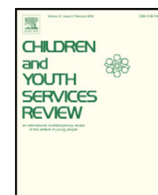
Children and Youth Services Review 52 (2015) 103–109

Contents lists available at ScienceDirect

Children and Youth Services Review

journal homepage: www.elsevier.com/locate/childyouth



Do children in foster care receive appropriate treatment for asthma?

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ARTICLE INFO

Article history:
Received 19 December 2014
Received in revised form 3 March 2015
Accepted 3 March 2015
Available online 10 March 2015

Keywords:
Asthma
Foster care
Health care
Congregate care
Administrative data

ABSTRACT

Asthma is the most common childhood chronic disease, and children in foster care have the highest rates of chronic conditions of any studied child population. The purpose of this study is to determine whether there are disparities in asthma management and health care utilization between children in foster care and other children covered by Medicaid in the state of Illinois. We use performance measures developed by the state child welfare system as well as those developed by the National Committee on Quality Assurance and used throughout the country. The study sample was drawn from linked administrative data on children in foster care and paid Medicaid claims. In order to determine the influence of living arrangement setting within the child welfare system, children in foster care were further grouped according to whether they lived in a stable home setting, a stable congregate care setting, or other living arrangement. We found that children living in home settings performed better on most performance measures than income-eligible Medicaid children. In contrast, children with asthma living in congregate care were particularly vulnerable as reflected in poor asthma care measurements and high utilization of hospitalizations despite positive performance on indicators of medication use. This population presents a significant challenge to the child welfare and health care delivery systems.

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1. Introduction

Asthma is the most common childhood chronic disease, and children in foster care have the highest rates of chronic conditions of any studied child population (Leslie et al., 2005; Stein et al., 2013). The highest rates of asthma prevalence in the United States (9.5%) are among African American children aged 0 to 17 years and among children in families living below the poverty level (Akinbami et al., 2012; Perrin, Anderson, & Cleave, 2014). African American and low-income children are over represented in the foster care population (Child Welfare Information Gateway, 2011) and have disproportionately high rates of asthma prevalence (Scott, Smith, & Ellis, 2012).

Stress has been associated with risk factors for asthma including early-life stress-related programming causing stress-related sequelae (Weil et al., 1999; Wright, 2011). Maltreatment can cause both severe physical and psychological stress occurring once or repeatedly, producing long-lasting damage. Scott et al. (2012) found that maltreatment was associated with 2.88 times the odds of an asthma diagnosis, compared with youth not reported to a child protection agency (Scott et al., 2012). Asthma was identified by caregivers as the most common chronic diagnosis among children in foster care (32.8%) in the National Survey of Child and Adolescent Well-Being (Jee et al., 2006).

To provide quality health care for children in foster care with serious health problems, Illinois developed a state-wide system of health care called HealthWorks of Illinois. The system's primary focus is to ensure that all children have access to qualified pediatric trained physicians in the medical home model. From previous research, children in foster care in Illinois used more health services (Bilaver, Jaudes, Koepke, & Goerge, 1999), received more preventive services (Early Periodic Screening Diagnosis and Treatment (EPSDT) visits and dental visits) (Jaudes, Bilaver, Goerge, Masterson, & Catania, 2004), and had decreased Emergency Department visits among those with chronic conditions (Jaudes, Champagne, Harden, Masterson, & Bilaver, 2012) compared to other children with chronic conditions covered by Medicaid.

The purpose of this study was to determine whether there are disparities in asthma management and health care utilization between children in foster care and other children covered by Medicaid in the state of Illinois, and specifically whether there is a disparity with regard

Abbreviations: HEDIS, Healthcare Effectiveness Data and Information Set; CHIPRA, Children's Health Insurance Plan Reauthorization Act; DCFS, Department of Children and Family Services; ASM, use of appropriate medications for people with asthma; MMA50 and MMA75, Medication Management for People with Asthma; AMR, asthma medication ratio; ICD-9-CM, International Classification of Diseases, 9th revision Clinical Modification; ED, emergency department; CPT, Current Procedural Terminology

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http://dx.doi.org/10.1016/j.childyouth.2015.03.004
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to the use of primary care, emergency department visits, hospitalizations and prescribed asthma medications.

We also address whether asthma management differs by the type of placement for youth in the child welfare system—such as a home setting versus congregate care. Home setting here is defined as traditional foster care, kinship foster care, or specialized foster care where asthma management is provided by a foster parent for a child in foster care. Caregivers, either in unrelated or in kinship foster care home settings, are powerful drivers of health care for children in foster care (Schneiderman, Smith, & Palinkas, 2012). Congregate care is defined as placement in a group home or residential setting where asthma management is provided by shift personnel/professionals. In theory, youth are placed in congregate care as a last resort or for psychosocial problems that cannot be easily addressed in a family setting (Barth, 2002). Youth in congregate care usually have more behavior/mental health problems than youth in "home settings." In fact, 70% of youth place in restrictive care setting have been placed there for behavior-related placements including disruption or behavior problems (James, Landsverk, Leslie, Slymen, & Zhang, 2008).

