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Estimating the Costs of Delivering Integrated HIV/STD Partner Services

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Background

In collaboration with the Robert Wood Johnson Foundation and the New York State Public Health Practice Based Research Network, the New York State Department of Health (NYSDOH) participated in a multi-phase evaluation of state-level integration of HIV Counseling and Testing and STD Partner Services. The goal of this evaluation was to define and measure quality as it relates to the effectiveness, efficiency, and acceptability of the integrated service delivery.

Partner Services (PS), delivered by public health professionals, has been demonstrated as an effective prevention strategy to reduce disease transmission and promote infection control. The CDC recommends PS for all new cases of HIV and syphilis, and for gonorrhea and chlamydia as resources permit. While PS for HIV has been shown to be an effective means of identifying new cases of infection, there exists limited information on the costs and cost-effectiveness of PS programs, particularly around partner services for chlamydia and gonorrhea.

Objectives

As part of the evaluation of program integration, a cost assessment was conducted to estimate the costs of delivering PS through the state health department, and to understand how program effort (and related costs) changed before and after program integration. Key objectives included:

- Quantify the amount of money spent on HIV/STD PS operations before, during, and after integration
- Estimate staff time and effort spent conducting work related to HIV/STD PS
- Allocate program costs to relevant process and outcome measures of PS program performance

Methods and Data Sources

Costs were collected from a program perspective, based on a microcosting-staff allocation methodology.¹⁻³ Direct and indirect full-time equivalent (FTE) staffing costs were collected from publicly available salary schedules, administrative and travel data, purchase orders, and grant records.

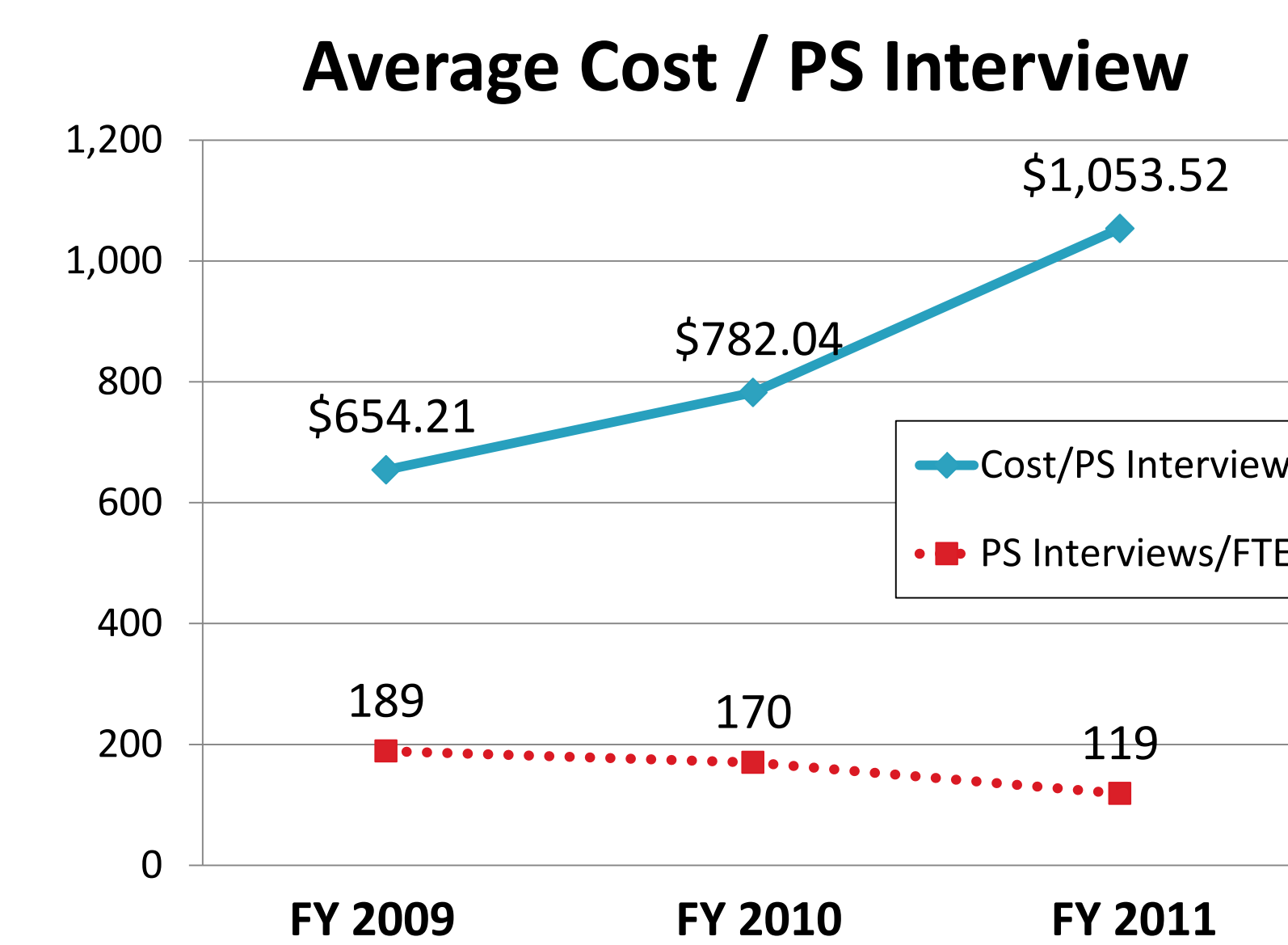
FTEs were weighted based on the percentage of staff time spent on HIV/STD PS activities. Staff effort allocation under integration was based on a review of monthly schedules and averaged over all regional offices.

