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Evaluating the Time Spent to Process Different HIV/STD Cases to Model Return on Investment



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Background

Sexually transmitted diseases (STDs) are an important public health problem in the US, with 20 million new HIV and STD infections per year and annual direct medical costs of \$16 billion. Partner Services, a disease intervention activity which includes counseling, partner notification, and linkage to care and treatment, is a critical public health activity to improve access to care and reduce disease transmission. However, as public health departments face chronic resource constraints, agencies must identify the most efficient way to allocate resources.

Research Objectives

In conjunction with the New York State Practice-Based Research Network (NYS PBRN), this project aimed to address the knowledge gap on the effort related to delivering HIV/STD partner services by conducting a real-world evaluation of the time for local and regional health departments workers to conduct HIV/STD case investigations in New York State.

Specific research questions are:

- Does case processing time between chlamydia, gonorrhea, HIV and syphilis partner services investigations vary?
- Is there within-site variation in time and effort spent on a HIV and STD partner services investigations?
- How is effort allocated between the original (index case) and partner notification activities?

Data Sets and Sources

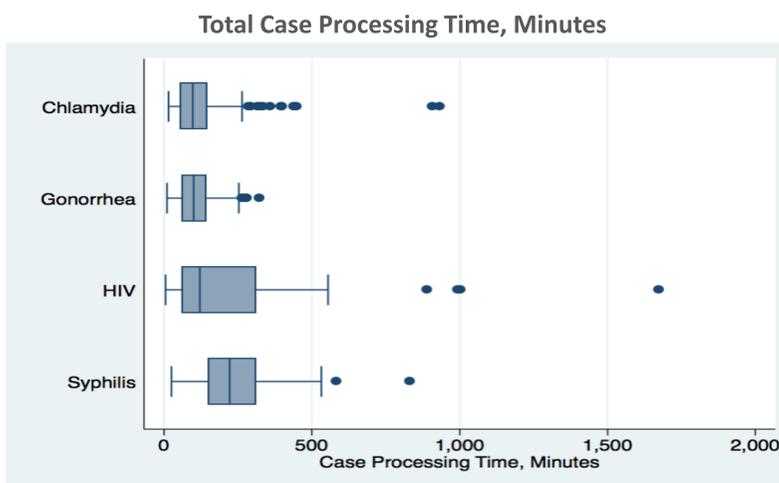
Key informant interviews with HIV/STD partner services staff elicited the tasks related to processing cases, assessed instrument validity and usability, and secured buy-in. Cases were selected using a systematic stratified random sample of infections diagnosed.

Disease investigators (N=52) from 9 sites across New York State completed forms on 518 HIV and STD cases (261 chlamydia, 156 gonorrhea, 42 HIV, and 59 syphilis) assigned between June and November 2014.

Analysis

All time study data were collected and entered into an Access database for data cleaning and analysis. Descriptive and bivariate analyses were conducted to assess variation between case processing time (in days and minutes) and allocation of effort across HIV, syphilis, gonorrhea, and chlamydia cases. Kruskal-Wallis one-way analysis of variance by rank was used to test differences across diseases.

Principal Findings

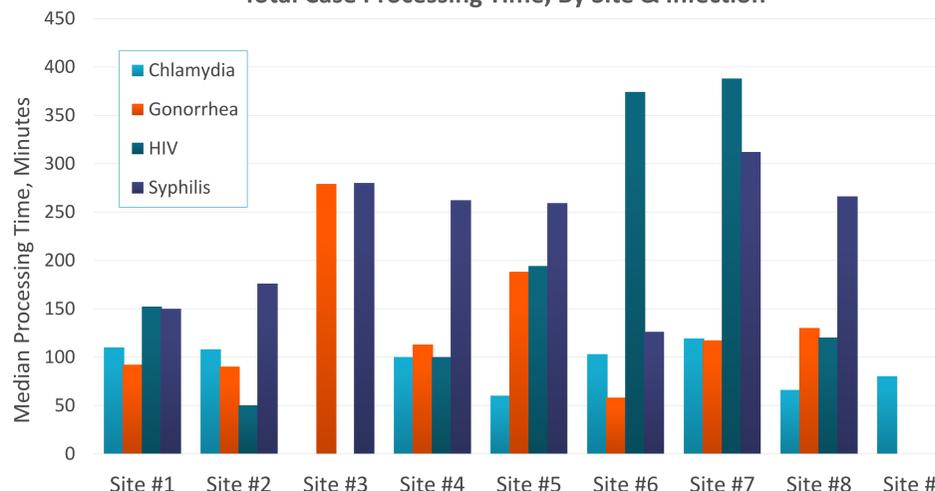


Median Case Processing Time, Days

Infection	Median Case Processing Time, Days	IQR (Days)
Chlamydia	11 days	(IQR 5-19 days)
Gonorrhea	13 days	(IQR 7-21 days)
HIV	17.5 days	(IQR 14-37 days)
Syphilis	19 days	(IQR 7.5-42 days)

Average case processing time, in both minutes and days, varied significantly ($p < 0.001$) based infection assigned. More time was spent investigating syphilis (median 229 minutes, IQR 164) and HIV (median 119, IQR 261) as compared to gonorrhea (median 101, IQR 79) and chlamydia (median 100, IQR 90).

Total Case Processing Time, By Site & Infection



Case processing time between sites also varied significantly for chlamydia ($P < .001$) and gonorrhea ($P < .01$) investigations, indicating variation between and within local and regional health departments conducting HIV/STD partner services investigations.

	All (N=518)	Chlamydia (N=261)	Gonorrhea (N=156)	HIV (N=42)	Syphilis (N=59)
External Prep	4.0%	4.8%	4.5%	3.1%	2.7%
Index Case Work	70.3%	70.6%	70.8%	68.3%	70.6%
Partner Notification	16.7%	16.9%	13.0%	21.7%	16.8%
Misc. Activities	9.0%	7.8%	11.7%	7.0%	9.9%

The majority of time (70.3%) spent on the partner services case investigation was on activities related to the index (original case), with 16.7% of time spent on partner notification activities.

External preparation activities included work done by clerks or disease investigators, related to screening, looking up, and/or assigning the case investigation. Index Case work included medical provider contact, record searching, outreach, travel, interview, and documentation related to the originally diagnosed individual. Partner notification activities includes record search, outreach, travel, interview, and documentation related to any elicited partners. Miscellaneous activities included computer data entry, time spent filling out the time study form, and "other" work not categorized.

Conclusions

- Partner services case processing time, in minutes and days to process, varies significantly based on the type of infection being investigated, with more time spent on HIV and syphilis cases.
- Significant variation also existed within and between sites, indicating practice variation between local and regional health departments conducting HIV/STD investigations.
- On average, the proportion of time spent on case activities was similar across infections, with 70% of time spent investigating the index case, and 17% on partner notification.

Implications for Programs and Research

This research contributes to practice by building the evidence base to support the anecdotal understanding of the "real world" work of HIV/STD partner services. By empirically measuring the time and effort spent on case investigations, program managers can use this data to prioritize case work more effectively, identify areas for improvement, and disseminate best practices.

These results will be used to model return on investment from HIV/STD partner services, building off previous cost assessment research conducted by the NYS PBRN. This contributes to the literature base by providing concrete estimates of the time and effort spent on HIV/STD partner services work, which can inform the development of more accurate cost-effectiveness models of public health programs.

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