

# **Baseline HIV Drug Resistance Testing Upon Linkage to Care: A Common Practice in San Francisco Even Prior to National Guidelines Revisions**

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# HIV-1 Drug Resistance Testing

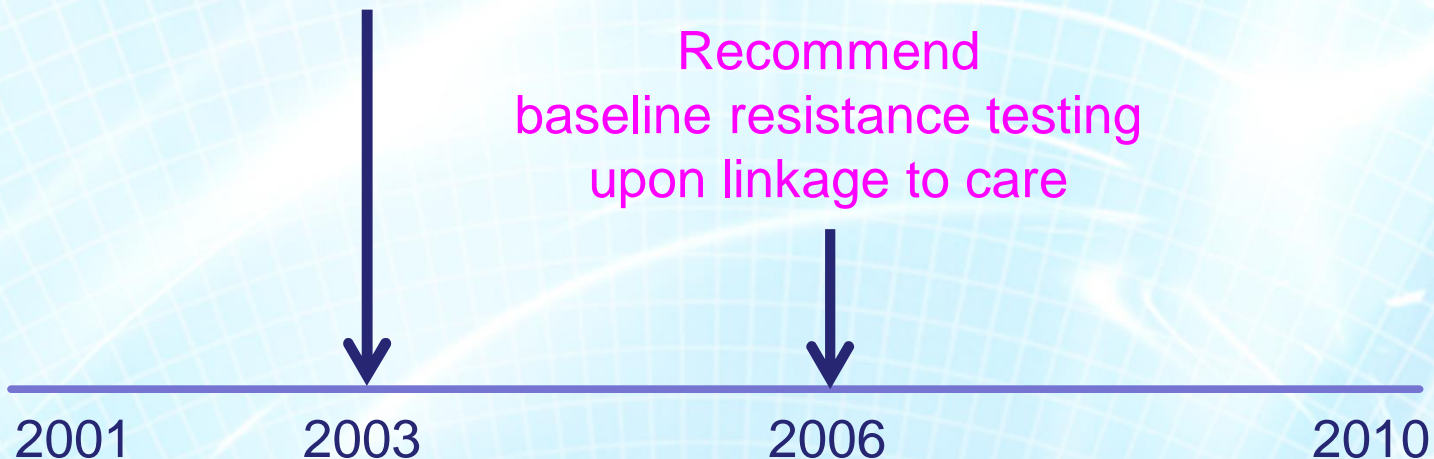
- ❖ HIV-1 drug resistance testing can inform regimen selection upon subsequent decision to initiate ART
- ❖ Baseline testing during early stage of HIV infection can detect transmitted drug resistance mutations that might revert to wild-type over time

# HIV-1 Drug Resistance Testing

- ❖ National guidelines for HIV-1 drug resistance testing have evolved over the past decade

Reasonable to consider  
baseline resistance testing

Recommend  
baseline resistance testing  
upon linkage to care



# Study Objectives

- ❖ Assess patterns in genotypic HIV-1 drug resistance testing over time in San Francisco
- ❖ Describe the demographic and clinical characteristics of HIV-1 drug resistance testers

# Study Sample

- ❖ San Francisco residents with HIV/AIDS
  - Diagnosed between 2001 and 2010
  - Linked to care at publicly-funded facilities in San Francisco
- ❖ Data Sources
  - San Francisco Department of Public Health HIV/AIDS Case Registry
  - UCSF Laboratory of Clinical Virology HIV-1 Drug Resistance Testing Database

