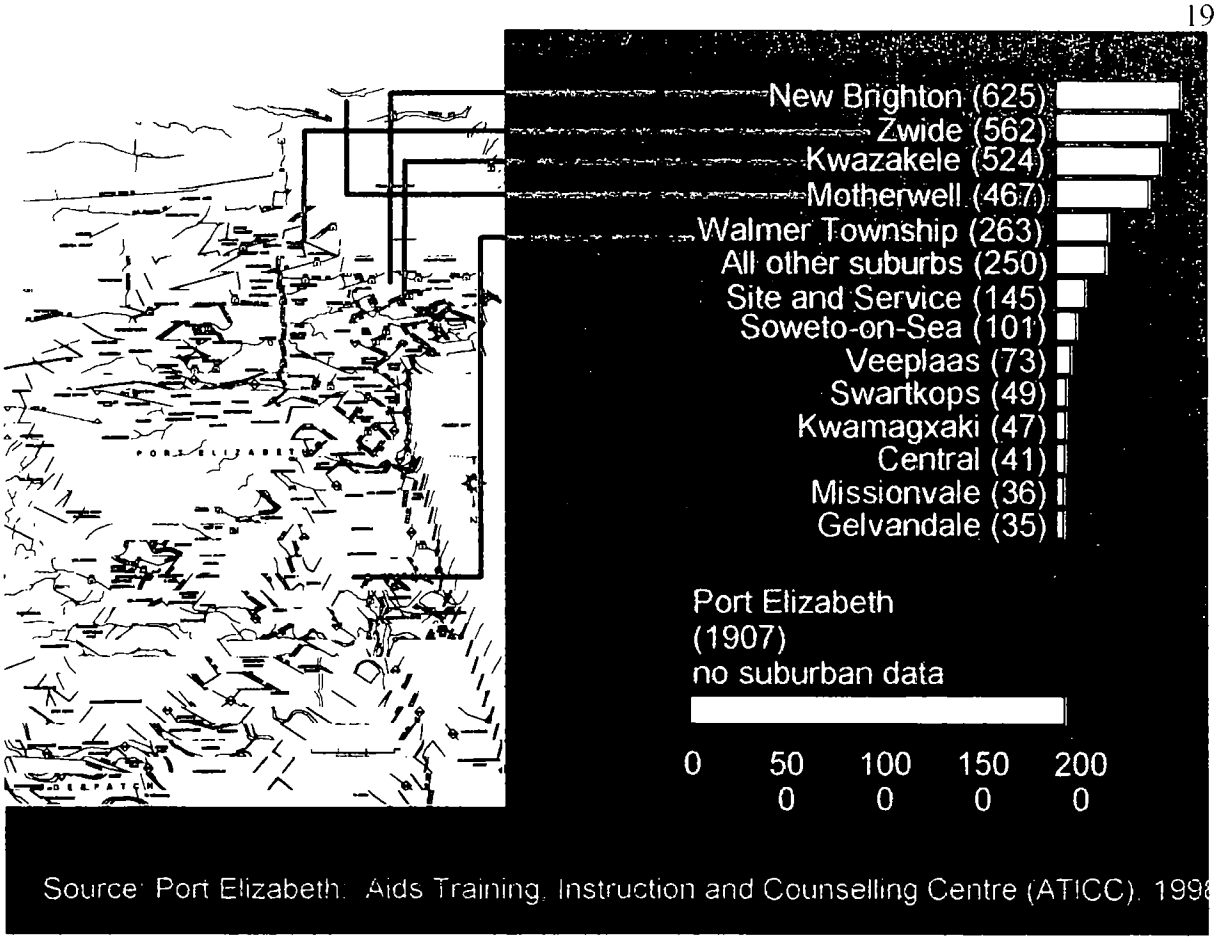

Figure 5: Port Elizabeth: suburban incidence of HIV/AIDS

The suburban level

Most notable is the high regional concentrations which have been unintentionally obscured by attempts to determine the average incidence of the epidemic, recalling the stale joke about the statistician who drowned in the river with an average depth of four feet. Joke aside, such averages do obscure the deep and wide penetration of the current epidemic clustered in certain well defined socio-economic neighborhoods and communities, most markedly in the "Locations", Endlovenis, Silvertowns, Chocksvilles, Site-and-Service schemes, in short all poor, or newly arrived urban communities.

