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*It's Everyone's Problem: HIV/AIDS and Development
in Asia and the Pacific*

AIDS in Melanesia

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Executive Summary

There has long been reason to expect a major heterosexual AIDS epidemic in PNG and probably in the rest of Melanesia. Socially and behaviourally Melanesia is strikingly similar to other areas of the world with serious AIDS epidemics. High levels of other sexually transmitted infections (STIs) indicate behaviour patterns that would also facilitate the transmission of HIV. STIs also act as cofactors for HIV infection. Low levels of male circumcision parallel the situation in other epidemic areas. Near parity by sex in cases reported so far in PNG is evidence that primary infection is largely heterosexual. Such an epidemic, by affecting males and females equally and by infecting children around the time of birth through vertical transmission from seropositive mothers, impacts on the whole society. The late start of a major epidemic in PNG can probably be attributed to the relatively small aggregation of people in urban centres (even Port Moresby has fewer than one-quarter of a million people), a highway system that does not network across the whole country, the limited size of the commercial sex sector, and possibly the absence of chancroid to act as a cofactor.

The situation is now changing. HIV infection, mostly concentrated in Port Moresby and mostly measured there, has been rising by about 60 per cent per annum over the last four to five years. This rise appears to be genuine and, if sustained, would infect 10 per cent of PNG's adult population in little more than a dozen years. Such exponential rises have been witnessed in some countries of sub-Saharan Africa.

The aim should be to take early action so that such a situation does not develop. Essential elements in such action would include the following. (1) The development of a much more comprehensive surveillance system for both HIV/AIDS and STIs supported by a population-based sample survey program. (2) An educational and informational program with high-profile government leadership. (3) An efficient condom distribution program that reaches such high-risk groups as commercial sex workers and adolescents and provides commercial sex workers with sufficient support to ensure use. (4) A major campaign against STIs which would probably have to include both mass medication over short periods and routine clinic treatment. (5) Care and support workers including where possible persons with HIV/AIDS. (6) The encouragement of large companies, especially foreign ones, to provide employees and their families, or whole communities, with comprehensive health services, including comprehensive HIV/AIDS and STI services. (7) A strengthening of the public health system to meet these challenges. (8) Sufficient external technical assistance to make these aims possible.

The Solomon Islands and Vanuatu have so far been protected by their small populations and small urban areas (their capitals have populations of 50 and 20 thousand respectively). The greatest threat to them is likely to come from a major epidemic in Port Moresby or in PNG as a whole.

We have known for almost as long as HIV/AIDS has been identified that Melanesia was in danger of a serious AIDS epidemic. One reason is that the mode of HIV transmission is (apart from ensuing vertical transmission from mother to child) almost entirely heterosexual. The evidence for the mode of transmission is derived both from information collected from seropositive people, and from a sex ratio (male/female) of infected persons, of close to one. Heterosexual epidemics place almost the whole

community in danger instead of segments of it, as occurs when the predominant mode of transmission is homosexual or by intravenous drug injection. Homosexual transmission is entirely male and everywhere intravenous drug users have a male majority. Thus the heterosexual epidemic of sub-Saharan Africa exhibits a sex ratio of 0.81 (earlier believed to have been near 1.0) and that of Papua New Guinea (PNG) a ratio around 1.0. This compares with other countries with largely heterosexual epidemics, Thailand with a ratio of 1.4, India 1.7, the Caribbean 1.7 and Cambodia 2.0, and contrasts with areas where other modes of transmission are important, Europe 2.9, Latin America 3.0, North America 3.9, East Asia 7.0 and Australasia 12.6 (UNAIDS 1999). Parity between men and women in infection does not mean equally high-risk sexual activities, because transmission from males to females during an act of sexual intercourse is about three times more likely than from females to males. Sub-Saharan African figures will often be cited in this report because we have more information about the epidemic there than other heterosexual epidemics.

