

A stylized graphic on the left side of the slide. It features two green mountain peaks of different heights. Below the mountains is a green wavy band representing a forest or grass. At the bottom is a blue wavy band representing water. The entire graphic is composed of solid-colored shapes with no outlines.

# Multnomah County Healthy Homes

Existing Programs and  
Approaches

***Kim Tierney, Program  
Supervisor, Healthy  
Homes and Families***

***Multnomah County  
Environmental Health,  
Portland, Oregon***

Multnomah County Healthy Homes and Housing Programs 988-3663 \* 24571  
Referrals to Healthy Homes, CAIR and AIR are made through <http://www3.multco.us/CAIR/> .or [infocair@multco.us](mailto:infocair@multco.us)  
Our Staff will determine the most appropriate program for the referral based on health needs, income, housing issues and capacity.

LeadLine:  
(800) 368-5060 or  
(503) 988-4000

**The Multnomah County Healthy Homes Asthma Program**  
<http://web.multco.us/health/healthy-homes>

Free program offering 4 **home visits each by a Community Health Nurse and Community Health Worker** to help families identify and reduce things that may be making a child's asthma worse.  
**Free housing supplies and Links to community resources**  
**Education** about medication use, improving indoor air quality and reducing asthma triggers at home.  
**To Qualify:**  
Low-Income (200% FPL)  
County Resident  
Asthma diagnosis  
Age 0-18  
Case load limit –8 per month

**The Unincorporated Multnomah County Rental Housing Inspections program**  
<http://web.multco.us/health/rental-housing/>

Free inspection of rental homes in areas of Multnomah County that fall outside the city limits of Portland, Gresham, Wood Village, Troutdale, Maywood Park and Fairview.  
**Complaints:** Interior and exterior home inspection, noting any violations of the county rental housing code. Violations reported to both the tenant and landlord, and will need to be resolved to pass a second inspection.  
**Exterior Assessment:** Baseline study to determine quality of housing stock. Exterior inspection only.  
**To Qualify:**  
Resident of Unincorporated Multnomah County  
Renter  
Complaint about quality of housing

**The Multnomah County Asthma Inspection Referral program (AIR)**  
<http://web.multco.us/health/healthy-homes>

A web-based referral system for medical practitioners to refer their pediatric patients with asthma for a free **ONE-TIME** home inspection, conducted by an Environmental Health Specialist.  
Medical providers and families receive a **report on asthma triggers in the child's home**, and inspector works with families and with permission of the family, with landlords to eliminate poor housing conditions  
**To Qualify:**  
No income restrictions  
Resident of Multnomah County  
Asthma diagnosis  
Age 0-18

**The Community Asthma Inspection Referral program (CAIR)**  
<http://web.multco.us/health/healthy-homes>

A web-based referral system for Community Based Organizations and providers to refer clients with housing related health problems for a free home inspection, conducted by a Community Health Worker. Children with uncontrolled health concerns will be referred to a Community Health Nurse for follow up and if needed, care.  
Community Health Worker and Environmental Health Specialist will work with families and landlords to improve housing conditions and fund structural repairs. Program also links families to community resources.  
**To Qualify:**  
Low-Income (200% FPL)  
Resident of Multnomah County  
No Doctor Required  
Asthma or Health Issue Req.  
Age 0-18

**The Leadline**  
[www.leadline.org](http://www.leadline.org)  
The Leadline provides information and referrals for local lead programs and services such as:  
•Free Childhood Blood Lead Screening  
•Home Remodeling and Repair Information  
•Free Tap Water Testing  
•Free Lead Poisoning Prevention Workshops  
•Soil Testing  
•Renter's Rights Advocates  
**To Qualify:**  
Resident of Oregon. No income restrictions for LeadLine phone service, some restrictions for programs we refer to. The person answering the LeadLine will help navigate eligibility.

