A Compendium of 2014 Quarterly Selected Topics in the Featured Abstracts Series Supplements to the

INTEGRATED EPIDEMIOLOGIC PROFILE OF HIV/AIDS IN PENNSYLVANIA

An Empirical Resource for Prevention and Care Program Planning February 2015

1st Edition



HIV Epidemiology Investigation Section Division of Infectious Diseases Bureau of Epidemiology



Karen Murphy, PhD, RN, Acting Secretary of Health Tom Wolf, Governor

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Kev Contributions to the

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This project is supported by grants from CDC and HRSA.

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This document (and updates) will be available online at: http://www.health.state.pa.us

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Suggested Citation:

Muthambi BRH, Geyer N, et al. 2014 Quarterly Supplements to the Integrated Epidemiologic Profile of HIV/AIDS in Pennsylvania, HIV Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology, PA Department of Health

Table of Contents

Q1, 2014: Likelihood of Seropositivity among Persons Accepting HIV Screening in the Pennsylvania Expanded HIV Testing Initiative (PEHTI): An Update.

Q2, 2014: Analyses of Concurrent/Late Diagnoses of HIV and AIDS (HIV stage 3): Earlier Screen-Detected Diagnoses in Correctional Settings of the Expanded Testing Program in Pennsylvania.

Q3, 2014: The Pennsylvania Expanded HIV Testing Initiative (PEHTI) Likelihood of HIV Test Acceptance among Persons Routinely Screened in Pennsylvania State Correctional Institutions, 2013.

Q4, 2014: Persons Diagnosed and Living with HIV/AIDS (PDLWH/A) with Past IDU History or Potential for Transmitting HIV through Injection Drug Use (IDU) in Pennsylvania, 2013: An Update.



Likelihood of Seropositivity among Persons Accepting HIV Screening in the Pennsylvania Expanded HIV Testing Initiative (PEHTI): An Update.

Benjamin Muthambi, DrPH, MPH^; Nathaniel Geyer, MS^*; Vladimir Krepets, PhD, MSci*; Lekhena Sros, PhD, MPH, Rph*; Thabiso Phiri, MSc∞; Nicholas Scharff, MD, MPH®; Paul Noel, MD®; Richard Wenhold, RN®; Paul Colson, PhD◊; Tonya Crook, MD, MS, DTM&H∞ ^Departments of Health^ and Corrections®, Commonwealth of Pennsylvania;

Departments of Medicine∞ & Public Health Sciences*, Penn State College of Medicine; Department of Epidemiology◊, Columbia University.

Objective:

To examine the likelihood of seropositivity among persons accepting HIV screening in healthcare settings participating in the Pennsylvania Expanded HIV Testing Initiative (PEHTI), and how this varies according to demographic, setting and risk characteristics.

Methods:

HIV screening in selected correctional and non-correctional healthcare settings was performed using conventional testing technologies (Blood-based ELISA and oral fluid-based Orasure® testing) or the OraQuick ADVANCE® Rapid HIV-1/2 Antibody Test on a series of patients who consented to HIV testing from January 2, 2009 through January 1, 2014. In addition to unadjusted analyses such as chi-square and simple logistic regression, further cross-sectional analyses were performed using adjusted/multiple logistic regression (MLR) analyses to determine the association between HIV seropositivity and several factors/covariates such as demographics (age group at HIV diagnosis, race/ethnicity, and sex), time interval/year of HIV diagnosis, and site type/setting of HIV screening. The measure of association (or likelihood of seropositivity) generated by MLR analyses was the adjusted Odds Ratio(*a*OR), and the statistical significance of differences between covariate categories and precision was determined using 95% confidence intervals(CI).

Results:

Of the 170,697 tests performed 752(0.44%) were reactive. The likelihood of seropositivity was greater for: a) those who were 30-39 years of age at HIV diagnosis (adjusted-odds-ratio,*a*OR=1.32;95%Confidence-Interval,CI=1.07-1.63) compared to the age group 18-29, and increased with each successive age group; b) non-Hispanic blacks (*a*OR=1.69;95%CI=1.44-1.98) or Hispanics of any race (*a*OR=1.42;95%CI=1.13-1.78) compared to non-Hispanic whites; and c) those tested in correctional settings (*a*OR= 1.57;95%CI:1.32-1.86), compared to those tested in non-correctional settings. Seropositivity was less likely for persons tested in 2011 (*a*OR=0.72;95%CI=0.57-0.9) and was even less likely in 2012 & 2013, compared to 2009. There were no differences by sex after adjustment.

Conclusions:

The 0.44% seropositivity observed was four times the CDC benchmark of 0.1 for healthcare settings, and the greater likelihood of seropositivity among older age groups 30-64 (who are less likely to be screened in targeted programs), and among higher risk populations such as incarcerated persons, and among racial/ethnic minorities (who are key populations for PEHTI), reflects continuing urgent need for expansion of early HIV screening and linkage to HIV prevention and care. Program planning and resource allocation to expand and intensify outreach for early HIV testing in healthcare settings should consider these findings to assure timely access and linkage to HIV treatment and prevention services (to prevent transmission from these potential sources of HIV infection).

