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Lecture presentation

Prevention of breastfeeding transmission of HIV-1 by infant peri-exposure prophylaxis

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Transmission of HIV-1 by breastfeeding is responsible for at least 250,000 yearly acquired HIV-1 paediatric infections worldwide. However, it remains largely out of reach of short perinatal prophylactic regimens. All HIV-1 infected women eligible for highly active antiretroviral therapy (HAART), lactating or not, should be offered treatment for their own health, which will also reduce transmission to their babies. Recent studies suggest that residual transmission can occur through HIV-1 cellular reservoirs in breast milk of these women despite successful HAART. Prevention of breastfeeding transmission of HIV-1 from women non eligible for HAART remains a dilemma. Prophylactic maternal HAART restricted to the lactation period is an option. Peri-exposure prophylaxis (PEP) consisting in the administration of an antiretroviral (ARV) drug to the infant during exposure to HIV-1 through breastfeeding as a prophylaxis, is another option. Proof of concept studies (two randomised trials, PEPI in Malawi and SWEN in Uganda, Ethiopia, India as well as the observational cohort MITRA in Tanzania) have confirmed the efficacy of PEP in preventing transmission. Infant PEP regimen included nevirapine (NVP) for 6 weeks in SWEN, NVP or NVP plus zidovudine for 14 weeks in PEPI, and lamivudine for 6 months in MITRA. Part of the preventive benefit of infant PEP was lost if the babies were still breastfed and exposed to HIV-1 after prophylaxis was stopped. PEP regimens were associated with minimal side effects, but in the SWEN study, PEP failure was associated with a very high rate of NVP resistance in babies, which may challenge the first-line HAART regimen recommended as soon as infant HIV infection is diagnosed. PEP offers the potential advantages of sparing ARV exposure in women non eligible for HAART (avoidance of side effects and of selection of resistance), of being independent of HIV-1 reservoirs in breast milk, of being potentially cheap and easy to administer, and of allowing the promotion of optimal infant feeding practices to all women, regardless of their HIV status. These advantages have to be balanced with the risk of developing side effects in uninfected babies during extended exposure to the PEP drug and of selecting ARV drug resistant viruses in babies who acquire HIV-1 despite prophylaxis. PEP is a promising intervention to prevent breastfeeding transmission of HIV-1. More research is needed to identify the PEP drug regimen having the optimal benefit/risk ratio (including long acting drugs) and to synergise PEP with promotion of best practices of infant feeding.