Gisela Garcia  
503-988-3663  
X 24571

Jeff Strang  
503-988-3663  
X25799

Gisela Garcia  
503-988-3663  
X 24571

Gisela Garcia  
503-988-3663  
X 24571

Perry Cabot  
503-988-3663  
X 24308

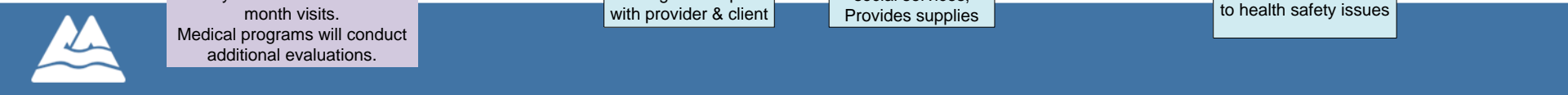
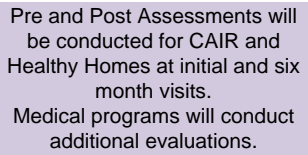


# Healthy Homes Program

- Multidisciplinary team with a nurse case manager and CHW
- Provision of supplies including vacuum cleaners, green cleaning kits, encasements
- Environmental education & behavioral intervention
- Linkage and referral to community partners who assist with weatherization or relocation
- Evaluation component that drives quality practice change and defined outcomes



## Work Flow for Healthy Homes, AIR and CAIR programs



# CAIR Program

- Out-stationed staff at Community Agencies
- Web based referral and data system
- Partners to provide home repair
- Partners to provide medical homes
- Broader health issues than just asthma
- Addressed the needs of the whole family
- Expanded interventions – Air Quality, Safety, Hazards



## Physical Remediation

### Portland Housing Bureau-

Portland Development Commission Lead Hazard and Abatement Program

Small Rental Rehab Program

Relocation Program

Multnomah County Weatherization

Community Energy Project

Metro – Green Cleaning Kits

### Medical Partners

#### Multnomah County Health Dept.

ICS Clinics

Lead Prevention Program & Immunization Program

### HUD – City of Portland

Healthy Homes and Lead Hazard Abatement Grant

## CAIR Program

### Advisory Committee-

Healthy Homes Collaborative

### Social Services Partner/ Referring Agencies

Human Solutions

Self Enhancement Inc - SEI

Community Alliance of Tenants – CAT

Impact Northwest

Friendly House

IRCO

Metro Multifamily Housing

Housing Authority of Portland

### Subcontractors -

Human Solutions

Self Enhancement Inc

Out-stationed Remediation Specialist



# Structural Components

- Multidisciplinary Team –
  - *EHS*
  - *Community Health Workers*
  - *Nurse/Asthma Educator*
  - *Bilingual Staff/Intake Specialist*
- Physical Remediation
- Nursing Case Management
- Environmental Assessment and Intervention
- Six month case management program
- Web based database system, charting and mobile access
- Program Evaluation and Return on Investment
- Targeted Case Management Medicaid Reimbursement
- Policy component and strong partnerships





# Partnership Success Story

- **CAIR Program**

- Conducted Nursing Case Management. • Provided medical supplies. • Dust containment. • Mold and moisture mitigations, increase ventilation, monitor humidistat. • Childproofing, smoke alarms, and general home safety.

- **Partner Support:**

- **OHP Transportation** – medical transportation
- **Community Warehouse** – Replaced moldy household furnishings
- **SEI** – Energy assistance
- **REACH - Physical repair** - Replaced kitchen sink drain, bathtub and bath vanity lines. • Replaced old gutter to direct water to front yard. • Replaced foundation vent screens with 1/4" mesh. • Replaced broken vinyl window sash. Replaced window.





# Before and After Intervention



# Healthy Home Providers Reimbursed by TCM

- Registered Nurse
- Environmental Health Specialist
- Asthma Educator
- Community Health Worker certified in the Stanford Chronic Disease Self-Management Program, or
- Community Health Worker working under the supervision of a licensed RN or EHS



# Demonstrate Return on Investment

## Collect Data

- Emergency Room Visits
- Hospitalization
- Medication Ratio – Control to Rescue
- Change in Environmental Scores
- ACT or TRACK Scores
- Quality of Life questions
- Work or School Days lost



# Healthy Home Program Results

## Cost Savings ED Utilization for 100 children (80 cases + 20 siblings)

- 1.0 visits reduction per child
- 105 prevented visits
- $\$760 \times 105 = \$79,800$  (2009 dollars)
- Adjusted for Oregon medical inflation rate (8%) for four years = **\$108,567 (2013 dollars)**

