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HIV as Part of the Lives of Children and Youth as Life Expectancy Increases: Implications for Education

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Abstract

The education sector is crucial to any national response to the world epidemic of HIV and AIDS. The school age years, about 5 to 15 years, make up the cross section of any population with the lowest prevalence of HIV infection. This is the "Window of Hope", and education is the social vaccine against HIV infection. Now, with effective anti-viral treatment increasingly available, the number of infected children of school age is rising through increased survival. Schools must adapt to having more such children in class. Furthermore, there will be many infected and affected children, orphans and vulnerable children, who will not access formal education, or not fully, and the path to education must be made easier for them. We are able to predict a rise and then a fall of the school age numbers, but new preparations must be made for these young people to adapt to their adult lives, living with HIV. All such school and educational responses must take the developmental stages of children and their emotional needs into account.

The Global HIV Epidemic and Children and Youth[1]

HIV infection is a human infection by a type of virus called a retrovirus, and it is in the nature of this type of virus that each individual's infection is permanent. The infection acts on the immune system over months and years, eventually leading to a condition that was named in 1981 as AIDS, the Acquired Immune Deficiency Syndrome. HIV is the cause of AIDS. The HIV epidemic continues to grow. The most recent UNAIDS estimate is that at the end of 2006, there were 38.6 million people living with HIV. The global prevalence among adults remains about 1%, although there is great variability among countries, and the

[1] The authors are grateful to Diane Melvin of the Department of Clinical Psychology, St. Mary's Hospital, London, for discussion and help with the psychological literature.

number infected has increased from 34 million to 36.3 million from 2003-2005. There is a common misconception that only sexually active adults are affected, but, largely through transmission from mothers, HIV infection is an increasingly important disease of children. The number of children living with HIV increased from 2.1 million to 2.3 million from 2003-2005 (UNAIDS 2006). For this reason and because this number is expected to grow, all in the education sector must acquire some knowledge of the condition.

The Education Sector Response to HIV

In recent years, the education sector has come to play an increasingly important role in the prevention of HIV. Bundy (2002) described the paradox of HIV and education, that education can prevent HIV infection, but HIV and AIDS can damage and even destroy education systems. The preventive role of education is, firstly, in teaching children from the earliest school, age-appropriate knowledge of the existence of HIV and AIDS and, secondly, in providing age-appropriate life skills to protect themselves. Evidence suggests a crucial, further preventive effect of education, as young people who have spent longer in school are less susceptible to infection (Kelly 2000). However, teachers are, like other adults, susceptible to acquiring the infection, often without knowing it. As their immune systems are progressively destroyed by the virus they become absent from work through sickness. This is likely to be followed, in the absence of treatment, by permanent absence and eventually death. In high-prevalence countries, many schools have become so understaffed as to be abandoned. Initiatives to secure effective prevention and treatment for educational staff, and to protect their employment, are a vital part of the education sector's response to HIV and AIDS. These issues have been approached quantitatively using modelling (Jukes & Desai 2005; Grassly et al. 2003; Risley et al. 2007).

Children of school age have the lowest prevalence of infection and, even in the worst affected countries, the vast majority of schoolchildren are uninfected. For these children there is a window of hope, a chance of a life free from HIV and AIDS, if they can acquire the knowledge, skills, and values to help them protect themselves as they grow up. To provide young people, especially girls, with the social vaccine of education is to offer them a real chance of productive life (See Bundy 2002).

Discussion of these established issues is highly accessible through the references cited. In this paper we wish to consider, from the point of view of the educator, newly-emerging ideas arising from the most recent knowledge of the state of the epidemic, and the changed situation we now face thanks to the rapidly increasing access to effective medical treatment for children and young people who carry the HIV virus.

Reaching School Age

Young children acquire HIV infection from their infected mothers in the process of being born, and from their mothers' breast milk. Although a few children become infected

through medical misadventure, usually blood transfusion with inadequately screened, infected blood, or even as a result of sexual abuse, infection transmitted from the mother is far more common. From the earliest observations of HIV infection in children in the 1980s, it was clear that some teenagers were still alive even though it was at birth that they had acquired their infection. Although these children were surviving, they were usually stunted in growth and showed a history of frequent illnesses throughout childhood. They were also affected neurologically, with learning difficulties and slowed intellectual responses (Aldrovandi 2005).