Literature references, additional tables and figures of results, and additional Epidemiologic Profile updates may be obtained through: [®]Corresponding author:

Benjamin Richard H. Muthambi, DrPH, MPH, *HIV Epidemiologist(Disease Control & Prevention)* HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology **Pennsylvania Department of Health**, 933 Health & Welfare Bldng, 625 Forster Str., Harrisburg, PA 17120, Fax: 717-772-6975 E-mail: BMuthambi@pa.gov Web page: <u>http://www.health.state.pa.us/hivepi-investigations</u>

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Acknowledgements of Other Contributors to Data Collection/Case Reporting and Program Management Support:

The authors gratefully acknowledge the statewide HIV/AIDS case surveillance program & case reporting sources including physicians, nurses, laboratories, local morbidity reporting offices, LMROs (county & municipal Health Depts., & district offices), and the support of PA Dept of Health programs in the Bureau of Communicable Diseases (Robin Rothermel, Director), Division of HIV/AIDS (Kenneth McGarvey, Director), Bureau of Epidemiology (Irshad Shaikh, MD, PhD, Director), Division of Infectious Disease Epidemiology (Atmaram Nambiar, MD, MPH, Director).



 Table 1. Characteristics of Persons who screened for HIV in Pennsylvania Expanded HIV Testing Initiative, 2009-2013

Characteristics		Reactive		Non-Read		
		N	%	N	%	P-value~
	Total	752	100	169,945	100	
Age Group as of	18-29	165	22	74,514	44	
December 31, 2013	30-39	190	25	53,715	32	
	40-49	227	30	24,926	15	
	50-64	170	23	16,790	10	<0.0001
Race/Ethnicity	White, non-Hisp.	271	36	73,626	43	
	Black, non-Hisp.	361	48	55,243	33	
	Hispanic	110	15	22,398	13	
	Other	10	1	18,678	11	<0.0001
Sex	Male	560	74	109,870	65	
	Female	192	26	60,075	35	<0.0001
Time Interval HIV	2009	145	19	15,589	9	
Screening	2010	170	23	23,515	14	
	2011	163	22	26,087	15	
	2012	141	19	54,615	32	
	2013	133	18	50,139	30	<0.0001
Site Type	Corrections	247	33	88,387	52	
	All other Sites	505	67	81,558	48	<0.0001

~Chi-square test results with p-values \geq 0.05 indicate that differences are not statistically significant; i.e. differences are significant at α < 0.05

Figure 1. Pie Chart of the distribution of Persons who screened for HIV in Pennsylvania Expanded HIV Testing Initiative, 2009-2013





Figure 2. Likelihood of Acceptance of HIV Screening in Pennsylvania State Correctional Institutions, 2013

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/e, Positivity 6 Rate, %		0.22	0.35	0:00	1.00	•	0.37	0.65	0.49	0.05	•	0.51	0.32	•	0.92	0.72	0.62	0.26	0.26	•	0.62	0.28			
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teactive, Re n C		165	190	227	170		271	361	110	10		560	192		145	170	163	141	133		505	247			
Ľ2	AGE GROUP AS OF 12/31/13	18-29	30-39	40-49	50-64	RACE/ETHNICITY	White, Non-Hispanic	Black, Non-Hispanic	Hispanic	All Other Race/Ethnicity	SEX	Male	Female	TIME INTERVAL	2009	2010	2011	2012	2013	SITE TYPE	All Other Sites	Corrections			

Analyses of Concurrent/Late Diagnoses of HIV and AIDS (HIV stage 3): Earlier Screen-Detected Diagnoses in Correctional Settings of the Expanded Testing Program in Pennsylvania.

Benjamin Muthambi, DrPH, MPH^; Nathaniel Geyer, MS^*; Vladimir Krepets, PhD, MSci*; Lekhena Sros, PhD, MPH, Rph*; Thabiso Phiri, MSc∞; Nicholas Scharff, MD, MPH®; Paul Noel, MD®; Richard Wenhold, RN®; Paul Colson, PhD¢; Tonya Crook, MD, MS, DTM&H∞ ^Departments of Health^ and Corrections®, Commonwealth of Pennsylvania;

Departments of Medicine∞ & Public Health Sciences*, Penn State College of Medicine; Department of Epidemiology₀, Columbia University.

Objective:

To examine the likelihood of concurrent/late diagnoses of HIV and AIDS (HIV stage 3), potential for earlier screendetected HIV diagnoses, and how this varies according to demographic, setting and risk characteristics. **Methods:**

The HIV case surveillance dynamic cohort selected included 9115 adults/adolescents (≥13 years of age at the time of HIV diagnosis) with a definitive HIV diagnosis from January 2, 2009 through January 1, 2013, and excluded those with a probable pediatric mode of acquiring HIV. In addition to unadjusted analyses such as chi-square, life table, and simple logistic regression, adjusted/multiple logistic regression analyses were performed to estimate likelihoods of concurrent HIV and AIDS diagnoses (within 6 months of each other) by several risk factors/covariates such as age group at HIV diagnosis, site type/setting of HIV screening, probable mode of transmission (risk), race/ethnicity, sex, rurality of place of residence at diagnosis, and time interval/year of HIV diagnosis.