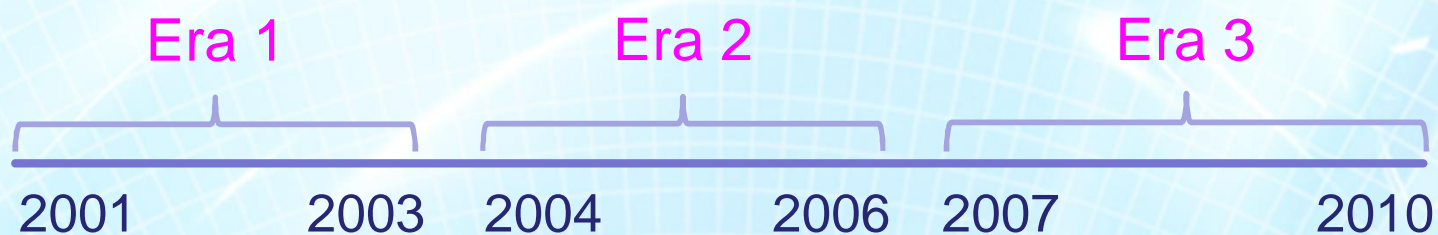


# Characterization of HIV Cases

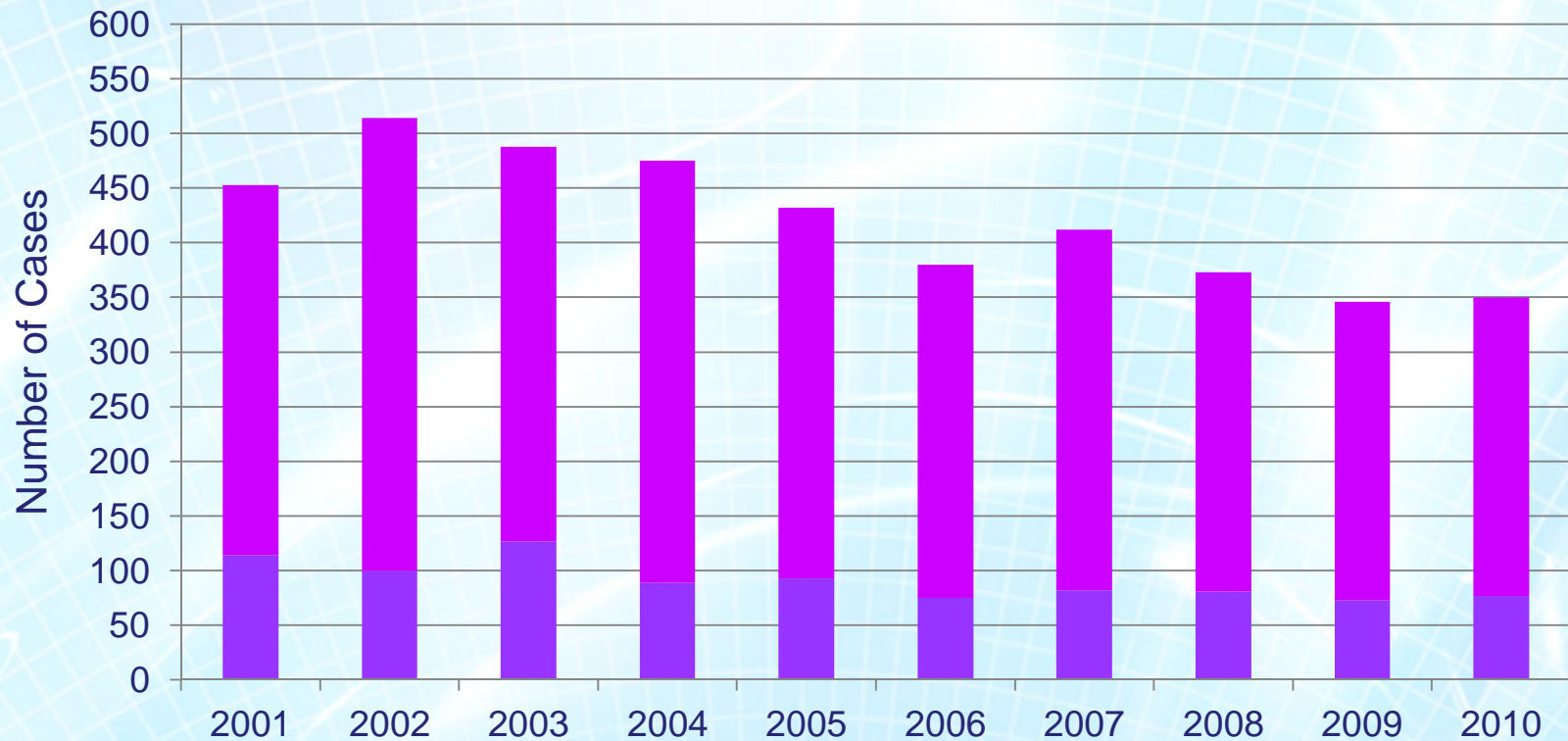
- ❖ Clinical characteristics
  - HIV diagnosis date
  - Date of first HIV-1 drug resistance test
  - Antiretroviral treatment initiation date
  - CD4 at treatment initiation
- ❖ Demographic characteristics
  - Gender
  - Age
  - Race/ethnicity
  - HIV transmission risk

# Analysis

- ❖ Associations assessed by Chi-square and Fisher's Exact Tests
- ❖ Temporal trends assessed using the Cochran-Armitage Trend Test
- ❖ Data stratified based on era of drug resistance testing guidelines