The Trojan Horse: the army base as a vector

While most municipal authorities tend to suspect in-migration from rural areas as the most obvious—even time-honoured—origin of their health problems, it is quite conceivable that at least some urban HIV vectors might have been internal in those South African cities near military

installations from the inception of the epidemic. The army base is a newly suspected site for the HIV vector for South African researchers but for no others. For example, when Cuba received its 500,000 military personnel back from those areas in Africa where South Africans had also served, all were tested and "a large number" were found seropositive.[12] Other areas on the African continent are known to be instrumental in spreading the epidemic.

The Liberian case

From 1989 -1995 Liberia had been in a state of civil war. Monrovia fell within an area protected by foreign troops. A "Save the Children" research initiative was launched in 1994 due to concern over increasing HIV/AIDS prevalence in Liberia in combination with the fact that hundreds of women and young girls were involved in sex work with military personnel. Focus group discussions were held with small groups of girls between the ages of 12-19 involved in sex work. There were seven girls to a group. Group discussions were followed up with individual interviews. Interviews were also held with military personnel. However, it was difficult to encourage the military to discuss the issue of child prostitution and the number of responses received were limited. All of the girls interviewed recalled that they had had their first sexual experience between the age of 10-13 years. Girls received gifts in the form of cash, food items and material rewards in return for sexual relations with military personnel. Younger girls demand less in return for the provision of sex work than older girls, who demanded money rather than goods. The majority of the girls in child sex work were involved for economic necessity in the absence of any other capacity or opportunities to earn income. Many girls were supporting families. Some girls had their own children to care for and needed the money for motherhood for which they were often unprepared. Girls had a very low awareness concerning HIV transmission and prevention. Many girls believed that condoms caused cancer of the vagina or that condoms would be caught internally. Many of the girls interviewed had been raped during their time as child prostitutes and some cases involved 2-5 men at once. Military personnel were often resistant to condom use and talked about condoms preventing body to body contact.[13]

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[12]Nancy Scheper-Hughes and Commentary, "Aids, public health, and human rights in Cuba," *Lancet* 342 (16 October, 1993): 1426.

[13]L. Elliott L "Child prostitution: a case study in military camps in Liberia." International Conference AIDS, **11**, 1 (Jul 7-12, 1996):254 (abstract no. Tu.D.136). Save The Children Fund UK, London, England. Fax: 44-171-793-7630.

Medical Officers of the Ugandan Contingent of the troops in Liberia were aware of HIV/AIDS and advocated in favour of condom distribution. Other soldiers of other nationalities remained suspicious of their use. It was not easy to interview the military on child prostitution. However, secondary sources indicate that foreign troops take advantage of the extreme poverty of women and girls in the local setting and exploit the situation for sex. The men prefer using child prostitutes as they are less demanding with little or no responsibility and they will take whatever is given to them in return for sex. The use of young girls for sex is also seen as a means of avoiding HIV infection and then there is also the virgin cure myth to consider (see *infra*, page 29). The war is over in Liberia. However, foreign troops are involved frequently in emergency situations. Elliot concluded that policy recommendations were needed to ensure that international and local military personnel obtained mandatory training on the UN Conventions on the Rights of the Child and education on HIV/AIDS/STD prevention.[14]

South African HIV researchers are seemingly unaware of the incidence of HIV or AIDS in their Defence Force. Possibly, returning cadres who had served in central Africa and elsewhere on the continent during the struggle before 1994 contracted HIV there (the various homeland armies were also incorporated into the SANDF at this time). When discussions were being held on the integration of the defense force it was agreed that there would be no testing of incoming personnel. This became a sensitive political issue and it was agreed that there would be no testing, a watershed event for the history of AIDS in South Africa. Further the UN has stipulated that troops who cross borders, or who are involved in combat, cannot be HIV+. This is an international law. Compliance would imply that mandatory testing would have to be done for every entire defense force member in the world. This testing has not occurred in South Africa for political reasons (alluded to above) but most of all since career soldiers fear being "mustered out", i.e. taken out of combat roles and especially not chosen for the favoured pool of soldiers who will see combat service in another country. The SANDF, to its credit, does not discharge any people with HIV but it is obliged to withdraw people with HIV from combat roles. It would be interesting to know whether South African troops involved in the invasion of Lesotho were screened for HIV.

