Reducing Older Adult Asthma Disparities (ROAAD) Study Summary

Purpose:

Older adults have the highest mortality rate and the second highest hospitalization rate for asthma in Massachusetts. Over 78% of MA adults aged ≥65 with asthma have asthma that is poorly controlled. Older adults with asthma face challenges in asthma self-management, with many lacking knowledge about the condition, its triggers, and appropriate medication use, while also experiencing socioeconomic, cultural, and linguistic barriers and other comorbidities. The Massachusetts Department of Public Health sponsors the ROAAD study, implemented by the Lowell Community Health Center (LCHC) and UMASS Lowell and evaluated by JSI Research and Training Institute, Inc. to assess the feasibility of a clinically-integrated Community Health Worker (CHW) home visiting program to improve asthma control and quality of life for older adults.

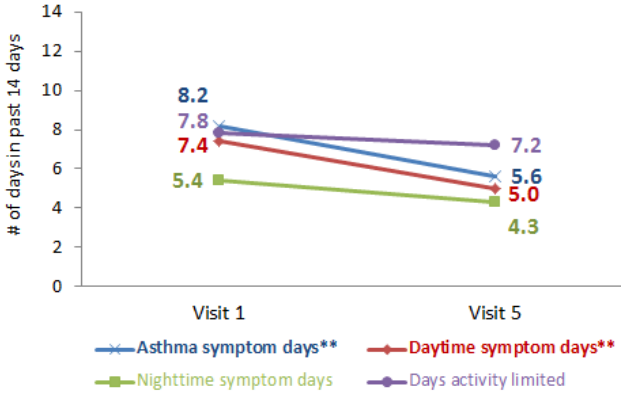
Intervention Design:

LCHC patients age 62+ with poor asthma control who speak English, Spanish, or Khmer were eligible and recruited. Those who consented received 5 home visits during the first 6 months and a 12-month phone follow-up from a CHW who can bridge cultural and linguistic barriers. CHWs provided asthma self-management education, assessed the home environment to identify triggers, engaged and taught patients to reduce exposures (dust, pets, pests, mold, smoke, chemicals), and made referrals for medical, legal, housing, transportation and social services as needed. A nurse accompanied on at least two visits to address complex care needs, conducted medication reconciliation, and provided instruction on medication use, while working with the clinical team to implement an asthma action plan (AAP) for the patient. Patients received allergen-resistant mattress and pillow covers, cleaning and storage supplies, a HEPA vacuum cleaner, and educational materials.

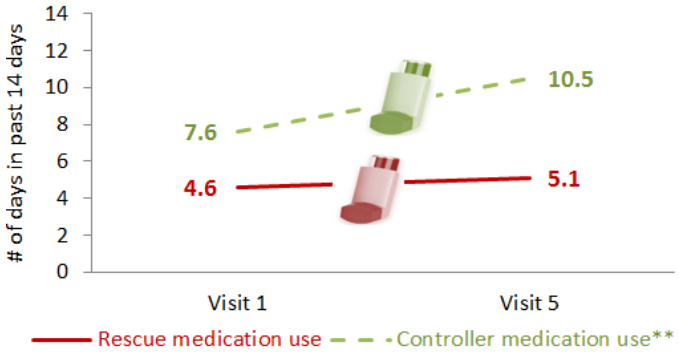
Findings:

Ninety-eight patients enrolled in the ROAAD study and completed visit 1: 78% female, 49% Hispanic/Latino, 24% White, 8% Black, 29% Asian, 41% identified as other (e.g. Columbian, Dominican, Portuguese, Puerto Rican). The average age was 70 years (60-89). About 47% spoke Spanish at home, 26% English, 26% Khmer, 3% other, and 1% Portuguese. Seventy-seven percent rent, 17% own their home, and 6% live with family/friends; overall 47% live in public housing. About 96.9% had health insurance at baseline - 42.9% had Medicare, 69.3% Medicaid, and 32.7% also had private insurance. Sixty-eight percent had less than a high school education. About one in five (19%) also had COPD. Fourteen patients (14.3%) reported smoking every day or some days at baseline. *A total of 85 patients completed visits 1 and 5 and were included in the pre-post analyses summarized below.*

Reduced asthma symptoms - The number of days in the past 14 that patients reported asthma symptoms decreased from an average of 8.2 to 5.6 days.

