BREATHE: Baltimore Realizing Equity in Asthma Treatment in Health and Education

Cohort:
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Location:
Baltimore, Maryland

Focus Areas:
Disease Prevention & Health Promotion
Early Childhood
School-based Health Care

Background

Health and educational disparities in childhood are the antecedents of longstanding inequality (Crombie, Irvine, & Elliott, 2005; Basch, 2011). Targeting health and educational outcomes for marginalized children has the potential to optimize success and address inequality (Crombie, Irvine, & Elliott, 2005; Basch, 2011; Cheng & Solomon, 2014). Asthma is one of the most prevalent diseases of childhood and one of the leading causes of school absenteeism (Barnett & Nurmagambetov, 2011). In the US, asthma disparities have been well documented with poor and minority children suffering a greater burden of disease (Gold & Wright, 2005). Baltimore City has significant child health and educational disparities by race and socioeconomic status, and one of the highest pediatric asthma hospitalization rates in the nation (Spencer, Petteway, Bacett, & Barbot, 2011).

School attendance is strongly related to educational achievement and health. Over 25% of children in Baltimore City schools are chronically absent. Chronic absenteeism, defined as missing ≥10% of days or at least a month, is a predictor of school dropout, which is associated with poor outcomes, including violence, teen pregnancy, and unemployment (Balfanz & Byrnes, 2012). Asthma is a major medical risk factor for chronic absenteeism and poor school performance (Balfanz & Byrnes, 2012).

Although administering daily corticosteroid controller asthma medications decreases hospitalizations and emergency department (ED) visits by more than 50%, up to 60% of children prescribed asthma controllers fail to follow the correct regimen (NHLBI Asthma Education and Prevention Expert Panel Report, 2007; Laforest, Licaj, Devouassoux, et al, 2016). There are many barriers to children receiving controller medications.

Wicked Problem Description

Studies have shown that directly observed therapy (DOT) of daily asthma controller medication in schools significantly decreases asthma symptoms, increases school attendance, and improves quality of life (ROI Evidence Base: Studies on Asthma, 2007; Findley, Thomas, Madera-Resse, et al., 2010). Further, DOT significantly decreases rescue medication use, asthma exacerbations, and school absenteeism (Halterman J, Szilagyi P, Fisher S, et al., 2011). School-based DOT also can promote family-centered, culturally competent care that considers the family's needs, beliefs, and health literacy. It is also an opportunity to engage in capacity building toward individual, developmentally appropriate self-management goals. However, it has been challenging to scale implementation of school-based controller DOT due to the difficulty of coordinating across sectors including clinicians, insurers, schools, and families (Halterman JS, Fagnano M, Montes G, et al., 2012). Barriers to quality care in school settings include lack of coordination among providers, parents, and schools, which result in poor outcomes, and increased costs. Providing school-based DOT is a natural way to align the health delivery, financing, public health, educational, and community sectors.

Project Strategies

Aims

We aim to: 1) work across sectors with healthcare (school-based health center and primary care providers), health financing (insurers), public health (local and state agencies), education sectors (school district and individual schools), and the community to design and implement a school-based asthma controller DOT program; 2) evaluate process, health, and educational outcomes pre- and post-implementation; and 3) create a roadmap for program implementation, reproducibility, and scalability. The project will engage multiple sectors including healthcare, healthcare financing, public health, education, and the community.

Approach

For Aim 1 and 2, we will employ a quasi-experimental design comparing health and educational outcomes pre- and post-implementation of school-based asthma controller DOT. For Aim 3, semi-structured interviews with stakeholders will be conducted about facilitators and barriers to school-based controller DOT.

Setting

The Rales Health Center (RHC) is located within a large public charter school. The elementary school serves 805 students and the middle school 718 students (83% eligible for free/reduced-price meals and >99% African American).

Outcomes

We will compare key outcomes for students receiving school-based asthma controller DOT to their pre-asthma controller DOT implementation values. These measures include process (e.g., percent of children on controllers receiving DOT), asthma (e.g., ED asthma rate, asthma symptoms), and educational outcomes (e.g., percent chronic absence). Qualitative semi-structured, in-depth interviews will use a grounded theory approach and be conducted with key-stakeholders, at baseline, 12, and 24 months.

Timeline

Year 1

- *Implementation:* Finalize program design, train staff, and implement school-based asthma controller DOT
- *Stakeholder Engagement:* Cross-Sector Stakeholder Asthma Controller Advisory Group meets twice a year
- *Education and Community Engagement:* Education and outreach to families and community healthcare providers
- *Evaluation:* Interview stakeholders and analyze process outcomes

Year 2

- *Implementation:* Refine implementation of school-based asthma controller DOT based on outcomes and community feedback
- *Stakeholder Engagement:* Cross-Sector Stakeholder Asthma Controller Advisory Group meets twice a year Education and Community Engagement: Ongoing education and outreach to families and community healthcare providers
- *Evaluation:* Interview stakeholders and analyze process, health, and education outcomes

Year 3

- *Implementation:* Refine implementation of school-based asthma controller DOT based on outcomes and community feedback
- *Stakeholder Engagement:* Cross-Sector Stakeholder Asthma Controller Advisory Group meets twice a year

- *Education and Community Engagement:* Ongoing education and outreach to families and community healthcare providers
- *Evaluation:* Interview stakeholders and analyze process, health, education, and cost outcomes
- *Dissemination:* Dissemination of program outcomes to community members and stakeholders; Create a road map for implementation, reproducibility, and scalability of school-based asthma controller DOT for other schools and school systems

Partnerships

Every stage of project planning, implementation, evaluation, analysis, and dissemination will actively involve consulting a Cross-Sector Stakeholder Asthma Controller Advisory Group that includes parents and community members. Ensuring the broadest impact, advisory team partners represent health (providers and insurers), public health, education, and community sectors. Partnerships with families, school leadership, and community healthcare providers will be central to program planning and implementation.

Evaluation Strategies

- *Data Analysis:* Exploratory and descriptive statistical analysis will be performed. Chi-square and paired-sample t-tests will be used to compare outcomes between pre and post paired-samples and means for continuous variables. Interview themes will be identified by two coders and triangulated with an advisory group. A cost-analysis, including cost-savings and return on investment, will be performed from health system and societal perspectives.
- *Dissemination:* The process, health, and education outcomes in combination with the lessons learned from qualitative stakeholder data will be used to generate a cross-sector implementation road map with actionable items. All findings will be disseminated to community partners.