The other reason is that sexual intercourse outside marriage is treated fairly tolerantly in Melanesia, as it is in sub-Saharan Africa, much of Southeast Asia and in many developed countries. Treating female premarital and extramarital sexual relations as a heinous sin has meant an unenviable position for women in much of the Middle East and North Africa, but it has provided a defence against AIDS: half the countries of the Middle East and North Africa record adult seroprevalence levels below 0.04 per cent (UNAIDS 1999). Melanesia is more sexually permissive, as was recorded by Malinowski (1929) three-quarters of a century ago. Such permissiveness can make HIV infection more likely, and has long made sexually transmitted infections (STIs) more likely, now a serious matter in that they may act as cofactors for AIDS. In the first decades of the twentieth century the islands of the Melanesian archipelago were noted for high STI levels, and PNG still has among the highest levels in the Western Pacific (WHO/WPRO 1999: 24). Levels are also high in Vanuatu (Vanuatu MOH/WHO 2000) and doubtless too in the Solomons.

The AIDS epidemic was first identified anywhere in 1981 although HIV transmission on a considerable scale must have been occurring for some years previously. Within

a few years it was located throughout most of the world. Nevertheless, it also began relatively slowly in some places only to spread rapidly in later years. Thus HIV/AIDS levels in Southern Africa were until the early 1990s well behind East Africa but are now the highest in the world (Caldwell 1997: 172). Anderson's models of heterosexual epidemics predicted that some of the later, more slowly moving epidemics would eventually surpass the earlier, faster moving ones in terms of the proportion of the population infected (Anderson 1988; Anderson *et al.* 1991). There is some evidence of this pattern in Nigeria where adult HIV levels were well under one per cent until the mid-1990s, but now exceed five per cent.

HIV/AIDS levels in Melanesia

In spite of early fears for the safety of Melanesia, HIV/AIDS was not detected until 1987 and levels have so far remained low. There are signs now that this situation may be changing, at least in Papua New Guinea. Before examining the evidence it should be noted that the database is insecure. Indeed, one of the most pressing needs for Melanesia is more adequate HIV/AIDS surveillance.

The periodic UNAIDS global surveillance reports omit countries with small populations, with the result that the most recent report (UNAIDS 1999), like earlier reports, lists for Melanesia only PNG and Fiji. It records an adult (15-49 years) HIV/AIDS level of 0.22 per cent in PNG and 0.07 per cent in Fiji (compared with 0.15 per cent in Australia and 0.06 per cent in New Zealand). The US Census Bureau (2000) lists seroprevalence levels for a greater number of countries. It subdivides them into low-risk and high-risk populations and by residence in the capital (or major) city and elsewhere. This is somewhat inconvenient, but it should be remembered that the UNAIDS estimates are based on the same measurements tied together by modelling assumptions about the relative levels of these groups and their weight in the population. 'Low-risk' means the general population and 'high-risk' refers to persons attending STI clinics or employed in commercial sex. High-risk groups' seroprevalence levels can give a warning about the direction in which the epidemic is moving, but even in a stable situation their levels are usually well above those of the general population. There is, however, no general rule. For instance in the Namibian

capital the levels are approximately equal, while in Mali the level found in high-risk groups is seventeen times that in low-risk groups. Similarly, seroprevalence levels are usually higher in urban than rural areas but the ratio between the two may decline over time. In Zimbabwe, tested rural areas (which may not be representative) record a higher level than the capital, Harare, whilst in Rwanda the urban-rural ratio is three to one. Once the WHO AIDS program modelled an urban-rural ratio of ten to one, but in sub-Saharan Africa (but perhaps not in Melanesia) those times are past. The US Bureau reports are also of value because they give the data sources.

The US Census Bureau (1999) provides the greatest detail on the Pacific but most data refer to the first half of the 1990s when WHO was pressing for information, and when most countries provided the seroprevalence levels of their blood donors to represent the general population. Only PNG provided any data from outside the capital, and there a seroprevalence level of 0.0 per cent was recorded. Among the low-risk populations of the capitals, zero levels were recorded in the Cook Islands, Fiji, French Polynesia, Marshall Islands, Micronesia, Palau, Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa, 0.1 per cent in Guam, Kiribati and New Caledonia, and 0.2 per cent in PNG. Only five countries provided information on high-risk groups in their capitals, and seroprevalence levels were zero in Palau and Tonga, 0.1 per cent in Fiji, 1.9 per cent in PNG and 3.0 per cent in French Polynesia. All that one can conclude is that in the early 1990s HIV/AIDS levels were low in the Pacific, but that the greatest area of concern was PNG and possibly the rest of Melanesia about which little was known or is yet known, bearing in mind that Melanesia constitutes almost three-quarters of the Pacific's population.