## Cost Savings Hospitalization

- $(105 \text{ visits} \times 38\%) \times \$8,970$  (2010 hospitalization visit cost) = \$941,850 (2010 dollars)
- Adjusted for medical inflation rate = **\$1,281,377 (2013 dollars)**

## Parental Lost Wages

- \$285 per day in lost wages in 2003 dollars with applied inflation at 3.2% = \$390 per day  $\times 2.5$  days lost per asthmatic child = **\$976 (2013 dollars)**  $976 \times 100 = \$97,600$

\*65 visits  $\times$  \$760 (Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality: Medical Expenditure Panel Survey, 2009.)

\*\*Hospitalization admissions per emergency department referral for children 0-5 with an asthma diagnosis are 38% from Multnomah County discharge data



# HUD CAIR Program Results – 150 cases

## Cost Savings - ED

- 0.50 visits reduction per child
- 76.5 prevented visits
- \$760\* 76.5 visit = \$58,140 (2009 dollars)
- Adjusted for Oregon medical inflation rate (8%) for four years = **\$79,098 (2013 dollars)**

## Cost Savings Hospitalization

- (76 visits x 38%\*\* ) x \$8,970 (2010 hospitalization visit cost) = \$260,130 (2010 dollars)
- Adjusted for medical inflation rate = **\$327,689 (2013 dollars)**

## Parental Lost Wages

- \$285 per day in lost wages in 2003 dollars with applied inflation at 3.2% = \$390 per day  
x 2.5 days lost per asthmatic child = **\$975 (2013 dollars) - 150 X 975 = \$146,250**

\*31 visits x \$760 (Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality: Medical Expenditure Panel Survey, 2009.)

\*\*Hospitalization admissions per emergency department referral for children 0-5 with an asthma diagnosis are 38% from Multnomah County discharge data



# Lessons Learned

Sicker Referrals = Increased ROI

Resources for Home Repair CDBG

Medical Homes

Community Partners

Program Income

Underestimating the need

Out-stationed Staff

Difference between CAIR / Healthy Homes



# Challenges

- New Technology
- Data Base development
- Enrollment
- Partner timelines
- Community Health Worker scope
- Charting
- Caseload Management
- Landlord Tenant Issues





# ER Visits (Closed Cases)

- Healthy Homes – Asthma
- 56% No Change
- 5 % Increased
- 39% Decreased
- 2.5 visits saved in 6 mos
- 5 visits saved per client/  
per year X cost of ER visit
- 122 visits saved over 2  
yrs

- CAIR –Asthma and other conditions
- 70% No Change
- 7 % Increased
- 22 % Decreased
- 2 visits saved in 6 months
- 4 visits saved per client/  
per year X cost of ER visit
- 132 visits saved over 2  
yrs



# ACT Score Changes

## Healthy Homes

- 83% of Cases showed an increase in ACT score
- Average ACT score change was 6.1 for all clients.
- Average ACT score change was 7.8 for all clients whose ACT score improved

## CAIR

- 71% of Cases showed an increase in ACT score
- Average ACT score change was 3.7 for all clients.
- Average ACT score change was 6 for all clients whose ACT score improved



# Qualitative Questions

	CAIR	HH			
1. How would you rate the health of your family – improvement	<b>-96%</b>	<b>-93%</b>			
2. Reduction in percent of clients feeling housing was source of illness	<b>-93%</b>	<b>-86%</b>			
3a Reductions in Emergency room visits for household in the last 6 months (self reported)	<b>-53%</b>	<b>-36%</b>			
3b. Reduction in average number of ER visits by household in last 6 mos	<b>-2.35</b>	<b>-2.2</b>			
4. Household members had access to health care	<b>61%</b>	NA			
5. Comfort with Landlord	<b>-60%</b>	<b>-53%</b>			

OR is from logistic regression model predicting final scores from program type, controlling for pre scores.  
Percents are relative changes from baseline.

In all cases, CAIR has superior results, with Questions 2, 4 and 5 being statistically significant



Questions and feedback:

Kim Harris Tierney

[Kim.H.Tierney@multco.us](mailto:Kim.H.Tierney@multco.us)

503 988 3663 x 22850

<http://web.multco.us/health/healthy-housing>

