

Evaluating Baltimore's Healthy Homes Program



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BUILDING A FRAMEWORK
FOR HEALTHY HOUSING

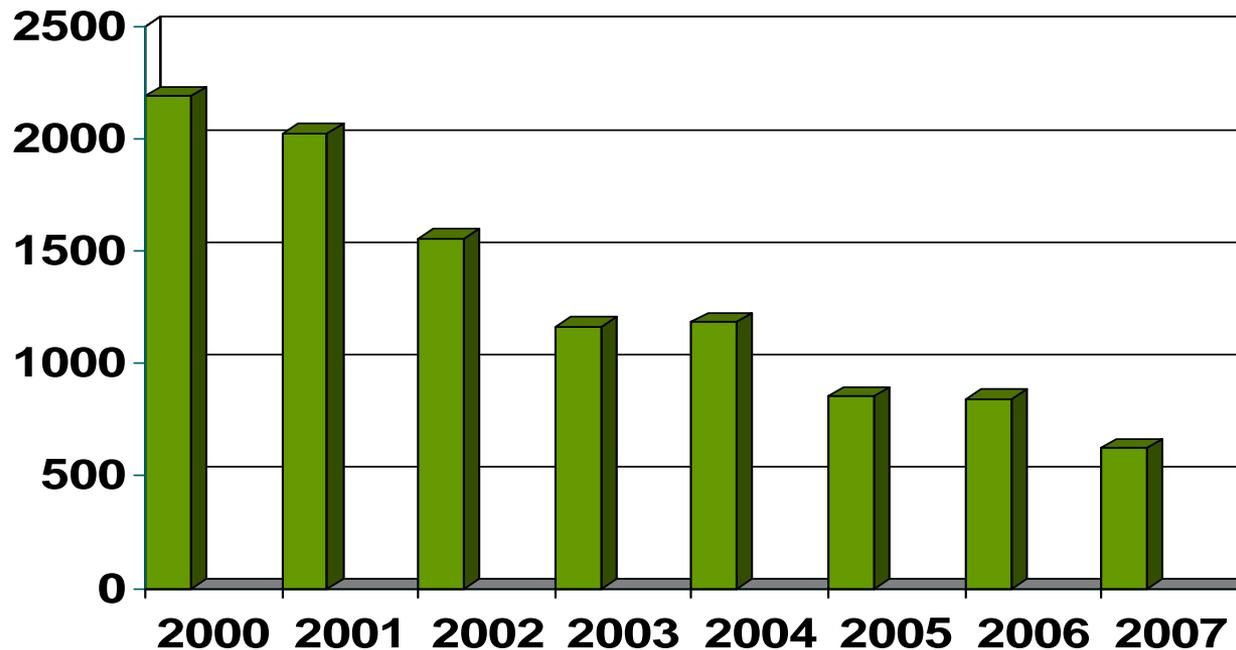
2008 National Healthy Homes Conference

Background

- 50 years old on average (US is 30 yrs)
- One-third of operational rent stock estimated not to meet housing code
- 75% of rental units with lead
- Studies show:
 - 100% mouse allergen
 - 80% cockroach allergen
 - 96% cat allergen
 - 60% mite allergen



Lead Exposure in Baltimore



The number of lead-poisoned children under age 6 in Baltimore decreased from 2,189 in the year 2000 to 626 in 2007.



Asthma in Baltimore

- ED visits due to asthma in Baltimore (203.4 per 10,000) are three times the state level.
- Deaths due to asthma in Baltimore (37.9 per 100,000) are double the state average (15.9 per 100,000)



Intervention

- Case management by a community health worker
- Inspection and education by a sanitarian / inspector
- Referrals to partnering agencies
- Follow up home visit
- *If elevated lead level:* Enforcement of city lead laws
- *If no elevated lead level:* Enforcement of state lead laws and city housing code



Intervention – Case management

Education

- lead poisoning, cleaning, pest management, fire safety, asthma triggers, ABCs of safe sleep

Supplies/Incentives

- mop & bucket, cleaning solution, paper towels, roach bait, glue traps for mice, caulk, cribs, children's books, \$5 gift card



