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Understanding cost variations in STD service delivery as state and federal agencies reduce funding

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Understanding cost variations in STD service delivery as state and federal agencies reduce funding

Abstract

Sexually transmitted diseases (STD) continue to be a major health problem in the U.S. Despite the persistence of STDs and the critical role of the public health sector in controlling these diseases, STD services continue to be reduced. A linear regression was performed using county demographic and cost variables. Many of these variables in county public health agencies and the populations they serve were not significantly correlated with cost of service. However, the availability of local tax funding for county health departments (CHDs), which varies extensively across counties within the state, is statistically linked to higher STD expenditure per case. County STD rates were also negatively correlated with cost of service. As the STD rate increases, the cost per STD case decreases implying some economies of scale. County population size did not have any effect on the cost per case. Understanding the factors contributing to the unit costs of STD services is critical to be able to make actionable and prudent decisions about continued financial support for public health agency based STD prevention/control services.

Keywords

Sexually transmitted diseases (STD), STD services, cost study

Cover Page Footnote

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Sexually transmitted diseases (STD) continue to be a major health problem in the U.S., particularly in Florida with STD infections being the most frequently reported infection to local public health agencies. [1] Despite the persistence of sexually transmitted diseases and the critical role of the public health sector in controlling these diseases, the resources supporting STD services continue to be reduced. County Health Department (CHD) funding sources for STD prevention/control vary extensively and can include county, state and federal support which influences how health departments respond to controlling these diseases.[2] Understanding the factors contributing to the costs of STD services is critical to be able to make actionable, informed and prudent decisions about continued financial support for public health agency based STD prevention/control services.[3]

The purpose of this study was to identify the unit costs of delivering STD prevention/control services, and examine the effects of variations in delivery system characteristics on costs. The initial phase of this study employs a macro-cost analysis approach to examine county level data statewide in contrast to micro-cost analysis which examines detailed cost data in one or two locales then generalizes this information statewide.[4,5]

METHODS

This study is a retrospective analysis using secondary data (2012) for all 67 Florida counties to examine factors influencing STD services expenditures. CHDs are linked through centralized information technology (IT) systems for finance and billing, programs and services utilization, employee activity and STD surveillance. Data included in the analysis are the following: CHD revenues and expenditures for STD services; Gonorrhea, Chlamydia, and Syphilis counts and rates by county; and U.S. Census data for demographic and income data by county. Variables used for this study included county level factors such as total population, STD rate/100,000, population density/square mile, population with income below 200% Federal Poverty Level, total CHD revenue/capita, CHD county tax revenue/capita, percent of population 24 years old and under, and percent black/other population and the outcome variable was CHD STD cost per case. The total cost per case is inclusive of testing, treatment and field investigation. Descriptive statistics, including 20^{th} and 80^{th} percentile, were compiled for each of the county level variables. General linear regression models were performed using the best subset selection method based on the R-square statistic to assess the best predictive model (assess statistically significant relationships of the variables to total cost per client/case).

