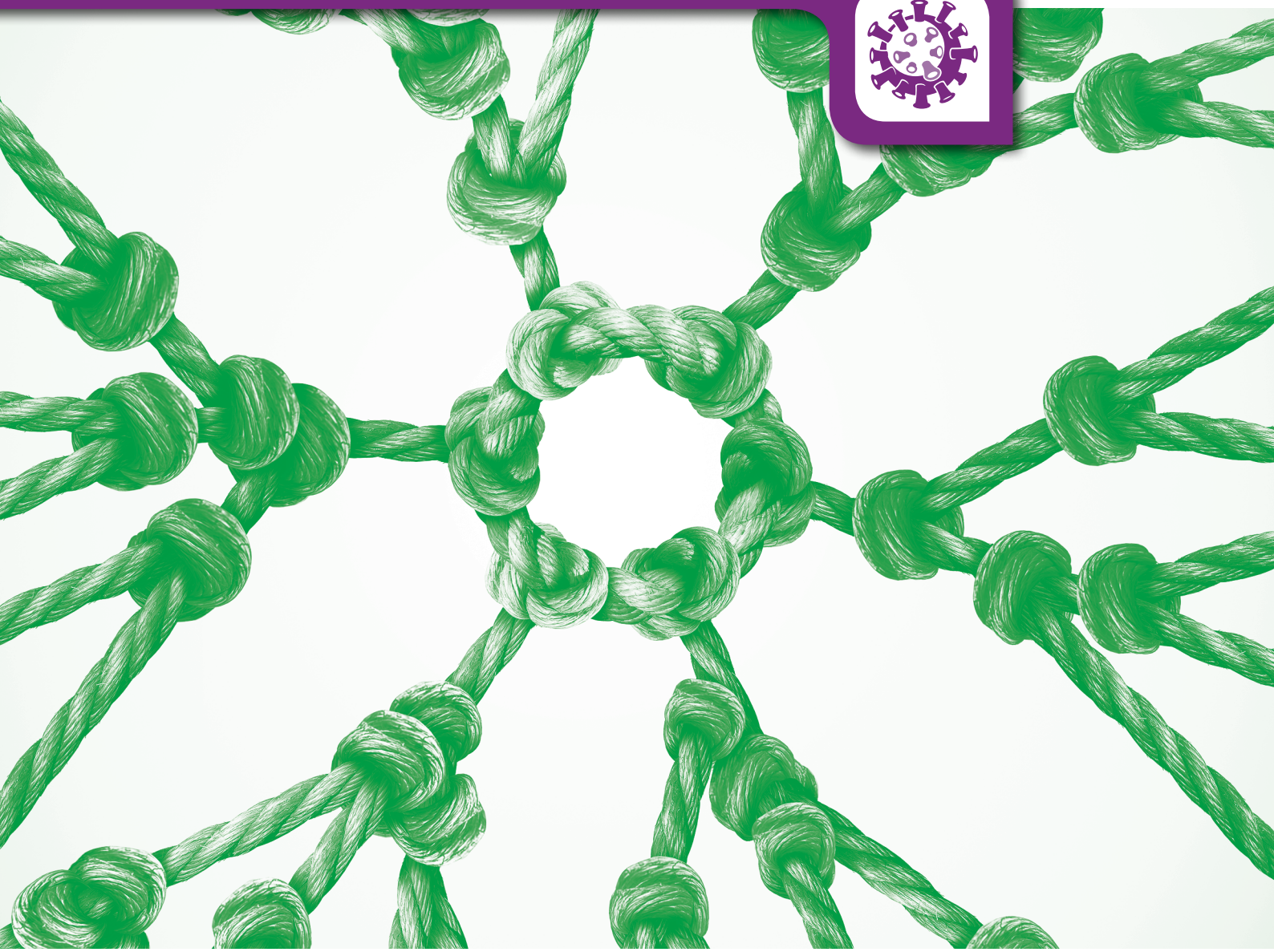
HIV DRUG RESISTANCE REPORT 2019



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DEFINITIONS

HIV drug resistance (HIVDR) is caused by one or more changes (mutation/s) in the genetic structure of HIV that affects the ability of a specific drug or combination of drugs to block replication of the virus. All current antiretroviral (ARV) drugs, including newer classes, are at risk of becoming partly or fully inactive because of the emergence of drug-resistant virus. People receiving ART can acquire HIVDR, and people can also be infected with HIV that is already drug resistant. WHO commonly classify HIVDR into three main categories.