Intervention – Inspection

- Inspection
 - Lead, carbon monoxide, mold, smoke detectors, structural defects, hoarding, garbage, injury hazards
- Enforcement
- Incentives
 - \$5 gift card



Intervention – Referrals

- **Health programs:** School-based Breathmobile, home-visiting, insurance enrollment,
- **Referral services:** United Way 211
- **Mental health services**
- **Relocation support:** Coalition to End Childhood Lead Poisoning
- **Child development**
- **Refugee/Immigrant services:**
- **Education:** GED/ESL



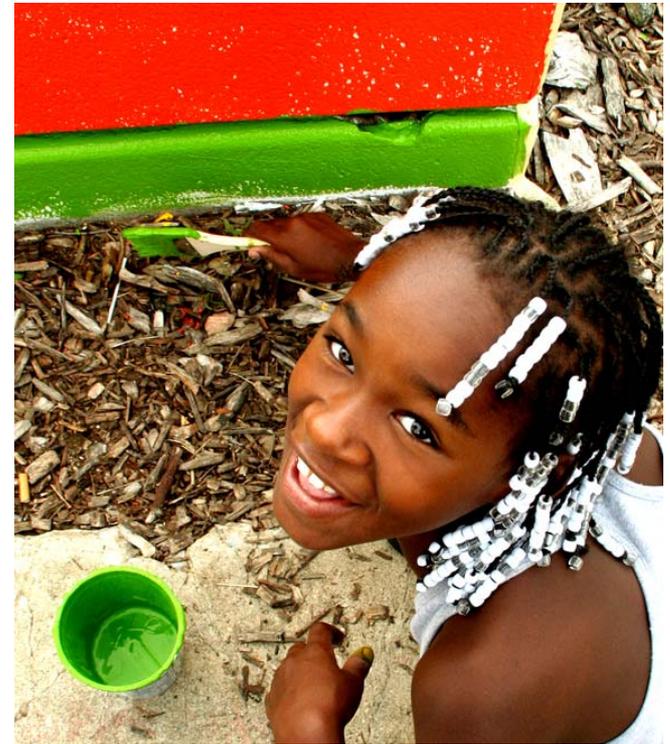
Intervention – Referrals

- Referral types (continued)
 - **Safety:** Fire Department, Johns Hopkins Safety Center
 - **Pest management:** Rat Rubout/Vector Control
 - **Legal services:** Coalition to End Childhood Lead Poisoning, Legal Aid
 - **Enforcement:** Maryland Department of the Environment, Baltimore Housing
 - **Housing/loan grant programs**



Intervention – Follow-up

- Follow-up visit after 3 months
 - Home visitor reassesses the home, provides education, and follows up on referrals
 - Gives \$5 gift card

