Adoption of Best Practices Increases Proportion of Outpatient to Acute Care Pediatric Asthma Visits

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**Rationale**: Many children have uncontrolled asthma leading to frequent and costly acute care visits with notable disparities among low-income and African Americans. This 10-month intervention adapted four effective approaches (i.e., practice facilitation, collaborative learning, performance feedback, and academic detailing) known to promote implementation of expert asthma guidelines in a scalable program approved for Maintenance of Certification, Part 4 by the American Board of Medical Specialties. We hypothesized program participation would be associated with increased adoption of best practices and correlate with both an increase in the proportion of primary care (outpatient) to acute care asthma encounters and total asthma patients in participating health centers.

**Methods:** Asthma best practices (34 indicators) were surveyed before and after participation in 12 Extension for Community Health Outcomes (ECHO®) video teleconferences approved for category one CME that incorporated peer-led case studies and expert didactics. Using Medicaid administrative claims, we examined change in asthma control indicators before and at one-year intervals during and after participation. A dashboard of indicators (Asthma Risk Panel Report [ARPR]) was developed and refined with health center input to track outcomes and support care management. Regional, health center, and provider-level ARPRs were compiled and repeated over time. The primary outcome was the proportion of outpatient and preventive services to total asthma encounters (PopTe). Significance was tested using Chi-square or paired t tests.

**Results**: Five pediatricians participated in the intervention Asthma Care Accelerator ECHO with predominately African American children with asthma receiving care. Four remained at their original practice site allowing evaluation of ARPRs for a baseline year and one or more sustaining years. Across providers PopTe ranged widely from 64% to 87%. There were significant increases in PopTe for two participating pediatricians from 71% to 84% (p < .0001) and 64% to 79% (p = .008). Asthma emergency department visits also significantly declined for the two practices. The larger regional ARPR of > 10,000 children showed a PopTe of 67% at baseline and 70% in the follow-up year. At the onset, a low rate (10 of 34 or 30%) of adoption of asthma best practices was observed. At the end of the post period, this rose to 22 of 34 (65%). Total patients increased for three of the four participating practices.

**Conclusion:** This intervention has shown effectiveness in improving adoption of best practices, promoting outpatient care in lieu of acute and urgent care, and increasing the number of children served by health centers.

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| Table 1. Proportion of Outpatient to Total Asthma Encounters, Visit Type, and Adoption of Best Practices, Pre- and Post-Intervention, Missouri Medicaid Participants (< 21 years of age) | | | | | | | |
|  | **Clinician** | **Total Encounters** | **Pre**  **%** | **Total Encounters** | **Post**  **%** | **Difference** | **Significance**  ***p*** |
| PopTe | **1\*** | 163 | 74.8 | -- | -- | -- | -- |
| **2** | 66 | 84.8 | 226 | 86.7 | 1.9 | .69 |
| **3** | 284 | 70.8 | 404 | 84.2 | 13.4 | < .0001 |
| **4** | 217 | 75.6 | 193 | 75.6 | 0.0 | 1.0 |
| **5** | 102 | 63.7 | 135 | 79.3 | 15.6 | .008 |
| **2-5** | 669 | 73.7 | 958 | 81.5 | 7.8 | .15 |
| **Region** |  | 67.0 |  | 70.0 | 3 | -- |
|  |  | **N** |  | **N** |  |  |  |
| Asthma  Emergency Department Visits (Patients with ≥ 1 visit) | **1\*** | 78 | 26.9 | -- | -- | -- | -- |
| **2** | 33 | 18.2 | 79 | 21.5 | -3.3 | .69 |
| **3** | 216 | 22.7 | 224 | 18.3 | -4.4 | < .0001 |
| **4** | 106 | 27.4 | 104 | 26.0 | -1.4 | .82 |
| **5** | 56 | 35.7 | 105 | 20.0 | -15.7 | .0299 |
| **2-5** | 411 | 25.3 | 512 | 20.7 | -4.6 | .10 |
| Asthma  Hospitalizations  (Patients with ≥ 1 day) | **1\*** | 78 | 8.9 | -- | -- | -- | -- |
| **2** | 33 | 3.0 | 79 | 3.8 | 0.8 | .84 |
| **3** | 216 | 2.3 | 224 | 0.0 | -2.3 | .023 |
| **4** | 106 | 2.8 | 104 | 3.8 | 1.0 | .69 |
| **5** | 56 | 7.1 | 105 | 1.9 | -5.2 | .097 |
| **2-5** | 411 | 3.2 | 512 | 1.8 | -1.4 | .17 |
|  |  | **Outpatient Encounters/N** | **Avg per patient** | **Outpatient Encounters/N** | **Avg per patient** |  |  |
| Outpatient Encounters / Asthma Patients (N) | **1\*** | 122/78 | 1.56 | -- | -- | -- | -- |
| **2** | 56/33 | 1.70 | 196/79 | 2.48 | 0.78 | .80 |
| **3** | 201/216 | 0.93 | 340/224 | 1.52 | 0.59 | .58 |
| **4** | 164/106 | 1.55 | 146/104 | 1.40 | -0.15 | .93 |
| **5** | 65/56 | 1.16 | 107/105 | 1.02 | -0.14 | .93 |
|  |  | **Score** |  | **Score** |  |  |  |
| Best Practices | **1** | 15 | 44.1 | 19 | 55.9 | 4 | .33 |
| **2** | 9 | 26.5 | 19 | 55.9 | 10 | .0145 |
| **3** | 8 | 23.5 | 24 | 70.6 | 16 | .0001 |
| **4** | 9 | 29.4 | 23 | 67.6 | 14 | .0008 |
| **5** | 10 | 29.4 | 23 | 67.6 | 13 | .0018 |
| **Mean**  **1-5** | 10.2  (SD 2.775) | -- | 21.6  (SD 2.408) | -- | 11.4 | .005 |
| PopTe: Proportion of outpatient + preventive visits to total asthma encounters; -- Data not available/calculated. | | | | | | | |
| \*Terminated employment during post-year, included in best practices, excluded from other analyses. | | | | | | | |
| Best Practices include high quality medical care, clinical operations, administration, and community services. | | | | | | | |

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