Results:

Life-table analyses showed ~24% of concurrent HIV-AIDS diagnoses (HIV stage 3) occurring within 6 months of HIV diagnoses. The likelihood of concurrent HIV-AIDS diagnoses was greater for: a) those who were 30-39 years of age at HIV diagnosis (adjusted-odds-ratio, *a*OR=2.03;95%Confidence-Interval,CI=1.76-2.33) compared to the age group 18-29, and increased with each successive age group; b) those whose 'probable mode' of HIV acquisition was heterosexual contact (*a*OR= 1.53;95%CI=1.26-1.85) compared to those whose probable mode was injection drug use(IDU), who were comparable to men-who-have-sex-with-men(MSM) and 'all others'; and c) those who were residents of urban counties (*a*OR= 1.27;95%CI:1.1-1.48), compared to residents of rural counties. Concurrent HIV-AIDS diagnoses were less likely for: a) persons diagnosed in state correctional settings (*a*OR=0.61;95%CI=0.41-0.9) compared to all other non-correctional settings; b) females (*a*OR=0.79;95%CI=0.69-0.9), many diagnosed in corrections, compared to males; c) 'all other' racial/ethnic groups (*a*OR= 0.21;95%CI= 0.17- 0.27) compared to whites, who were comparable to blacks and Hispanics. There were no changes over successive time intervals (years) of HIV diagnoses.

Conclusions:

The 39% lower likelihood of concurrent/late diagnoses observed in state correctional settings indicates achievement of the project objective for screen-detection of earlier stages of HIV. However, the substantial proportion (~1/4) of concurrent HIV-AIDS diagnoses in the combined statewide cohort suggests continuing urgent need among risk groups identified for expansion of early HIV screening and linkage to HIV prevention and care. Program planning and resource allocation to expand and intensify outreach for early HIV testing in healthcare settings should consider these findings to assure timely access and linkage to HIV treatment and prevention services (to prevent transmission from this apparently late-diagnosed reservoir of potential sources of HIV infection).

Literature references, additional tables and figures of results, and additional Epidemiologic Profile updates may be obtained through: "Corresponding author:

Benjamin Richard H. Muthambi, DrPH, MPH, *HIV Epidemiologist(Disease Control & Prevention)* HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology **Pennsylvania Department of Health**, 933 Health & Welfare Bldng, 625 Forster Str., Harrisburg, PA 17120, Fax: 717-772-6975 E-mail: BMuthambi@pa.gov Web page: <u>http://www.health.state.pa.us/hivepi-investigations</u>

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Characteristics		All Other H 2009-20 N	IV Dx. 12 %	Concurrent HIV-AIDS Dx 2012 N	(6 Mo.) x. 2009- %	P-value~
			70		70	i valuo
	Total	6,882	100	2,233	100	
Age (Years) at HIV	18-29	2,742	40	1,214	54	
Diagnosis	30-39	1,586	23	570	26	
	40-64	2,584	38	449	20	<0.0001
Location at HIV	Corrections-PEHTI	132	2	33	4	
Diagnosis	Corrections-non PEHTI	360	5	98	94	
	Non-Corrections/All others	6,490	94	2,102	1	0.1817
Probable Mode of	IDU	512	7	181	37	
Transmission	MSM (incl. MSM-IDU)	2,319	34	816	36	
	Heterosexual Contact	1,564	23	795	20	
	Other/unknown	2,487	36	441	8	<0.0001
Race/Ethnicity	White, Non-Hispanic	1,487	22	637	29	
	Black, Non-Hispanic	2,558	37	1,041	47	
	Hispanic	907	13	379	17	
	Other Racial/Ethnic Groups	1,930	28	177	8	<0.0001
Sex/Gender	Male	5,546	81	1,722	77	
	Female	1,336	19	511	23	<0.0001
Geographical	Rural	2,514	37	450	20	
Classification	Urban	4,368	63	1,783	80	<0.0001
Year of Diagnosis	2009-2010	3,573	52	1,094	49	
	2011-2012	3,339	49	1,139	51	0.0409

Table 1. Characteristics of Persons with Concurrent (6 Mo.) HIV-AIDS vs. All Other HIV Diagnoses, 2009-2012

~Chi-square test results with p-values > 0.05 indicate that differences are not statistically significant; i.e. differences are significant at α < 0.05



Figure 1. Pie Chart of the distribution of Concurrent (6 Mo.) HIV-AIDS Dx. vs. All Other HIV Dx, 2009-2012.



Figure 2. Life Table Analyses - Trends of Cumulative Proportions of HIV Diagnoses Surviving Without Progression to AIDS (HIV Stage 3), 2009-2012.





HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology Bureau of Epidemiology

9 Greater Odds uOK*, unadjusted Odds Ratio; aOR~, adjusted Odds Ratio; LL,95%CI^, Lower Limit of 95% Confidence Interval; UL,95%CI^, Upper Limit of 95% Confidence Interval; ∮∮ aOR & 95% CI Ţ ∳ ∮ ¢ Lesser Odds 0.1 LL, UL, LL, UL, 95% 95% 95% 95% 95% CI^ CI^A CI^A CI^A CI^A for for for for for AOR aOR **1.00** 0.83 1.20 **1.16** 0.95 1.42 **1.44** 1.19 1.74 **1.54** 1.27 1.88 0.50 0.41 0.61 1.18 0.94 1.48 0.99 0.87 1.12 0.98 0.84 1.13 0.98 0.84 1.15 1.04 1.40 0.90 0.82 1.00 1.06 0.96 1.17 2.88 2.54 3.27 3.02 2.65 3.43 0.53 1.13 0.61 0.41 0.91 1.16 0.92 1.48 0.82 0.64 1.05 0.21 0.18 0.26 0.22 0.17 0.27 0.67 0.88 1.00 1.00 0.77 1.00 1.00 1.00 1.00 1.21 1.00 1.80 2.38 2.28 2.91 0.95 0.85 1.07 1.10 1.38 2.03 2.56 uOR* 0.77 2.07 2.58 1.23 2.28 1.00 1.00 1.00 1.00 1.00 1.00 1.00 All All Concurrent Concurrent Others, Others, (6-Mo.), n (6-Mo.), % n % 51% 37% 17% 20% 26% 54% 94% 1% 4% 8% 36% 20% 29% 47% 8% 77% 23% 20% 80% 49% 214 2102 33 816 795 441 637 041 379 450 783 1139 449 570 88 181 177 722 511 1094 23% 94% 2% 5% 7% 34% 23% 36% 22% 37% 13% 81% 37% 52% 49% 38% 39% 28% 19% 63% 2319 3339 586 2712 6490 132 360 512 1564 5546 1336 2514 3573 2487 1487 2558 907 1930 4368 2584 30-39 Urban 18-29 40-64 Rural Black, Non-Hispanic Male Female 2009-2010 2011-2012 Non-Corrections/All other Corrections-non PEHTI Injection Drug Use (IDU) MSM (incl. MSM-IDU) Other/unknown White, Non Hispanic Hispanic Other Racial/Ethnic Group SEX/GENDER RURALITY AT HIV DX. YEAR OF HIV DIAGNOSIS AGE (YEARS) AT HIV DX. SETTING AT HIV DX. Corrections-PEHT PROB. MODE OF TRANSMISS. Heterosexual Contact RACE/ETHNICITY

pennsylvania

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9 Greater Odds JOR*, unadjusted Odds Ratic; aOR~, adjusted Odds Ratic; LL,95%CI/, Lower Limit of 95% Confidence Interval; UL,95%CI/, Upper Limit of 95% Confidence ∮ ∮ ¢ Ţ aOR & 95% CI ∳ ₫ ∮ ¢ Lesser Odds 0.1 LL, UL, LL, UL, 95% 95% 95% 95% 95% CI^ CI^A CI^A CI^A CI^A for for for for for # UOR UOR aOR aOR 1.00 0.83 1.20 1.16 0.95 1.42 0.98 0.88 1.10 1.01 0.89 1.14 0.85 1.14 0.99 0.85 1.16 0.53 1.12 0.61 0.41 0.90 1.26 1.85 0.21 0.17 0.27 1.10 1.48 0.84 1.02 1.09 0.99 1.20 1.76 2.33 0.81 0.63 1.03 0.97 1.52 1.13 1.42 0.79 0.69 0.90 2.54 3.27 2.03 2.88 1.44 1.20 1.74 1.53 0.50 0.41 1.74 1.22 1.27 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.93 1.68 2.21 2.17 2.74 0.91 1.46 0.17 0.25 2.42 2.16 2.71 uOR* 0.98 0.93 1.15 2.44 0.77 1.00 0.21 1.00 1.27 1.00 1.00 1.00 1.00 1.00 e All All Others, Others, 25% 1% 37% 35% 20% 17% 23% 80% 21% 54% 94% 4% 8% 28% 8% 20% 51% 49% 47% 77% % 1170 274 103 839 549 903 2228 868 399 183 1817 463 1196 499 593 35 192 467 667 1117 ⊆ Proximate Proximate 12 Mo., 23% 94% 34% 23% 36% 22% 37% 13% 81% 19% 37% 63% 49% 51% 38% 39% 2% 4% 7% 29% % 12 Mo., n 2482 4248 3467 1563 130 255 1520 1298 2501 3282 2534 2652 5364 2267 1457 886 1924 5451 50 2461 18-29 30-39 40-64 White, Non Hispanic Black, Non-Hispanic Rural Urban 2009-2010 2011-2012 Injection Drug Use (IDU) MSM (incl. MSM-IDU) Hispanic Other Racial/Ethnic Group Male Female YEAR OF HIV DIAGNOSIS Von-Corrections/All other Heterosexual Contact SEX/GENDER AGE (YEARS) AT HIV DX. Other/unknown SETTING AT HIV DX Corrections-PEHTI Corrections-non PEHTI PROB. MODE OF TRANSMISS RACE/ETHNICITY RURALITY AT HIV DX. Interval;

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Q2, 2014 Supplement to Integrated Epidemiologic Profile of

HIV/AIDS in Pennsylvania (in support of prevention and care)

HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology Bureau of Epidemiology



The Pennsylvania Expanded HIV Testing Initiative (PEHTI) Likelihood of HIV Test Acceptance among Persons Routinely Screened in Pennsylvania State Correctional Institutions, 2013

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Departments of Medicine & Public Health Sciences*, Penn State College of Medicine; Department of Epidemiology, Columbia University School of Public Health.