Outcomes data were generated from statewide HIV and STD surveillance systems. Outcome measures selected for cost comparison were based on key metrics used by the CDC in evaluating program performance for HIV/STD Partner Services.

Analysis

All administrative cost and program outcome data were retrospectively collected across integrated regional offices for one year before integration, one year during integration (the transition and training period), and one year after integration, representing a three year period from April 1, 2009 – March 31, 2012. Outcomes data were requested by quarter during this time period, and all cost and outcomes data were collected in an Excel database for cleaning and analysis.

Results



HIV/STD Partner Services Program Costs

	FY 2009 (% of total costs)		FY 2010 (% of total costs)		FY 2011 (% of total costs)	
Salary	\$867,489	41.3%	\$1,156,208	40.6%	\$1,730,653	44.5%
Fringe	\$372,184	17.7%	\$494,934	17.4%	\$817,439	21.0%
Indirect	\$325,317	15.5%	\$433,861	15.2%	\$482,843	12.4%
Administrative	\$488,745	23.3%	\$492,130	17.3%	\$804,286	20.7%
Travel	\$40,137	1.9%	\$29,250	1.0%	\$42,671	1.1%
Training	\$0	0.0%	\$227,813	8.0%	\$0	0.0%
Supplies/Misc	\$6,028	0.3%	\$12,967	0.5%	\$10,857	0.3%
Total	\$2,099,898	100%	\$2,847,163	100%	\$3,888,749	100%
Inflation-adjusted costs (2009\$)	\$2,099,898		\$2,800,469		\$3,700,145	

Staffing and personnel costs (including fringe and indirect expenses) accounted for over 70% of program costs throughout the study time period. Salary costs increased as cross-trained staff spent more time and effort on HIV/STD PS investigations relative to time spent on other prevention activities such as community-based HIV counseling and testing.

	# Cases Diagnosed for Potential Investigation	# Assigned to Field Staff	% PS Case Workload ^a	Program \$ Spent on each disease	# Interviewed	Disease Specific Cost/Interview	# Partners Notified	Disease Specific Cost/Partner Notified	New Positive (HIV)	Cases Treated (STD) ^b	Disease Specific Cost/Positive	Weighted FTEs	Cases per FTE
FY 2009													
HIV	194	187 (96%)	6%	\$117,993	98	\$1,206	100	\$1,180	6	\$19,666			
Syphilis	133	87 (65%)	3%	\$54,895	87	\$631	157	\$350	88	\$624			
Gonorrhea	3,976	978 (25%)	29%	\$617,097	966	\$639	715	\$863	328	\$1,881			
Chlamydia	15,363	2,076 (14%)	62%	\$1,309,912	2,059	\$636	1,488	\$880	786	\$1,667			
Total (Average)	19,666	3,328	100%	\$2,099,898	3,210	\$654	2,460	\$854				17	196
FY 2010													
HIV	191	176 (92%)	5%	\$134,300	97	\$1,385	142	\$946	16	\$8,394			
Syphilis	152	90 (59%)	2%	\$68,676	89	\$772	90	\$763	51	\$1,347			
Gonorrhea	4,174	1,041 (25%)	28%	\$794,357	1,037	\$766	630	\$1,261	279	\$2,847			
Chlamydia	11,959	2,363 (20%)	64%	\$1,803,136	2,358	\$765	1,574	\$1,146	812	\$2,221			
Total (Average)	16,476	3,670	100%	\$2,800,469	3,581	\$782	2,436	\$1,150				21	174
FY 2011													
HIV	168	159 (95%)	4%	\$145,516	104	\$1,397	114	\$1,276	7	\$20,788			
Syphilis	174	116 (67%)	3%	\$106,163	112	\$948	200	\$531	103	\$1,031			
Gonorrhea	4,092	1,419 (35%)	35%	\$1,298,666	1,217	\$1,067	819	\$1,586	325	\$3,996			
Chlamydia	12,663	2,349 (19%)	58%	\$2,149,800	2,079	\$1,034	1,233	\$1,744	566	\$3,798			
Total (Average)	17,097	4,043	100%	\$3,700,145	3,512	\$1,054	2,366	\$1,564				30	137