These teenage survivors, though, were the minority of infected children. In general, children do not live as long as adults after their infection with the virus, and they do not have the years of hidden, or symptom-free, infection that adults enjoy. The natural history of HIV infection acquired at birth is that many infants die within the first year, especially from the age of three months. After this first year, the cohort of children who have survived is subject to steady attrition. By five years, many will have perished, but those surviving longer will be a distinct group in whom the disease's progression is slower, although they will have characteristic opportunistic infections, poor growth and some degree of brain impairment, and they too will lose members steadily, year by year.

Therefore, from the earliest observations of the epidemic, there have been infected children reaching school age. However, this does not contradict the description of the school-age years as the "window of hope" (Bundy 2002). In any population with a high prevalence of HIV infection, the age cross-section with the lowest prevalence will be the school age, say 5 to15 years. Only a few of the children who acquired infection prenattaly have arrived alive at this age, and sexual acquisition for those who were not infected at birth, in general, has not yet begun. Prevention targeted here has been the main focus of an effective preventive strategy, "education, the social vaccine".

Now, however, we are entering a new phase in the development of the epidemic among children and adolescents, the age of at least moderately effective treatment with anti-viral drugs, together with wider availability of this treatment. Prolonged, in fact indefinite, survival is the principal effect of anti-viral drug treatment. The therapy is by a combination of drugs, nearly always three, given once or twice every day, which inhibits the replication of HIV through different molecular targets. This treatment, *h*ighly *a*ctive *a*nti-*r*etroviral *t*reatment or HAART, was introduced in the care of children around 1995 in North America and Western Europe. Within a year or two the effect was clear to all physicians and nurses involved, the dying stopped. The attrition of the cohort of infected children by irreversible opportunistic infection and death ceased, and almost all who were alive, in whatever state of health, at the beginning of HAART, remain alive.

In countries such as Botswana, where a very high prevalence of HIV infection has been combined with relatively well-resourced treatment and a concerted, focused campaign by the government to make this treatment available to all who need it (UNAIDS 2006), we can now anticipate that in the first decade of the 21st century we shall be seeing what we have seen in industrialised countries, the same phenomenon of the surviving cohort moving into, and through, the school years. Schools will need to make some adaptations to this. At

the same time we need to remember that HIV infected children will not be the majority in the classroom. The Window of Hope will be changed rather than obliterated.

The cohort of infected children starts at birth, but the rate of new recruitment at this point is not expected to remain constant. When a mother is identified in her pregnancy as infected with HIV, interventions are available that will make transmission of her infection to her child far less likely, thus greatly increasing the child's chance of reaching adulthood without the virus. With optimal intervention, the probability of infection in infancy is reduced 30-fold, from about 30% in the most adverse conditions and with no health service intervention, to about 1% in the most favourable conditions and with optimal intervention. Even in conditions where neither the social organisation nor the health service is that of a mature nation, a 10-fold reduction may be realistic (Newell 2001). It follows that as health services succeed in spreading prevention of mother-to-child transmission (PMTCT), entry to the cohort of infected, growing children will diminish, and that, five to seven years later, the number entering school will also diminish. Meanwhile, the older children living with HIV will be entering their adolescence. This phenomenon has been noticed in Europe. In sub-Saharan countries, even in the absence of effective PMTCT, some diminution in the HIV prevalence of infants after the initial peak in adult prevalence is to be expected. This is because infant prevalence reflects the prevalence in pregnant women; and this diminishes through mortality of young adults generally. This is discussed more fully in the section on Epidemiological Considerations, below.

Condition of the Child Ready for School from an HIV Affected Home

Those who care professionally for families in which at least one member is infected with HIV commonly speak of HIV *affected* children and a distinct subset of these, *infected* children. The simple point is that a child does not need to have the virus in their body for profound effects on their health and wellbeing to occur. However, for the child who is infected, there will, of course, be extra health effects specific to malfunction of their immune system.

The child who is born to an HIV-positive mother but who has escaped infection through birth or through breast milk is described as an affected but uninfected child (the majority of children born to HIV-positive mothers, since where 30% acquire the infection it follows that 70% do not). The mother is likely to be unwell and the process of pregnancy, birth and lactation often accelerates her own illness (Nduati et al. 2001). She is likely to have acquired her own infection from her husband or partner, the child's father, and he is often physically ill and may also be in emotional turmoil. These circumstances affect the wellbeing of the child. The poverty of the home is also increased. Expenditure on care increases while income dries up. The child faces orphanhood as the parents' infection progresses. The child is also progressively burdened with providing care for himself, for the sick parents and for other children who are now deprived of adult care.