# Newly-Diagnosed HIV Infections San Francisco, 2001-2010, N=4,223



■ AIDS @ Diagnosis

N = 911

■ HIV/non-AIDS @ Diagnosis

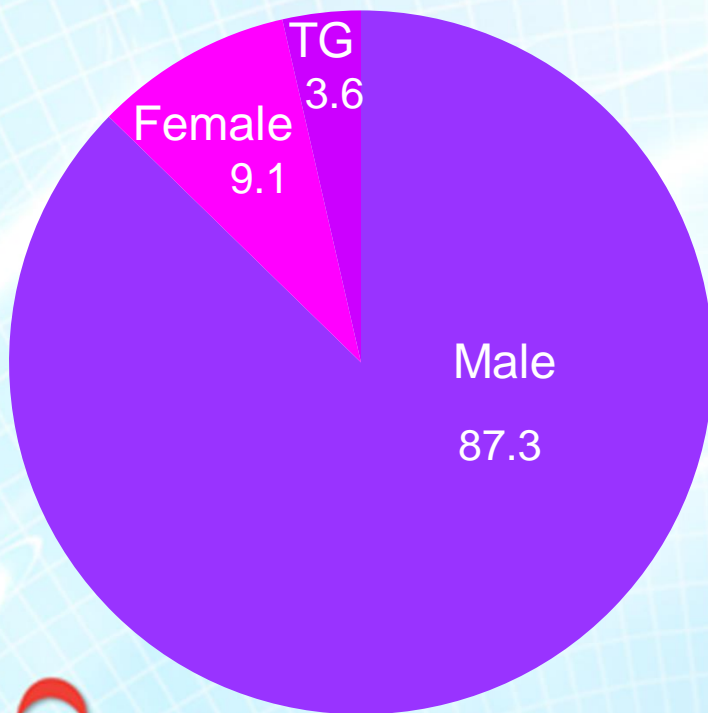
N = 3,312



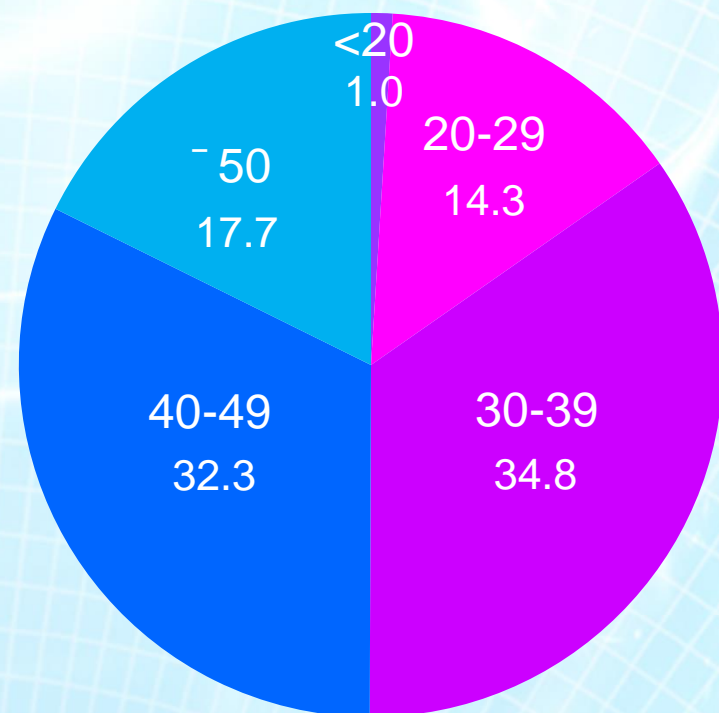


# Characteristics of New Cases AIDS at Diagnosis