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School-based telemedicine combined with in-school care helped children manage asthma

Preventative telemedicine could play a key role in helping school-aged children with asthma manage their condition, according to a recent study published in *JAMA Pediatrics*, led by Jill Halterman, MD, MPH of the University of Rochester, Department of Pediatrics, with pediatrics departments at Johns Hopkins School of Medicine and the University of Arkansas for Medical Sciences. The study, covered in multiple media sources, reported that children who used telemedicine and in-school care for asthma had fewer emergency room visits than children who used “enhanced usual care.”

Patients and methods

Researchers enrolled 400 students from the Rochester City Schools, which the study considered an impoverished district. Children ranged from age three to ten, with an average age of 7.8 years. Most identified as African American (57.6%) or Hispanic (31.8%), and 61.8% were male. A majority had public health insurance and about half lived at home with a smoker. Before participating, children had an average of 7.2 symptom-free days per two weeks. Parents and guardians reported that 48% went to the emergency room or were hospitalized for asthma in the prior year and 68% were prescribed daily preventative medication. Children were assigned to one of two asthma management programs for one school year be-

tween 2012 and 2016. Researchers examined outcomes when the school years were completed, specifically the average number of symptom-free days per two weeks.

The study used the School-Based Telemedicine Enhanced Asthma Management (SB-TEAM) program that had been developed by Halderman, et al. to build on school-based care programs already used in the Rochester City School District. The SB-TEAM added telemedicine to traditional treatment, enabling school-based providers to conduct exams and schedule clinician consults, in real time through a virtual visit or within three days. The clinicians also worked with the child’s parents, either by phone or telemedicine visit, to discuss care management and coordination, pass along information and answer questions. For children in the SB-TEAM program, a telemedicine visit was scheduled at school at the beginning of the school year, and at selected times. Whenever possible, the child’s primary care provider was included in the visit, and University of Rochester clinicians were used when necessary.

In the enhanced usual care (eUC) group, children and their caregivers received a guidance-based symptom assessment, a recommendation for medications, education materials, and were contacted on a regular basis to discuss care and collect feedback.

Results

After the SB-TEAM intervention, children had more days in which they were symptom-free per two weeks compared with children who received enhanced usual care (11.6 vs. 10.97; difference, 0.69; 95% CI, 0.15-1.22; $P = .01$). The researchers observed the most notable difference between the two groups during follow-up (difference, 0.85; 95% CI, 0.10-1.59). Furthermore, children in the SB-TEAM group were less likely to receive care from emergency departments or require hospitalization related to their asthma (7% vs. 15%; OR, 0.52; 95% CI, 0.32-0.84).

“The SB-TEAM intervention yielded statistically significant improvements in outcomes among urban children with persistent asthma,” wrote the authors. “Children had more symptom-free days, fewer days with activity limitation, reduced airway inflammation, and fewer emergency department visits or hospitalizations for their asthma.”

Discussion

The study made particular mention of the value of school nurses and health aides in the program. “Most covered multiple schools and had many competing demands on their time, yet children received their preventive medications almost every day they were in school,” explained

Halterman. Nurses did not receive extra compensation for participation in the program.

Halterman and her team said “a telemedicine platform encompassing schools, primary care providers and caregivers offers particular value in an urban setting, where children are at a high risk of encountering gaps in care. As we continue to work toward sustainability of these care models, it is important to consider resources available in each community to build collaborations that can be continued. Such models are most valuable if they reach the children at highest risk, fit logically into existing care systems, and ensure treatment can be delivered systematically and efficiently. In the future, sustained and enhanced funding for school-based programs will be critical, as care provided in schools can clearly improve outcomes for the children with greatest need. Our hope is that such care models will continue to expand nationwide to ensure the goals of therapy are met for all children with asthma to ultimately eliminate disparities in their health status.”

“These are encouraging results and highlight the potential for telemedicine supplementing a school-based asthma program,” noted Matthew Greenhawt, MD, MBA, MSc, Associate Professor of Pediatrics, Director Food Challenge and Research Unit, Section of Allergy and Immunology, Children’s Hospital Colorado, University of Colorado School of Medicine, in a written commentary. “Some of the effects seen were small, despite being significant. However, small gains are very welcomed within this at-risk asthma subgroup, and hopefully this group and others can build upon this promising study.”

References

This article incorporates content from the following publications:

Effect of the School-Based Telemedicine Enhanced Asthma Management (SB-TEAM) program on asthma morbidity: A randomized clinical trial. Halterman JS, *JAMA Pediatr.* 2018 Mar 5;172(3):e174938. doi: 10.1001/jamapediatrics.2017.4938. Epub 2018 Mar 5.

School-based telemedicine program decreases severity of asthma. *Healio/In the Journal’s Perspectives (JAMA Pediatrics)*, January 18, 2018.

School-based telemedicine helps city kids manage their asthma. *mHealthIntelligence*, Eric Wickland, January 8, 2018.

Study: Telemedicine combined with in-school care could help kids manage asthma. *Mobihealthnews*, Laura Lovett, January 10, 2018.