

# Management of HIV Drug Resistance in the United States: Achieved Success and Areas for Improvement

Hayden Hyatt, Jonathan Lilley, Apeksha Shenoy, Kunal Lodaya, Fabian D'Souza

Boston Strategic Partners, Inc., Boston, MA, USA

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## BACKGROUND

Genetic mutations in HIV can confer resistance to antiretroviral therapies (ART), known as HIV drug resistance (HIVDR)<sup>1</sup>

## OBJECTIVES

To assess management of HIVDR in the United States over time. While previous reports have focused on mutations that confer drug resistance to any ART class, this is the first study to report prevalence of medication switching due to HIVDR

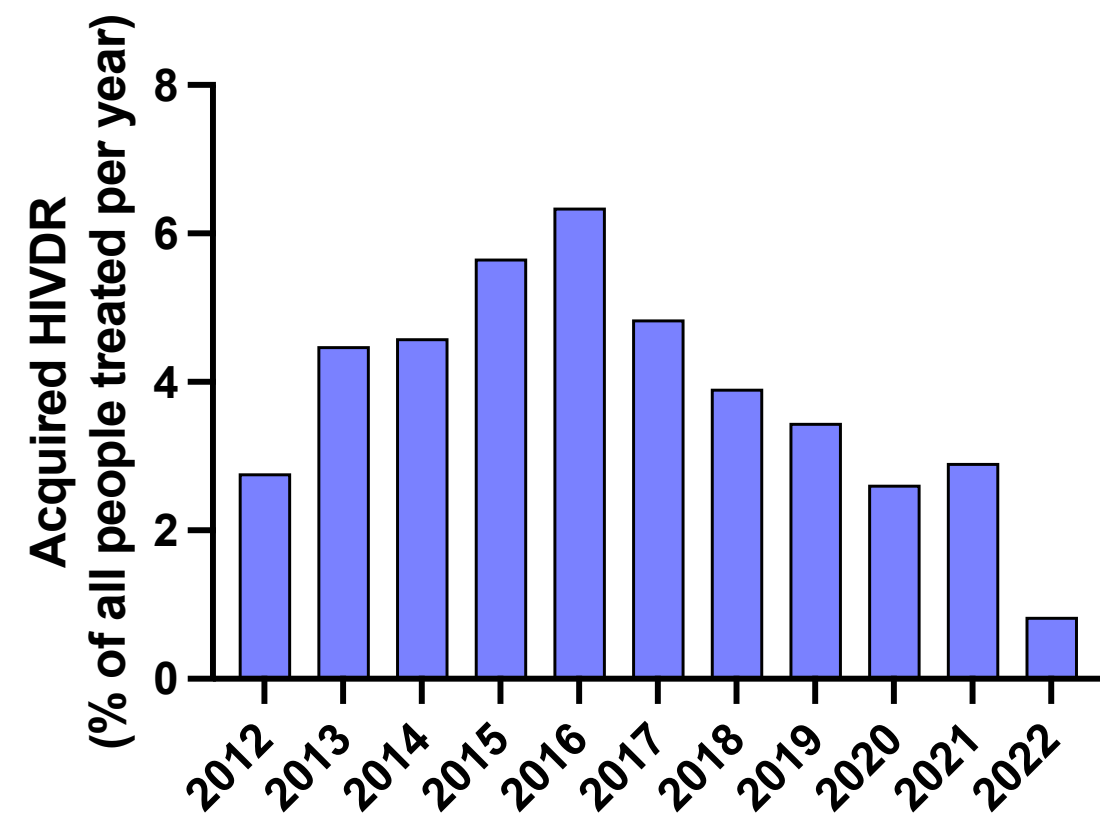
## METHODS

- Using ICD-10 and Current Procedural Terminology codes, de-identified patient records from a U.S. electronic health record database were used to determine clinical characteristics and prevalence of HIVDR between Jan. 2012 and Nov. 2022
- Cases of transmitted HIVDR were determined as initiation of ART within one year of a positive HIVDR panel. Acquired HIVDR (due to spurious mutations) was determined as a switch in ART regimen and an HIVDR panel performed within one year of the medication switch
- Prevalence was determined as the number of annual transmitted/acquired HIVDR cases divided by the annual number receiving ART