San Francisco, 2001-2010, N=911

## Gender

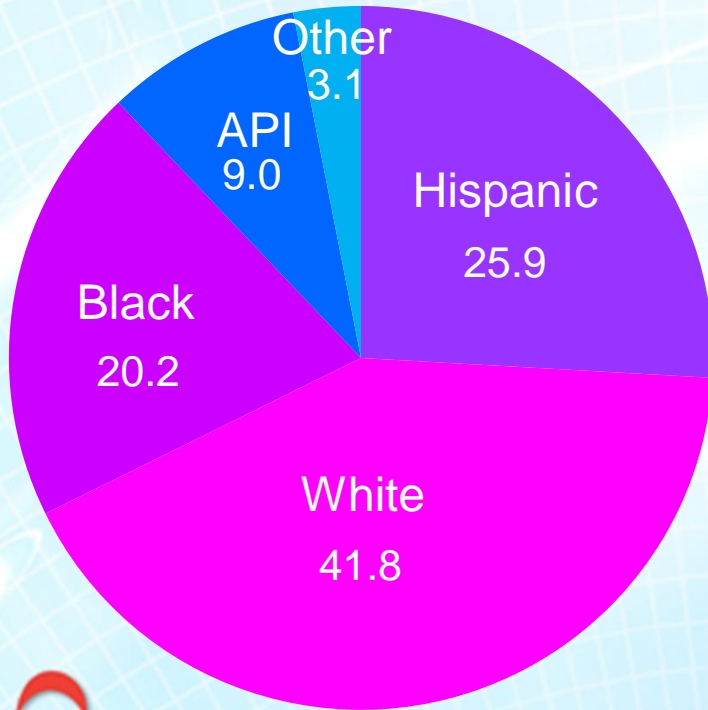


## Age

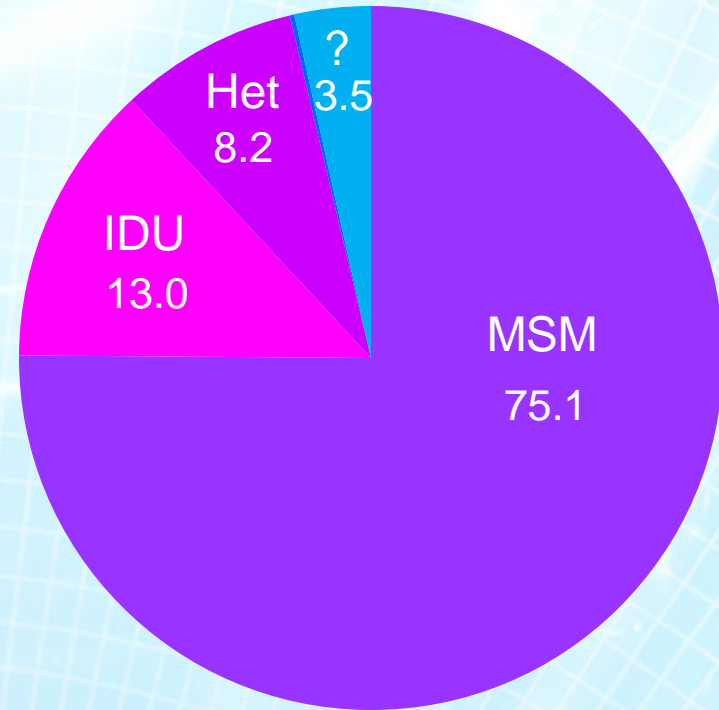


# Characteristics of New Cases AIDS at Diagnosis San Francisco, 2001-2010, N=911

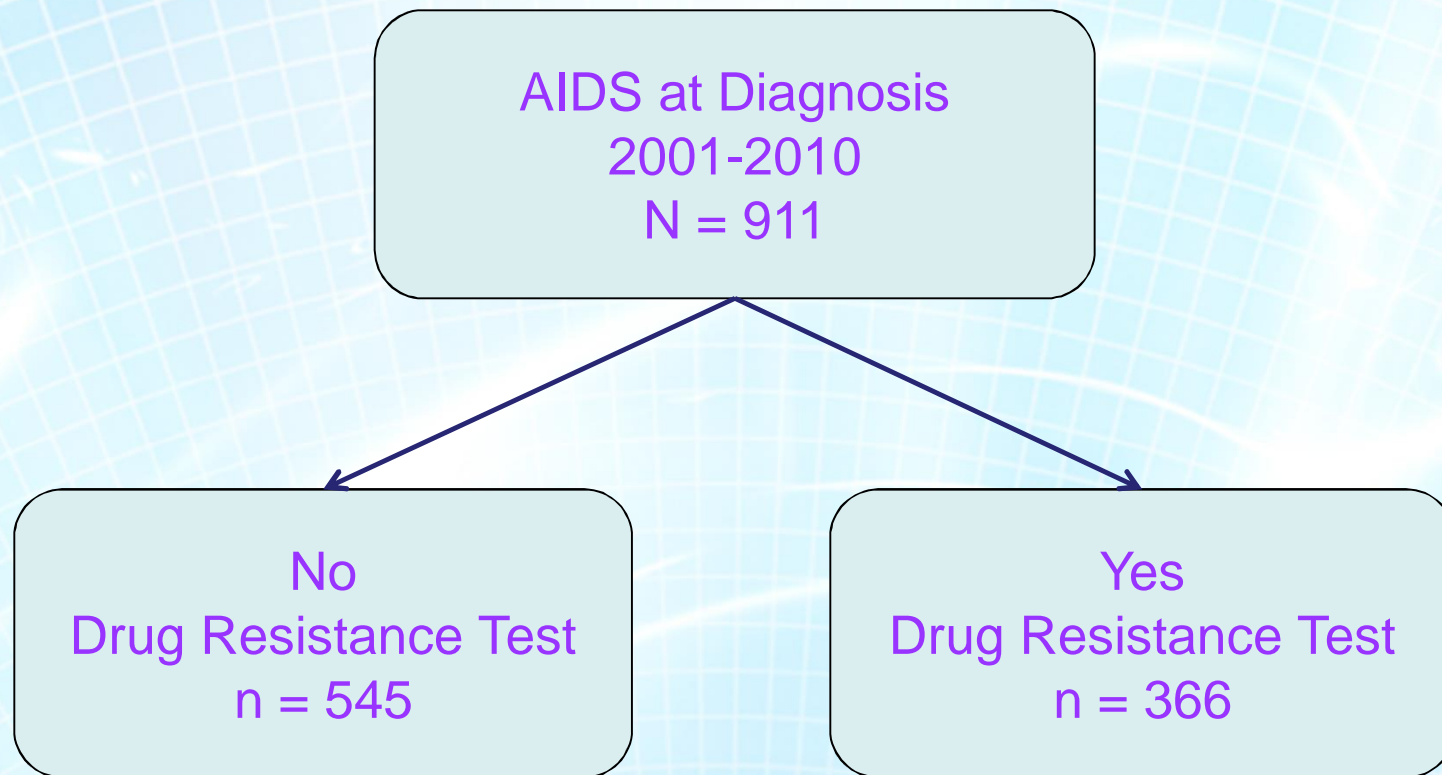