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[14]L. Elliott L "Child prostitution: a case study in military camps in Liberia." International Conference AIDS, **11**, 1 (Jul 7-12, 1996):254 (abstract no. Tu.D.136). Save The Children Fund UK, London, England. Fax: 44-171-793-7630.

Once SA veterans returned to their home country and were incorporated into the new South African National Defence Force, they were distributed all over the country and thereby became an almost perfectly randomly distributed set of sites for the incipient epidemic between 1992 and 1994. There are three bases in the Eastern Cape, namely Port Elizabeth, Grahamstown and Umtata. It is conjectured on the basis of cases elsewhere in Africa, that returning veterans to such units (among whom were many heros) all with assured state employment would appear as most admirable suitors to any impressionable young, poor woman consulting her nuptial options. Further research is needed but some local anecdotal evidence lends some weight to this hypothesis. A conversation with a high schoolteacher near an army base in the region revealed that the female learners in one school in the region talk of "nothing but the barracks." According to the same source, male army personnel routinely open accounts for these teenage conquests at nearby departmental stores, a process very similar to the Liberian model (*supra*, page 20). According to medical authorities in Grahamstown, which has both high unemployment and a large army base, a high proportion of Friday evening casualties involve army personnel fighting over these weekend *affaires de coeurs*. Hospital personnel are specially warned of the dangers of accidental blood infection from wounds from these particular army fights. This Trojan Horse phenomenon should be regarded along with the virgin myth (cf. page 29).

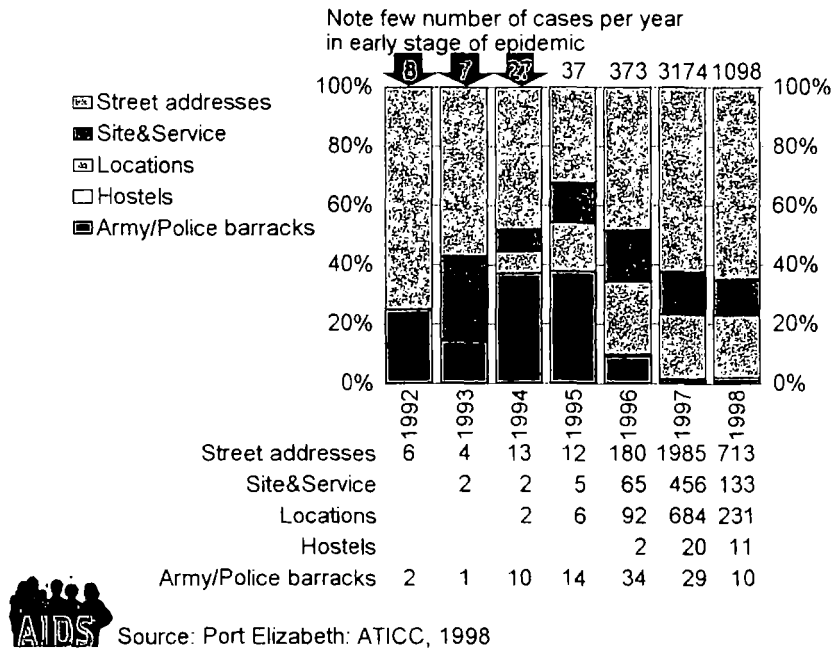

Figure 6: Sites of infection over time.

There seems to be a double peak (1992,1995-6) in the accompanying surface chart, suggesting that the Army was already infected and then, after 1994, was again infected, possibly following the incorporation of liberation group cadres in the integration of the SANDF. One should particularly note the high proportion among the very small number of the early cases. The police force are a secondary, minor source which are included in this group.

The prison population is a similar group in terms of sex composition (not included here) but the national figures according to the Minister of Correctional Services are climbing rapidly from 6,789 in 1997 to 10,047 on July 31st 1998, an increase of almost 50% in one year.[15]

The street level

The epidemic on the street level reveals high concentrations which is also a new—if not surprising—finding for South Africa HIV incidence.