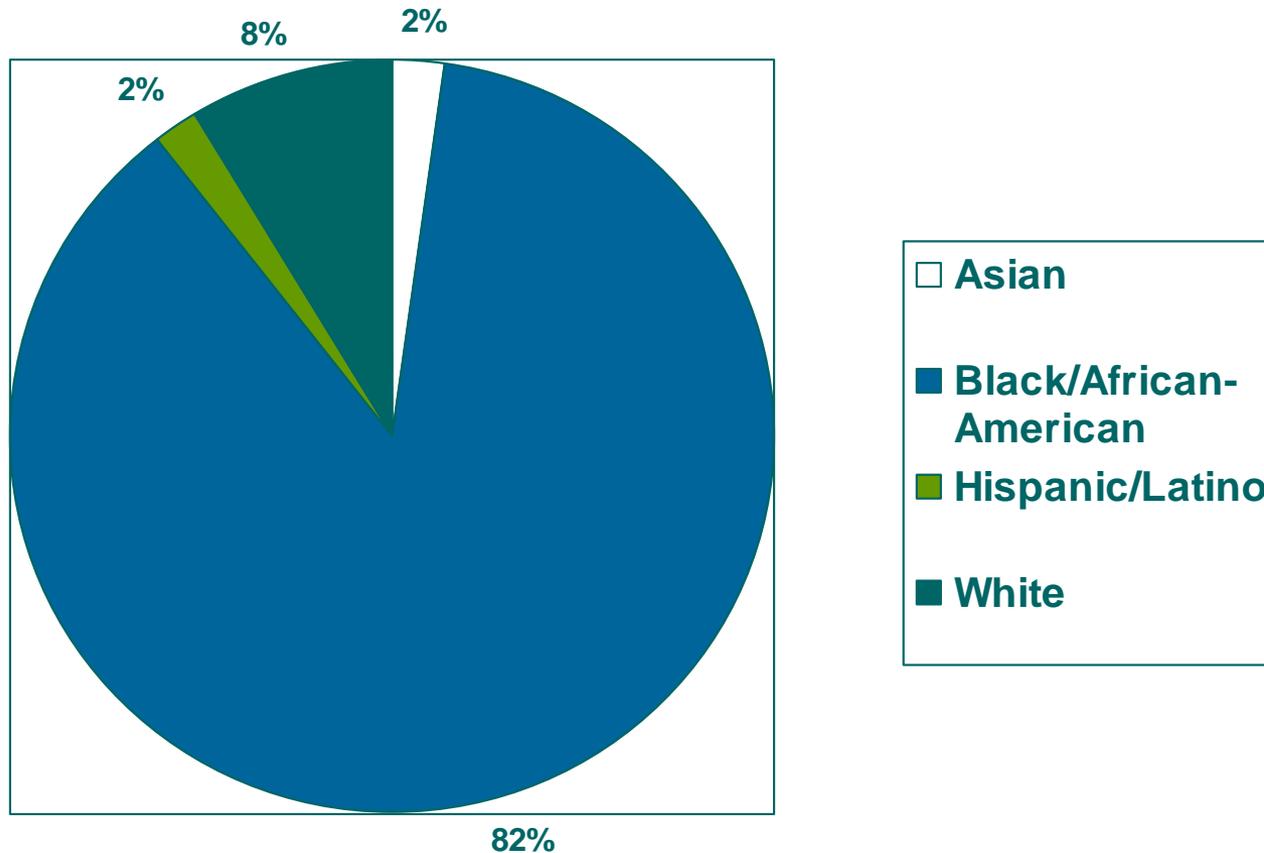


Evaluation

- Simple Pre/Post Comparison
 - Follow-up visit made 3+ months after initial home visit
 - 50 cases with complete initial visits (medical and visual) and complete follow-up
 - 17 Primary Prevention cases
 - 33 EBL cases



