

More day cares near by, more germs? Maybe not, according to whooping cough study

February 23 2017



Credit: Drexel University

Among parents, you often hear these four words: "Kids are germ factories."

But a new study out of Drexel University's Dornsife School of Public Health found that while you might think bringing more day [care facilities](#) to your block might make you and your neighbors sick more often, that doesn't appear to be the case.

Neal D. Goldstein, PhD, assistant research professor, led a team that looked into the density of day cares in Philadelphia and compared them to areas where cases of whooping cough (pertussis) occurred in the city.

"Hypothetically, more [day care](#) use could translate to more children, parents and caretakers getting sick because of everyone being in contact with each other. But we wanted to ask the question, 'Do these people carry germs back into the local community, making other kids sick?'" Goldstein explained. "The answer to that appears to be, 'No.' The presence of day cares in an area does not necessarily mean there is community risk of pertussis among kids."

However, numbers gathered for the study—which Goldstein and co-authors Loni Philips Tabb, PhD, and Seth Welles, PhD, of Drexel, and E. Claire Newbern, formerly with the Philadelphia Department of Public Health, published in *Public Health*—shows that vaccination is still the most important factor when fending off whooping cough.

In a large control group of Philadelphia children who were included in the study because they did not contract pertussis, 81 percent were current on their immunization against the illness. Among the group studied because they had contracted pertussis, just 64 percent were immunized.

"The most important factor we observed that was correlated with greater pertussis risk was lack of vaccination," Goldstein said. "We know that vaccination is important, but this analysis suggests that it's even more important than where you live."

The researchers looked at reported cases of pertussis in Philadelphia among children up to age six from 2001 through 2013—which amounted to 410—and mapped them against registered day care sites—roughly 2,000 in the city. To measure density, the team broke out the city's neighborhoods and assessed how many day care sites there were per square mile. They then overlaid these data with the number of pertussis cases also occurring in each neighborhood.

Data in the study did not show any correlation between higher densities of day care facilities and elevated prevalence of pertussis.

Goldstein said the lack of correlation between day cares and pertussis could come down to Pennsylvania's strict vaccination requirements for children in day care.

"This vaccination requirement should provide a base level of protection among children—and adults—provided that people have received the vaccine," he said. "Granted, these vaccination requirements can be exempted out of for medical and nonmedical reasons, but, hopefully, there are sufficient numbers of vaccinated children—and workers—to cancel out any affects of those who aren't vaccinated."

Varying levels of pertussis were found, regardless, in the city's different neighborhoods. While the city-wide average was six cases per neighborhood during the study time period, the South Broad-Girard Estates neighborhood showed 24 cases, with two nearby neighborhoods also having more than 10 cases. In the meantime, Center City, Fairmount-Spring Garden and Sharswood-Stanton at the center of Philadelphia and Overbrook Park-Wynnefield Heights in the west each just had three cases.

Some additional reasons for the lack of correlation between day cares and [pertussis](#) could include unregistered day cares that the study didn't

take into account, as well as the fact that people might not use day care in their immediate neighborhood. For instance, parents might use a day care closer to their job.

Future work might look into both of those potential confounders.

"I would love to capture unregistered day cares in our data and have knowledge of where people take their children to day care," Goldstein said. "To do this, we would need to design a prospective study, enroll parents and children, and then follow them for several years for the outcomes to occur."

With such a prospective study being both time and resource-consuming, there is a lot of value in looking more deeply into the current study.

"With this type of pressing [public health](#) work, we don't always have the luxury of waiting for a prospective study, which is why it's important to take a look at what data we have available today and analyze and report on what we see," Goldstein concluded.

More information: N.D. Goldstein et al, Density of day cares in relation to reported pertussis incidence in Philadelphia, *Public Health* (2017). [DOI: 10.1016/j.puhe.2017.01.015](https://doi.org/10.1016/j.puhe.2017.01.015)

Provided by Drexel University

Citation: More day cares near by, more germs? Maybe not, according to whooping cough study (2017, February 23) retrieved 2 May 2024 from <https://medicalxpress.com/news/2017-02-day-germs-whooping.html>

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