[15]As cited in the *Daily Dispatch* (17 October, 1998): 4, col 1.

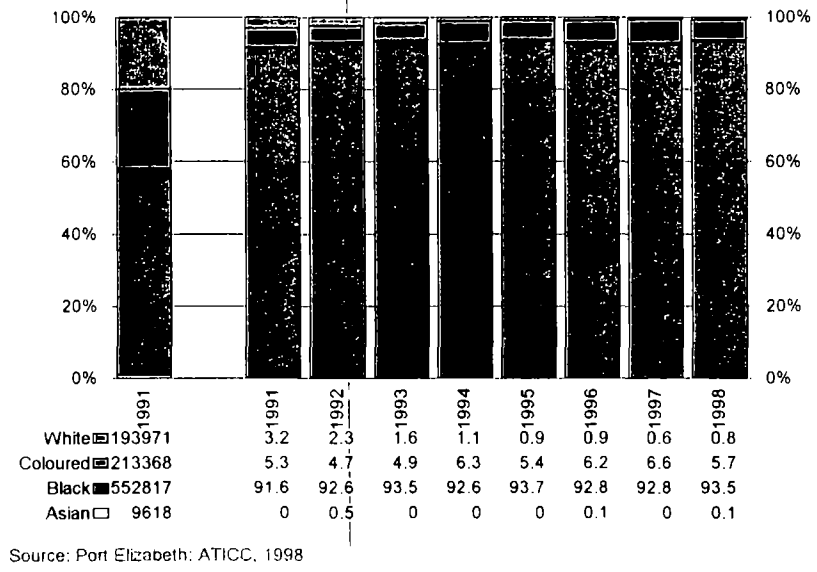

Figure 7: Ethnic composition of HIV positives measured against the population at large.

Rendering the data in both space and time reveals further insights. One urban community had only six diagnosed cases between 1988 and 1997 and then, suddenly—in the space of fifteen short months—had over three hundred cases diagnosed. This might not reveal infection rates but rather a community belatedly waking up to the epidemic. How many unaware neighborhoods are there out there which need a wake-up call?

The clan level

All one can say (respecting the absolute privacy of positives) is that on certain streets there are more HIV positives than rate payers. Whole households are infected as are—sad to say—clans and family networks. We need anthropologists to understand this process. See following figure "Percentages of positives in clan groupings")

Some cultural factors in the transmission of HIV

What is immediately apparent is that the HIV is located predominately in the African sector of the population. The Asian population hardly registers on the accompanying graph and one may note that the first Asian woman has yet to die of AIDS in Region A. The European population proportion of positives is declining. So too is the coloured proportion of positives. The African

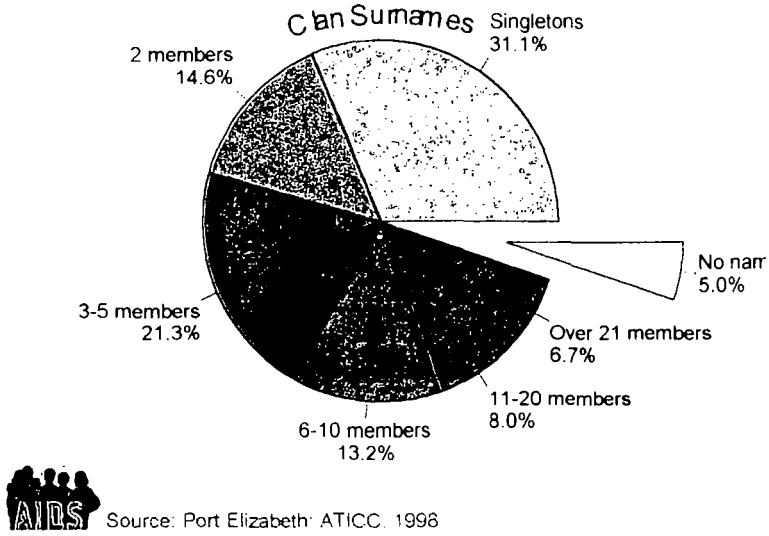

Figure 8: Percentages of positives in clan groupings.

proportion, however, is increasing and one may say that in five years the epidemic will be purely African as the other positives in the other ethnic groups will have died. There is no "ethnic" explanation for this pattern, of course, only the simple fact that the poorest and most illiterate members of our society are in the African population.