Is it possible to give a general picture of the HIV affected child starting out in class at the age of, say, six or seven years old? There will not be any feature specific enough to

identify such a child, but sadness, poverty, wariness, lack of engagement and poor attendance are likely. There will probably be other causes for the same characteristics in the same community, so teachers should avoid drawing conclusions beyond having sensitivity to all the possibilities. The description of this child is that of one who is vulnerable to stigmatization and isolation within the community of young children. The infected child is, in addition, likely to be small for their age, often with mildly inflamed skin and dull hair. They may have frequent cough, often loose and bubbly, and a tendency to suffer from diarrhea. Infected children have a range of intellectual abilities, like all children, but HIV infection does affect cognitive function, and on average there is delay in development. (Blanchette et al. 2002; Wolters & Brouwers 2005)

Barriers to Starting School for the HIV Affected Child

The effects of HIV on a family are not so specific that they are wholly different from other causes of child vulnerability: poverty, family strife, community violence and other chronic disease such as tuberculosis, which is, itself, closely related to HIV infection within communities. The road to education in the standard school system meets blockages at many points for the HIV affected or infected child, as with other vulnerable children. These could be categorised as (1) within the child, through impaired health, including impaired development, and through emotional stress; (2) within the family, including the child but adding the dynamics of the family's function as a group; (3) within the community; (4) within the school system and the school.

Before exploring these, we should examine critically the simple, hackneyed metaphor of the road to education, above. The visual image is of a single path, however thickly strewn with obstructions. A truer picture is of paths branching like a tree, with each branch diverging before a barrier, a single route going through to sustained education in the standard school but many other destinations at the ends of other paths. Such destinations include domestic servitude, membership of a street gang, alternative acquisition of skills, informal apprenticeship, oblivion through solvent abuse, trading any asset such as sexual availability, true self-education, begging, seeking help from faith-based organisations, survival through crime. The list is deliberately presented without ordering in morality or social utility. The developing young person has increasing, even if only partial, autonomy in choice, so this will have some effect on the road taken. This means that the young person is not a passive subject of planning, but must be approached as a partner in the educational system.

Furthermore, pursuing the metaphor, it is not enough merely to clear the barriers on the one route to schooling. New barriers need to be built on the paths that lead to the least desirable alternative places, while some of the more promising alternative paths leading to alternative forms of education need to be explored too.

This cannot be done entirely by the education sector. Concretely, it is not reasonable that the principal of a school, who wishes to play a part in making education more accessible to the more peripheral young people in a community, should be spending his or her time out

on the streets reducing the availability of solvents or other drugs. However, there must be community representation for educators on whatever group or council takes part in community governance. This group should work to reduce the counter-attraction of alternatives to education such as drugs, while the educators perform their role in increasing the attraction of education.

For examples of the obstructions to education within the family, the community and the school, see the more extensive discussion in World Bank (2006).

Probably through habituation, educators often lack perception that certain groups are targets of EFA (Education For All). A teacher may routinely encounter street-children on the way to work without reacting that they should be in school, or at least have some access to education. Similarly, a teacher may know of a girl taken in by a family, perhaps even their own family, who has become a domestic help but has not been given any education. EFA cannot be said to have been achieved if such children are deprived of educational access.

Life in Class

The way the child is affected. Within the school there is often stigmatization and discrimination. This is especially so with HIV from a fear of infection coupled with a lack of understanding of the disease. However, infection is not the only cause of discrimination; more fortunate children often sense vulnerability in their companions and pick on victims. School may become less appealing for the child. Unfortunately, teachers and other pupils may not be sensitive to the needs of the vulnerable child. Without protection, these children may drop out of school.

For the infected child, attendance is also likely to be affected by bouts of illness, leading to frequent and sometimes prolonged absences. This should occur less often when children are on HAART, in fact the child may be thriving and show no sign of illness at all. But things do not always go so smoothly. Because children often miss doses of medication, because they have failed to swallow the dose or because there has been miscommunication among several carers, or because their diagnosis is being kept secret, among many other reasons, they may well have only partially suppressed viral replication, and the frequent mutations of replicating HIV may have led to drug resistance. Often when suppression of viral replication is only partial, children nevertheless are less sick than they would be if they were not on anti-viral treatment at all. However, they are subject to complications and absence from school.