Population



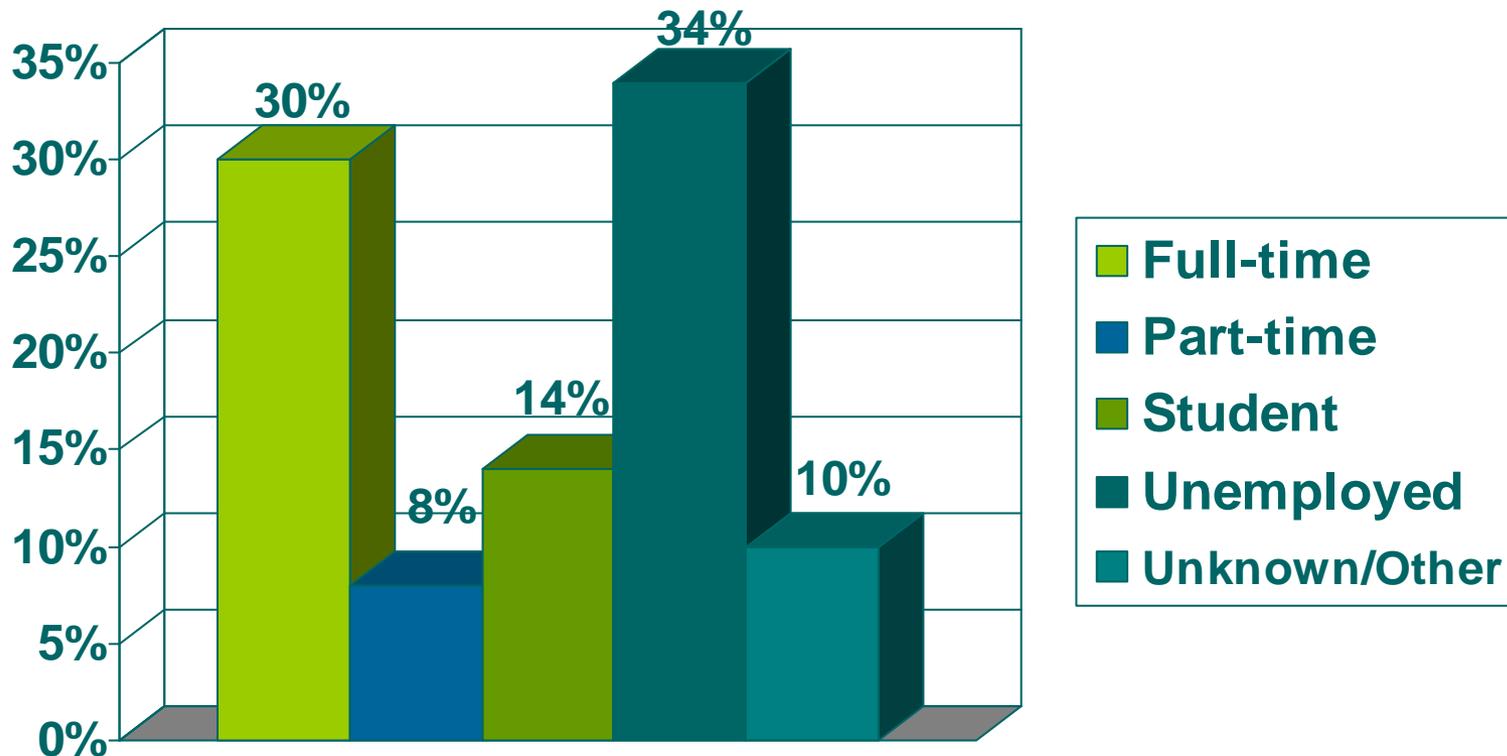
Population

Respondent's Education	
Some high school	22%
High school diploma/GED	40%
Some college or trade school	24%
Bachelor's degree	2%
Unknown	12%



Population

Respondent's Employment Status



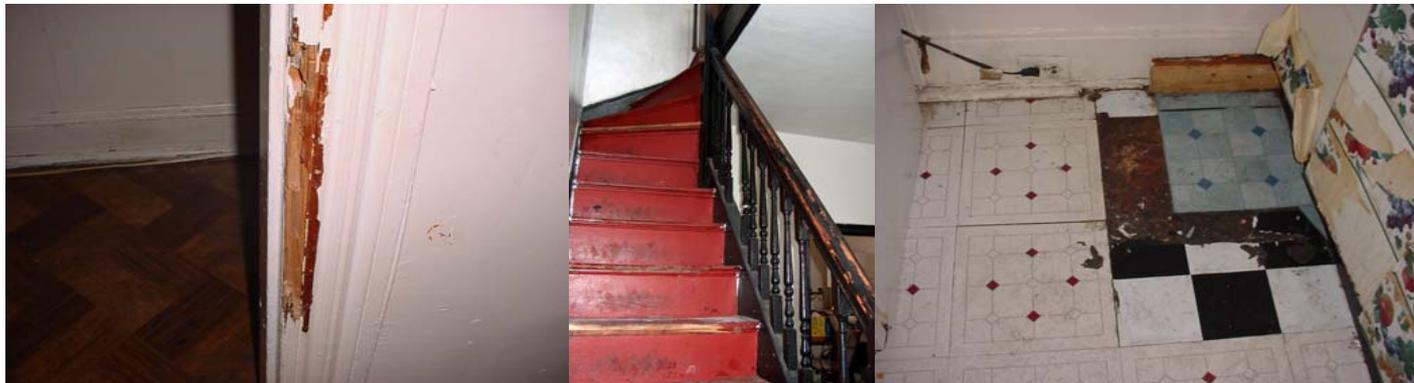
Population

- Mean income = \$576/month
- Average household size = 4.9 people



Population - Renters

- 56% live in rental properties
 - 65% of renters have a written lease
 - Average monthly rent is \$328



Population - Asthma

- 40% of households have someone with asthma or other respiratory problem
- 32% have child with asthma