Nuptiality rates and traditional marriage patterns

Because of the high unemployment and long-standing general poverty in the Eastern Cape there are some indications that *lobola* (bride wealth) prices can no longer be raised as easily as formerly which has resulted in lower nuptiality rates (fewer people entering marriage) and some falling away of traditional marriage patterns and practices. Young men can no longer afford to get married and young women, faced with diminished chances of a formal, traditional marriage, are moving into the urban areas earlier and more frequently, regardless of whether they can get a job in the formal sector.

There are also some indications that the youth revolt following the Soweto uprisings in 1976 had sexual repercussions in terms of a more liberal set of attitudes and less strict sexual mores.[16] The net result of these developments has been a drop in the age of first intercourse and an increase in

[16]I am grateful to Les Bank for this insight and look forward to his published work on this topic.

high risk sexual behavior, both of which are causes for the acceleration of the epidemic. Traditional practices such as *ukumetsha* (making love without penetration—intercrural sex) have fallen away to herald an era of a free, but most dangerous, love.

There is a tragic irony here in that South Africa should have its sexual revolution at the same moment in which the world's most dangerous viral STD should make its appearance. Some fundamentalist religious groups have rather uncharitably leaped on this coincidence and rendered it into a moral consequence and even "Divine Retribution". As Barry Schoub concludes somberly "Religion may well become a factor which exacerbates the disease."[17] One can only hope that religious groups can unite and beat a common path to their historical rôle as sick comforters. They will be sorely needed and appreciated.

Sex Workers

Not all love in Port Elizabeth is free. One ex-worker in ATICC in Port Elizabeth claimed there were three types of sex workers in Port Elizabeth. First, are the unmarried female sex workers who regularly have HIV tests. They are concerned to demonstrate to their clients that they are free of HIV. In fact they are sometimes refused repeat tests because of the expense of the ELISA test. They typically work at night from their homes or off the streets. Second are the married sex workers who are reluctant to come forward for any testing. They work during the day off the streets and return to their spouses in the evening. Third are the notorious "rent boys" who serve homosexual or bisexual clients and work off the streets in their clients' motor cars. Some of the latter have more than 200 contacts per year. They have steadfastly refused to come forward for tests or to meet in AITTC-sponsored gatherings.

Circumcision

There is an unsupported and controversial hypothesis that the Xhosa practice of circumcision might be responsible for slightly lower rates of infection in the Eastern Cape compared to Natal. Studies on the association between absence of male circumcision and HIV infection elsewhere in Africa indicate that a small increase in efficiency of HIV transmission caused by a factor very

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[17]Barry D. Schoub, *Aids &HIV in Perspective: A Guide to Understanding the Virus and its Consequences* (Cambridge: Cambridge University Press, 1994): 214-215.

common in a population (e.g., male non-circumcision) can effect a large increase in HIV seroprevalence over the long term. Evidence exists which suggests that male circumcision reduces a man's susceptibility to HIV infection, potentially explaining part of the wide geographic and population-level variability observed in HIV transmission in Africa.[18] It would appear that male circumcision might reduce the risk of HIV transmission.[19]

Researchers have suggested that the surface epithelium of the glans develops a protective keratin layer following circumcision which functions like a natural condom against contracting sexually transmitted diseases. Circumcised males may therefore be less susceptible to contracting both STDs and HIV.[20] Studies suggest that the HIV virus has a better host in the uncut and therefore unhardened epithelium prepuce of the penis. Zulu men, who have the highest seroprevalence of males in South Africa, are all uncircumcised. The extent of the epidemic in the Eastern Cape has not been well enough monitored to accept or reject this hypothesis, but there is a considerable body of research in Africa which is consistent with this hypothesis.[21] If circumcision does retard the epidemic, the proper supervision of the circumcision ritual and/or its routine inclusion in hospital procedure (and perhaps eventual universalization at birth?) could significantly impede the epidemic in the uncircumcised provinces and their sub-populations, a solution which—one could confidently assert—would be culturally sensitive but would provide an inexpensive and "natural" prophylactic for the nation's population as the epidemic expands.

