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Original Research

Does closure of children's medical home impact their immunization coverage?

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ABSTRACT

Objectives: Little is known about the impact closing a health care facility has on immunization coverage of children utilizing that facility as a medical home. The authors assessed the impact of closing a Medicaid managed care facility in Philadelphia on immunization coverage of children, primarily low income children from racial/ethnic minority groups, utilizing that facility for routine immunizations.

Study design: Observational longitudinal cohort case study.

Methods: Eligible children were born 03/01/05–06/30/07, present in Philadelphia's immunization information system (IIS), and were active clients of the facility before it closed in September 2007. IIS-recorded immunization coverage at ages 5, 7, 13, 16 and 19 months through January 2009 was compared between clinic children age-eligible to receive specific vaccines before clinic closing (preclosure cohorts) and children not age-eligible to receive those vaccines prior to closing (postclosure cohorts).

Results: Of 630 eligible children, 99 (16%) had no additional IIS-recorded immunizations. Third dose DTaP vaccine coverage at age seven months among preclosure cohorts was 54.4% vs. 40.3% among postclosure cohorts [risk ratio 1.31 (1.15,1.49)]. Fourth dose DTaP coverage at 19 months was 65.9% vs. 57.7% [risk ratio 1.24 (1.08,1.42)]. MMR coverage at 16 months was 79.5% vs. 69.9% [risk ratio 1.47 (1.22, 1.76)]. Coverage for the 431331 vaccination series at 19 months was 63.8% vs. 53.8% [risk ratio 1.28 (1.12,1.88)].

Conclusions: Immunization coverage declined at key age milestones for active clients of a Medicaid managed care that closed as compared with preclosure cohorts of clients from the same facility. When a primary health care facility closes, efforts should be made to ensure that children who had received vaccinations at that facility quickly establish a new medical home.

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Introduction

The health care industry has undergone many organizational changes, including extensive consolidation of facilities through mergers and formation of health care systems.[1–7] The last two decades have seen an unprecedented number of mergers.[6] These changes are initiated for a variety of reasons, including cost savings for the merging facilities. Within a local market, consolidation often results in changes to delivery of care.[1,8–10]

Little is known about the impact of consolidation of health care facilities on the well child care of children, and particularly among low income children from racial and ethnic minority groups, who had previously received care at a closed facility. Routine immunization coverage can serve as one indicator of well child care receipt as immunizations are recommended to be received at most well child visits for through age 18 months.[11–15]

In Philadelphia, a consolidation of health care systems resulted in one facility ceasing provision of well child care, including vaccinations, in September 2007. This facility primarily served low income inner city children from racial and ethnic minority groups and enrolled in Medicaid managed care. The population living in the zip code containing the facility is 49.3% white, 22.4% some other race, and 20.1% black, with 43.8 of the population of Hispanic or Latino ethnicity.[16] Parents of children who had received care at this facility could transfer their child's care to clinics operated by other health systems that were located within a few blocks of the original clinic. In addition, another clinic under the same health care system was located approximately one mile away. The extent to which these options were adopted by parents whose children had received care at the closed clinic and the impact of the closing on children's vaccine coverage rates is unknown.

This study sought to determine the impact of closing a large Medicaid managed care facility on immunization rates and timeliness of vaccination among children who had received their initial vaccinations at a clinic that was subsequently closed, requiring a change in medical home. This study also examined characteristics of the provider these children next visited for immunizations. Lessons learned from this experience can help communities to better cope with the closing of a large infant immunization provider and ensure that affected children will be protected from vaccine preventable diseases.

Methods

Using the Philadelphia immunization information system (IIS), the City of Philadelphia Department of Public Health (PDPH) identified eligible children. Eligible children were those born March 1, 2005–June 30, 2007, present in the IIS, and receiving their last vaccination at the closed clinic. Using the IIS, PDPH then assessed immunizations received by all eligible children through January 1, 2009 from all IIS-participating providers. All childhood immunization providers in the City of Philadelphia participate in the IIS and almost all providers are enrolled in the Vaccines for Children (VFC) program. The VFC program provides vaccines at no cost, as well as preventative services in a comprehensive primary care home, to children in families who may not be able to afford the vaccines.[17] Of the annual birth cohort in the City of Philadelphia, almost all (98.7%) are entered into the IIS through the input of Pennsylvania's birth registry, 71% are Medicaid-eligible and 83% are eligible for the VFC program.[18]

Children were assessed by one month birth cohorts for antigen specific coverage and overall vaccination series coverage using the IIS. Specifically, children were assessed for the receipt of the second dose of the diphtheria, tetanus toxoid, and acellular pertussis vaccine (DTaP2) at age five months, DTaP3 at age seven months, the measles, mumps, and rubella vaccine (MMR) at age 13 and 16 months, and DTaP4 at age 19 months. At age 19 months, children were also assessed for coverage with the 431331 series ($\geq$4 doses of DTaP; $\geq$3 doses of inactivated poliovirus vaccine (IPV); $\geq$1 dose of MMR; $\geq$3 doses of *Haemophilus influenzae* type b conjugate vaccine (Hib); $\geq$3 doses of Hepatitis B vaccine (HepB); $\geq$1 dose of varicella vaccine (VAR). Children were allowed a 30-day grace period to receive each recommended vaccine, and vaccinations were considered valid if they were administered on or after the minimum recommended interval between doses.

Vaccination coverage was compared between one month age cohorts of children receiving care at the closed clinic and age-eligible to receive specific vaccines before clinic closing (preclosure cohorts) and one month age cohorts of children not age-eligible to receive those vaccines prior to closing (postclosure cohorts). For example, DTaP3 coverage was compared between one month cohorts of children who reached seven months of age before the clinic closed and one month cohorts of children who reached seven months after the clinic was closed. Before closing, this clinic vaccinated a monthly average of 54 children <19 months of age. This study was reviewed and approved by the Institutional Review Board of the City of Philadelphia Department of Public Health.

Results

Follow-up of clinic children

A total of 630 children had their last IIS-recorded vaccination at the closed clinic, were <19 months old when the clinic closed, and had not yet received all vaccinations due by age 19 months. Of these, 99 (16%) had no record of seeing another immunization provider in the IIS between September 24, 2007 and January 1, 2009, 15 months after the clinic closed.

For the 531 children with vaccinations recorded in the IIS after the clinic closed, 400 (63%) saw one provider, 104 (17%) saw two, and 27 (4%) saw three or more providers in the 15 months after the clinic closed. The most frequent next vaccinator served 301 (65%) of these children, is a hospital-based clinic under the same management as the original clinic, and is located approximately one mile away from the closed clinic. There were a variety of other frequent vaccinators, each serving no more than 4% of the 531 children.