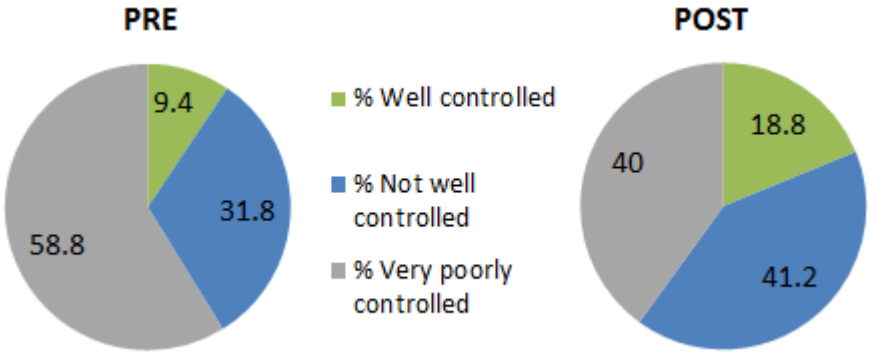


Improved medication adherence – The number of days in the past 14 that patients reported using their controller medication increased from an average of 7.6 to 10.5 days.



Asthma Control Status – Asthma control status was determined based on patients' responses to four questions on the 2-week asthma symptom recall questionnaire that measured days with daytime and nighttime asthma symptoms and use of

rescue medications. Over time, patients' asthma control status improved – the percentage of patients who had poorly controlled asthma decreased from 58.8% at baseline to 40.0% at visit 5. A larger percentage (18.8%) of patients had well-controlled asthma at visit 5 (compared to 9.4% at baseline) (p=0.0205).

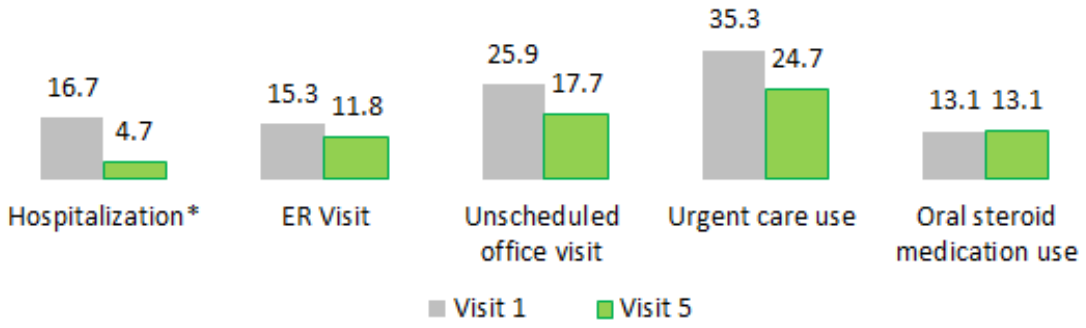


Reduced Preventable Healthcare Use – Poor asthma control can lead to increased use of preventable healthcare services. Compared to baseline (16.7%), a significantly smaller percentage (4.7%) of patients at visit 5 reported any asthma-related hospitalizations in the last six months (p=0.0184). ER visits, unscheduled office visits, and urgent care use also decreased, but were not statistically significant. There was no change in oral steroid medication use, which remained at 13.1%.