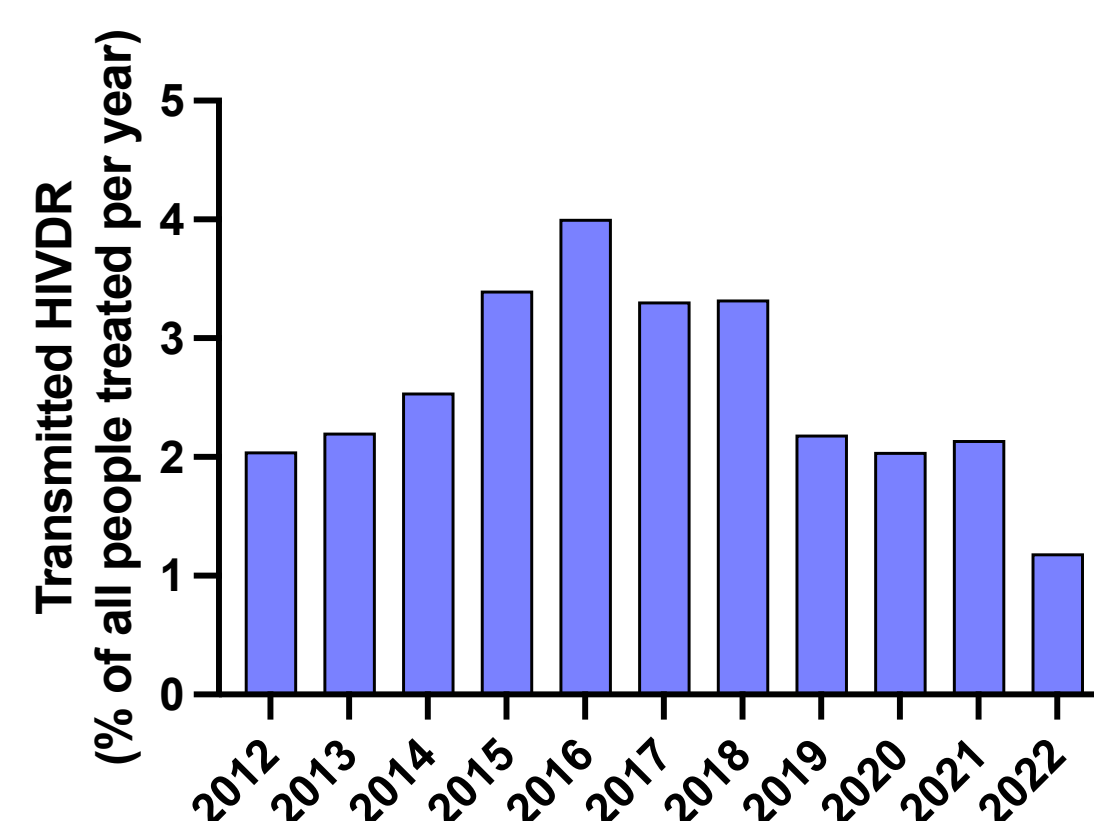
## RESULTS

- From 2012 to 2022, annual prevalence of acquired HIVDR decreased from 2.8% to 0.8% (**Fig. 1**), and annual prevalence of transmitted HIVDR decreased from 2.0% to 1.2% (**Fig. 2**)
- Most patients with acquired HIVDR received new medication 0-30 days after an HIVDR panel (67.5%); however, 11.8% of patients did not initiate new ART regimens until  $\geq 181$  days after (**Table 1**)
- Males comprised 72.6% of acquired HIVDR cases. Black individuals comprised the largest proportion (44.1%) followed by white (18.7%), Hispanics (1.4%), and Asian/Pacific Islanders (0.8%) (**Table 2**)