Both in school and in a troubled home, the child is having emotional reactions which must not be forgotten. The child may withdraw, feel shame or dwell on the situation. Their concentration and work at school will suffer. Children are especially likely to show physical symptoms that are an attempt to resolve their emotional conflicts, because of immature symbolic expression of their thoughts and feelings.

The perspective of the teacher, infected or uninfected, on or off treatment. In high HIV

prevalence countries, many teachers are infected. Increasingly, teachers have access to anti-retroviral drugs. There will be many classrooms in which a teacher on HAART is instructing pupils on the way in which good blood cells keep bad viruses suppressed and how taking medicine helps the good cells to be on top in the war, while knowing that something similar is happening, and perhaps sometimes failing to happen, in his/her own body. Because of the association of HIV infection with anger, confusion and denial on the part of adults who know their diagnosis, it is impossible to predict the average response to this on the part of teachers, although the range of responses will certainly be wide. Research on this would be difficult, but it could be valuable.

Life Out of Class, or Out of School

Teachers need some sensitivity to the difficulties that HIV affected children face. The pupils are often from impoverished households where sickness, tiredness and a sense of sadness pervade. Children will be affected in their interactions with peers, for example in play. Play is important for development, as teachers have classically been foremost in recognising. The sensitivity of teachers can only be enhanced by in-service training and workshops designed to promote awareness. In workshops for education administrators conducted as part of the "Accelerating the Education Sector's Response to HIV/AIDS" (through IATT, the Inter-Agency Task Team of the World Bank and UN Agencies), colleagues have had the task of planning their ministry's response to opening access to education to vulnerable children. They have always given such sensitising workshops high priority as part of their planning. This is clearly based on their experience, e.g. as focal points on HIV issues, and this experience must be respected by outside agencies.

Epidemiological Considerations

Since its inception in the early 1980's, the HIV epidemic in sub-Saharan Africa has progressed through several phases. The main factors governing the timing of the phase transitions are the infectious nature of HIV, its long incubation, and as a sexually transmitted infection (STI), its high dependence upon behaviour for its transmission. In each country, the initial phase is one of epidemic increase, reaching a peak, which happened in the 1990s for most countries. Some time about 10 years into the epidemic, deaths begin to surpass new infections and prevalence declines. There was often a subsequent shift in behaviour due to the surges in mortality experienced by the population, further lowering incidence. Where aggressive prevention campaigns have been successful, e.g. in Uganda and Kenya (Hallett *et al*. 2006), prevalence continues to decline. Where prevention campaigns have been more unfocussed, e.g. Tanzania, prevalence is expected to gradually increase. Where HAART use has succeeded in becoming the norm, as in Botswana, prevalence is expected to undergo a dramatic increase, while deaths from AIDS will undergo an attendant decrease.

In this new era where the use of HAART is rapidly becoming universal in some sub-

Saharan countries, new challenges accompany the triumphs of universal access and dramatically declining AIDS mortality. In the context of the current paper, increasing access for HIV positive mothers to effective PMTCT drugs is set to decrease the number of HIV positive children being born, while use of ART for children is set to allow increasing numbers of those born with HIV to survive into adulthood. A case study for this phenomenon is Botswana, where ART use in adults has recently increased to 90% in a short space of time. (UNAIDS 2006 update) If PMTCT and provision of HAART to children requiring it proceeds in a similar manner, the number of HIV positive children in school and surviving to sexual maturity will initially be boosted and later, decline, as the source of this population, perinatal acquisition of HIV, is cut off by effective PMTCT. Steps should be taken to plan for the expected increase in both HIV positive children, and school age children taking drugs to suppress their infection. In particular, steps should be taken both to reduce stigma and support treatment adherence in the school setting.

As this cohort ages, special attention should be paid to adolescents, who are at risk both of discontinuing treatment, thus boosting their infectivity, and of engaging in risky behaviour for the first time as they make their sexual debut. The result could mean ongoing transmission and further increases in prevalence.

Modifying Health and Nutrition Education in Schools with Children Living with HIV

Health and nutrition education for all children. Skills-based health education is one of the four pillars of FRESH, Focusing Resources on Effective School Health and Nutrition. (www.schoolsandhealth.org/FRESH.htm) Life skills must be built on knowledge of human health, appropriate to the age and development of the child. Knowledge of HIV and the body's defences against viral infection is best delivered when incorporated into general health education and health promotion. The concepts upon which a child builds a sense of self and bodily health become elaborated as part of cognitive and emotional development (Melvin 1997).