The cause for alarm arising from HIV/AIDS statistics is the rise in PNG of reported HIV and AIDS cases, especially over the last four years (WHO/WPRO 2000: Table 4). Reported new HIV cases increased between 1989 and 1994 from 17 to 69, only to rise in the next four years from 69 to 634, and appearing as if they would exceed 1,000 in 1999. AIDS cases increased from 6 to 26, and then 232 in 1998. The HIV cases appear recently to be rising exponentially by almost 60 per cent per annum, and, if unchecked, could reach several thousand new cases per annum in a few years' time.

Much depends on the extent to which notification has been tightened. In this situation it is impossible to construct real projections. The so-called WHO/WPRO (2000: Table 7) projection for 2003 showing 650 new AIDS cases in that year must be considered linear and conservative.

There has been surveillance at times in antenatal clinics in Port Moresby and Popondetta, in STI clinics in Port Moresby, Goroka and Mt Hagen, and in the armed forces (AusAID 1998). It may well be that the epidemic is at present largely confined to Port Moresby and the armed forces but the limited surveillance system makes it difficult to be certain.

Very recent figures appear to modify this picture (Malau 2000). The steep upward trend in HIV cases reported from 1996 to 1998 slackened in 1999 so that fewer than 800 new cases were reported. However, new cases reported during the first quarter of 2000 were 25 per cent higher than in the previous year and back again on the earlier trend line. During the first three months of 2000, new cases were reported in 11 of PNG's 20 provinces and since the beginning of the epidemic cases had been reported in every province. Nevertheless 69 per cent of the cumulative cases and 72 per cent of the new ones were in the National Capital District.

These new figures do not make the task of constructing projections for the future of the epidemic any easier. The following conclusions are warranted. (1) Trends over the last four years suggest that a major epidemic, perhaps exceeding levels in Thailand and Cambodia, is possible, and even probable. (2) Epidemic levels of HIV/AIDS are already found in Port Moresby, especially among the poor and migrants into shanty areas. (3) A pattern found elsewhere, and one likely to be followed in PNG, is one where the disease first takes hold in the country's major urban area and then spreads from there, facilitated by circular migration. (4) Papua New Guinea's epidemic is the most advanced in Melanesia, both because of the country's relatively large population and because of the size of its capital. (5) There is now sufficient likelihood of a major epidemic to warrant a strong effort to combat

its spread. This is not a conclusion that could have been reached even two or three years ago.

The last conclusion does not rest on surveillance evidence alone. It would be made with less assurance were there not strong cultural and social evidence that features of Melanesian society strongly resemble those of other societies which have been susceptible to heterosexually transmitted AIDS epidemics. This can be shown by summarizing the situation in sub-Saharan Africa, the world's largest AIDS epidemic, one that is almost entirely heterosexual, and the one about which we know most.

Caldwell (2000: 120) summarizes the conditions of the acute epidemic in East and Southern Africa as follows. It has been made possible there by the combination of the following factors. (1) There is a good deal of sexual activity outside marriage, either premarital or extramarital sexual relations. (2) A significant amount of this sexual activity involves persons having more than one sexual partner during a relatively short period of time. This is partly promoted by the existence of polygyny which implies that men have a biological need for more than one woman. (3) A significant amount of male sexual activity is with prostitutes, who, because of their large numbers of partners, are likely to be characterized by above-average HIV levels. This situation is aggravated by migration to towns or mining or plantation areas, both because the migrants are usually men unaccompanied by wives and because they earn wages and have ready money in these places. (4) There is a significant level of STIs, which are caused by the same conditions that facilitate an AIDS epidemic and which act as cofactors promoting HIV transmission. (5) There is a poorly resourced health system which is incapable of keeping STIs at a low level. (6) There is much poverty which, at the individual level, makes cheap commercial sex readily available, and, and the national level, makes it impossible to provide adequate medical services. (7) The transmission of HIV is facilitated by most males being uncircumcised and it is this situation which characterizes those African populations where HIV/AIDS levels are highest. The social science evidence as to the situation in PNG in these respects is summarized in the remainder of this report.

