

Background

Eastern North Carolina has the highest rates of asthma emergency department visits and in-patient hospitalizations in the State of North Carolina. Through home-based visits, National Institute of Environmental Health Sciences guidelines were used to reduce environmental exposures in the home to minimize asthma triggers in children.

Project Goals

For children with asthma, living in poor quality, indoor housing environments can play a critical role in causing asthma attacks and ED visits.

By the conclusion of the fellowship year, the goal was to assist at least 25 of the 35 families served in achieving 3 of the following:

- Properly using asthma medication as prescribed, following their asthma action plan
- Reduce ED visits by 50-75% over a 5 - 6 month period
- Reduce the number of times a rescue inhaler is needed to less than twice a week
- Reduce the occurrence of waking up from sleep due to asthma symptoms to less than twice a month
- Eliminate at least one environmental trigger in the home

Intervention Strategies

The project utilized two intervention strategies;

- 1) Home-based asthma intervention approach that includes a combination of tools, including an environmental visual assessment checklist to identify asthma triggers present in the indoor environment. Through home assessments and interviews with families, it is possible to determine asthma triggers related to asthma symptoms and attacks. Each home is evaluated for the presence of cockroaches, rodents, mold and moisture, dust, signs of smoking indoors, roof leaks/ water damage, fragrances, stuffed toys and furry pets. Environmental measurements in the home are collected using 1) an Amprobe THWD-3 temperature and relative humidity device; and 2) Extech meter to measure moisture in home building materials. 3) FLIR (Forward-Looking Infrared Device
- 2) SDOH screening tool. A SDOH screening tool is used to evaluate the socio-economic and well-being of family needs (i.e., food insecurity, housing insecurity, safety, stress and transportation issues.



Asthma Triggers

Name of person completing form: _____ Relationship to patient: _____

Age: _____ Sex: ☐ Male ☐ Female ☐ Other Primary Language: ☐ English ☐ Spanish ☐ Other: _____

Race/ethnicity: ☐ Non-Hispanic White ☐ Hispanic/Latino, or Spanish Origin ☐ Black or African America ☐ Asian ☐ American Indian or Alaskan Native ☐ Middle Eastern ☐ Pacific Islander ☐ Two or more races ☐ Other: _____

Country: _____

We believe everyone should have the opportunity for health. Some things like not having enough food or reliable transportation or a safe place to live can make it hard to be healthy. Please answer the following questions to help us better understand you and your current situation. We may not be able to find resources for all your needs, but we will try and help as much as we can.

1. Within the past 12 months, did your food run out before you got money to buy more?	Yes	No
2. Within the past 12 months, have you ever stayed: outside, in a car, in a tent, in an overnight shelter or temporarily in someone else's home (i.e. couch surfing)?	Yes	No
3. Are you worried about losing your housing?	Yes	No
4. Do you have problems with pests (such as cockroaches, mice, and/or bed bugs), mold, lead and/or water leaks at the place you stay?	Yes	No
5. Have you been impacted by hurricane or flooding?	Yes	No
6. Within the past 12 months, have you been unable to get utilities (heat, electricity) when it was really needed?	Yes	No
7. Within the past 12 months, has a lack of transportation kept you from medical appointments or from doing things needed for daily living?	Yes	No
8. Some children have trouble with learning and struggle to keep up with other students. Do any of your school-age children have problems at school?	N/A	Yes No
9. Some people with serious, long-term health problems may qualify for disability income benefits. Does anyone in your household have a serious long-term health problem?	Yes	No
10. Does anyone in your household need help getting health insurance?	Yes	No
11. Does anyone in the household need help getting medicines?	Yes	No
12. Would you like help with any of the needs that you have identified?	Yes	No

SDOH Screening Tool



Social Determinants of Health

Patient ID Number _____ Location Address: _____ City: _____

Environment-Housing Assessment (File only – not for client 01.24.2018)

Date: ____/____/20____

Weather conditions outside: Rainy Windy Sunny Humid Snowing Other: _____

Inspector Name: _____

Check humidity and temperature in the following: Inside: Rh: _____ Temp: _____

Measure mattress in child's sleeping room. Length: _____ Width: _____ Depth: _____

Housing: Single family detached house _____ Apartment building _____ Duplex _____ Triplex _____ Mobile Home _____

Year Built: _____ (look under toilet tank lid, date is sometime there)

Questions to ask Client:

Rent _____ Own _____ Lease _____ Other _____

Length of Time lived in this home? Years _____ or Months _____ or Weeks _____

Has child ever been tested by doctor for allergies No DK YES (If Yes, Circle which ones tested positive)

1. Dust	7. Household cleaners	13. Cold/Infections
2. Weather	8. Mice/Rodents	14. Stress/Anxiety
3. Roaches	9. Pollen/Ragweed	15. Other Explain
4. Tobacco smoke	10. Stuffed Animals	
5. Pets	11. Carpets	
6. Mold	12. Exercise/playing	

What activity was your child involved with shortly before their last asthma attack, or do you think makes your child's asthma worse? List _____

How sure do you feel you can control your child's asthma by making changes in your home?