## Race/Ethnicity



## HIV Risk

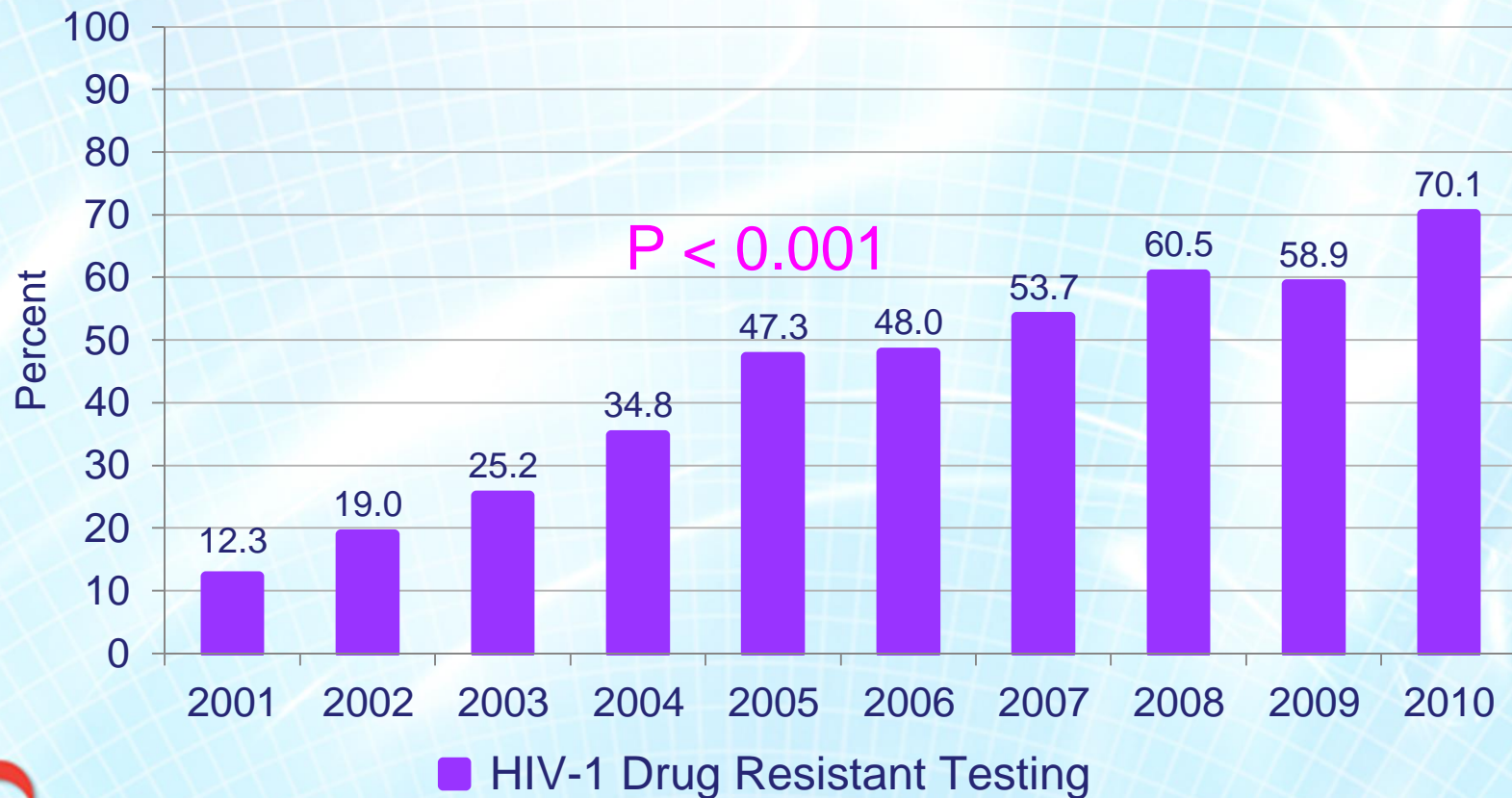


# HIV-1 Drug Resistance Testing



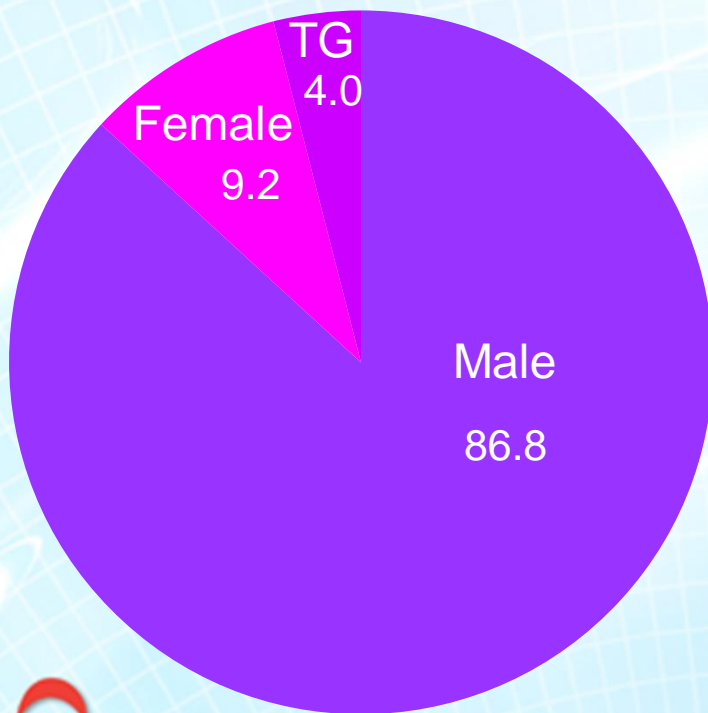
40.2%

# HIV-1 Drug Resistance Testing AIDS at Diagnosis, N=911

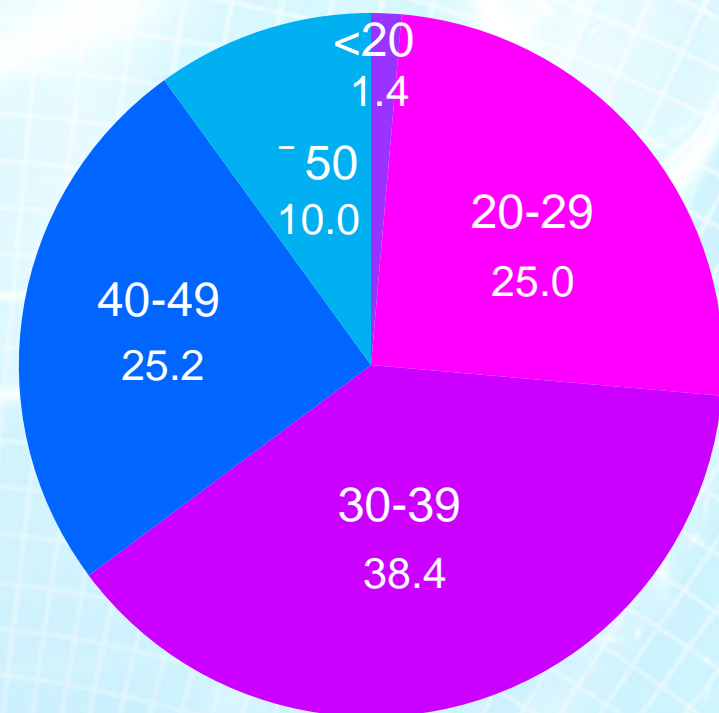