Virginity and HIV

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[18]D.J. Dingman, "Circumcision reduces risk of HIV infection. Conference coverage (Vancouver)" *Sex Weekly Plus.* (1996, Sample No): 13.

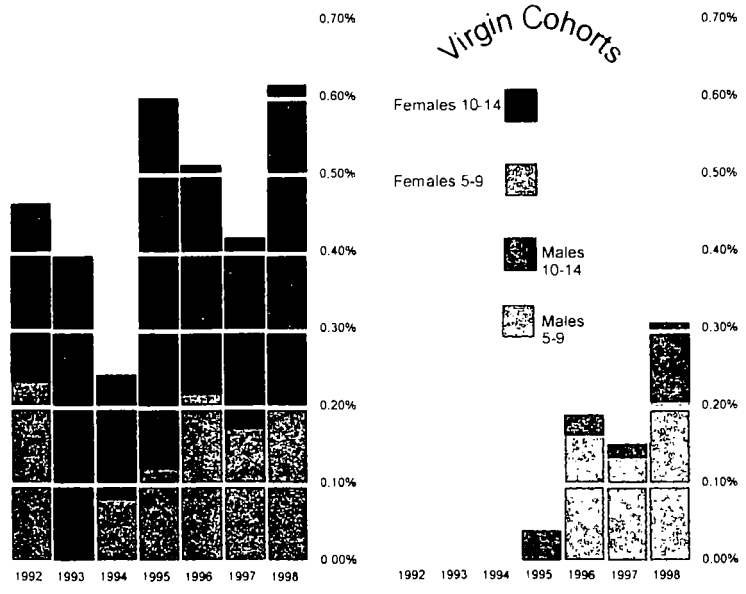
[19]S. Moses, F.A. Plummer, J.E. Bradley, J.O. Ndinya-Achola, N.J. Nagelkerke, A.R. Ronald, "The East African AIDS epidemic and the absence of male circumcision: what is the link? Forum. Male circumcision and the AIDS epidemic in Africa." *Health Transition Review* (1)5 (1995 Apr):100-3; J. Bongaarts, P. Reining, P. Way, F. Conant, "The relationship between male circumcision and HIV infection in African populations." *AIDS* 3, **6** (1989 Jun): 373-7.

[20]I. de Vincenzi, T. Mertens, "Male circumcision: a role in HIV prevention?" *AIDS* 8, **2**(1994 Feb):153-160.

[21]H. Piechowiak, "AIDS. Less risk for the circumcised [AIDS. *Beschnittene weniger gefahrdet]" Fortschritte der Medizin.* 106, **33** (20 November 1988): 8-9.

There is also a dangerous myth, the prevalence of which has to be investigated for the Eastern Cape, namely that sexual intercourse with a virgin will "cure" HIV/AIDS. According to a cited United Nations International Children's Fund (UNICEF) study, African girls aged between 9 and 15 years are five times more likely to be infected with HIV than boys of the same age.[22] One can see how this myth evolved. Adults, who fear their peers may be infected with HIV, turn to children who are presumed free of HIV; but some desperate HIV positives have come to believe sleeping with a virgin girl will actually cure them. In the Eastern Cape, the equivalent figure is larger. A girl in the virgin age grouping (5-14 years) is more than eight times more likely to be infected than her male counterpart (see following table). Even in the 5-9 year cohorts girls are more likely to be infected.

[22]C. Sebunya, "Child-abusers face mob justice," *Aids Analysis Africa,* 6,**3** (1996 Jun): 15.



Source: Port Elizabeth: Aids Training, Instruction and Counselling Centre (ATICC), 1998

Figure 9: Virgin cohorts over time

	Females	***Males***	***Total***
5 to 9 years old	26	17	43
10 to 14 years old	50	6	56

Robert Dorrington, one of the country's actuarial experts on HIV, has observed that this finding might reflect the enhanced perinatal survival of females to HIV infection.[23] Against this, one should note that HIV infection in these sexually inactive cohorts has grown from zero percent in 1991 to almost one percent of the total in 1998 (see figure, page 29).

