



# What Works to Reduce Unnecessary Care for Bronchiolitis? A Qualitative Analysis of a National Collaborative

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## ABSTRACT

**OBJECTIVE:** Unnecessary care is well established as a quality problem affecting acute viral bronchiolitis, one of the most common pediatric illnesses. Although there is an extensive quality improvement literature on the disease, published work primarily reflects the experience of freestanding children's hospitals. We sought to better understand the specific barriers and drivers for successful quality improvement in community and nonfreestanding children's facilities.

**METHODS:** We undertook a mixed methods study to identify correlates of success in a bronchiolitis quality improvement collaborative of community hospitals and children's hospitals within adult hospitals. We assessed site demographic characteristics, compliance with project interventions, and team engagement for association with end of project performance. We then used performance quartiles on a composite assessment of project measures (use of bronchodilators and steroids) to design a purposive sample of sites approached for qualitative interviews.

**RESULTS:** Team engagement was the only factor quantitatively associated with better performance in the overall cohort. Fifteen sites, from the total cohort of 21, completed qualitative inter-

views. Qualitative themes around team engagement, including the presence of buy-in for successful sites and the inability to engage colleagues at unsuccessful sites, were important differentiating factors between top and bottom performance quartiles. Regardless of performance quartile, most programs cited intra-institutional competition for limited resources to do quality improvement work as a specific barrier for pediatrics. The ability to overcome such barriers and specifically garner information technology (IT) resources also differentiated the top and bottom performance quartiles.

**CONCLUSIONS:** Team engagement showed a consistent association with success across our quantitative and qualitative evaluations. Competition for limited resources in this cohort of nonfreestanding children's programs, particularly those in hospital IT, was a key qualitative theme.

**KEYWORDS:** bronchiolitis; deimplementation; quality improvement

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## WHAT'S NEW

This study contributes new information on the importance of competition for limited resources to address pediatric quality issues in community and smaller children's programs, within the context of reducing unnecessary care for bronchiolitis.

BRONCHIOLITIS IS A self-limited acute viral lower respiratory tract infection in children younger than 2 years of age, and one of the most common reasons for pediatric hospitalization.<sup>1</sup> A major challenge with the disease is that no specific therapy meaningfully changes the course of illness, and most diagnostic testing has been proven un-

necessary or even harmful.<sup>2–4</sup> There is a substantial medical literature regarding continued overuse of disproven therapies and unhelpful testing, as well as unwarranted variation in care.<sup>5–8</sup>

Other than establishing clinical pathways and auditing compliance, there is little further information available about characteristics of successful quality improvement (QI) efforts to reduce unnecessary tests and therapies for bronchiolitis. “Deimplementation”<sup>9</sup> and “deinnovation”<sup>10</sup> are newly coined terms to describe this type of QI work, which might require different strategies than interventions that promote the uptake of tests or treatments. Furthermore, published approaches might not reflect all of the important elements in successful projects, because cultural and

interpersonal factors are increasingly shown to play important roles in QI, particularly as complexity science concepts are applied to health care.<sup>11</sup> Finally, most pediatric QI studies on bronchiolitis have been performed in large freestanding children's hospitals,<sup>5</sup> whereas most care occurs in community hospitals and children's programs nested within larger adult hospitals.<sup>12</sup>

In this study we attempted to link performance in a national, multisite QI collaborative on acute viral bronchiolitis to themes from qualitative interviews conducted with participating teams to investigate drivers and barriers to performing deimplementation QI in such settings.

## METHODS

We conducted a mixed methods study linking site performance and qualitative interviews with teams from hospitals participating in the Quality Collaborative for Improving Hospital Compliance with the American Academy of Pediatrics (AAP) Bronchiolitis Guidelines (BQIP).<sup>13</sup> We intended to explore participants' experience with a project specifically focused on deimplementation and performed in understudied settings, including community and nonfreestanding children's hospitals. We began with a positive deviance framework,<sup>14</sup> intending to investigate factors that yielded more successful improvement, although we also gathered information on factors that impeded efforts. This project was approved by the AAP institutional review board. Written, informed consent was obtained from participants before interviews.

### PARTICIPANTS

Twenty-one hospitals participated in the collaborative, a voluntary project with a goal of reducing unnecessary care for inpatient bronchiolitis over a 1-year period; the specifics of the project, which involved the evaluation of care for 1869 total patients, are published elsewhere.<sup>13</sup> Each site included an interprofessional team, led by at least 1 pediatrician, but also including respiratory therapists, nurses, and other staff.

### QUANTITATIVE DATA COLLECTION

We collected data on site characteristics before and after the project. Information on hospital type (community vs children's hospital); volume of bronchiolitis admissions; baseline knowledge, attitudes and behaviors; existence of local QI tools and resources; and adoption of the specific tools promoted in the project were assessed.

All 21 sites were stratified using a composite ranking of both the end of project performance and the magnitude of change achieved on 3 key process measures: the rate of any inpatient bronchodilator use, the numbers of doses of bronchodilator per patient, and rate of any inpatient steroid use (note: lower is better for all measures). These measures were chosen because unnecessary use of bronchodilators and steroids was the primary focus of the collaborative and there was wide intrainstitutional variation in their utilization.<sup>13</sup> End of project performance was defined using

average utilization rates across the 3 postintervention months. Magnitude of change was defined as the relative difference in average pre-versus postproject performance. We ranked sites for each measure for postproject performance and magnitude of change achieved and averaged the ranks into a composite project performance rank with equal weighting given to each domain. Sites were then stratified according to quartile on the basis of composite performance rank and these performance ranks were used to target sites for qualitative interviews with the intention to oversample high and low performers.

### QUALITATIVE DATA COLLECTION

Interviews were conducted via telephone and were prespecified to last up to 30 minutes. The qualitative framework informing our approach was thematic analysis. We specifically sought to understand factors that might explain the differential performance within the group and that were not apparent on the basis of the quantitative analysis. We used a purposive sampling strategy, beginning by interviewing sites at the extremes of performance, successful and unsuccessful. We subsequently scheduled interviews with the next highest- and lowest-performing institutions until all quartiles were sampled. The investigator performing the interviews was unknown to the study participants, and was blinded to sites' performance status and the sampling strategy until study completion. The principal investigator sequentially reviewed all transcripts and made the decision not to pursue further interviews after the top and bottom quartiles were 80% sampled and no new themes appeared to be emerging from the middle quartiles.

The interview guide was developed a priori by the principal investigator on the basis of the stated goals of the project, which were derived from a systematic review of the QI literature on bronchiolitis.<sup>5</sup> Interview questions were open-ended in nature and were about the team members' experience during the collaborative, as well as their perceived performance on project measures. Interviews began with general questions, such as: "Tell me about your experience with this project," and "Tell me about any barriers you encountered during your project" and then moved to measure-specific questions, such as "Tell me about your experience with the bronchodilator measure in this project." No performance data were discussed or shared during the interviews, and sites remained unaware of the exact performance rankings used in this study, although they did have access to their own data and mean collaborative performance benchmarks throughout the project. Interviews were audio-recorded with the permission of the participants and subsequently transcribed verbatim.

### DATA ANALYSIS

Quantitative data were analyzed using candidate site characteristics and evaluating for an association with postproject performance. Characteristics assessed included: hospital type (defined as community vs children's hospital within a hospital); patient volume (defined as higher volume if at least 20 cases of bronchiolitis per month during

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