Why Melanesia may be susceptible to a major AIDS epidemic

The evidence is that PNG's risk of a major AIDS epidemic depends on its level of high-risk sexual activity. Almost 90 per cent of HIV transmission is attributed directly to heterosexual relations and a further 10 per cent to resulting vertical transmission from mother to child. It is claimed that 99 per cent of all blood used in transfusions is tested (Jenkins and Passey 1998: 241) and that, although there is widespread use of marijuana, there is little intravenous drug injecting (Jenkins and Passey 1998: 238). Although ritual homosexuality has been reported at length, anal sex is believed to be of very low incidence compared with vaginal sex. The only evidence throwing any doubt on this model is the fact that there is a small predominance of men recorded as seropositive or having AIDS in contrast to the significant predominance of women in the African epidemic.

In explaining the African AIDS epidemic Caldwell *et al.* (1989, 1992) followed Goody (1976) in regarding the ancient agrarian societies of Asia and the Mediterranean as being anomalous in their fierce control of women's non-marital sexual activity, with the aim of preserving the inheritance of land and social position. This has not occurred where land is communally owned and where there is shifting cultivation or garden cultivation.

The evidence seems to be that the societies of the Pacific and some of Southeast Asia resemble those of Africa in having a more relaxed attitude to sexual relations, and having experienced an increasing amount of premarital and extramarital sexual relations. One of the reasons that sexual prohibitions are more relaxed is the existence of polygyny. This has two effects. One is the implication that men need multiple female partners. The other is the necessity in polygynous societies for men to marry late so as to create a surplus of women available to be the second and third wives of older men. The proportion of PNG wives in polygynous marriages appears to be lower than in most parts of sub-Saharan Africa (Demographic and Health Surveys: various dates). In addition the duration of postpartum sexual abstinence by wives is shorter in PNG than in most of sub-Saharan Africa.

Nevertheless, there is abundant and uncontested evidence of a good deal of sexual activity in PNG outside marriage (Hammar 1998; Jenkins and Alpers 1996; Koczberski 2000; UNICEF 1995: 26; NSRRT and Jenkins 1994). NSRRT and Jenkins (1994: 119ff.) reported the number of lifetime sexual partners averaged by men rising from around ten during adolescence to over 20 by 60 years of age, and the number of different sexual partners during the previous year as having been above one for over 50 per cent of both men and women. They warn that there may be biases in the data, but levels well below these would sustain a heterosexual AIDS epidemic.

Most research emphasizes a high level of teenage sexual activity and a low level of condom use during such activity. Adolescent boys are driven by peer pressures to feel that they cannot lose any opportunity for sexual relations (Jenkins and Passey 1998: 237), and adolescent girls feel that they will not acquire or retain boy friends without sexual relations (Jenkins and Alpers 1996).

Male initiation rites were characterized by anal sexual relations among male groups spread widely across Melanesia (Herdt 1982, 1984; Allen 1984). Such sexual activities were apparently not subsequently common, and, in any case puberty rituals have been declining.

In PNG there has always been a transactional component in most non-marital sexual relations. Strictly commercial sex has increased only with paid wages and with migration to towns, plantations and mines. Brothels, in the Southeast Asian sense, are still rare, and even prostitutes renting a room for their business, as in Africa, is not the pattern (Hammar 1998: 275 ff.; Jenkins and Passey 1998: 236). The growth of prostitution followed the construction of the Highlands Highway and the opening up of the Ok Tedi mine (NSRRT and Jenkins 1994: 97). One reason for the availability of women for commercial sex is that the women involved are usually not condemned by their families as long as their earnings are shared (Jenkins and Passey 1998: 236). Even in such high-risk relationships condoms are reported to be used on only 7 per cent of occasions (WHO/WPRO 200: 66).