RESULTS

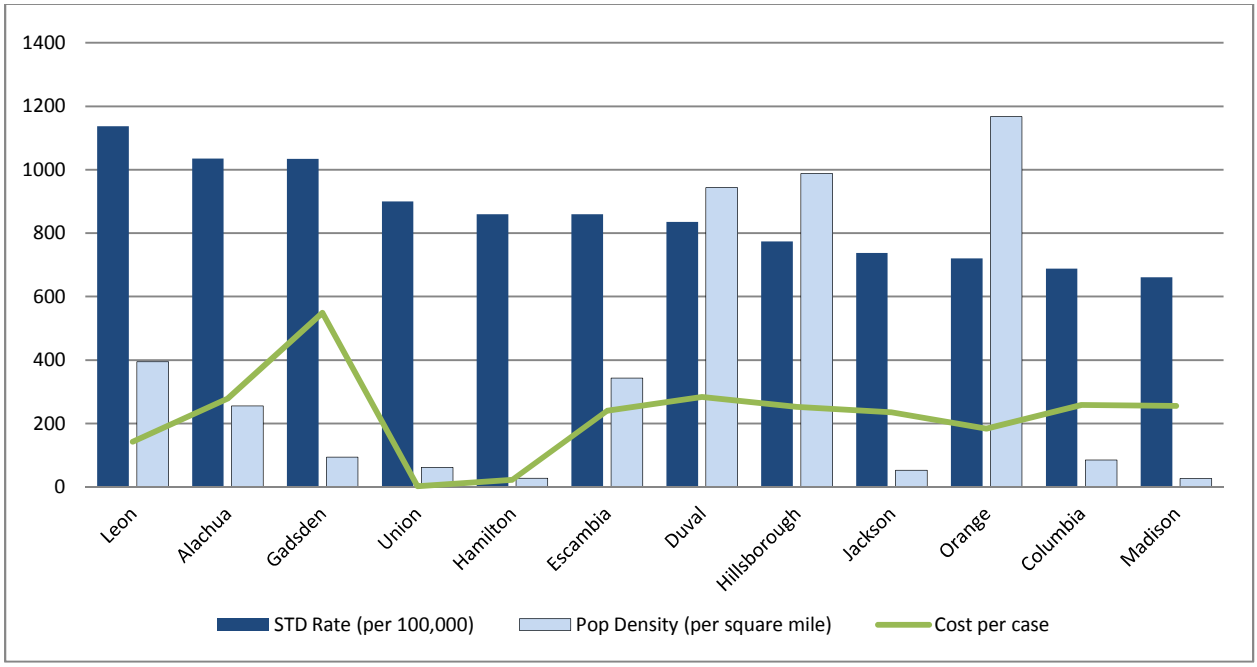
Extensive variations were found in the cost of service by unit, by client and by visit. The 20th and 80th percentiles for each of these measures (Table 1) clarified that these variations were substantial, beyond a few outliers.

Table 1. Range of Florida county health departments' STD costs

	Cost per service	Cost per visit	Total cost per client
State average	$47.59	$157.56	$259.07
County median	$47.10	$119.40	$181.15
Lowest level	$0.84	$1.43	$1.81
Highest level	$121.72	$293.69	$462.12
20 percentile	$29.62	$71.65	$122.27
80 percentile	$72.30	$179.59	$294.08

Regression analysis established that two variables were marginally significant in the model: county STD rate (β=-0.21, p=0.063) and CHD county tax revenue per capita (β=13.20, p=.055). Broad variation is shown in the comparison of the twelve counties with highest STD rates for cost of service and population density (See Figure 1).

Figure 1. Comparison of cost per case and population density for top 12 county STD rates in Florida



IMPLICATIONS

Wide variability in STD rates and cost for STD services are found across the state that is considered to be a highly centralized public health agency system, particularly because of the centralized Human Resource, Reporting and IT functions. Many variables in county public health agencies and the populations they serve were not significantly correlated with cost of service. However, the availability of local tax funding for CHDs, which varies extensively across counties within the state, is statistically linked to higher STD expenditure per case. County STD rates were also negatively correlated with cost of service. As the STD rate increases, the cost per STD case decreases implying some economies of scale. County population size did not have any effect on the cost per case. Members from the Florida Practice Based Research Network (PBRN) provided other plausible

explanations for the variations, which will inform the micro-cost analysis phase of this study that will follow.

Revenue sources for STD prevention and control, particularly local tax support, appear to influence how CHDs respond to controlling these diseases and may be supplanting funds lost through state and federal sources. Understanding the nature, mutability and impact of variations in expenditures on STD service delivery is critical to improve the effectiveness and efficiency of STD services delivery and to direct resources where it is needed the most. Following the identification of major variations through this initial research, the PBRN research team is shifting its focus to examine explanations for the major variations that were identified by using interviews and micro-cost analysis methods[4] with those identified counties that exhibit the major variations. Clarifying where higher costs are unnecessary or could be reduced is critical where decisions are required to effectively allocate dwindling resources. Clarifying where lower costs reduce quality of services will also be critical in resource allocation for STD prevention/control.

SUMMARY BOX:

What is Already Known about This Topic?

One of the main functions of health departments is monitoring and controlling sexually transmitted diseases; however, the approach and funding for these services may vary by health department.

What is Added by this Report?

Population factors such as population density, poverty rates and racial mix may have an effect on disease rates but did not have a significant impact on the cost of providing STD services while the amount of local tax funding is linked to higher STD expenditure per case.

What are the Implications for Public Health Practice, Policy, and Research?

Revenue sources for STD prevention and control, particularly local tax support, appear to influence how CHDs respond to controlling these diseases and may be supplanting funds lost through state and federal sources.

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