

SATuRN: Preliminary report 2011

Southern Africa Treatment and Resistance Network

Surveillance of Transmitted HIV-1 Drug Resistance in South African Provinces from 2005-2009

Background: Surveillance of HIV-1 transmitted drug resistance (TDR) was conducted among pregnant women in South Africa over a 5 year period after the initiation of a large national antiretroviral treatment program.

Methods: All participants were from Gauteng (GP) and KwaZulu-Natal (KZN) Provinces and were part of the 2005 to 2009 annual ante-natal HIV seroprevalence survey conducted by the National Department of Health. HIV-1 positive serum specimens were tested using the Aware™ BED™ EIA HIV-1 Incidence Test. TDR was assessed in primigravid women age <25 years. Genotyping was performed on viral RNA by sequencing the protease and reverse transcriptase genes.

Results: A total of 354 sequences were analyzed from 9 surveys. In GP, the levels of TDR were <5% for all drug classes while in KZN levels were <5% in 2007 but appeared to be increasing for NNRTI as these reached 5-15% in 2009. A total of 12 (3.4%) sequences had TDR including K103N and M184I/V. Use of the BED ELISA suggested that samples selected for inclusion into the study were enriched for those with incident infection.

Conclusions: Analysis of the levels of TDR in 2 provinces of South Africa over 5 years suggested that in GP, TDR remains low while in KZN TDR levels may be increasing with the most recent survey showing moderate levels of resistance to the NNRTI drug class. Serological tests for incident infections may be a useful additional parameter to include in surveys of TDR.

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Province	Year	Number specimens tested	Number sequences analyzed	Amplification rate	Median Age (Range)	HIV subtype	Number with mutations	Mutational patterns			Threshold level
								PI	NRTI	NNRTI	
Gauteng (GP)	2005	51	34	76%	21 (18-22)	C	0				<5% NRTI, NNRTI
	2006	40	34	93%	20 (18-21)	C	0				<5% all drug classes
	2007	133	47	46%	20 (18-21)	C	1	M46I	M184I		<5% all drug classes
	2008	43	34	81%	20 (18-21)	C	0				<5% all drug classes
	2009	58	47	81%	19 (18-21)	C (1A)	1		M184V	Y188L	<5% all drug classes
KwaZulu-Natal (KZN)	2005	287	40	14%	21 (18-24)	C	1			K101E Y181C	ND*
	2007	61	34	67%	19 (18-22)	C	0	M46I			<5% all drug classes
	2008	284	37	13%	20 (18-24)	C (1B)	5		M184V K219R	K103N K103N K103N	ND*
	2009	80	47	71%	19 (18-21)	C (1D)	3			V106M K101P K103N	<5% PI, NRTI 5-15% NNRTI

Table: Transmitted HIV Drug Resistance Threshold Surveys performed in Gauteng and KwaZulu-Natal Provinces between 2005 and 2009

References:

Pillay V, Ledwaba J, Hunt G, Rakgotho M, Singh B, Makubalo L, Bennett D, Puren A and Morris L. Antiretroviral drug resistance surveillance among drug-naïve HIV-1 infected individuals in Gauteng Province, South Africa in 2002 and 2004. *Antiviral Therapy* 2008, 13: 101-107

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