Antiretroviral Resistance and HIV/AIDS in Developing Countries

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In the last one year combined efforts from international communities and national governments have led to a dramatic increase in the number of HIV-infected people in developing countries receiving antiretroviral therapy (ART). An estimated 700,000 people living with AIDS in developing countries were receiving ART by the end of 2004, an increase of approximately 75% in the total number receiving treatment from twelve months previously.

The rapid scale up in access to treatment in settings which lack skilled health-care workers and other critical infrastructure for delivery of care and treatment has led to a concern for the development of widespread antiretroviral resistance. Although data from developing countries are just emerging, indications are that there is no evidence to indicate that scaling up ART in these countries is leading to extensive increase of drug-resistant HIV strains. In Brazil, where triple therapy was introduced on a large scale since the mid-90s, the resistance to drugs is no higher than that reported by developed countries. Primary HIV-1 drug resistance has remained low in Cote d'Ivoire and Uganda which introduced ART therapy in 1998 as part of the Accelerating Access Initiative. In Asia, reports of prevalence of primary ARV resistance range from 1% to 8% of isolates.

One of the key factors in minimizing development of antiretroviral resistance is to ensure adherence to therapy. In many of these ART programmes, adherence to regimens is reported to be as high as 90%. Ensuring this high level of adherence require a combination of initiatives including designing regimens that are simple and well tolerated as well as good supportive services. Education and training of health care workers and the community are essential components of a good ART programme. In addition, continued low cost of ARV medicines and diagnostics and an uninterrupted supply of quality medicines are essential to maintain adherence to therapy.

At present much of the knowledge regarding ART susceptibility and resistance is from data from HIV-1 subtype viruses, the predominant circulating HIV-1 subtype in developed countries. In contrast, in most countries where rapid roll out of ART is currently occurring, infections are predominantly due to non subtype B viruses. The role these different subtypes play in the clinical response and development of resistance is still unclear. Reports to date have indicated that nearly all drug resistance mutations known in subtype B occur in non-B isolates, although polymorphisms unique to non-B isolates, some in drug resistance positions, are common in non-subtype B isolates. In addition, a few treatment-related mutations, rarely seen in subtype B, have also been identified. The major role that these different polymorphisms and mutations may have in the development of resistance to antiretroviral drugs

is as yet unclear.

As we continue to expand access to treatment, further knowledge of the role of these different subtypes and systems for surveillance of ART resistance must be developed and expanded through ongoing research and international collaboration.