1. Very Sure 2. Somewhat Sure 3. Not Sure

In the last 12 months, have you had any problems with cockroaches, mice or other bugs? Yes _____ No _____ DK _____

When is the last time you had your air conditioning unit serviced (HVAC) by a qualified HVAC company? Cleaning coils: _____

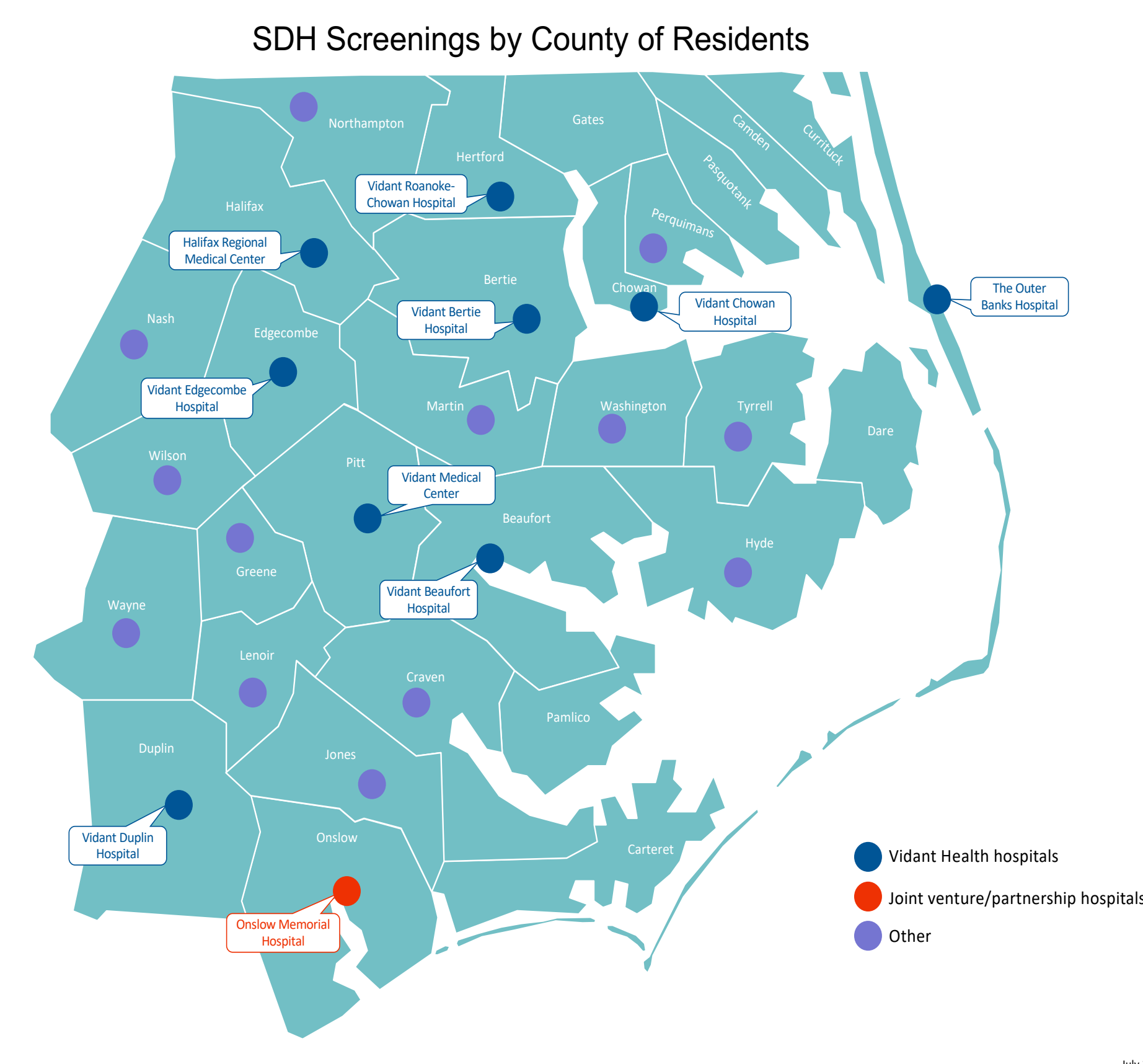
< 3 months ago < 1 year ago 1–2 years ago > more than 2 years ago never DK

During the past 12 months, has there been water or dampness in your home from broken pipes, Leaks Heavy rain or floods? Look at these areas and test for moisture when inspecting home. Yes _____ No _____ DK _____

Does your home frequently have a mildew odor or musty smell? Yes _____ No _____ DK _____ (If yes, ask if they can isolate which room or area is present)

In the past six months have you had any of the following pets living in your home? Cat _____ Dog _____ Gerbil _____ Guinea pig _____ Rabbit _____ Bird _____ Other pets _____

Environmental Assessment Form



Schweitzer Project Service Area

Results

- 26 of the 35 families eliminated at least one environmental trigger in the home.
- 34 out of 35 children reduced the need for a rescue inhaler to less than twice a week due to asthma education and/or home remediations.
- 10 out of 35 families have reported the reduction of coughing episodes at night.
- ED visits have been reduced to an all-time low with only 1 child reporting to the hospital after participation in our program.

Discussion

Asthma is a respiratory condition in which the bronchi of the lungs undergo inflammation, causing constriction in the airways making it difficult to breathe. There are roughly 6.2 million children under the age of 18 living with the condition in the United States, as it is the number one leading chronic illness among children and youth.

Greater emphasis is needed on providing education about asthma triggers and early detection signs to avoid asthma attacks. With increased knowledge, informed decisions could be made to prevent asthmatic episodes resulting in fewer days missed at school and less interrupted sleep, which is arguably just as important.

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