Some commentators have pointed out that there has been an increase in reports of child abuse since 1994. Some have argued that the receptivity of the new ANC government to issues of gender is responsible for this. Race is also an issue here. Before 1994, it would be unlikely for a black person to complain to a local white authority about child abuse. Perhaps an additional explanation for the increase in reports of child abuse and rape is, in part, the effects of belief of this diabolical myth.

[23]Personal communication, September, 1998.

Conclusions

The main findings suggest high and even sensational regional clustering of HIV positives within the poorest and most marginal communities of Region A. While there is some anecdotal evidence that the trucking routes along the National roads are important vector corridors of the epidemic both into the cities and into the periurban and perhaps into the rural areas, there is overwhelming evidence that there are also internal urban sites of infection which I have dubbed Trojan horses. Army bases especially at Forest Hill and Grahamstown were instrumental in spreading the epidemic in its incipient stage. It is obvious that the diagnostic process lags far behind the spread of the epidemic. In overall terms, it seems true to claim that we have yet to begin coordinating a program of intervention for this most deadly of epidemic in the poorest province of our country.

Policy recommendations:

1. Since there are few cost effective medical interventions, and significant behavioral change is an elusive and unlikely long-term solution, suggested interventions such as medically supervised male circumcision might slow the progression of the AIDS epidemic even if the full benefits only accrue to the next generation. A multi-generational approach is necessary, as work has shown that even in the United States there has emerged a new generation of HIV positives who have forgotten (or never learnt of) the otherwise successful HIV awareness media campaign of the late eighties. This would suggest that authorities such as the House of Traditional Leaders might have to take a more effective role in popularizing and supervising safe circumcision rituals, perhaps training the existing practitioners (*iingcibi*) and perhaps facilitating their inclusion in the medical health profession to the level of paramedics. Practices like the cherishing of virginity and *ukumetsha* should also be encouraged not, of course, on moral grounds but for personal survival.
2. Every community in the Eastern Province needs a public relations wake up call and opportunities made available for counseling centers and the expansion of the AITTC clinics into remote areas, both urban and rural. There is no counseling facility at Umtata, for example.
3. Every highway should have a billboard every 100 kilometers. Every entrance to every town, city, village or settlement should have an AIDS awareness billboard in English and Xhosa.
4. A school competition might be launched for the design of AIDS awareness posters, billboards and bumper stickers. This will promote awareness among the younger generation of artists and learners. A suitable bumper sticker might be "Are you HIV aware? No? Positive?"
5. The newly developed saliva test (rejected by the WHO) should be re-investigated as it provides huge advantages for an area such as the Eastern Cape. It is inexpensive, fast and avoids all the reluctance which all people everywhere have towards the drawing of their blood. The University of Pretoria is currently doing trials on the saliva test. Perhaps AITTC centers (PE, East London and Queenstown) could be sites for an expanded testing program. Municipalities should make funds available for

more extensive testing. Regrettably, Port Elizabeth testing funds have been drastically reduced for the year 1999.

6. Mobile testing units should be deployed in the rural areas with some incentive scheme for farmers to release their workers for tests and to enable pretest counseling. These should be done in the Eastern regions of the Province as a top priority.
7. The Province might want to consider a week-long anonymised death scan for certain selected sample areas. By this is meant that every person who died within one week in one area be tested for HIV and their age, sex, socioeconomic group and ethnic status be recorded. This would be a statistically reliable way to estimate incidence. Antenatal studies are conducted anonymously.
8. Policymakers should develop an algorithm for health providers to use to advise mothers about the relative benefits and risks of breast-feeding concerning HIV transmission. Preventative efforts should focus upon promoting safe sex as well as encouraging the safest and best manner of infant feeding.
9. A central provincial registry of HIV data needs to be established. A uniform, case level, data form needs to designed which can be integrated into existing GIS systems. What is needed is a data capture screen for hospital PCs. One PC per hospital should be dedicated to the capture of data. The Population Research Unit believes it can host an HIV Surveillance Unit which could be ultimately based at the Health Resource Center in East London.
10. Data capture clerks need to be trained on site.
11. An archiving policy needs to be established.
12. Needlestick injuries may be minimized by the new sheath syringe developed by a Somerset West firm