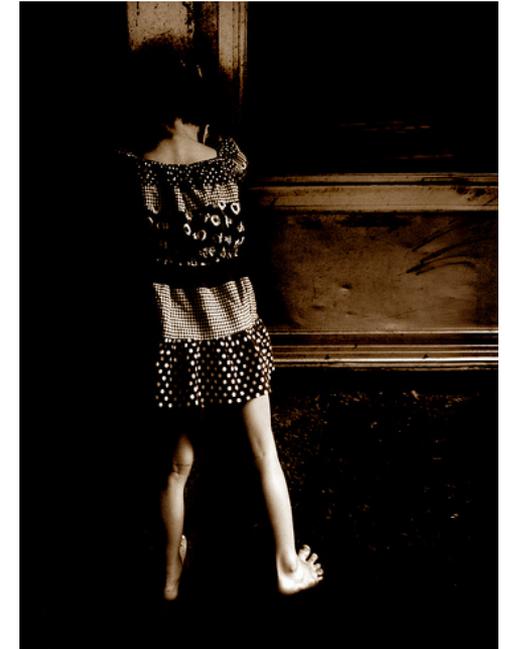
Fire Safety

	Initial	Follow-up	Change
Working smoke detectors on all floors	57%	83%	Improved***

*** Statistically significant at 99% level

** Statistically significant at 95% level

* Statistically significant at 90% level



Safe Sleep

	Initial	Follow-up	Change
Infant had own crib	50%	93%	Improved***



Indoor Smoking

	Initial	Follow-up	Change
Any indoor smokers	64%	42%	Improved***
# of indoor smokers	0.96	0.61	Improved***
Evidence of smoking	53%	35%	Improved*



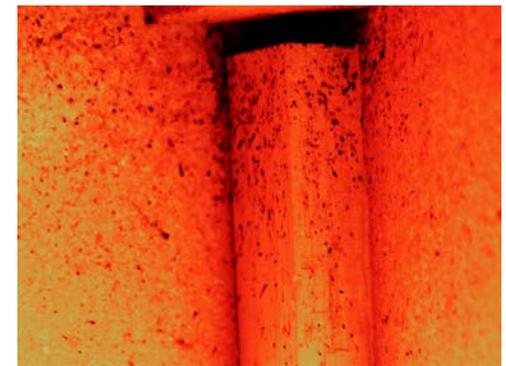
Housekeeping

	Initial	Follow-up	Change
Home “appeared clean”	28%	56%	Improved***
Free of garbage/debris	35%	65%	Improved**
Hoarding Scale 1-10	2.5	2.5	-
Debris on gas range	40%	29%	-



Pests

Pest problems improved	64%
Pest problems stayed the same	24%
Pest problems got worse	8%



Healthy Homes Scorecard

Developing a measure of the health and safety of a family's home

Goals:

- Allow staff on all levels to quickly and consistently assess and communicate the level and/or severity of a family's healthy housing needs
- Track improvements and problems in a simple, easy way
- Use as a performance measurement tool for the program