The preschool child has no concept of the integration of the body; each body part appears independent. "Magical thinking" (Rosengren et al. 1994) is also characteristic of this age: the child believes himself to be the agent that causes changes in the external world. Two-year olds believe that by hiding the world behind their hands, they have made it disappear. Older children may associate hospitals and sickness in such a way as to believe that they go to hospital in order to get sick. They are especially prone to the belief that bad things that happen to them, such as sickness, are consequences of something that they have done wrong. Of course, traces of these beliefs persist in adulthood, and are especially relevant in a discussion of HIV infection. Teachers need to understand children's conceptions, while realizing that there may be some echoes of the same ideas within their own thoughts. If sickness is caused by the child's badness, as the child sees it, then treatment, such as unpleasant tasting medicine or blood tests, may reasonably be seen as a punishment. Reassurance can

be offered by explicitly addressing this in the family life education curriculum.

In the primary school stage, the child is developing a sense of the integration of different body parts and can integrate this anatomical knowledge with simple explanations of function. However, the integration is only partial and startling misunderstandings may suddenly surface. This is especially prone to happen in understanding sex. It is our common experience that primary school children have some interest in sex and that, in the absence of age-appropriate teaching, they will share their own conceptions and learn, or mis-learn, from each other. School-age children are also becoming more aware of prevention and are ready to learn about positive actions that will protect them.

Teenagers have a complete sense of their bodies as functioning systems. Their thinking is now more wide ranging, and they can understand both prevention and treatment for their long-term benefit. They are also more prepared for rational integration of both mind and body in health, and understand that physical symptoms may have psychological causes, or mixed physical and psychological causes, and vice versa.

Health and nutrition education specifically useful to the child living with HIV. Clinical psychologists who specialize in the care of HIV-affected children, especially HIV-infected children, have found that young children respond to the idea of protection within themselves. (Brown et al. 2006) For example, immune defences can be symbolized as a wall. The idea of being protected by a wall from something bad outside corresponds to a young child's concentric view of the world, with mother and home at the centre and a widening, but dangerous, world beyond into which they make forays. General health and nutrition education combine with specific HIV education to promote the idea of building and strengthening the wall. Nutrition, hygiene and desirable social behaviour can be integrated in giving the child a sense of power in building their defences generally. Anti-retroviral medication can be added into this as one more wall-builder. This is a more positive and encouraging approach than constantly emphasising the dangers of the pathogen, the virus, on the other side of the wall. Viruses and other parasites are often symbolized as snakes. Snakes have almost universal symbolic potency for humans, and the image is useful in learning, but teachers must be sensitive to young children's proclivity to ruminate upon things they fear.

The pooled experience of psychologists (American Academy of Pediatrics 1999; Lester et al. 2002) is that HIV-infected children can be told part of the story (the immune system and the virus) when they are aged 7 to 10 years. This is an age when children respond to concrete ideas (walls, snakes, etc.) and also understand rules. If they are instructed carefully they can keep personal information about themselves to themselves. Adults' fears about children's talking indiscriminately is a chief reason why young children are provided with no information whatever, but in reality this fear is not justified when clear instructions are given.

From 10 to 14 years the knowledge already imparted is not contradicted but is expanded and made more explicit. For the infected child, this is the time for explicit naming of the virus causing the infection as HIV, and for explicit information on the modes of transmission.

There is, in practice, great difficulty with this. Information for individual children can only come from their own families with the support of health workers, but class teaching can greatly help with general discussion of the subject. At the individual, family level, information is in a race with puberty, and there is no denying that the race is often lost.

Adherence to Anti-Retroviral Treatment. Adherence, or sticking to the treatment, has become a technical term and it is one of the greatest challenges (Steele & Grauer 2003) in the drug treatment of HIV infection. It means taking the prescribed dose of the three anti-retroviral chemicals, whether separately or in a combined tablet form, every day, seven days a week, currently usually both morning and evening. Young children are, of course, dependent on adults to ensure they do this. The task of getting tablets or liquid medicine into a young child can become more and more burdensome as the child associates the medication moments of the day with making a scene and suffering the provoked adult's response, often with both parties mutually reinforcing and escalating the other's response. Adolescents, however, become autonomous, but then they can exercise their autonomy in a rejection of the objective reality of their condition (Wallander & Varni 1998). They then stop taking medication. The phenomenon has long been well recognised in teenagers with diabetes. Control of blood sugar is often lost for a while in the adolescent years; it is not unusual for the young person to end up in hospital having failed to take their insulin. In Europe similar problems are increasingly recognised in youngsters on HAART for HIV (Hekster & Melvin 2005).