# Characteristics of New Cases HIV/non-AIDS at Diagnosis San Francisco, 2001-2010, N=3,312

## Gender

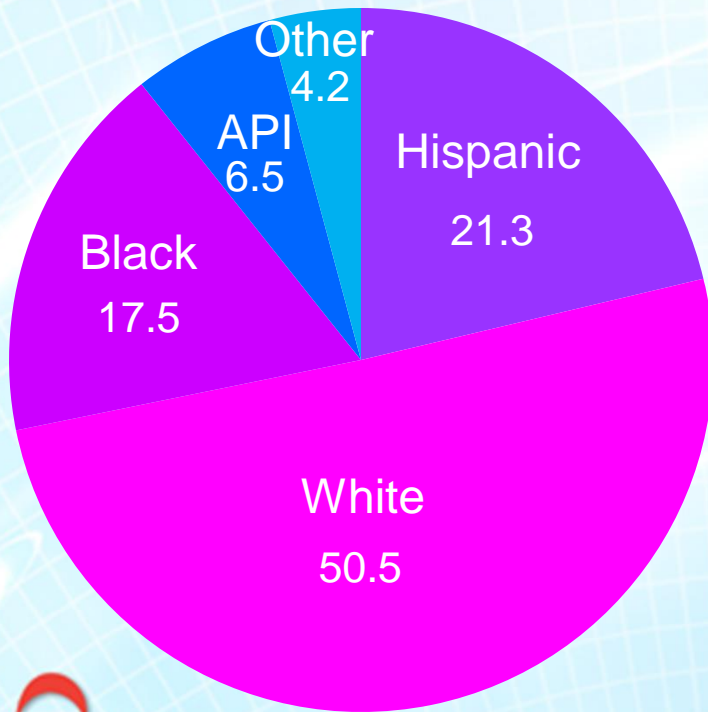


## Age

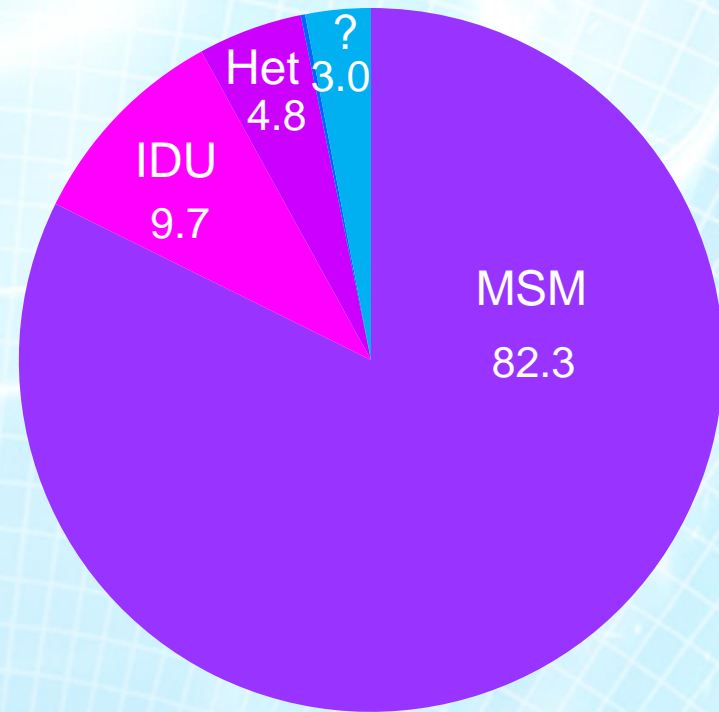


# Characteristics of New Cases HIV/non-AIDS at Diagnosis San Francisco, 2001-2010, N=3,312

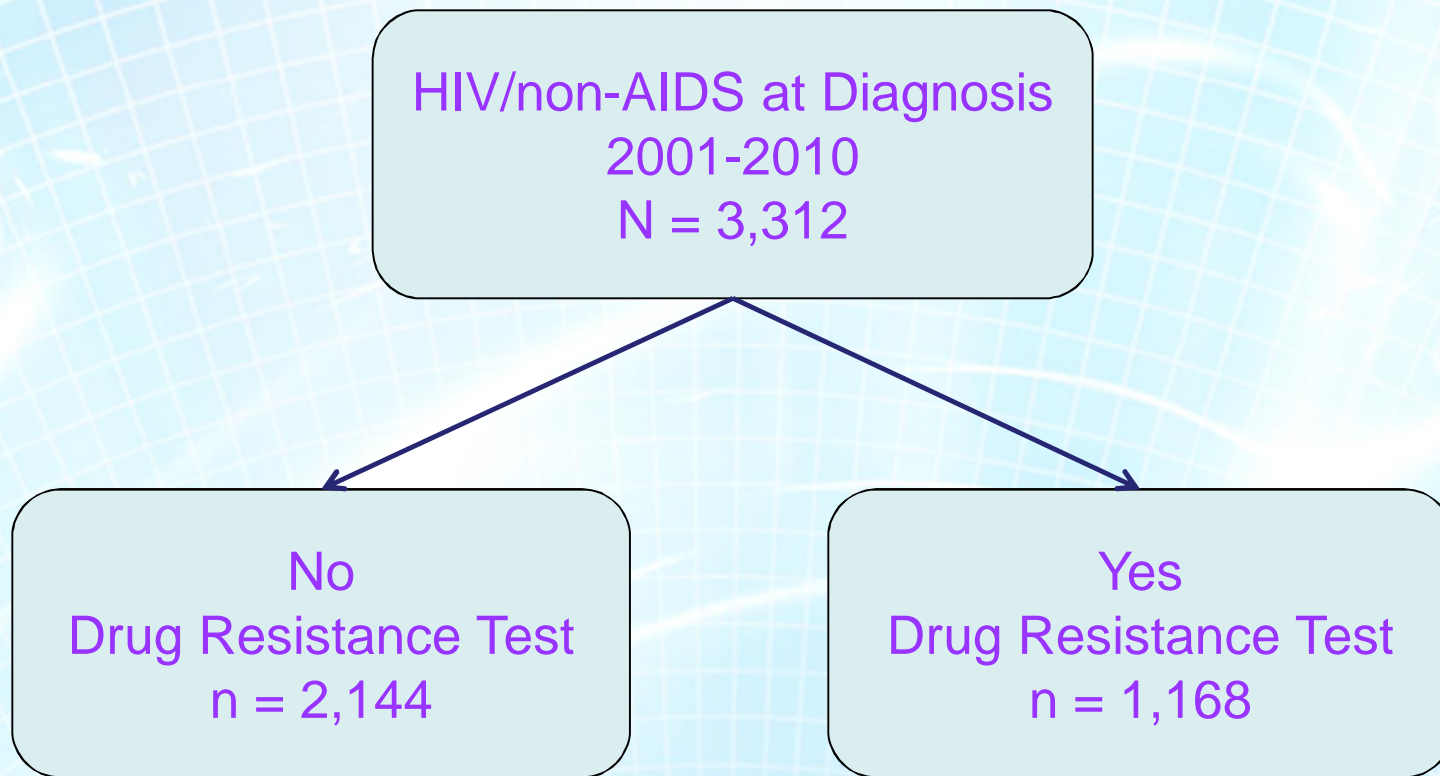
