HIV/AIDS Programme

WORLD HEALTH ORGANIZATION GLOBAL STRATEGY FOR THE SURVEILLANCE AND MONITORING OF HIV DRUG RESISTANCE

2012

World Health Organization

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ACRONYMS AND ABBREVIATIONS

ANC	Antenatal clinic
ART	Antiretroviral therapy
ARV	Antiretroviral
CDC	Centers for Disease Control and Prevention
DBS	Dried blood spots
DRM	Drug resistant mutation
EID	Early infant diagnosis
EWI	Early warning indicator
HIVDR	HIV drug resistance
LMIC	Low and middle income countries
LPV/r	Lopinavir/ritonavir
NNRTI	Non-nucleoside reverse transcriptase inhibitor
NRTI	Nucleoside/nucleotide reverse transcriptase inhibitor
NVP	Nevirapine
PEPFAR	President's Emergency Plan for AIDS Relief
PI	Protease inhibitor
PMTCT	Prevention of mother to child transmission
TDR	Transmitted drug resistance
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
VCT	Voluntary counseling and testing

INTRODUCTION

As of the end of 2011, more than 8 million people in low- and middle-income countries (LMIC) were receiving antiretroviral therapy (ART), up from 6.6 million in 2010 – representing an increase of about 20% *(1)*. This figure reflects a remarkable scale-up in the provision of ART from 400,000 people receiving it in 2003 at the launch of the "3 by 5" initiative. This dramatic increase has been attributed to multiple factors, including the use of standardized and simplified regimens and guidelines for initiation and monitoring of ART. Low- and middle-income countries have benefited from international donors such as the President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, TB, and Malaria. Recipient countries have committed to the expansion and strengthening of their health systems to provide universal access to ART.

Despite the obvious benefits that rapid scale-up has had on AIDS-related morbidity and mortality, the potential for widespread emergence and transmission of HIV drug resistance (HIVDR) to antiretrovirals (ARVs) has been a major ongoing concern of public health experts. In 2004, in response to this concern, the World Health Organization (WHO) created HIVResNet, a global network of over 50 institutions, laboratories, clinicians, epidemiologists, and other HIVDR experts to support development and implementation of a of global drug resistance surveillance strategy *(2)*.

In 2004, WHO and the United States Centers for Disease Control and Prevention (CDC), in collaboration with HIVResNet, developed a global strategy for the assessment and prevention of HIVDR. Components of the strategy included: 1) Formation of national HIVDR working groups in countries scaling-up ART, 2) Monitoring the quality of care in ART programmes using "Early Warning Indicators" of HIVDR (EWI), 3) Surveillance of acquired HIVDR at sentinel ART clinics, 4) Surveillance of transmitted drug resistant HIV in recently infected populations, 5) Designation, by national HIVDR working groups, of one or more HIVDR testing (genotyping) laboratories for HIVDR surveillance, and 6) Formation and maintenance of a national HIVDR database. Additionally the strategy included the development of a network of HIVDR genotyping laboratories that support public health surveillance.

As seen in the recently released WHO Global Report on HIV Drug Resistance *(3)* (July 2012) and in a recently published supplement in *Clinical Infectious Disease (4)* (May 2012), surveys using WHO surveillance methods have yielded valuable information about transmitted and acquired HIVDR in the setting of the rapid scale-up of ART. However, lessons learned from implementation of the WHO strategy and the realities of ongoing expansion of ART programmes suggested that parts of the strategy require updating. Therefore, WHO in consultation with HIVResNet updated its guidance on monitoring the quality of care in ART programmes related to HIVDR prevention using EWIs. Updates to guidance on surveillance of acquired HIVDR and surveillance of transmitted drug resistant HIV in recently infected populations were initiated. Additionally, new guidance on surveillance of HIVDR in children

less than 18 months of age and surveillance of HIVDR in populations initiating ART has been developed.

This document provides an overview of the different strategy elements, so as to inform its implementation in resource-limited settings. The guidance on the development and ongoing activity of national HIVDR working groups and the designation of WHO-recommended genotyping laboratories for drug resistance testing, as described previously remains unchanged *(5)*.

The updated 2012 global HIVDR surveillance and monitoring strategy (Figure 1) presented in this document summarizes a comprehensive package of HIVDR surveys that should be implemented in all countries scaling-up and maintaining populations on ART.

Figure 1. WHO 2012 HIV drug resistance surveillance and monitoring strategy