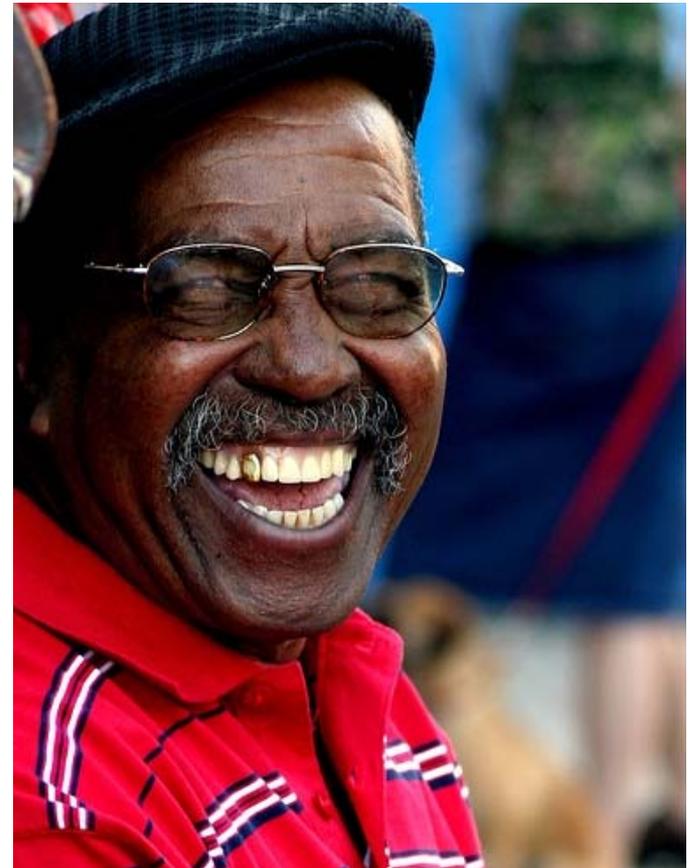
Developing the Healthy Homes scorecard

STEP 1: Review score cards

STEP 2: Identify topic areas

STEP 3: Identify evidence-based indicators associated with health outcomes

STEP 4: Develop scoring system



Healthy Homes Score card

Areas:

1. Connection to resources
2. Asthma & Indoor Air Quality
3. Lead
4. Safety
5. Pest management



Healthy homes scorecard

<u>Topic</u>	<u>Indicator # 1</u>	<u>Indicator #2</u>
Connection to resources	# Connections	
Asthma and Indoor Air Quality	Symptom severity	Mold, leaks
Lead	Blood Lead Level (if child is under six)	Chipping peeling paint
Safety	Crib (if infant is present)	Smoke detector
Pests	Evidence of cockroaches, mice, bedbugs, rats	Self report of cockroaches, mice, bedbugs



Questions?

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2008 National Healthy Homes Conference



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Family Environmental Lead Sampling

(The Community Working with the Community)

Sandy M. Roda, University of Cincinnati



Research and Development

#1 The design and assessment of a sampling kit was funded by the U.S. Environmental Protection Agency, Grant EPAX82843301

#2 A community-based study and further assessment of the residential use of home sampling kits was funded by NIH and CDC Grant 1 PO1 ES11261



Project #1 The Development of an Effective Home Lead Sampling Kit

Research Goals

- To provide the community with a reliable way to conduct home sampling for Pb particularly during renovation and remodeling
- To increase the awareness of the community to the potential problems related to Pb poisoning
- To provide a tool for families to collect environmental samples for large population-based studies



Project #1 The Development of an Effective Home Lead Sampling Kit

Results - Volunteer vs. Pb Risk Assessor

- Volunteers collected samples 59% of the time at the same site as a licensed Pb Risk Assessor
- Volunteers were able 90% of the time to agree with the overall results of a Pb Risk Assessment
- Based on a Pb Risk Assessment and when Pb was present, volunteer dust wipe samples performed 83% of the time, paint chips 63% of the time, and soil 80% of the time



Project #1 The Development of an Effective Home Lead Sampling Kit

Conclusions

- Revisions were made to the booklet and video based on volunteer suggestions and comments (pictures, sampling instructions, ect.)
- Additional supplies were added to the kit (i.e. wipes, ruler, pen)
- Volunteers were able to determine the best place to sample although different from where a Pb Risk Assessor sampled.
- The video is a very important instructional guide to showing people where and how to collect samples.



Project #2 Identifying Residential Hazards Using Home Sampling Kits

Research Goals

- Evaluate the reliability of home sampling kits for lead and pesticides collected by community participants compared with trained technicians.
- Recruit families based on the PbB level of the child (Group I <5 ug/dl, Group II $\geq 5 < 10$, Group III ≥ 10 ug/dl).
- Test video vs. no video.
- Evaluate the predictive validity of home sampling kits for lead based on the resident child's PbB.



Project #2 Identifying Residential Hazards Using Home Sampling Kits

Results: Blood and Dust Lead Means by Group

*Geometric Mean	All	PbB <5ug/dl	PbB 5 - <10ug/dl	PbB ≥ 10 ug/dl
# of Families	130	54	31	45
Child's Age (mos.)	30.4	28.8	35.1	29.2
House Yr. Built	1921	1930	1915	1906
Blood Pb*	6.08	2.36	6.62	17.8
Dust Pb (Tech)*	1.78	0.81	1.81	4.34
Dust Pb (Family)*	1.81	1.01	2.14	3.15



Project #2 Identifying Residential Hazards Using Home Sampling Kits

Conclusions

- Family members can replicate the floor sampling of a trained technician. Correlation of family dust to tech dust was 0.72.
- Statistically significant correlation of dust to child PbB. Tech with PbB was 0.35 and family with PbB was 0.23.
- 80% of the video group said it should be included. No significant difference between the two groups.