## Race/Ethnicity



## HIV Risk

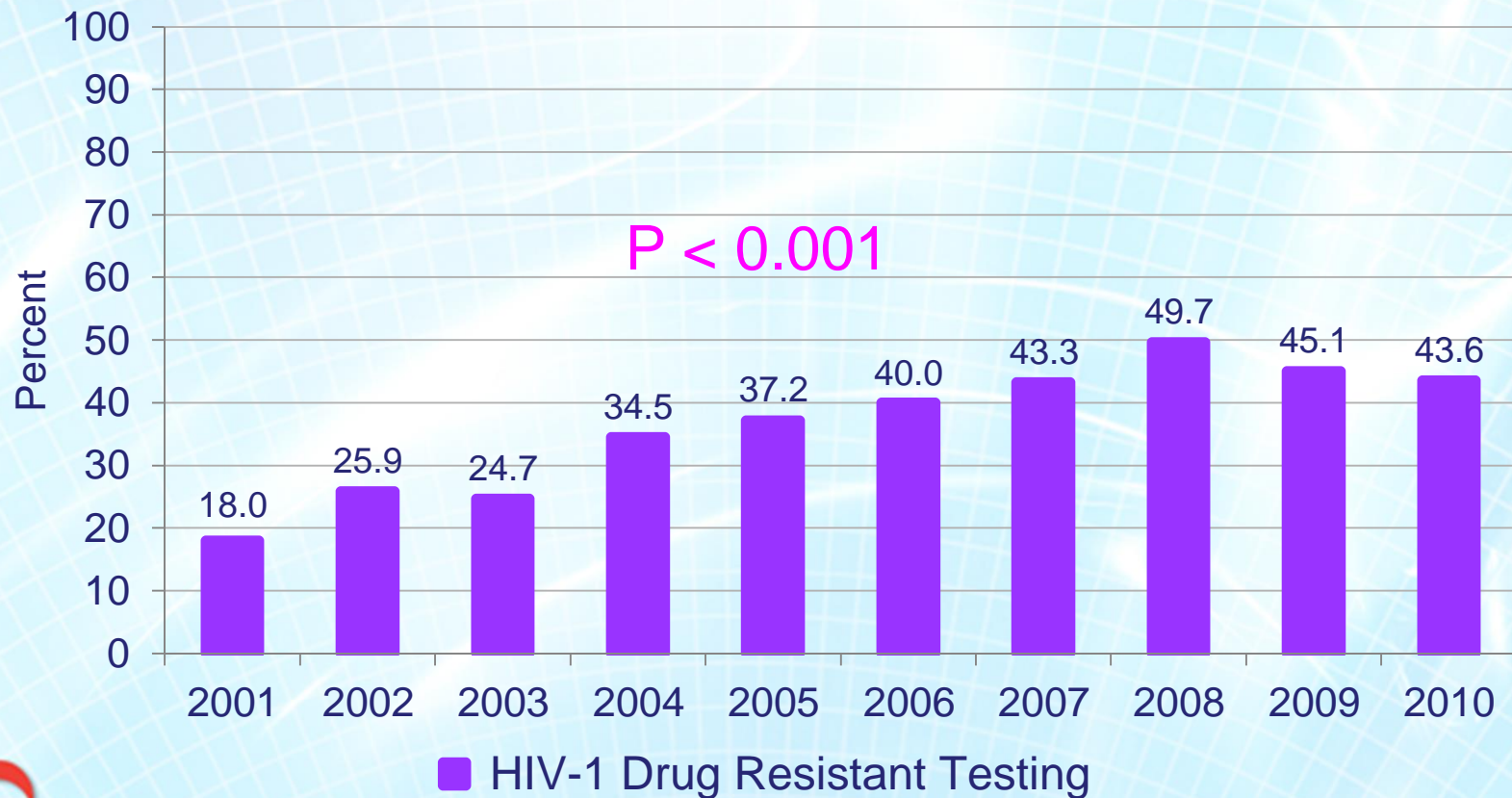


# HIV-1 Drug Resistance Testing



35.3%

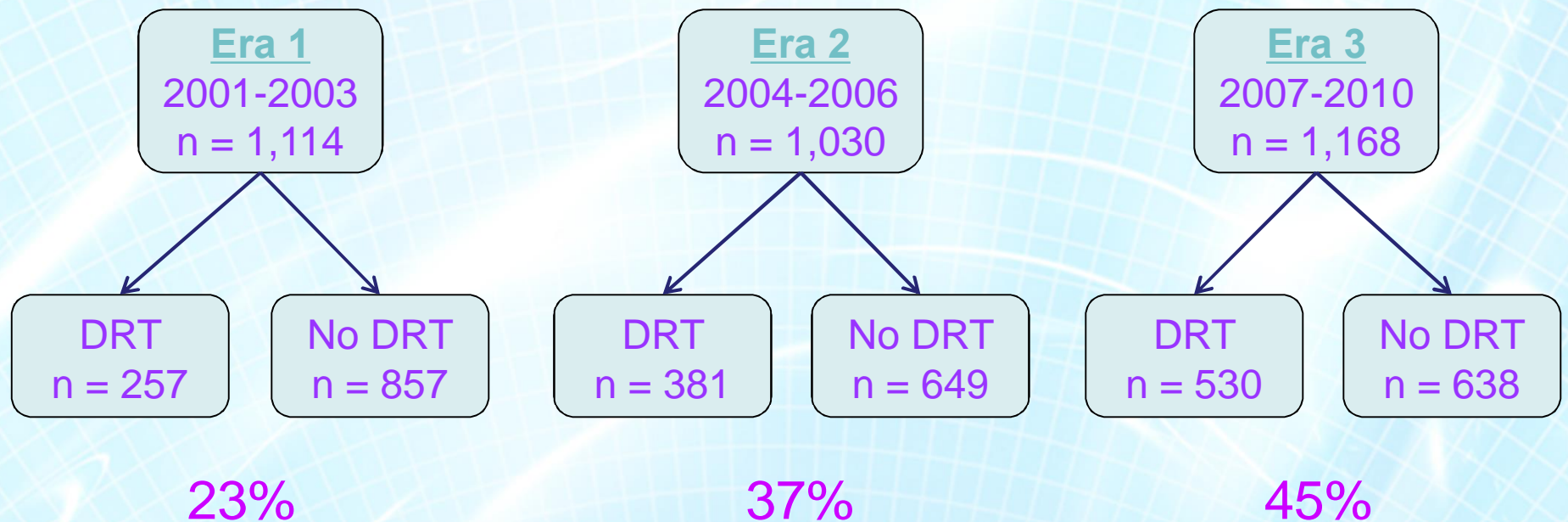
# HIV-1 Drug Resistance Testing HIV/non-AIDS at Diagnosis, N=3,312