The same conditions that are now giving rise to the AIDS threat were previously responsible for an STI epidemic (Hammar 1998; Hughes 1997; Jenkins and Passey 1998:242 ff.; Lemeki *et al.* 1996; Passey 1996; Govt. of PNG 1998; WHO/WPRO 1999, 2000). There is no doubt that this epidemic is little more than a century old, and hence the STIs are characterized by greater virulence than in developed countries. The first epidemics were in the islands and on the coast around the turn of the nineteenth and twentieth centuries (Hammar 1998: 260-261). The Highlands syphilis epidemic of 1969-1970 was a product of the building of the Highlands Highway (Hughes 1997: 238-239). There are no traditional words for STIs in the Eastern Highlands (Lemeki *et al.* 1996: 240) and probably elsewhere. The STI epidemic appears to have peaked in the late 1980s but this may be an artefact arising from deteriorating surveillance (Jenkins and Passey: 242 ff.). WHO/WPRO (1999: 24) shows most STIs to be at a higher level in PNG than elsewhere in the Western Pacific region although, in the case of syphilis, Cambodia rates equally. Ulcerating STIs, probably the most dangerous cofactors for HIV/AIDS, are common, especially Donovanosis (granuloma inguinale), which is now rare outside PNG, lymphogranuloma venereum, syphilis, genital herpes and impetigo (Wilkey and Johnson 1971: 28; Kuberski *et al.* 1978; Richens 1985; Hudson *et al.* 1994). A hopeful contrast with East and Southern Africa appears to be the relatively low level of chancroid. STI levels appear to be high also in Vanuatu (Abel and Kaun 1998; UNFPA 1999; Vanuatu Ministry of Health and WHO 2000) and in the Solomons, although the latter appears to have surveillance problems (Lovi and Osuga 1998: 300; Sarda and Gallwey 1995: 39). High levels of STIs have probably been the cause of lower levels of fertility in PNG than might otherwise have been anticipated (Collins 1988; Jenkins 1993).

PNG is a developing country with only a limited amount to spend on health, and this explains the inability of the health service to effectively combat STIs and to carry out adequate surveillance. Health expenditure as a percentage of GDP peaked in 1981 and 1982 at 3.6 per cent and had fallen by 1994 to 2.3 per cent. As a percentage of the budget, it peaked in 1985 (PNG Department of Health 1996: Table 3.1).

Koczberski (2000: 62-63) says that health services are declining. In the developing

world as a whole, 4 per cent of GNP is spent on health; in Melanesia that figure is equalled by the Solomon Islands, while PNG spends 3 per cent and Vanuatu 2 per cent (Ahlburg 1996: 15). During the period 1974-1983, STI levels appear to have increased in spite of a national program against them (Lombange 1984), before the rise ceased in the late 1980s. Nevertheless, Edwards concluded in 1994 that the health service was in crisis. Subsequently, the situation has reversed once again with real expenditure per capita rising by 27 per cent between 1996 and 1998 and projected to rise by almost 50 per cent by 2000 reaching almost four per cent of GNP.

Lack of male circumcision has been shown to be associated with a greater risk of HIV transmission (Bongaarts *et al.* 1989; Moses *et al.* 1990; Caldwell and Caldwell 1993). Melanesia compares with the main AIDS belt of East and Southern Africa in that most ethnic groups did not traditionally circumcise males. In the *Ethnographic Atlas* Murdock (1967) listed 30 PNG ethnic groups and classified them as 27 not circumcising, one circumcising and two with no information. Morris (1999: 964) adds that foreskins tend in PNG to be well developed. On the other hand there are also reports of the recent spread of non-traditional types of circumcision and of foreskin laceration (NSRRT and Jenkins 1994: 28).

