HIV DRUG RESISTANCE

CONCEPT NOTE

SURVEILLANCE OF HIV DRUG RESISTANCE IN ADULTS INITIATING ANTIRETROVIRAL THERAPY (PRE-TREATMENT HIV DRUG RESISTANCE)

JULY 2014

World Health Organization

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ACRONMYS

ADR	acquired HIV drug resistance
AIDS	acquired immunodeficiency syndrome
ART	antiretroviral therapy
ARV	antiretroviral drug
ATV/r	atazanavir/ritonavir
AZT	zidovudine (also ZDV)
DEFF	design effect
DBS	dried blood spot
DRV/r	darunavir/ritonavir
EFV	efavirenz
HIV	human immunodeficiency virus
ICC	intracluster correlation coefficient
HIVDR	HIV drug resistance
INI	integrase inhibitor
LPV/r	lopinavir/ritonavir
mL	milliliter
NNRTI	non-nucleoside reverse transcriptase inhibitor
NRTI	nucleoside reverse transcriptase inhibitor
N(t)RTI	nucleotide reverse transcriptase inhibitor
NVP	nevirapine
PDR	pre-treatment HIV drug resistance
PEP	post exposure prophylaxis
PEPFAR	President's Emergency Plan for AIDS Relief
PI	protease inhibitor
PPS	probability proportional to size
PPPS	probability proportional to proxy size
PR	protease region
PrEP	pre-exposure prophylaxis
RT	reverse transcriptase region
SI	sampling interval
SID	survey identification number
VL	viral load
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session
WHO	World Health Organization

BACKGROUND

HIV Drug Resistance (HIVDR) emerges when HIV replicates in the presence of antiretroviral drugs. If HIV drug resistance becomes widespread, the drugs currently used to treat HIV infection may become ineffective. To date, levels of HIVDR in countries scaling up antiretroviral therapy (ART) remain manageable. However, resistance is slowly increasing. In East Africa, resistance rates of 10% to non-nucleoside drugs (such as nevirapine and efavirenz) have been recently described.

To maximize the long-term effectiveness of first-line ART and ensure the sustainability of ART programmes, it is essential to minimize the further spread of HIV drug resistance. Even in settings with optimal ART programme management, some degree of HIVDR is expected to emerge in populations on ART, and some HIVDR is expected to be transmitted to previously uninfected individuals. Therefore, WHO recommends that HIV treatment scale-up should always be accompanied by a robust assessment of drug resistance emergence and transmission. WHO's HIVDR monitoring and surveillance strategy is composed of five key elements:

i. Monitoring of Early Warning Indicators of HIV drug resistance
ii. Surveillance of HIVDR in recently-infected adult populations (transmitted HIVDR)
iii. Surveillance of pre-treatment HIVDR in adult populations initiating ART (pre-treatment HIVDR)
iv. Surveillance of acquired HIVDR in populations of adults and children receiving ART (acquired HIVDR)
v. Surveillance of HIV drug resistance in treatment-naive children less than 18 months of age

WHO's HIVDR Surveillance and Monitoring Strategy is a critical component of the public health approach to ART delivery. By obtaining population-level data on HIVDR in different populations, its various elements can inform programme-level decision making regarding, for example, optimal first and second lines, for both children and adults.

This document describes methods to assess HIVDR in adult populations about to initiate ART (surveillance of pre-treatment HIVDR).

Figure 1. HIV Drug Resistance Surveillance and Monitoring Strategy