Objective: To examine the likelihood of acceptance of HIV screening among persons routinely screened at discharge from/admission to Pennsylvania state correctional institutions collaborating with PEHTI, and how this varies according to demographic, offense, place of arrest, and sentence-related characteristics.

Methods: The cohort eligible for HIV screening included 40,831 persons who were discharged from/admitted to all state correctional institutions in 2013. In addition to unadjusted analyses such as chi-square and simple logistic regression, further cross-sectional analyses were performed using adjusted/multiple logistic regression (MLR) analyses to determine the association between HIV test acceptance and several factors/covariates such as demographics (age group at HIV diagnosis, race/ethnicity, and sex), HIV-risk related offense, urbanity of place of arrest, and sentence length. The measure of association (or likelihood of HIV test acceptance) generated by MLR analyses was the adjusted Odds Ratio(*a*OR), and the statistical significance of differences between covariate categories and precision of ORs was determined using 95% confidence intervals(CI).

Results: Of the 40,831 persons eligible for screening, 10,750 (26%) accepted HIV screening (Figure 1). Based on adjusted/MLR analyses (Figures 2 & 3), the likelihood of HIV test acceptance was greater for: a) females (adjusted-oddsratio, aOR=2.32; 95%Confidence-Interval,CI=2.16-2.50) compared to males; b) Hispanics of any race (aOR=1.09:95%CI=1.01-1.17) compared to non-Hispanic whites: c) those incarcerated for HIV-risk related (sexual or drug) offenses (aOR=1.15;95%CI:1.07-1.24), compared to those incarcerated for other sentences; d) those arrested in urban areas (aOR=1.07;95%CI:1.02-1.13), compared to those arrested in rural areas; and e) those with a minimum sentence length of 6-15 years (aOR=1.29;95%CI:1.22-1.37), compared to those with a minimum sentence length of 6 years, and was even greater for those with minimum sentences longer than 15 years. HIV screening acceptance was less likely for: a) those whose current age at admission/discharge in 2013 was 30-39 years (aOR=0.80;95%CI=0.76-0.85) compared to the 18-29 age group, and was even less likely in successive older age groups; and b) non-Hispanic blacks (aOR=0.92;95%CI=0.87-0.97) compared to non-Hispanic whites. Sex-stratified adjusted analyses showed that older females (50 years or older) were less likely to accept HIV screening compared to their male counterparts. Conclusions: The 26% acceptance level suggests urgent need and substantial opportunity for further improvement of opt-out routine HIV screening in state correctional settings, particularly among persons from highly-impacted populations with lower acceptance rates such as blacks and males, and among those with shorter sentences who are likely to be released into the general population in the near future. Program planning and resource allocation to expand and intensify outreach for early HIV testing in healthcare settings such as correctional settings should consider these findings to assure expansion of early screening, and timely access and linkage to HIV treatment and prevention services (to prevent transmission from these potential reservoirs of HIV infection, and adverse sequelae of potential late diagnoses among infected persons).

Literature references, additional tables and figures of results, and additional Epidemiologic Profile updates may be obtained through: Corresponding author: Benjamin Richard H. Muthambi, DrPH, MPH, *HIV Epidemiologist(Disease Control & Prevention)* HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology Pennsylvania Department of Health, 933 Health & Welfare Bldng, 625 Forster Str., Harrisburg, PA 17120, Fax: 717-772-6975 E-mail: <u>BMuthambi@pa.gov</u> Web page: <u>http://www.health.state.pa.us/hivepi-investigations</u>

Suggested Citation: Muthambi BRH, Geyer N, et al. (2012-13) Integrated Epidemiologic Profile of HIV/AIDS in Pennsylvania, HIV Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology, PA Department of Health.

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The authors gratefully acknowledge the statewide HIV/AIDS case surveillance program & case reporting sources including physicians, nurses, laboratories, local morbidity reporting offices, LMROs (county & municipal Health Depts., & district offices), and the support of PA Dept of Health programs in the Bureau of Communicable Diseases (Robin Rothermel, Director), Division of HIV/AIDS (Kenneth McGarvey, Director), Bureau of Epidemiology (Irshad Shaikh, MD, PhD, Director), Division of Infectious Disease Epidemiology (Atmaram Nambiar, MD, MPH, Director).



Q3, 2014 Supplement to Integrated Epidemiologic Profile of HIV/AIDS in Pennsylvania (in support of prevention and care)

 Table 1: Distribution of Characteristics of Persons Accepting HIV Screening at Intake/Discharge in Pennsylvania State