There is also uncontested evidence that sexual activities can be accompanied by a substantial degree of violence in Melanesia (Dinnen and Ley 2000), in PNG (NSRRT and Jenkins 1994: 102; Hammar 1998: 268-269; Jenkins and Passey 1998: 238; Banks 2000; Borrey 2000; Garap 2000; Koczberski 2000: 61-62) and in the Solomons (Burslem *et al.* 1998). Violence is reported in both marital and non-marital relations. PNG hospitals often treat vaginal tearing (Borrey and Kombako 1997). Rape, including the traditionally sanctioned payback rape, and pack rape are all reported. Clearly, this raises the chance of bleeding during sexual relations and heightens the likelihood of HIV transmission. There is a related male dominance in sexual relations which means that women have only a limited possibility of insisting on condom use even in commercial sexual relations.

What is the situation and what might be done?

A comparison is possible between the social conditions set out earlier in the report for the East and Southern African AIDS epidemic and the conditions described in Papua New Guinea and Melanesia more generally. There are clearly close parallels, in sexual activity outside marriage, multiple and parallel sexual partners, a high level of STIs and a lack of male circumcision. The incidence of commercial sex, especially institutionalized in brothels where prostitutes have large numbers of partners, is less developed in PNG, even in Port Moresby, than in African cities. This may explain the relatively late appearance of the epidemic in PNG, and may provide PNG with a degree of protection. On the other hand, it does mean that the continuing growth of Port Moresby presents dangers. The weak condition of the health system in the effort to control STIs also has parallels although PNG's health infrastructure and STI clinic system are probably stronger than those of the majority of sub-Saharan countries. The high levels of STIs are significant because, not only are many of them cofactors for AIDS, but their existence at this level is a strong indicator that the social system is probably conducive to an HIV/AIDS epidemic. PNG is also poor, but the only sub-Saharan African countries with incomes as high are found in Southern Africa: in South Africa, Botswana, Zimbabwe and Namibia. These comparisons are not as reassuring as they might seem because the worst AIDS epidemic in the world is in fact in these Southern African countries comparable in per capita income and health infrastructure with PNG. However, some observers have suggested that the high income levels of southern Africa promote the spread of AIDS through the level of commercial activity and especially through the highly developed road system and the density of road transport. Thus, PNG may receive some protection from its mountainous terrain and the fact that the whole country is not connected by highly trafficked road systems.

What should be done? To answer that question I will draw on a model I have put forward for countering the African epidemic (Caldwell 2000). Its components are the following.

1. There is need for penetrating and sustained educational and informational programs about the dangers of AIDS. Most sub-Saharan Africans have known

for some years now that AIDS inevitably kills and that the likelihood of being infected is associated with commercial sex and multiple sexual partners. This situation has been more delayed in PNG.

Where education is insufficient in sub-Saharan Africa is at the level of individuals and the media. AIDS is regarded as a mysterious and sinister disease and AIDS deaths are rarely discussed. Even when people attend funerals the cause of death is rarely identified by anyone as being AIDS. Newspapers publish Health Department or UNAIDS reports but do not identify by name or picture persons who have died of AIDS. This is in keeping with a culture of silence about deaths which may have a supernatural component, and is also in keeping with a culture in which it is difficult for males and females, or parents and children, to discuss sexual relations. My impression is that the PNG situation has strong parallels but does not go as far as the African situation. If this is so, then PNG should take advantage of this difference. For similar reasons, African AIDS sufferers do not 'come out' in the sense of revealing their condition, and thus the campaign against AIDS loses the chance of having a particularly effective form of leadership. It has been calculated that, of South Africa's 3 million seropositive persons, only 30 have been willing to reveal their condition. If there is less reluctance in PNG, the opportunity should be grasped because seropositive people provide the kind of campaign leadership that no one else can. Doubtless, many of the same problems met in Africa will also be encountered in PNG.

