



ISSUES IN MEDICINE

Risk of HIV transmission during paediatric health care in sub-Saharan Africa

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David Gisselquist, John Potterat and Stuart Brody, writing recently in the *SAMJ*,¹ suggest that the high prevalence of HIV among infants and children in sub-Saharan Africa is a result of iatrogenic transmission of HIV, rather than mother-to-child transmission (MCTC). Earlier, the same group have suggested that unsafe injections are a major, if not the main, mode of transmission of HIV-1 in sub-Saharan Africa.^{2,3}

Certainly there are definite cases of unexplained HIV-1 infection in children.⁴ Hiemstra *et al.* have documented 14 cases of unexplained HIV-1 infection, 12 from the Western Cape and 1 each from the Eastern Cape and KwaZulu-Natal. Thirteen children (92%) had been hospitalised previously. Eight hospitals were identified in the Western Cape. Ten of 13 children had been admitted as neonates and 9 of 13 had had 2 or more admissions. All but 2 of the children had been subjected to intravascular cannulation and intravenous drug administration before the diagnosis of HIV. This is certainly circumstantial evidence of nosocomial transmission, but the authors do not necessarily regard this mode of transmission as responsible for most HIV-1 transmission in South Africa.

A study of safe injection practices in health facilities in Swaziland⁵ shows that although disposable syringes are always used in the health care facilities studied, there are certainly cases of unsafe injection practice that could lead to nosocomial infections with HIV and hepatitis.

So, the question remains — to what extent are unsafe injection practices responsible for transmitting HIV and other blood-borne diseases in sub-Saharan Africa? Gisselquist and his colleagues are quite convinced that this mode of transmission is so important that they are concerned that too much money will be put into safe-sex campaigns and not enough into ensuring sterile procedures and safe injection technique. However, George Schmid and colleagues, in reviewing the epidemiological literature, conclude that Gisselquist's group put too much emphasis on the role of unsafe injections in the transmission of HIV-1.⁶ Their

arguments hinge on a full examination of the Gisselquist group's assumptions.

The first of these assumptions is that unsafe injections are common in Africa, the Gisselquist group quoting figures of up to 50% of all injections being given with re-used needles. This figure is challenged by Schmid's group, who quote a figure of 18% in Africa. They point out that most injections in Africa are intramuscular, and that the amount of HIV remaining on a used needle in these circumstances would almost certainly be too small to cause infection. They also point out that simple sterilisation techniques, almost universally used where needles and syringes are reused, would decrease the chances of cross-infection still further.

Gisselquist *et al.*'s *SAMJ* article concentrates on paediatric HIV-1 infection, the main argument being that there are too many cases of HIV-1 among infants to be accounted for by vertical transmission alone. However, Schmid *et al.* identified 6 population-based studies on the prevalence of HIV-1 infection in sub-Saharan Africa that included children. These studies all found that the prevalence of infection in children aged 5 to 14 years — an age range that is less likely to have acquired the infection from their mother — was much lower than the prevalence in adolescents and adults aged 15 years or older. If injections were the major mode of transmission, the authors would have expected a much smaller discrepancy between HIV-1 prevalence in children and adults, as there is no evidence that children have fewer injections than adolescents and adults. They also point out that longitudinal studies show that seroconversion in uninfected children is rare, quoting a study in Uganda that showed only one seroconversion among 5 451 HIV-1 negative infants and children aged 0 - 12 years, followed up for 8 596 person-years. In Cote d'Ivoire, none of the children born to 266 persistently HIV-1 negative mothers seroconverted over 48 months of follow-up. Indeed, Hiemstra *et al.* found only 14 cases of unexplained HIV-1 infection in their recent survey, although more may be uncovered in later research.

Gisselquist *et al.* quote the results of a national survey of South African children⁷ and adults that suggested an unexpectedly high prevalence of 5.6% among 2 - 12-year-olds as being further evidence of transmission through unsafe injection. However, as Schmid *et al.* point out, there are many questions about the validity of the survey's findings, discussed by the survey authors but largely disregarded by Gisselquist's

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group. For example, there was no increase in prevalence of infection in children by age. The non-response rate in the survey was high because 29% of the listed visiting points and 37% of eligible respondents in the remaining households did not participate. The survey results are questionable in other ways; prevalence among children by race is the opposite of that shown by other surveillance and death registration data, and the HIV-1 pattern by provinces in the survey was also inconsistent with surveillance and previous research. The survey also provides no evidence that AIDS is nearly as important a cause of mortality among children and teenagers as the survey numbers would suggest.

When the Gisselquist group's first set of papers came out, they were reported by the world's media somewhat uncritically as evidence that unsafe sex was not the primary mode of transmission of HIV-1 transmission in sub-Saharan Africa. Already, the US Senate Committee on Health, Education, Labor and Pensions have held hearings to decide whether HIV/AIDS funds should be devoted to programmes that target unsafe injections rather than unsafe sex. The danger

of taking Gisselquist's research in an uncritical way is that it may lead to a reduction in the impact of the message that unsafe sex transmits HIV-1 — something for which the evidence is compelling if examined carefully and systematically. That is not to say that we should take no notice of the documented problems around the re-use of disposable syringes. But the emphasis should be placed purely on ensuring sterile technique, and scarce resources should not be devoted to research into the extent of nosocomial transmission of HIV-1.

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