1. **Acquired HIV drug resistance (ADR)** develops because of viral replication in the presence of ARV drugs.
2. **Transmitted HIV drug resistance (TDR)** is detected among ARV drug–naive people with no history of ARV drug exposure. TDR occurs when previously uninfected individuals are infected with virus that has drug resistance mutations.
3. **Pretreatment HIV drug resistance (PDR)** refers to resistance that is detected among ARV drug–naive people initiating ART or people with previous ARV drug exposure initiating or reinitiating first-line ART. PDR is either TDR or ADR or both. PDR may have been transmitted at the time of infection (TDR) or may be acquired through previous ARV drug exposure (such as among women exposed to ARV drugs for preventing mother-to-child transmission of HIV, among people who have received pre-exposure prophylaxis or among individuals reinitiating first-line ART after a period of treatment interruption).

ARV drug–naive applies to people with no history of ARV drug exposure.

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EXECUTIVE SUMMARY

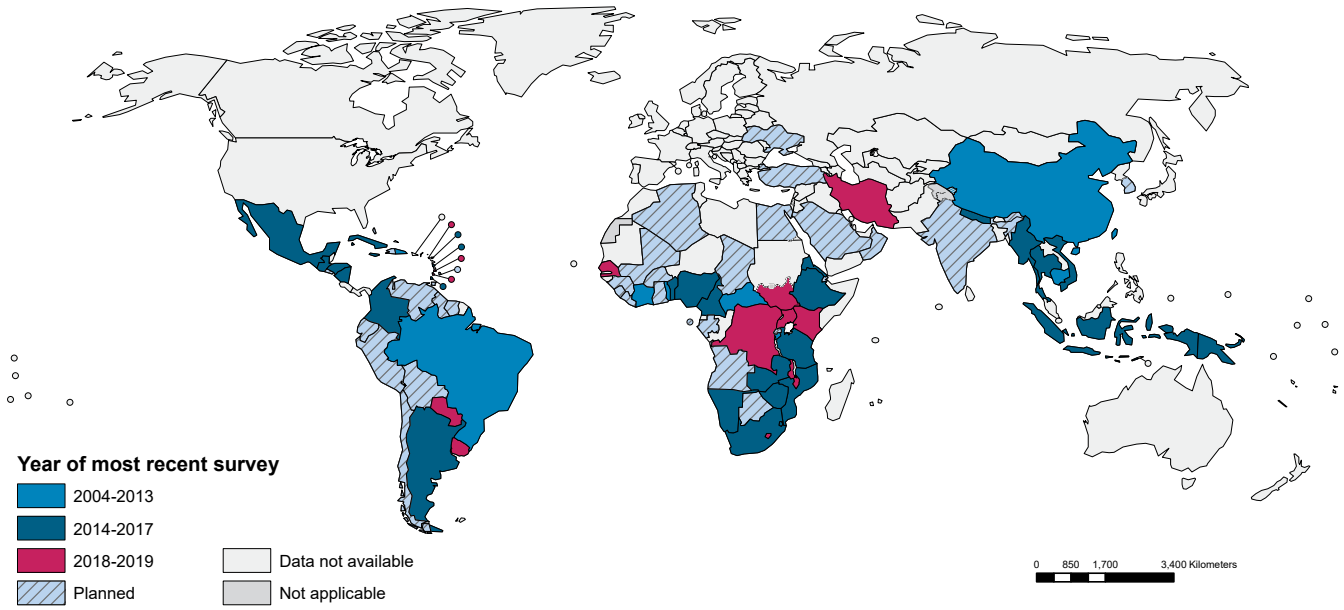
The rise in antimicrobial resistance (AMR) is one of the greatest threats to global health. If it is not urgently addressed, it may result in millions of deaths, an increase in new and hard-to-treat infections and increased health-care costs.[1] As a result, combatting AMR, including the threat posed by drug-resistant HIV, is a major goal for the global community. Prevention, monitoring and timely response to population levels of HIV drug resistance (HIVDR) is critical to achieving the WHO/UNAIDS 90–90–90 targets for 2020 that 90% of people living with HIV know their HIV status, 90% of those who know their HIV-positive status are accessing treatment and 90% of the people receiving treatment having suppressed viral loads. These targets reflect the global community's commitment to eliminating AIDS as a public health threat by 2030. In response to the threat of HIVDR to attaining these goals, the global health community launched a five-year Global Action Plan on HIVDR (2017–2021) that details a roadmap to prevent, monitor and respond to globally increasing levels of HIVDR. In response to the Global Action Plan, countries and funders are increasingly focusing on establishing robust and routine population-level monitoring of HIVDR to accompany the scaling up of antiretroviral therapy (ART) and supporting a safe transition to new antiretroviral (ARV) drugs in first- and second-line ART.