Contents of the Home Lead Sampling Kit

- Tubes – 6
- Wipes – 15
- Ziplock bags – 5
- Pb Pamphlets
- Instruction booklet
- Video – 1
- Pen - 1
- Large Mailer – 1
- Template – 1
- Gloves – 14
- NLLAP Lab list
- Lab submittal form
- Ruler



Accountability & Credibility Together (ACT)

- A social service agency formed in 1996.
- Increase skills of lower income families and reduce their need for public assistance.
- Emphasizes education, provides opportunities, and assists working poor families.
- Hamilton County Job & Family Services refers participants based on family income (150% federal poverty guidelines) and dependent children in the home.
- Serve approximately 1300 families per year.



ACT/UC Partnership

- In 2006 ACT began lead awareness and prevention training and education to program families.
- ACT began distribution of the Home Lead Sampling Kit with analysis funded by ODJFS.
- Working with other agencies for the expansion of the Hamilton County Lead Collaborative.
- Provide training and information about lead and lead clean-up to landowners.



ACT's Lead Outreach Efforts

- Lead education classes to 948 clients.
- Lead kits distributed to 945 clients.
- Samples returned by 450 clients.
- May '08 started providing incentives.
- Overall 48% return of samples – 38% prior to May '08, 50% after May '08.



Results of ACT's Lead Outreach

- 147 units identified with a result exceeding the EPA/HUD standard (33% of tested residences).
- 21 residences retested by Pb risk assessor.
- Soil – Landlord is responsible to sod or cover – 99% positive response.
- Paint – Landlord repair chipping and peeling areas.
- Dust – Super-clean and resample (16 below std).
- 5 families had to be moved, child tested with high EBL.



Outcomes of the ACT Lead Outreach Program

- Education has resulted in increased PbB testing of ACT children.
- Identification of Pb hazards in existing ACT family housing.
- A list of safe housing for relocation of families.
- Landlords are responding positively.
- Landlords and workers are receiving EPA Pb safe renovator training.





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**“The Community working with
the Community”**

Lead Safe Babies:

IT'S BIRTH, DEVELOPMENT, & FUTURE

JOSEPH B. KAUFFMAN
PHILA. DEPT. OF HEALTH
CLPPP



PDPH-, CDC-, and EPA-funded Partnership since 1996

- Childhood Lead Poisoning Prevention Program, City of Philadelphia, Department of Public Health

- National Nursing Centers Consortium



Targets pregnant women and children less than one year of age



- Consent
- Pre-test
- Lead Bucket
- Intervention
- Post-test -\$10 gift card
- 9 mo. Follow-up phone call – reminder to have baby tested

Intervention



- Scripted education
- Home visit for lead swipes & environmental assessment
- Interim controls - Super clean or hazard remediation
 - Notified \geq EPA standard; $\geq 1,000 \mu\text{g}/\text{sq. ft.}$ on window sills or floors triggers intervention
 - @ lower levels when resources available
 - EPA standard
 - $> 40 \mu\text{g}/\text{sq. ft.}$ floor
 - $> 250 \mu\text{g}/\text{sq. ft.}$ sill

Outcome Analysis

2004 - 2005



- N = 2,319
- Primarily African American or Latino & Low-Income
- 1,116 homes with no prior lead elevations
- 774 born within 6 months of enrollment
- 95 homes with interim controls

Knowledge Evaluation

- The NNCC analyzed the Pre- and Post-Tests of caregivers:
- The results showed a statistically significant difference between Pre- and Post-Test scores (paired t-test, 95% confidence level or alpha of .05)
- There was an increase in lead poisoning prevention knowledge after clients participated in LSB.

For analysis of blood lead levels...



