

Realizing the goals of routine HIV screening programs: quantifying and implementing an effective HIV screening system in New York City's (NYC) public healthcare system based on optimal volume analysis.

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Project Objectives

1. Determine the optimal annual volume of HIV screening needed to find all HIV positive patients and identify them early in the HIV disease.
2. Establish an implementation process to realize that optimal annual screening volume.

Starting Points

- Annual screening volume is defined as the proportion of unique patients 13 and over that received HIV screening in the year.
- A stable reduction in the number of newly diagnosed patients indicates a routine volume of screening, which suggests the lower end of screening volume effectiveness.
- Concurrent HIV and AIDS diagnosis is used to indicate late diagnosis.
- Optimal volume is when the statistical chances for a facility of finding a concurrent HIV/AIDS diagnosis is zero.
- Optimal volume analysis will help determine the size of an HIV screening program. It is a public health tool, not a tool to determine if an individual patient should receive screening.



Optimal Annual Screening Volume

Methods:

- Since 2005, the 11 hospitals and 6 large community clinics run by the New York City Health and Hospitals Corporation (HHC) have had an initiative to increase HIV screening.
- Seven years of data, from fiscal year 2006 (FY06) through FY12, were analyzed to identify trends related to yield of new diagnoses and concurrent HIV and AIDS diagnoses. Data from the 17 facilities were analyzed individually and the collective efforts of all facilities were also reviewed to provide a city-wide perspective.
- Between FY06 and FY12:
 - 1,157,830 unique patients were tested in HHC facilities
 - 11,781 HIV diagnoses were made; 4,963 of them were new
 - Concurrent HIV/AIDS diagnoses for newly diagnosed patients dropped from 32.26% (FY06) to 25.27% (FY12)
 - Across HHC, the proportion of age-eligible patients screened went from 9.41% (FY06) to 18.03% (FY12)

Findings:

- Rates of new diagnoses level off when 20% of age-eligible patients were screened (Chart 1), providing a baseline for routine screening efforts; concurrent HIV/AIDS diagnoses reached statistical zero at screening rates of 40% (Chart 2).
- While screening rates increased by 104.7% over seven years, volume analysis demonstrated that rates need to further increase by 10.89% to reach desired 20% baseline and more than double to reach optimal annual screening volume.

Chart 1: Linear Spline Fit of Yield of New HIV Diagnoses

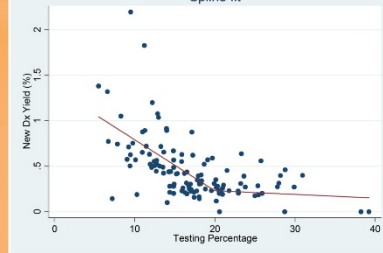
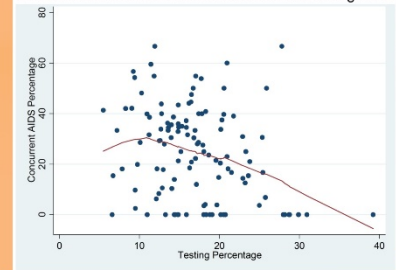


Chart 2: Linear Model of Concurrent HIV/AIDS Diagnoses



Implementation

- In 2013 facility HIV screening targets were increased to reflect volume analysis, and in the first year, 7 of the 17 facilities reached or exceeded new baseline targets.
- Program systems are being reviewed to identify improvements that allow for the necessary volume increase without additional financial resources. Areas of review include how to:
 - integrate HIV screening into existing processes;
 - utilize test technology;
 - use the electronic medical record to improve efficiency.

Conclusion:

- Quantifying targets against routine HIV screening goals allowed facilities to scale their program size and allocate resources accordingly.
- The program transitioned from utilizing non-evidence based annual test count increases to establishing annual targets based on optimal volume analysis.