Substantial progress has been made in monitoring the population-level emergence and transmission of HIVDR. Between 2004 and 2018, 49 countries implemented surveys of HIVDR using WHO-recommended standard methods. A further 35 countries have plans to conduct surveys (**Fig. 1**). This report presents findings from 44 nationally representative HIVDR surveys implemented in 24 low- and middle-income countries using WHO standard survey methods.[2]

In 12 of 18 countries reporting survey data to WHO between 2014 and 2018, levels of pretreatment HIVDR (PDR) to efavirenz (EFV) and/or nevirapine (NVP) among adults initiating first-line ART exceeded 10% (**Fig. 2**). Overall, levels of NNRTI PDR are nearly twice as high among women as among men.

These findings are important, since women comprise a larger proportion of the population living with HIV globally and especially in sub-Saharan Africa, the region with the highest burden of HIV infection. Another subpopulation at high risk of PDR is individuals reinitiating first-line ART and reporting previous exposure to ARV drugs (for example, for preventing the mother-to-child transmission of HIV, previous ART for treating HIV infection, post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP)

Fig. 1. Implementation of national HIV drug resistance surveys, 2004–2018



[1] No time to wait: securing the future from drug-resistant infections: report to the Secretary-General of the United Nations. New York: Ad Hoc Interagency Coordination Group on Antimicrobial Resistance; 2019 (https://www.who.int/antimicrobial-resistance/interagency-coordination-group/IACG_final_report_EN.pdf?ua=1, accessed 5 July 2019).

[2] HIV drug resistance surveillance guidance: 2015 update. Geneva: World Health Organization; 2015 (https://apps.who.int/iris/bitstream/handle/10665/204471/9789241510097_eng.pdf;jsessionid=42B6287D67B61D-47BC29C36FD598DAA8?sequence=1, accessed 5 July 2019).

Fig. 2. NNRTI pretreatment drug resistance in 18 countries reporting national survey data to WHO, 2014–2018

WHO region	Country	Survey year	Prevalence of NNRTI PDR				
			All (women and men)	Women	Men	ART initiators reporting being ARV drug naive	ART initiators reporting previous ARV drug exposure
African region	Cameroon	2015					
	Eswatini	2016					
	Namibia	2015					
	Uganda	2016					
	South Africa	2017					
	Zimbabwe	2015					
Region of the Americas	Argentina	2014					
	Brazil	2014					
	Colombia	2016					
	Cuba	2017					
	Guatemala	2016					
	Honduras	2016					
	Mexico	2017					
	Nicaragua	2016					
Western Pacific Region and South-East Asia Region	Myanmar	2016					
	Nepal	2016					
	Papua New Guinea	2017					
	Viet Nam	2017					

Prevalence of PDR to EFV and/or NVP: <10% 10-30% >30%

NNRTI resistance is defined as resistance to NVP or EFV. Previous ARV drug exposure: participants self-reporting being exposed to ARV drugs, such as women exposed to ARV drugs for preventing the mother-to-child transmission of HIV who interrupted ART after delivery and restarted care after a period of time; or defaulters restarting ART. Note that white (empty) cells represent lack of information because surveys excluded people with previous ARV drug exposure (Brazil, Colombia, Cuba and Zimbabwe) or no data on previous exposure were available (Nepal and South Africa).

Fig. 2. In 12 of 18 countries the NNRTI PDR prevalence had exceeded 10%. Among women, NNRTI PDR was >10% in 14/18 countries, while among men PDR NNRTI prevalence was >10% in 10/18 countries. The NNRTI PDR prevalence among individuals starting first-line ART and reporting previous ARV drug exposure exceeded 10% in all reporting countries.