

# Identifying New York State School Districts with High Incidence of *Chlamydia* in Females Age 10-19 Using Geographic Analysis

Brigitte Bekan Homawoo<sup>1</sup>, MD, MPH, Rosalind Thomas<sup>1</sup>, MPH, Alison Muse<sup>1</sup>, MPH, Benjamin Wise<sup>1</sup>, MS, Wei He<sup>2</sup>, MS and F. Bruce Coles<sup>1,3</sup>, DO.

(1) New York State Department of Health, Bureau of STD Control (2) Health Dialog Corporate Headquarters, Boston, MA (3) State University of New York at Albany, School of Public Health

## Background

- An estimated 2 million people in the United States are infected with *Chlamydia* each year. Adolescents and young adults are particularly affected by sexually transmitted diseases (STDs), including *Chlamydia*.
- The disease is asymptomatic in the majority of cases. If untreated, chlamydial infection may result in serious health problems such as pelvic inflammatory disease and infertility.
- In 2006 and 2007 respectively, 8,324 and 8,897 cases of *Chlamydia* were reported in young women (age 10-19 years) in New York State (NYS), excluding New York City (NYC).
- Identification of geographic patterns and epidemiologic trends through statistical analysis and mapping constitute useful surveillance and needs assessment methods to inform prevention and program activities and monitor the impact of existing interventions.

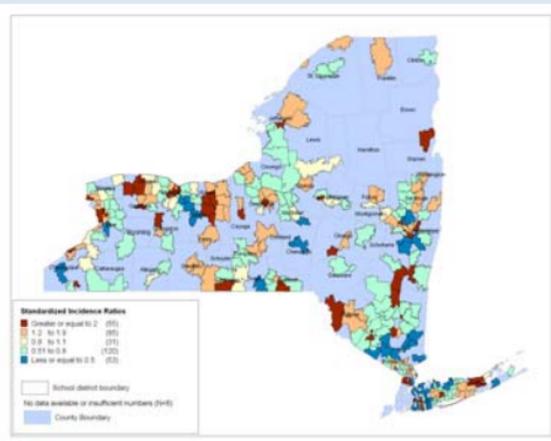
## Methods

- The following data sources were used to produce the maps:
  - STD cases with geographic information extracted from the Bureau of STD Control's (BSTDC) surveillance database;
  - NYS school district boundary files in shape format<sup>1</sup>; and
  - Ciaartis 2007 NYS population estimates, in SAS format, with census tract-level detail.
- MapInfo version 9.5 (Pitney Bowes) was used to create the maps for this analysis.
- Data from 2006 and 2007 were merged for this analysis, to increase data stability and reduce variability caused by low incidence in a school district. The NYS *Chlamydia* incidence rate for females aged 10-19 was 618 cases/100,000.
- These maps represent school district-level standardized incidence ratios (SIRs) for *Chlamydia* in NYS, excluding NYC. An SIR is a ratio of observed cases to expected cases.
- An SIR greater than 1.0 indicates that there were more cases than expected in an area. Five SIR ranges were established, representing relative SIRs. An SIR of 2.0 was arbitrarily selected as the beginning of the highest SIR range, indicating that within these school districts, there were at least two times as many observed cases of *Chlamydia* as were expected.
- The calculated SIR data was smoothed prior to mapping, using Head-Bang software version 3.0<sup>2</sup>. Data were smoothed using default settings with the exception of the maximum number of nearest neighbors, which was set to 4. Smoothing algorithms use information from surrounding areas to stabilize SIRs in sparsely populated areas.
- For confidentiality reasons, areas with fewer than six cases of *Chlamydia* in 2006-2007 were excluded. The choice of the 10-19 age range was guided by the NYS Department of Health Adolescent Sexual Health Workgroup's definition, which includes adolescents beginning at age ten. The cutoff at 19 years of age was used to include cases in older adolescents due to possible delays in diagnosis. Using this age definition allows comparison with existing epidemiological reports.

## Results

- 344 (49%) of the 695 NYS school districts outside of New York City had at least 6 *Chlamydia* cases reported among young females age 10-19 years. The location and SIR for these districts is shown on Map 1.
- Fifty-five (55; 29.1%) of these districts were identified in which the school age population has an SIR of 2.0 or greater.

Map 1. Standardized Incidence Ratios for *Chlamydia* in New York State by School District in Females Age 10-19 in 2006-2007



## Results, cont'd

- Since the focus of the project is to share data in a way that would be meaningful to local stakeholders, a series of additional maps was prepared. This included an overlay of school-based health centers (not shown) as well as regional maps (Maps 2-5).
- For the dissemination data brief, each regional map is paired with a data table listing key information on those districts in the region with an SIR of 2.0 or higher (female population aged 10-19; number of observed *Chlamydia* cases; smoothed SIR; county).

Map 2. Western New York Region



Map 3. Metropolitan New York Region



Map 4. Central New York Region



Map 5. New York Capital District Region



## Discussion

### Limitations:

- Females in the age group analyzed are proxies for the school-aged population. As seen in Table 1, over 50 % of infections occurred in those aged 18-19, who may not currently be enrolled in school.
- Results can be skewed by institutions such as colleges or juvenile detention facilities located in a school district. Additional analyses are planned to reflect the influence of cases from high reporting institutions.

Table 1. Age distribution of chlamydial infection in New York State Excluding New York City (2006-2007 combined)

Age	Number of Cases	Percent	Cumulative Cases
10-14	714	4.15	714
15	1,434	8.33	2,148
16	2,572	14.94	4,720
17	3,599	20.90	8,319
18	4,472	25.97	12,791
19	4,430	25.72	17,221

## Conclusions and Next Steps

- The spatial representation of *Chlamydia* in school districts can provide important information for School Boards who have the potential to be key community partners working alongside other stakeholders to address STD rates in adolescents in their districts. It also helps identify opportunities for targeted screening programs.
- Adolescent females infected with *Chlamydia* are proxies for enrolled students of the same age. STD programs can use mapping tools to share surveillance data in visual formats using units of analysis that have meaning to specific constituencies involved in local decision-making.
- A data brief featuring these maps (and associated tables) has been developed as a dissemination tool targeting the aforementioned stakeholders. The brief also includes facts on: sex education policy in NYS schools, Infertility Prevention Project screening sites and other *Chlamydia* screening centers, and outcomes from the 2007 NYS Youth Risk Behavior Surveillance System (YRBSS).

### References

<sup>1</sup><http://www.nysgis.state.ny.us/>

<sup>2</sup><http://srab.cancer.gov/headbang/>