 Correctional Healthcare Settings, 2013

Characteristics	Categories within Characteristics	HIV Te Accep	est ted	HIV Test Accepte		
		Ν	%	Ν	%	P-value~
	Total	10,750	100	30,081	100	
Age(yrs) as of	18-29 years	4,156	39	10,252	34	
12/31/2013	30-39 years	3,334	31	9,891	33	
	40-49 years	1,934	18	5,905	20	
	50-59 years	1,071	10	3,199	11	
	60 and older	255	2	834	3	<.0001
Sex/Gender	Male	9,253	86	28,101	93	
	Female	1,497	14	1,980	7	<.0001
Race/Ethnicity	White, non-Hispanic	5,009	47	13,035	43	
	Black, non-Hispanic	4,319	40	13,236	44	
	Hispanic	1,353	13	3,623	12	
	Other Race/Ethnicities	69	1	187	1	<.0001
Offenses with	All Other Sentences	1,269	12	26,848	89	
HIV Risk	Sexual & Drug Sentences	9,481	88	3,233	11	
Rurality-Place	Urban	7,755	72	22,589	75	
of Residence	Rural	2,995	28	7,492	25	0.0027
Min. Length	Less than 6 Years	8,034	75	23,756	79	
Imprisonment	6-15 Years	1,872	17	4,731	16	
	Greater than 15 Years	844	8	1,594	5	<.0001

~Chi-square test results with p-values ≥ 0.05 indicate that differences are not statistically significant; i.e. differences are significant at $\alpha < 0.05$

Figure 1: Proportion of Persons Accepting HIV Screening at Intake/Discharge in Pennsylvania State Correctional Healthcare Settings, 2013





Figure 2. Likelihood of Acceptance of HIV Screening in Pennsylvania State Correctional Institutions, 2013

uOR*, unadjusted Odds Ratio; aOR~, adjusted Odds Ratio; LL,95%CI/, Lower Limit of 95% Confidence Interval; UL,95%CI/, Upper Limit of 95% Confidence Interval; Lesser Odds 0.1 LL, UL, 95% 95% 0.1^ CI^ for for aOR-aOR aOR 0.88 0.80 0.76 0.85 0.89 0.78 0.72 0.85 0.87 0.69 0.59 0.80 2.47 2.33 2.16 2.50 0.89 0.92 0.87 0.97 1.05 1.09 1.01 1.17 0.73 1.27 0.95 0.72 1.26 0.90 1.07 1.02 1.13 1.49 1.78 0.86 0.76 0.71 0.81 **52.04** 57.91 66.48 **1.15** 1.07 1.24 1.10 1.24 1.29 1.22 1.37 1.44 1.71 1.63 1.00 1.00 1.00 1.00 1.00 1.00 10 00% UL 0.76 2.14 0.82 0.79 0.76 0.65 0.81 년 한 <u>영</u> 년 0.91 0.85 0.83 0.81 0.83 2.30 0.96 0.86 0.75 1.17 uOR* 1.00 1.00 00.1 0.97 1.00 8. 0. 1.57 Accepted, Accepted, Accepted, Accepted Col. % ജ 4 88 7 52 26 16 S 2 g 2 ÷ c 4 3 З 5905 26848 3233 13035 13236 22589 23756 0252 3199 834 28101 1980 3623 187 7492 4731 1594 9891 ⊆ Col. % 9 œ œ 2 ജ 2 88 38 2 22 17 g 4 5 9 c 4156 5009 4319 69 1269 844 1934 255 9253 1497 1353 2995 7755 8034 1872 3334 1071 9481 ⊆ 18-29 years Male White, non-Hispanic Black, non-Hispanic Rural Urban AGE(YRS) AS OF 12/31/2013 30-39 years 40-49 years 50-59 years SEX/GENDER Female Hispanic All Other Sentences Sexual & Drug Sentences Less than 6 Years 6-15 Years Greater than 15 Years 60 and older RACE/ETHNICITY Other Race/Ethnicities MIN. LENGTH IMPRISONMENT OFFENSES WITH HIV RISK RURALITY-PLACE OF ARREST

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Persons Diagnosed and Living with HIV/AIDS (PDLWH/A) with Past IDU History or Potential for Transmitting HIV through Injection Drug Use (IDU) in Pennsylvania, 2013: An Update.

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Objective: CDC-recommended back-calculation analyses suggest that 80% of HIV-infected persons have been diagnosed in Pennsylvania (PA). Since the HIV (non-AIDS) case-surveillance and reporting started in 2002; few studies have characterized the potential reservoir of persons diagnosed and living with HIV/AIDS (PDLWH/A) with past-IDU-history or potential-for transmitting-HIV-through-IDU, including men-who-have-sex-with-men who are also IDU (MSM-IDU).

Methods:

Design and Study Population: The selected HIV case-reporting/surveillance dynamic-cohort for these analyses included 36,216 adults/adolescents (>13-years old at the time of HIV-diagnosis, excluding those probably infected through mother-to-child-transmission) with a definitive HIV-diagnosis from January 1, 1980, who were longitudinally followed-up and presumed alive after death registry linkage as of December 31, 2013.

Statistical Analyses and Primary Outcome Measure: Simple chi-square analyses and geospatial representation of the population of interest were performed. Adjusted/multiple logistic regression analyses were performed to estimate likelihoods of PDLWH/A who can-potentially-transmit-HIV-through-IDU (vs. all other probable modes of transmission) and how this varies by several demographic and other risk factors/covariates.