a: Does not include STD cases that were assigned for treatment verification only

b: Calculated based on the number of diseases assigned for investigation / total case investigations

c: HIV outcomes based PS case closure dispositions of '2' or '5'; STD outcomes based on closure dispositions of 'A' or 'C'

As the number of staff conducting HIV/STD PS investigations increased, the cost per outcome increased, while caseload per FTE decreased following integration. The average cost per PS index interview and per partner notification increased 61% (\$654 to \$1,054) and 83% (\$854 to \$1,564), respectively. For STD PS investigations, the cost per preventive/treatment outcome increased 65% (syphilis) to as much as 127% (chlamydia). Positivity rates among HIV partners ranged from 6-11%.

The number of case investigations increased slightly following integration, but due to statewide priority grids for PS assignment (based on risk factors, age, pregnancy status, etc.) many diagnosed cases aren't considered eligible for investigation. HIV and early syphilis investigations were assigned at high rates relative to disease incidence, but made up less than 10% of all cases worked by program staff. The majority of cases investigated were for chlamydia and gonorrhea diagnoses.

1: Haddix, A.C., Teutsch, S.M., Corso, P.S. (Eds.). 2002. Prevention Effectiveness: A Guide to Decision Analysis and Economic Evaluation, 2nd ed. Oxford University Press, USA.

2: Shrestha, R.K., Begley, E.B., Hutchinson, A.B., Sansom, S.L., Song, B., Voorhees, K., Busby, A., Carrel, J., Burgess, S., 2009. Costs and Effectiveness of Partner Counseling and Referral Services With Rapid Testing for HIV in Colorado and Louisiana, United States. Sexually Transmitted Diseases 36, 637-641.

3: Shrestha, R.K., Sansom, S.L., Farnham, P.G., 2012. Comparison of methods for estimating the cost of human immunodeficiency virus-testing interventions. J Public Health Manag Pract 18, 259-267.

Conclusions

Allocation of human resources in public health programs such as HIV/STD PS is the most influential predictor of program costs. By identifying interventions and activities that have a demonstrable impact on disease transmission, HIV/STD programs can better prioritize their strategies and maximize public health impact.

While CDC recommendations emphasize the benefits of PS for HIV and syphilis, this assessment suggests that the majority of staff time and program costs are dedicated to gonorrhea and chlamydia cases. Given the resource-intensive nature of PS investigations, further research needs to be done on the cost-effectiveness of PS for curable infections such as chlamydia and gonorrhea. In response to this evaluation, NYSDOH is piloting the use of field staff for high-impact field interventions (such as relinking HIV+ individuals to care) and conducting additional research on the costs, cost-effectiveness, and outcomes of its statewide HIV/STD PS programs.

Limitations

There likely exists regional variation in program performance, due to variations in effort spent on different program activities. Program costs presented reflect only the front line staff and direct supervisors, and do not include the costs of higher-level administrators.

Outcome measures for PS for HIV and STDs are not easily comparable, since the disposition codes used in PS investigations differ for HIV and STDs. Systematic issues in the way dispositions are collected, recorded and documented limit the precision of this measure.

Disease specific outcome costs are allocated based on the percentage of cases assigned, which may not be an accurate measure of the amount of effort spent on each case. Research indicates that HIV and syphilis cases are often more time and labor intensive, and the method of allocation chosen may underestimate the time spent on PS for these infections.

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