- Block group assigned by pre-coding with Aromap 9.1.
- Mean calculated for all block groups with more than 15 children tested.
- High risk block groups > than citywide geometric mean
- <6 mo. at time of enrollment – meant no prior exposure

Blood lead level comparisons

By highest blood lead	Children Tested	$\geq 10\mu\text{g/dL}$	$\geq 20\mu\text{g/dL}$	Geometric Mean
Citywide	86,532	10.3%	1.2%	4.44 $\mu\text{g/dL}$
LSB Homes	2,319	17.4%	6.4%	5.00 $\mu\text{g/dL}$
LSB Homes- no prior elevation(npe)	1,116	11.6%	3.9%	4.34 $\mu\text{g/dL}$
LSB clients- born within 6 mo. (npe)	774	6.1%	.06%	3.92 $\mu\text{g/dL}$

Blood lead level comparisons

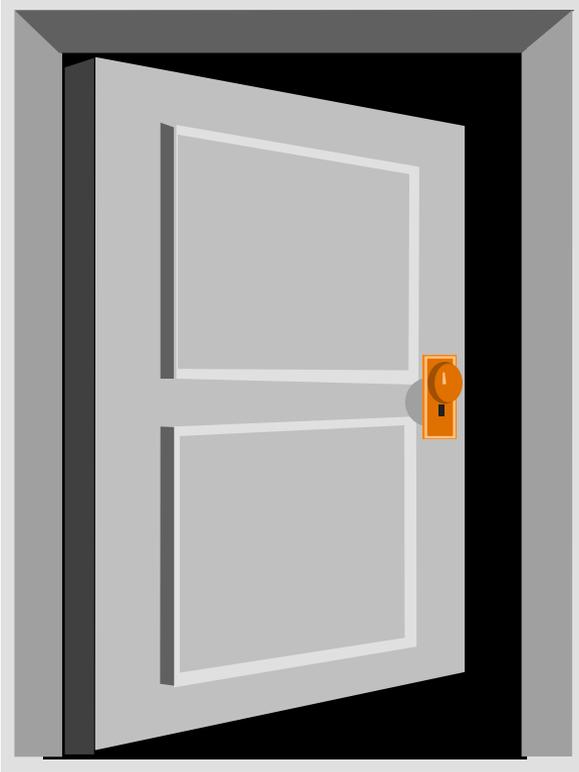
By highest blood lead	Lower than BG Mean	Greater than BG Mean	Lower in high risk blocks
Citywide	57.9%	42.1%	54.3%
LSB Homes	53.3%	46.6%	49.8%
LSB Homes- no prior elevation (npe)	62.2%	37.8%	62.2%
LSB clients- born within 6 mo. (npe)	67.2%	37.9%	69.1%

Clients (n=95) born within 6 months of program enrollment with interim controls

- 70.5% lower than block group mean
- 71.2% in high risk blocks were lower than block group mean



Interim controls based on...



- Environmental assessments
- High lead dust swipes
- Analysis of correlation between assessments and dust wipes (n=200) found no correlation.

Outcomes

- Caregivers of all LSB clients had a significant increase in knowledge about lead poisoning.



- Focusing on LSB clients in homes with no prior blood lead elevations and born within 6 mo. of enrollment: 69% of LSB clients living in high risk blocks and 71% of LSB clients that benefited from interim controls and lived in high risk blocks had lower blood levels than their block group mean (vs. 54% for City) .

RESULTS

- 1800 NEW FAMILIES ARE EDUCATED PER YEAR**
- 60 HOMES MADE LEAD-SAFE PER YEAR**
- CLIENTS RETAIN AND USE LEAD KNOWLEDGE ATTAINED**
- SIGNIFICANTLY LESS LEAD-POISONED CHILDREN**



FUTURE GOALS

- **REACH 11,000 CHILDREN IN HIGH RISK AREAS**
- **INCREASE NUMBER OF HOMES MADE LEAD-SAFE BY CERTIFIED LEAD ABATEMENT CONTRACTORS**
- **MONITORING OF NEW SIBLINGS OF ORIGINAL LSB's FOR EBLL's**
- **DEVELOP SYSTEM OF MAINTAINING AFFECTED PROPERTIES FOR LEAD-PAINT SAFETY**