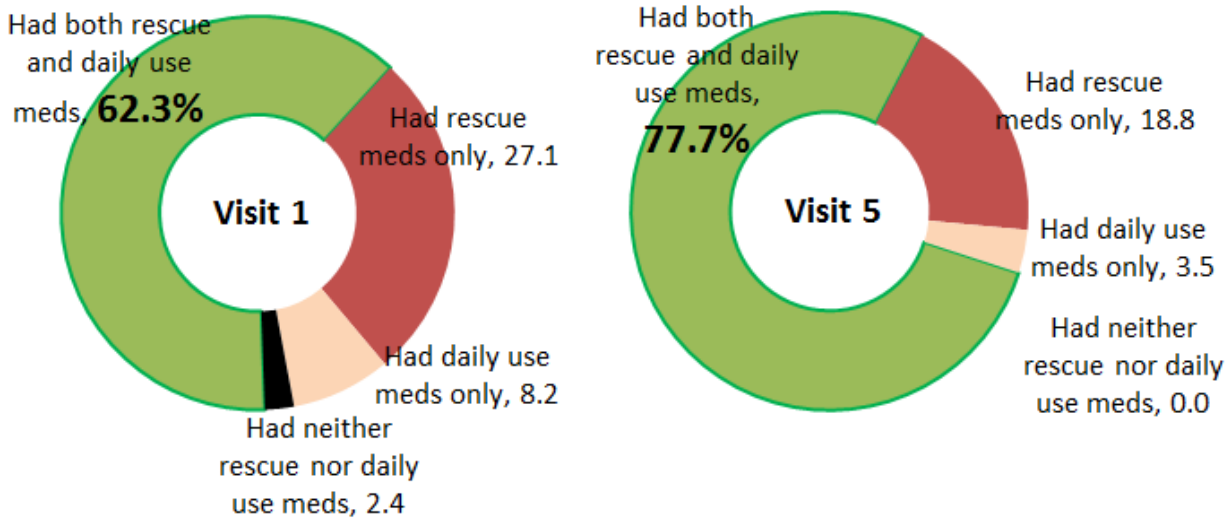
.

Healthcare utilization rates decreased between baseline and visit 5

A smaller 4.7% of patients reported asthma-related hospitalizations in the last 6 months at visit 5, compared to 16.7% at baseline



Reconciled Asthma Medications and Asthma Action Plan - Only one patient had an Asthma Action Plan at baseline; by visit 5, 82% had a written AAP which the ROAAD CHW and visiting nurse reviewed with the patient (p<0.0001). Also, at visit 5, 78.6% of patients reported having used the AAP to decide which medicines to take when their asthma got worse. The visiting nurse also conducted a medication inventory and provided medication reconciliation. At baseline, 62.3% of patients had both rescue and controller asthma medications; this increased to 77.7% by visit 5 (p=0.0067, when comparing having both rescue and daily use medication versus all other regimen combinations- either or or none). A smaller percentage of patients had rescue-only medication (27.1% to 18.8%). By visit 5, all of the patients had at least one form of asthma medications (2.4% had no medications at baseline).

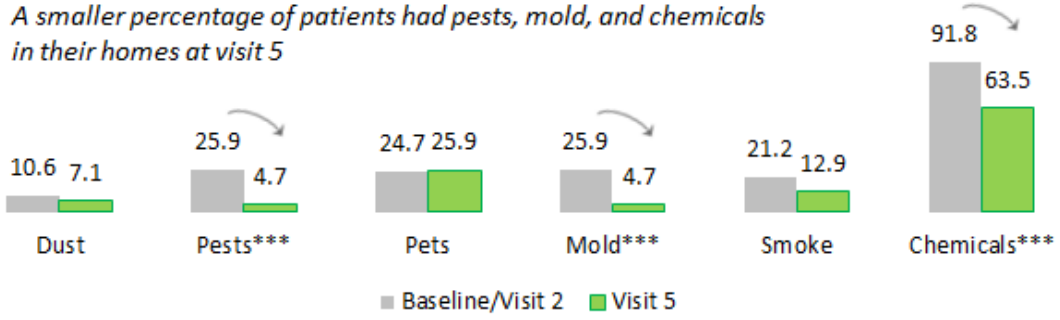


*Note: statistically significant differences denoted by *p<0.05, **p<0.01, ***p<0.0001*

Reduced Environmental Triggers - A smaller percentage of patients had pests (4.7%), mold (4.7%), or chemicals (63.5%) in their homes at the 5th visit, as compared to at baseline (pests: 25.9%, mold: 25.9%, chemicals: 91.8%, all p<0.0001). The average number of triggers decreased from 2.0 to 1.2 (p<0.0001). Also, a smaller 7.1% of patients had 3 or more triggers either observed by the CHW or self-reported by the patient at visit 5, compared to 35.4% at baseline.