2. Nothing can substitute for strong government leadership. Political leaders at the highest level should be willing to discuss the epidemic and to say what can be done about it in public and through the media. In Africa such leadership has been provided by the head of state only in Uganda and it is probably no coincidence that this is the only country where HIV levels are definitely falling.
3. As with all other disease, there should be a recognition of reality, in the case of AIDS of actual sexual behaviour. In Africa much time and many lives have been lost by aiming for an impossible ideal, usually described as 'the Christian

marriage', where all sexual activity takes place within marriage. The fact is ignored that many who give lip service to such a precept do not practise it and do not feel that they are physically capable of practising it.

4. HIV/AIDS epidemics, like other epidemics, can be controlled often by relatively minor declines in the transmission rate so that each new case infects on average less than one further person. This often means identifying a few situations where transmission is more than usually likely and reducing the transmission rate in these situations. Where sexual behaviour does not change, the main chance of reducing transmission lies in the greater use of condoms. If their use is to be increased steeply there will have to be a great deal of education about the need for their use, a plentiful supply of them at all times, and a cost – probably subsidized – within reach of all. It is important to negotiate with religious and other groups not to undermine the campaign. There are two circumstances where condom use may be particularly important in reducing rates of HIV transmission and so curbing the AIDS epidemic. The first is in commercial sex. This is important in Papua New Guinea because of the demonstration that the HIV level in high-risk groups in Port Moresby is several times that found in the general population. Evidence from elsewhere shows that prostitutes are usually pleased to be supported by outside pressure to use condoms both because it renders sexual intercourse safer and because it renders relations with strangers less intimate (Varga 1997). The other area where there is a high risk of unsafe sex is among teenagers. Every report on sexual activity in PNG shows that adolescents are at high risk because of frequent sexual activity, a desire for different partners on the part of boys, a lack of sophistication about the likely need for condoms, and circumstances which militate against their obtaining condoms. Even in those African countries where governments have instructed that family planning and STI clinics should provide condoms to everyone requesting them, the staff are often reluctant to serve adolescents, and adolescents are accordingly very likely not to use these facilities.

5. Any adequate AIDS program will have to be based upon and guided by an efficient HIV/AIDS, and preferably STI, surveillance system representing the whole country and addressed to both the general and high-risk populations. Probably the general surveillance system will be largely based on antenatal clinics where clients come from the whole local population; here there are problems because seropositive women are less fertile than seronegative women and so less likely to be attending such clinics (Caldwell 1997: 176). Such a surveillance system will have to be supplemented by periodic surveys with HIV testing in order to relate the clinic information to all women and the situation among women to that among men. It is assumed that there will also need to be a centralized registry of the testing results from STI clinics and from systematic periodic testing of prostitutes.

6. There should be a major initiative against STIs, both because there is new-consensus as to their importance as cofactors for HIV transmission and because PNG levels are so high that such a campaign could be justified by its reduction of suffering from STIs alone. The longitudinal epidemiological study in Tanzania showed such a campaign to have been effective in lowering HIV levels (Grosskurth *et al.* 1995; Hayes *et al.* 1995). Conflicting evidence has come more recently from Uganda (Wawer *et al.* 1998, 1999), but the rival groups now appear to think that the failure in Uganda arose from the fact that it was a long-established, mature epidemic (Grosskurth *et al.* 2000). The PNG epidemic is, of course much less mature even than the Tanzanian one and provides a good prospect that a major campaign against STIs would limit the spread of HIV/AIDS. Probably a successful campaign in PNG would need both an initial mass-treatment campaign combined with high-level, ongoing clinic treatment (Korenromp *et al.* 2000).

Are there successful models which PNG might note?

Notice might be taken of at least three models.

1. The campaign to reduce new HIV infections as a result of homosexual relationships in Australia from 1984 was probably the most successful

program in the world, resulting in a steep decline in new infections. The success of the program has been the subject of several analyses (Dowsett 1990, 1993, 1999; Ballard 1998). At first it was believed that the major factor was a reduction in the levels of anal intercourse but later research appears to have shown that the main factor was greatly increased use of condoms. Success against HIV transmission depended on several conditions. The first was a new self-confidence among homosexuals, which had greatly strengthened within the previous few years. There was a new willingness to recognize their own sexuality and to discuss it. This meant that there was a willingness when the AIDS epidemic arrived, to discuss themselves as a community in particular danger and willing to take immediate steps to protect themselves. The second, and related, condition was a willingness to organize and publicize, and a readiness to accept help from the government or any other source. In return, they believed that they should not be victimized and that informational campaigns should not vilify them.