Teachers have a part to play in promoting adherence. This is not through medicating the individual child, but by promoting understanding of the reason for taking medication among the children, appropriate to their stage of understanding. The lessons can be given to the entire class, as part of family life education. Those children who are on HAART will understand the relevance to them, and indeed the fact that the teaching is being given to all will probably reduce the pressure they feel when they are being individually harangued by health workers or family members about their need for adherence to therapy.

Sex and family/future relationships for the adolescent living with HIV. Experience of many discussions with senior educators throughout Africa, often based on anonymous written questions (Cooper et al. 2004), has shown that educators at all levels are uncomfortable with public debate about the sexual activities of young people. It will not be easy to address the sexual needs of adolescents who are completing primary or secondary education and who have lived with HIV from their birth. The concept is likely to challenge teachers' assumptions on HIV and society and to provoke a dislocation of thought that must be faced and overcome.

For the infected child in Western Europe (Miah 2004), the naming of the diagnosis as HIV infection, "the AIDS virus", is targeted at a disclosure at age 11 years as optimal, coming after a gradual preparation and supported by the family. The naming of the infection by the mother or the closest family member is best, with a health worker, either doctor or nurse, as a possible but substandard substitute, working with the family. Experience has led to considering this to be best practice, and much of our evidence for this comes from

retrospective reflection by young people in their later teens (Mellins et al. 2002), describing what they would have found optimal. In practice, families often have great difficulty with the disclosure and beg for delay, and in practice, disclosure of the diagnosis to the young person often does come later.

Unfortunately, the mental development judged sufficient for this disclosure coincides with the physical change of puberty, with all the anxiety this brings and also the sexual urges that are stirring. The addition of learning one's diagnosis of HIV infection to one's altered perception of one's body leads to turmoil and confusion. Teachers need not only to address safe sex as part of family life education, but also consent, choice and self control. Jukes (Jukes, M. personal communication) has found in Kenya that adolescent boys have beliefs about the harm they will come to if they practise sexual continence that are entirely contrary to family life and health education.

Learning from Experience and Modifying Education as the Cohort Grows

Monitoring the children and the classes. Many schools in Africa have anti-AIDS clubs, approved and promoted by Ministries of Education. The effectiveness of these in preventing HIV infection is not known. As with so many health promoting activities, the "Inverse Care Law" may apply, in that it may be the pupils with the most developed life skills, most able to make choices and assertive enough to stick to them, who are the most active members of the clubs, while those who are truly most at risk fail to attend. A new role for the anti-AIDS clubs could well be to monitor, in partnership with teachers, the wellbeing of classes and the discussions arising from general health teaching and specific teaching on HIV. In this role the clubs would not simply be conveying approved messages to individual members, but would be acting in a communal way to support the more vulnerable children, without identifying them individually. This form of partnership between teachers and students, rather than the acceptance of a relationship based entirely on authority and instruction, is essential in order to engage the most distressed and vulnerable students.

Evaluation of modified curriculum. Modifications made to the curriculum to incorporate the reality that a significant proportion of the students are living with the HIV virus would need to be evaluated, again, without their being individually identified. Just as we recommend above that HIV facts should be taught as part of general health education in a manner appropriate to the developmental stage of the child's understanding, so we would advocate that evaluation should be through testing on the family life skills curriculum generally, but incorporating questions on HIV knowledge. In-service training of teachers and free discussion among teachers, which may often be difficult, should lead to feedback on the curriculum and new ideas to improve it. These will need to be conveyed by local administrators to the provincial and central focal points of the Ministry of Education.

Conclusions

In this paper we have attempted to provide a basis of knowledge, from a combination of health and epidemiological information, psychological findings and educational considerations, which will enable educators, especially in sub-Saharan Africa, to make preparations for a rapidly changing scene, with increasing numbers of HIV infected young people, many of them preparing to lead long, productive lives. Discussion of this paper could provide a basis for further enquiry, for exchange of views and for educational planning.

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