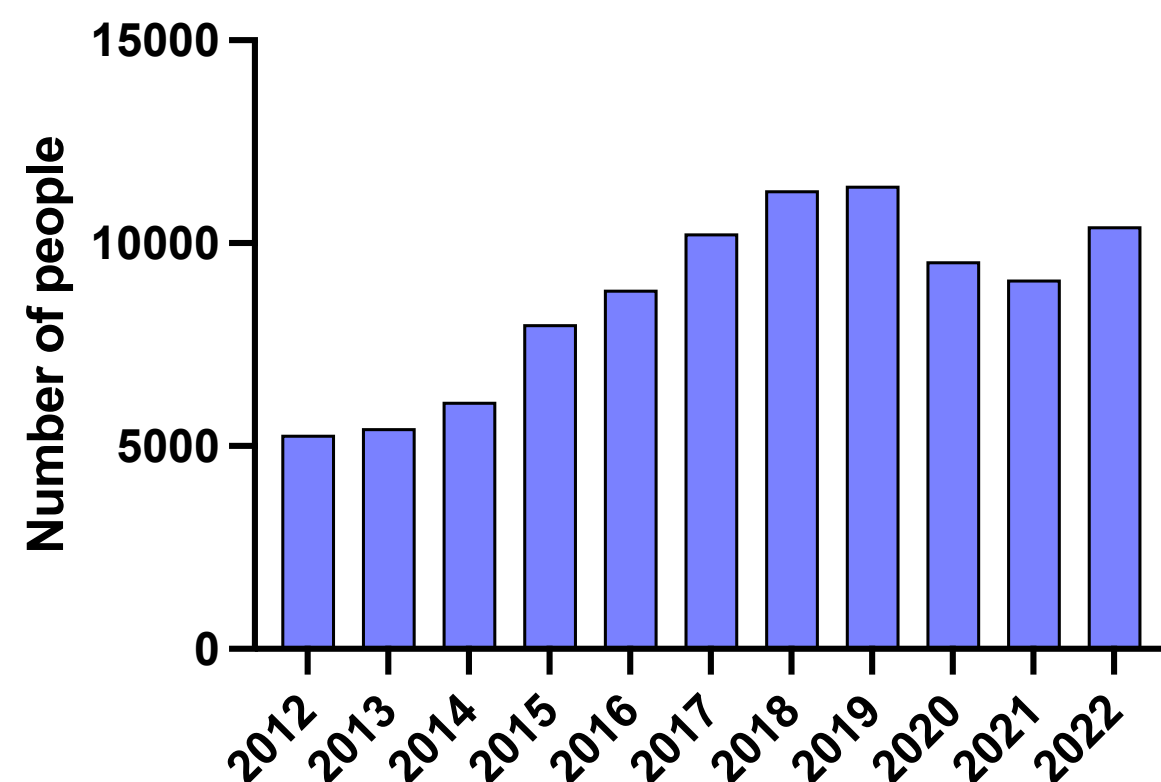
**FIGURE 1: Acquired HIVDR**



**FIGURE 2: Transmitted HIVDR**



**FIGURE 3: Number of People Receiving HIV treatment**



**TABLE 1. Time between Lab Panel and Medication Switch for Acquired HIV**

Time Range, days	n (% of 3618 people with acquired HIV)
Prior to HIVDR panel	1729 (47.8%)
0	28 (0.8%)
0-30	685 (18.9%)
31-90	438 (12.1%)
91-180	311 (8.6%)
>181	427 (11.8%)

**TABLE 2: Characteristics of People Living with Acquired HIVDR (N= 3,618)**

Race	Age	Sex	%
Black	< 18		44.09
		Female	5.20
		Male	3.23
	18 - 29		1.91
		Female	7.33
		Male	4.07
	30 - 49		3.26
		Female	16.69
		Male	6.25
	50 - 64		10.44
		Female	13.49
		Male	4.10
White	< 18		8.97
		Female	1.38
		Male	0.39
	18 - 29		0.99
		Female	18.70
		Male	0.48
	30 - 49		0.21
		Female	0.27
		Male	1.02
	50 - 64		0.54
		Female	0.48
		Male	9.63
Hispanic	< 18		2.51
		Female	7.09
		Male	6.64
	18 - 29		1.38
		Female	5.26
		Male	0.93
	30 - 49		0.15
		Female	0.15
		Male	0.78
	50 - 64		0.78
		Female	0.15
		Male	0.78
Asian/ Pacific Islander	< 18		0.15
		Female	0.15
		Male	0.15
	18 - 29		0.15
		Female	0.15
		Male	0.15
	30 - 49		0.15
		Female	0.15
		Male	0.15
	50 - 64		0.15
		Female	0.15
		Male	0.15
Other	< 18		0.15
		Female	0.15
		Male	0.15
	18 - 29		0.15
		Female	0.15
		Male	0.15
	30 - 49		0.15
		Female	0.15
		Male	0.15
	50 - 64		0.15
		Female	0.15
		Male	0.15

## CONCLUSIONS

- These findings demonstrate that HIV management efforts in the U.S. have resulted in clear progress in treating people living with HIVDR; however, HIVDR affects specific populations to a greater extent than others, highlighting the immediate need for continued efforts in developing targeted HIVDR management
- Notably, the low prevalence of Hispanics may be due to sampling bias within the database

## REFERENCES

- World Health Organization. "HIV drug resistance report 2021." (2021).