> *For asthma, going into the home is really key to understanding what triggers might be in the environment.*
>
> – LCHC Provider

A smaller percentage of patients had pests, mold, and chemicals in their homes at visit 5

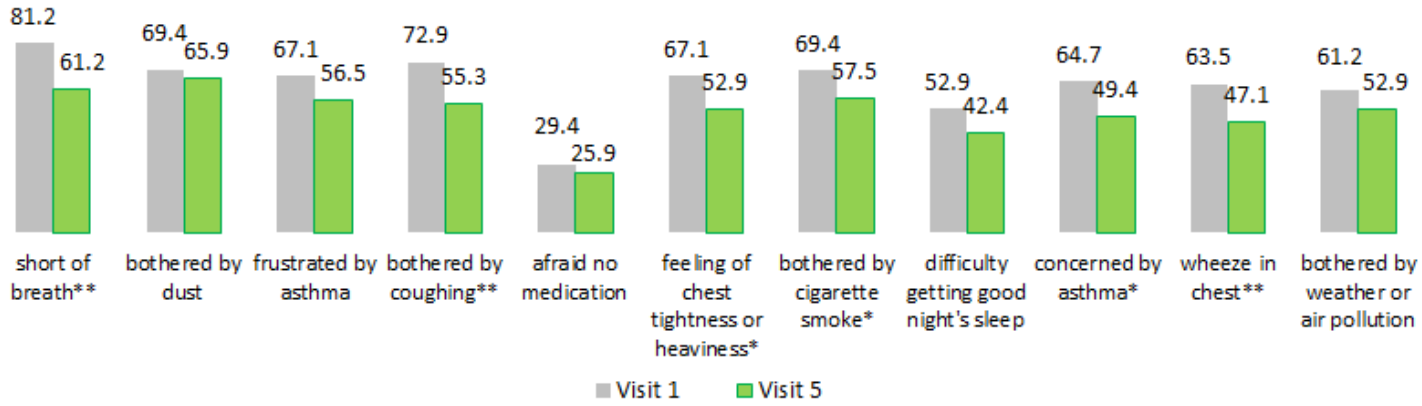


Improved Asthma Quality of Life - Patients reported on how often their asthma affected them and the extent to which their activities were limited in the past 2 weeks. A lower percentage of patients reported that their asthma bothered them all, most, a good bit, or some of the time at visit 5, compared to baseline. The average score for the 11 areas shown below increased from 3.9 to 4.4 (p<0.0001), where a higher score indicates less impairment on daily life.

> *My asthma is under control now and I want to keep it that way. Thank you for this program.*
>
> – ROAAD Participant

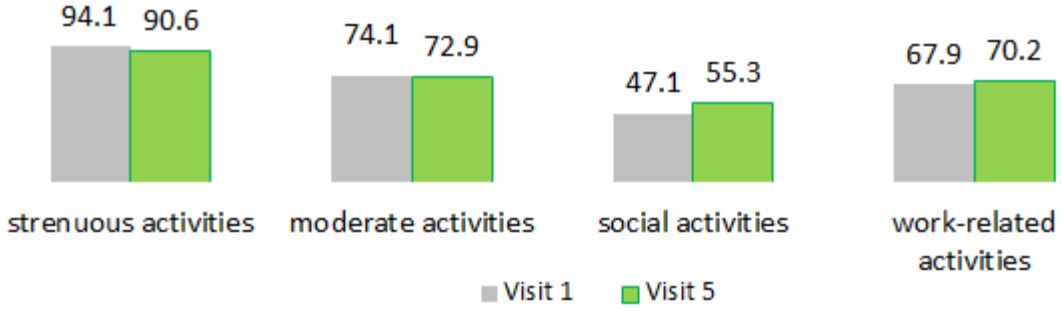
Six of 11 asthma-related quality of life measures improved

81.2% of patients felt short of breath due to asthma all, most, a good bit, or some of the time at baseline, compared to 61.2% at visit 5



Overall, there were no statistically significant differences in reported activities limitation due to asthma between baseline and visit 5. The activities limitations score did not change (3.5 to 3.4).