2. Methods

2.1. Data and study sample

This study uses linked administrative data on child welfare system involvement and paid Medicaid claims drawn from the Integrated Database (IDB) on Children's Services in Illinois (Goerge, Van Voorhis, & Lee, 1994). The IDB links records across public human service agencies using a technique called probabilistic record matching (Newcombe, 1993; Roos & Wajda, 1991; Roos, Wajda, Nicol, & Roberts, 1992) The method uses the likelihood that two records belong to the same person by matching multiple pieces of identifying information across databases (e.g., names, birth dates, gender, race).

The study sample was drawn from the population of Illinois children aged 5–17 years eligible for Medicaid due to child welfare system involvement or income between fiscal year (FY) 2010–2012 (July 1, 2009–June 30, 2012). We excluded children eligible for Medicaid due to disability although some of the children in foster care may have qualifying disabilities. The study sample was further selected according to the length of Medicaid eligibility and consistency of living arrangement. First, we selected children who were continuously eligible for Medicaid during the FY and the 6-month period prior to the start of the FY in either of the two categories of eligibility (foster care or Medicaid income-eligible). Next, we categorized children according to placement experiences. Children in "home settings" were those living in a single, continuous relative, or non-relative (including specialized) foster home for the entire fiscal year. Similarly, children in "congregate care settings" were those living consistently in residential treatment or group home settings during the fiscal year. Finally, we defined the remaining children as living in "other settings." Other settings include events such as runaway or juvenile detention, but it also includes children who experienced a placement change (any change of living arrangement setting lasting at least 1 day) of any kind during the fiscal year and thus were not in a continuous living arrangement. All income-eligible Medicaid recipients were assumed to be in a continuous living arrangement for the measurement year. Across the 3 fiscal years of measurement, we had a total of 15,963 child-year observations in the foster care eligibility group and 2,598,537 child-year observations in the Medicaid income-eligible group. Although children could be included more than once over the study period, the number of repeated measures differed by eligibility group. Nearly half of the children in the foster care ($n = 8{,}837$) appeared only once in the sample compared with only 23% in the income-eligible children ($n = 1{,}125{,}048$). We chose to analyze repeated measures in order to estimate population average affects smoothed over the 3-year study period.

2.2. Variable definitions

2.2.1. Asthma performance measures

Several asthma performance measures were used as dependent variables in our analysis. Measures were taken from the 2012 National Committee for Quality Assurance's Healthcare Effectiveness Data and Information Set (HEDIS) tool, a modification of a 2011 Children's Health Insurance Plan Reauthorization Act (CHIPRA) initial core set candidate measure, and indicators defined by the Illinois Department of Children and Family Services (DCFS).

2.2.1.1. Percent of asthma patients with ≥1 asthma-related emergency room visits. This measure reports the percentage of pediatric patients with an asthma diagnosis during the fiscal year that has one or more ED visits during the fiscal year. The denominator for this measure includes all children with a primary International Classification of Diseases, 9th revision Clinical Modification (ICD-9-CM) diagnosis code beginning with 493. The numerator includes all children with claims for Emergency Department (ED) visits (as defined by HEDIS provided Current Procedural Terminology (CPT) codes or inpatient category of service) and a primary diagnosis code beginning with 493. We used inpatient category of service in our Medicaid data as an additional indicator of ED use because we found many hospitalizations that had no corresponding ED claim. We counted a hospitalization as an ED visit because children are hospitalized through the ED. The definition of this indicator varies slightly from the technical specifications laid out for CHIPRA measure 20 in 2011.

2.2.1.2. Percent of asthma patients with ≥1 asthma-related hospitalizations. This measure reports the percentage of pediatric patients with an asthma diagnosis during the fiscal year that has one or more inpatient hospitalizations during the fiscal year. The denominator is the same as the denominator of the percent of asthma-related ED visits. The numerator includes all children with an inpatient hospitalization (as defined category of service codes) and a primary diagnosis code beginning with 493 during the fiscal year. This indicator was developed by DCFS.

2.2.1.3. Percent of asthma patients with ≥1 asthma-related outpatient visits. This measure reports the percentage of pediatric patients with an asthma diagnosis during the fiscal year that has one or more outpatient visits during the fiscal year. The denominator is equal to the denominator of the percent of asthma-related ED visits and hospitalizations. The numerator includes all children with an outpatient visit (as defined by HEDIS provided CPT codes) and a primary diagnosis code beginning with 493 during the fiscal year. This indicator was developed by DCFS.

2.2.1.4. Use of appropriate medications for people with asthma (ASM). This measure describes the percentage of pediatric patients with persistent asthma who were appropriately prescribed medications during the fiscal year. Children with persistent asthma are defined according to the following HEDIS criteria: (a) those with at least one ED visit or inpatient hospitalization with a primary asthma diagnosis, (b) those with four outpatient visits with a primary asthma diagnosis *and* at least two asthma medication dispensing events, and (c) those with at least four asthma medication dispensing events. Asthma medication dispensing events and appropriate (preferred) medications are identified through national drug codes on paid prescription claims. Lists of particular national drug codes were provided through the HEDIS tool.

2.2.1.5. Medication Management for People with Asthma (MMA50 and MMA75). This measure describes the percentage of pediatric patients with persistent asthma who remained on an asthma controller medication for at least 50% and 75%, respectively, of their treatment period. Children with persistent asthma are defined according to the same

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