The nearest potential parallel in PNG is the teenage community. Assistance may have to be provided so that teenage groups can organize their own leadership, recognize their sexual culture, and distribute condoms. There is obviously some contradiction between providing assistance and developing their own leadership and *esprit de corps*, but gifted individuals probably can do it. It is doubtful whether schools provide the right channel.

2. In Thailand a threatening AIDS epidemic has been halted by focusing on brothels (Phoolcharoen *et al.* 1998). These are in theory illegal and this made the task easier. Health inspectors attempted to enforce the availability and use of condoms in all commercial sex relationships and threatened police action, to close down the premises if they found the management or the prostitutes defaulting on the provision and use of condoms.

The situation has proved to be more difficult in Africa because of the less institutionalized nature of commercial sex, but various local adaptations of the Thai approach are beginning to have some success. The difficulties are still greater in Papua New Guinea because of even less institutionalization of

commercial sex, but the rewards in the form of slowing the epidemic would be so great that there is strong justification for a great deal of effort in finding adaptations suited to PNG.

3. A number of foreign firms in the West African countries, Ivory Coast and Nigeria, have provided for their employees and all members of their families comprehensive health services which include STI and HIV testing, STI treatment and the provision to any family members of contraceptives, including condoms, without questions being asked or other family members being informed. The result has in each case been a decline in STI levels and HIV infections (Caldwell 2000: 122-123).

This could be translated to PNG in two ways. First, foreign companies could be encouraged to provide such services, and secondly, the public health system could experiment with those aspects of the approach that were found to be transferable to their own work.

Summary

There is an increasing level of HIV/AIDS in PNG and possibly elsewhere in Melanesia. The mode of transmission is heterosexual and lessons should be sought from other heterosexual epidemics, mainly in sub-Saharan Africa but also in the Caribbean, Thailand and Cambodia.

A serious AIDS epidemic in Melanesia has long been considered likely because of strong similarities between the sexual cultures of Melanesia and those found in other countries with heterosexual epidemics. HIV was detected in PNG as early as 1987, and the failure of an HIV/AIDS epidemic to quickly evolve can probably be explained by low levels of urbanization, a relatively small capital, and the fact that road transport does not criss-cross the whole country. All these circumstances may still slow the development of a major epidemic, as may the limited size of the commercial sex sector.

Nevertheless, while the HIV/AIDS level is still low even in Port Moresby, the rapid increase in levels in the National Capital District over the last four years suggests the beginning of an epidemic. The data base is too small for meaningful construction of projections, although it might be noted that exponential increases of the type experienced in the last four years would engulf the whole country in a decade or two. Certainly, the recent increases in Port Moresby and the identification of cases across the country mean that it would be wise to begin constructing an efficient preventive system in the immediate future.

That system would have to be guided by a comprehensive and sustained surveillance network. Constituents of the system would be more comprehensive testing and treating of STIs, the continued provision of AIDS education, and the massive availability of condoms.

The success of any program will depend on conspicuous government leadership at the highest level with leaders being prepared not to be swayed by sectional interests or ideologies. It will also need grass-roots leadership with a prominent role being played by HIV/AIDS sufferers. Such an approach will have to be posited on cultural reality and not on idealized sexual relationships.

At the earliest opportunity steps should be taken to experiment with methods for breaking the chain of infection. Two early foci should be infection in commercial sexual relations and the problems of unprotected teenagers.

This report has been addressed to stopping the epidemic. Nevertheless, a comprehensive AIDS program would have to have provision for caring for the infected and for AIDS orphans, destigmatizing the situation of AIDS sufferers and their families, providing support groups for these people, and probably the use of drugs to reduce vertical transmission.

What happens in the Solomons and Vanuatu depends both on what happens in PNG and on the growth of their own urban centres.

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