Results: The proportion of PDLWH/A with past-IDU-history or potential-for transmitting-HIV-through -IDU was ~25% (females~28%; racial/ethnic minorities~76%). PDLWH/A with past IDU history or potential-for-transmitting-HIV-through-IDU were more likely to be: a) those currently in the age-group 30-39 years(OR=3.07:95%CI:2.59-3.64) and successive older age-groups, compared to the 13-29 years age-group; b) racial/ethnic minorities [non-Hispanic blacks (OR=1.72:95%CI:1.61-1.83), Hispanics (OR=2.86:95%CI:2.65-3.08)], compared to non-Hispanic whites; c) residents of the North-central HIV service-area, HSA (OR=1.46;95%CI:1.25-1.70), and male residents of AIDSNET HSA (OR=1.18:95%CI:1.05-1.32), compared to AACO (Philadelphia and surrounding four PA counties) HSA; and were less likely to be: a) residents of the Southwest HSA(OR=0.52;95%CI:0.47-0.58), compared to the AACO HSA; b) other racial/ethnic groups (OR=0.48;95%CI=0.34-0.66) other than non-Hispanic blacks and Hispanics, compared to non-Hispanic whites; and c) females (OR=0.90;95%CI:0.85-0.96), compared to males, except white females. Conclusions: Given a) the high proportion presumed to know their HIV-status(~80%), b) the common mode of transmission of HIV and Hepatitis A, B & C through IDU, and the well documented high comorbidity and synergistic adverse effects of this comorbidity, and c) recent advances in screening and treatment of Hepatitis C, the substantial proportion of PDLWH/A constituting the reservoir of those with past-IDU-history or potential-for transmitting-HIV-through-IDU (almost ¼) suggests a major opportunity for sustained prevention/care for the subgroups identified as more likely to be in this risk group. These findings should be considered in program planning and resource allocation for development of prioritization algorithms and intensified targeted outreach to this reservoir throughout the continuum of engagement in prevention/care. More specifically, expand efforts to: i) conduct timely Hepatitis B & C screening, Hepatitis A & B vaccination, and assessments of recent-risk of HIV and/or Hepatitis B & C transmission through IDU, ii) expand screening for HIV, Hepatitis B & C, and vaccination for Hepatitis A & B for partners of those who are assessed/determined to be at recent-risk-of-transmitting-HIV and/or Hepatitis B & C through IDU, iii) coordinate timely access and linkage to and retention in HIV prevention and treatment for HIV, Hepatitis C, and substance use, and ensure sustained viral suppression of both conditions).

Literature references, additional tables and figures of results, and additional Epidemiologic Profile updates may be obtained through: "Corresponding author: Benjamin Richard H. Muthambi, DrPH, MPH, *HIV Epidemiologist(Disease Control & Prevention)* HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology **Pennsylvania Department of Health**, 933 Health & Welfare Bldng, 625 Forster Str., Harrisburg, PA 17120, Fax: 717-772-6975 E-mail: <u>BMuthambi@pa.gov</u> Web page: <u>http://www.health.state.pa.us/hivepi-investigations</u>

Suggested Citation: Muthambi BRH, Geyer N, et al. (2012-13) Integrated Epidemiologic Profile of HIV/AIDS in Pennsylvania, HIV Investigations Section, Division of Infectious Disease Epidemiology, Bureau of Epidemiology, PA Department of Health.



HIV Epidemiology Investigations Section, Division of Infectious Disease Epidemiology Bureau of Epidemiology









Footnotes:

-AACO, AIDS Activities Coordinating Office is the HIV service coalition region including Philadelphia and 4 surrounding counties in PA;

-- Dot density of HIV cases on the map represents prevalent IDU (incl. MSM-IDU) cases as end of 2013;



Table 1: Characteristic	s of PDLWH/A	with past	IDU history or	potential for trai	nsmitting HIV	through IDU vs.
all other risk behaviors	, 2013					

Characteristics		IDU (Incl. IDU) N	MSM- %	All Othe Behav N	er Risk viors %	P-value~
Onaracteristics	Total	8,962	100	27,254	100	
Current Age (Years)	13-19	2	0		0	
as of December 31,	20-29	173	2	2,968	11	
2013	30-39	832	9	4,804	18	
	40-49	2,698	30	8,248	30	
	50-59	3,693	41	7,720	28	
	>=60	1,564	17	3,416	13	<.0001
Race/Ethnicity	White, non-Hisp.	2,118	24	9,508	35	
	Black, non-Hisp.	4,762	53	13,840	51	
	Hispanic	2,040	23	3,442	13	
	Asian	33	0	307	1	
	Native American	7	0	62	0	
	Others	2	0	95	0	<.0001
Sex/Gender	Male	6,451	72	19,595	72	
	Female	2,511	28	7,659	28	0.878
Coalition/HIV	AACO	6,032	67	17,422	64	
Service Region*	AIDSNET	849	9	2,068	8	
	North-central	272	3	586	2	
	Northeast	209	2	621	2	
	Northwest	201	2	592	2	
	South-central	906	10	2,808	10	
	Southwest	493	6	3,157	12	<.0001

*Coalition/HIV service regions of residence at diagnosis, HIV service regional areas serving groups of counties are shown in Figure 2:

^Probable mode of transmission/acquiring HIV: IDU, injection drug use; and MSM, men who have sex with men.