Activities limitation did significantly differ between baseline and visit 5 - *the percentages of patients reporting activity was totally, extremely, very, or moderately limited due to asthma were similar*

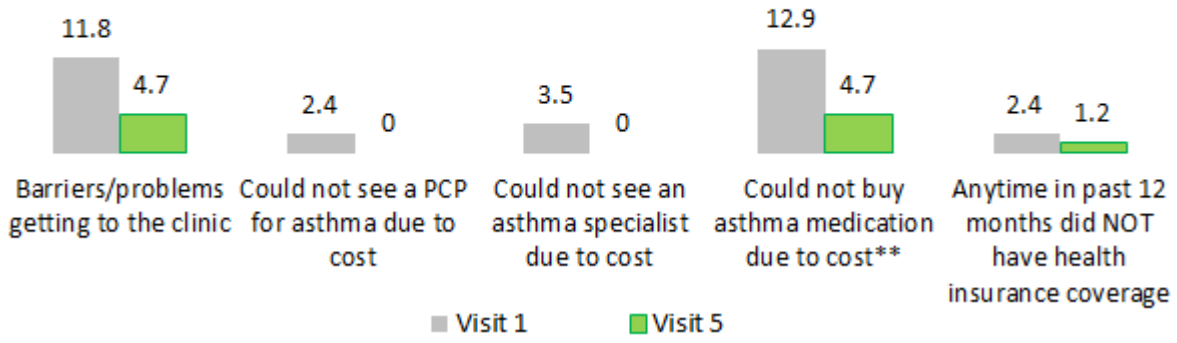


Reduced Barriers to Healthcare – CHWs assessed patient needs and made referrals and connections to social, community and other medical services as needed. Ten patients (11.8%) had barriers getting to the clinic at baseline; four patients (4%) experienced this problem by visit 5, likely because CHWs connected many to transportation services; although this finding was not statistically significant. A few patients reported not being able to see a PCP or asthma specialist at baseline; no patient reported this barrier at visit 5. Eleven patients (12.9%) reported not being able to afford asthma medications at baseline, compared to 4 (4.7%) at baseline (p=0.0082).

> *"This has created trust and rapport for community health workers within the health center in a way we hadn't been able to before.*
>
> *– Chief of Community Health & Policy*

Barriers to healthcare decreased between baseline and visit 5

A smaller 4.7% of patients reported not being able to buy asthma medications at visit 5, compared to 12.9% at baseline



*Note: statistically significant differences denoted by *p<0.05, **p<0.01, ***p<0.0001*

Recommendations

- Early & ongoing full provider engagement/health center buy-in is essential.
- Modifications to the model suggested include extra nurse/nursing time as needed.
- Availability of extremely low-literacy fact sheets and community resources are valuable.
- Further study is recommended that involves multiple sites, a larger cohort, and a control trial.
- Varied CHW models of integration need to be explored. This may entail employing CHWs to provide asthma home visiting across the life spectrum and/or CHWs supporting a broader range of chronic conditions in addition to asthma and COPD.
- Opportunities exist for dissemination of the model as the state embraces new health care reform models and payment systems that may cover CHW services emphasizing culturally competent, wellness-oriented health care.

> *We are in a major paradigm shift in transitioning to quality of care. Some of these quality measures may become cost-effective. ROAAD was a plus-plus and I'm only realizing its full value having communicated with more of our providers.*
>
> – LCHC Provider

> *Accountable care organizations are looking at improvement in health outcomes, capping the total cost of care, and improving efficiencies in the system. This model definitely helps achieve all of those.*
>
> – Chief of Community Health & Policy