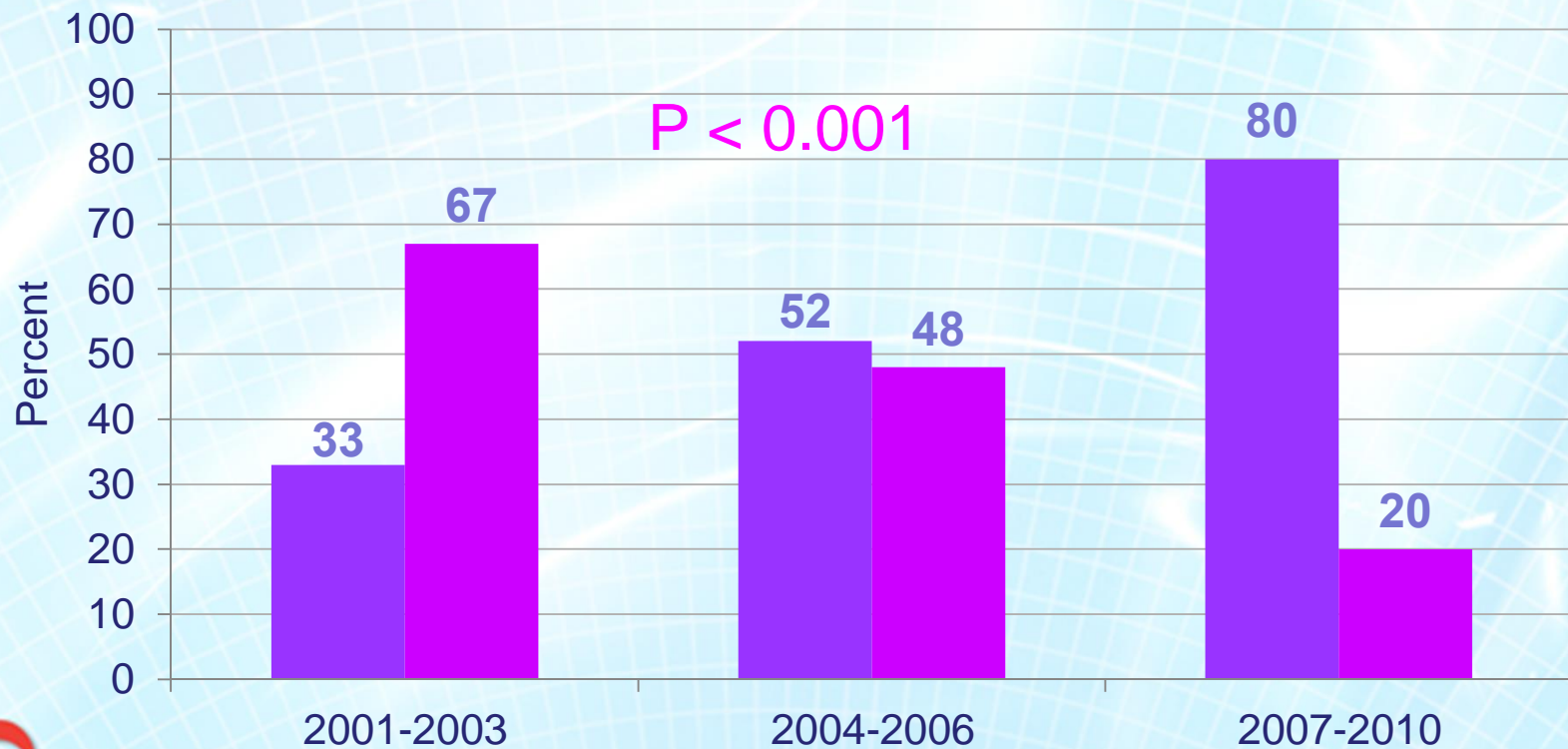
# HIV-1 Drug Resistance Testing by Era

## HIV/non-AIDS at Diagnosis, N=3,312



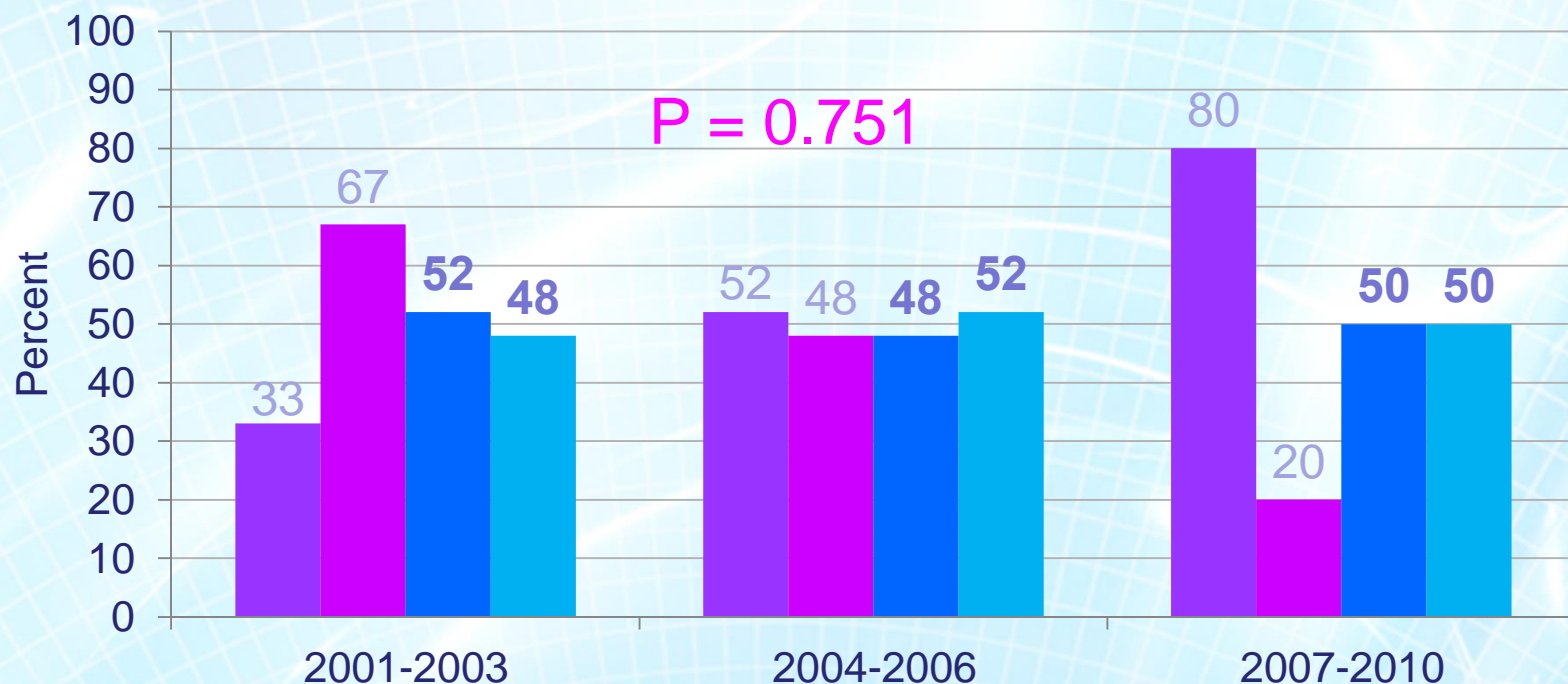
$P < 0.0001$

# Time from HIV Diagnosis to Drug Resistance Testing HIV/non-AIDS at Diagnosis, N=1,168



■ DRT 0-12 months    ■ DRT >12 months

# Time from HIV Diagnosis to Drug Resistance Testing and ART Initiation HIV/non-AIDS at Diagnosis, N=1,168



- DRT 0-12 months ■ DRT >12 months
- ART 0-12 months ■ ART >12 months

# Testing Rate by Demographic Characteristics

## HIV/non-AIDS at Diagnosis

### Time from Diagnosis to DRT = 0-12 months

Characteristics	2001 – 2003		2004 – 2006		2007 – 2010	
	%	P	%	P	%	P
<u>Gender</u>						
Male	32.6	0.584	52.8	0.014	80.1	0.853
Female	31.8		57.5		79.3	
Transgender	50.0		17.7		75.9	
<u>Age</u>						
0-19	50.0	0.192	50.0	0.744	66.7	0.876
20-29	34.3		52.3		81.5	
30-39	37.6		55.5		78.4	
40-49	20.4		46.2		80.2	
≥ 50	25.0		50.0		79.0	

# Testing Rate by Demographic Characteristics HIV/non-AIDS at Diagnosis Time from Diagnosis to DRT = 0-12 months

Characteristics	2001 – 2003		2004 – 2006		2007 – 2010	
	%	P	%	P	%	P
<u>Race/Ethnicity</u>						
White	37.6		48.5		66.7	
Hispanic	40.4		63.2		81.5	
Black	10.9	0.003	47.9	0.064	78.4	0.347
Asian/Pacific Islander	55.6		46.2		80.2	
Other	16.7		35.3		79.0	
<u>HIV Risk Factor</u>						
MSM	37.8		51.6		80.0	
IDU	11.9	0.003	46.7	0.689	73.3	0.480
Heterosexual	30.0		63.2		83.7	
Missing	0.0		60.0		88.2	

# Testing Rate by Demographic Characteristics

## HIV/non-AIDS at Diagnosis

### Time from Diagnosis to DRT = 0-12 months

Characteristics	2001 – 2003		2004 – 2006		2007 – 2010	
	%	P	%	P	%	P
<u>CD4 at Diagnosis</u>						
0-199	28.6		40.0		67.3	
200-350	52.1		66.7		82.1	
351-500	35.1	0.004	54.9	0.004	82.4	0.137
>500	23.9		44.0		42.6	
Missing	100		---		100	

# Limitations

- ❖ Data from publicly-funded facilities
  - Publicly-funded facilities represent about 75% of newly-diagnosed HIV cases annually
- ❖ Individuals who had HIV-1 drug resistance testing conducted at other laboratories would not be reflected in this analysis
  - UCSF Laboratory of Clinical Virology conducts the large majority of HIV-1 drug resistance testing for public-funded facilities in San Francisco

# Summary

- ❖ HIV-1 drug resistance testing among new cases who were HIV/non-AIDS at diagnosis increased steadily starting in 2002 and continued through 2010
- ❖ Increase in HIV drug resistance testing likely in response to revised clinical guidelines



# Summary

- ❖ Baseline HIV-1 drug resistance testing upon linkage to care was adopted in San Francisco as early as 2002
  - Preceded 2003 and 2006 guideline revisions
- ❖ Hispanics, Asians and MSM more likely to be tested for HIV-1 drug resistance within 12 months of diagnosis during 2001 to 2003 era
- ❖ Demographic, risk and clinical characteristics of early drug resistance testers did not differ significantly by the 2007-2010 era

# Conclusions

- ❖ Starting in 2004-2006 era, majority of newly-diagnosed HIV/non-AIDS cases had first drug resistance test conducted within 12 months after diagnosis
- ❖ Disparities in baseline drug resistance testing within 12 months after diagnosis decreased in recent years
- ❖ Further analyses needed to evaluate whether early baseline drug resistance testing ultimately improves treatment outcomes

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