~Chi-square test results with p-values ≥ 0.05 indicate that differences are not statistically significant; i.e. differences are significant at $\alpha < 0.05$



Table 2: Likelihood of PDLWH/A with past IDU history or potential for transmit ting HIV through IDU vs. all other risk behaviors, 2013

Greater Odds 9 • ∳ ∳ ∮ Φ aOR & 95% CI Φ ∮ Φ ∳ φ Lesser Odds 0.1 LL, UL, LL, UL, 95% 95% 95% 95% 95% CIA CIAA CIA CIAA for for for for for 0.66 0.96 1.83 1.12 1.70 1.27 1.02 3.03 2.56 3.59 3.07 2.59 3.64 6.12 5.22 7.18 9.16 7.82 10.73 8.02 6.81 9.45 8.86 7.51 10.45 **2.66** 2.48 2.86 **2.86** 2.65 3.08 0.98 0.83 1.15 1.12 0.94 1.33 0.58 0.86 0.48 0.34 0.90 0.85 **1.19** 1.09 1.29 **1.03** 0.94 1.34 1.16 1.55 1.46 1.25 0.47 1.61 0.91 0.83 1.14 1.07 0.94 0.52 1.55 1.46 1.64 1.72 1.00 1.00 1.00 1.00 5.73 4.89 6.71 8.38 7.16 9.81 0.41 0.30 0.56 1.00 0.94 1.05 0.86 1.01 0.41 0.50 uOR* 1.00 1.00 1.00 1.00 0.97 0.93 0.45 IDU (Incl. IDU (Incl. All All MSM-IDU), MSM-IDU), Others, Others, n % n % 51% 11% 18% 30% 28% 13% 35% 13% 72% 28% 54% 8% 2% 2% 2% 2% %01 12% 19595 13840 17422 3066 8248 7720 3416 9508 3442 7659 2068 4804 2808 3157 586 592 464 621 30% 24% 23% 72% 37% %6 2% 2% %6 41% 17% 53% %0 28% 3% 2% %0 %9 2118 2040 6032 2698 3693 1564 4762 6451 2511 849 272 209 175 832 906 201 493 4 Hispanic Male AACO AGE(YEARS) AS OF 12/31/13 Black, Non-Hispanic Other 13-29 years White, Non-Hispanic 30-39 years 40-49 years 50-59 years >=60 years RACE/ETHNICITY SEX/GENDER Female COALITION REGION AIDSNET Vorthcentral Northeast Southwest Northwest Southcentral

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OR*, unadjusted Odds Ratio; aOR~, adjusted Odds Ratio; LL,95%CIv, Lower Limit of 95% Confidence Interval; UL,95%CIv, Upper Limit of 95% Confidence Interval;

Table 3: Likelihood of PDLWH/A with past IDU history or potential for transmit ting HIV through IDU, stratified by sex/gender, 2013

Emales uOR*, unadjusted Odds Ratio; aOR~, adjusted Odds Ratio; LL,95%CI^, Lower Limit of 95% Confidence Interval; UL,95%CI^, Upper Limit of 95% Confidence Interval; Greater Odds ł 9 Males $\overline{\Phi}$ φ ٥ aOR & 95% CI | Sex/Gender Φ ₽ ∳ ∳ ₫ ļ φ <u>+</u> ф ά **∳** Lesser Odds φ 0.1 UL, 95%Cl∽∿ for aOR, Females 3.28 6.78 9.18 6.37 2.04 90. 112 0.85 0.55 0.72 0.81 0.35 0.91 LL, 95%CI^ for aOR, aOR~, for aOR, Females Females** 0.66 1.13 3.65 4.94 3.28 0.55 0.55 0.62 0.35 0.57 0.60 0.09 2 4.98 8. 1.52 0.76 0.79 0.73 0.44 8. 0.64 0.70 0.18 00.1 2.37 3.73 4.57 0.77 Females, Females, All Others 2616 5016 519 585 769 129 175 4786 634 2007 817 141 828 601 234 120 ⊆ IDU (Incl. MSM-IDU) б 46 946 976 749 239 8 52 4 246 1443 408 274 269 102 651 ⊆ men who have sex with men; Het Cont., Heterosexual Contact; 2.50 UL, 95% for Males 1.12 4.03 8.09 14.02 1.32 1.64 ន្ល 0.65 5.06 13.01 6.1 0.93 aoR, aoR, Males 5.57 8.99 9.55 1.05 1.14 0.94 2.17 0.45 3.30 2.70 1.03 4.23 0.91 0.51 1.18 2.33 IDU (Incl. Others MSM-IDU) Males, aOR~, Males, n n Males 1.00 6.71 1.00 1.37 1.15 1.26 2599 11.57 1.01 1.00 4.63 0.64 5713 10.81 0.57 2432 3219 1299 5632 12406 7989 9054 2556 2208 446 <u>980</u> 457 451 344 ₹ 3319 129 610 558 752 2717 1295 4283 192 158 660 467 632 33 15 391 AACO Hispanic AGE(YEARS) AS OF 12/31/13 Other 3-29 years COALITION REGION AIDSNET Vorthcentral White, Non-Hispanic Black, Non-Hispanic 30-39 years 40-49 years 50-59 years Southcentral >=60 years Northeast Northwest Southwest RACE/ETHNICITY pennsylvania