

HUD Healthy Homes Grantee Program

Sample Program Evaluation Plan

Project Definition

A. State goals and objectives

Goals

1. To implement and evaluate cost-effective improvements in homes that reduce the incidence of health outcomes, such as asthma, lead poisoning and unintentional injuries;
2. To train and employ residents of our city's public housing in gathering information about their housing conditions, particularly those conditions that affect their health;
3. To conduct health promotion projects with residents; and
4. To train maintenance staff in selected "best practices."

Objectives

1. Reduce moisture, mold, lead and safety hazards in 125 area homes.
2. Evaluate lead hazards in 300 homes occupied by public housing families meeting the study inclusion criteria.
3. Evaluate the impact of mold and moisture interventions on the health of children through two studies:
 - a. Composite Study: Document children's reactions to the home environment while assessing environmental measurements and interventions and subsequent responses following the interventions in 75 homes; and
 - b. Asthma Study: Study the effects of interventions on 150 children with asthma through an asthma study/control group.
4. Integrate techniques and lessons learned for controlling mold and moisture with existing rehabilitation projects.
5. Provide education about health and safety hazards to all families for three years, reaching approximately 2000 people.

B. State Assumptions

1. A clean home environment will provide relief to children suffering from the combined effects of poor air quality and an asthmagenic home.

2. A tailored educational intervention will increase the knowledge of environmental health and safety hazards and help families maintain and improve homes to reduce home health and safety hazards.
3. Integrating moisture and mold prevention activities into established rehabilitation projects, such as lead hazard control and weatherization, will improve the health of greater numbers of children, beyond current assistance levels.
4. Through examining effective interventions, the project will identify best practices that are cost-effective and efficient for low-income households.

C. Define Outcome Measurements

Outcomes

1. Reduced mold and allergen (dust mites, cockroach, mice) loads in remediated homes.
2. Reduced unintentional injuries;
3. Reduced exacerbation of respiratory illness;
4. Reduced risk of lead poisoning;
5. Improved participating families' quality of life, and
6. Increased awareness of health and safety hazards associated with housing.

Outcome	Method of Measurement
Reduced mold, allergen, and environmental hazard loads in remediated homes	Air and dust samples taken from homes before and after intervention, measured for contaminants (mold and allergens).
Reduced unintentional injuries	Journals provided maintained by participants document injuries and emergency room visits before and after intervention. Estimates of falls, burns, electric shocks, and poisoning.
Reduced exacerbation of respiratory illness	Journals provided maintained by participants document severity of asthma attacks and emergency room visits before and after intervention. Number of hospitalizations, ER visits, and doctor visits due to unintentional injuries. Number of absences from school.
Reduced risk of lead poisoning	Blood tests before and after intervention
Improved participating families' quality of life	An additional survey instrument will record the presence of chronic diseases, overall healthy status, physical fitness, emotional health, daily activities, social activities, changes in health status, pain, and overall quality of life of the participants. Also included will be self-reported hospital or emergency room admissions and visits to a primary care provider for acute treatment associated with

	<p>unintentional injury, asthma exacerbation, lead or carbon monoxide poisoning.</p> <p>The survey will be administered to each person in the dwelling unit (parents or guardians will respond for children under age 12).</p> <p>A follow up survey will be administered six months after home and education interventions.</p>
Increased awareness	<p>A pre- and post-test design will be used to evaluate tenant's knowledge of the causes and measures to prevent unintentional injuries, respiratory problems, lead poisoning, carbon monoxide poisoning, and radon exposure. Knowledge will be examined through a survey that will be administered before the educational intervention and six months following the intervention to test knowledge retention.</p>

D. Develop Interventions

An initial home assessment, including a resident interview and inspection of the dwelling, will be used to develop a plan recommending behavioral changes and environmental interventions proposed for reducing housing based hazards. Results from this assessment will be used to develop a detailed scope of work that provides details of interventions.

1. Dust mites: Mattress and pillow covers, house clean, HEPA vacuum, clean or remove rugs
2. Pests: Extermination/IPM, patch & plaster, HEPA vacuum
3. Mold: Air conditioner, fix roofing, fix plumbing
4. Ventilation: Air conditioner, heating cleaning and filters, smoking cessation, add bathroom fan
5. Lead paint: Cleaning supplies and education, window or door replacement
6. Injury Prevention: Outlet covers, water thermometers, radiator covers (if radiators), window guards, cabinet locks.

Service Providers

1. City Public Health Commission
2. Local Plumbers' Association
3. Area hardware stores
4. Community Health Center
5. Lead Rehabilitation Contractors

Frequency of Service

1. Dust mites: Once
2. Pests: Initial intervention, follow-up once every two months for one year
3. Mold: Once
4. Ventilation: Initial intervention, follow-up once every six months for one year
5. Lead paint: Initial intervention, follow-up once yearly
6. Injury prevention: Once

Outcome Evaluation

A. List anticipated outcomes

Outcome	Anticipated Result
Reduced mold/moisture and allergens in remediated homes	These items affect asthma, lead paint exposure and pulmonary function. Many asthmatics are affected by the presence of mold and some molds produce toxic materials. Moisture can cause the deterioration of interior and exterior paint resulting in peeling and flaking. The repairs that relate to the prevention of mold and moisture include roof repairs and gutter cleaning, fixing leaking plumbing, replacing ceiling tiles, patch plaster, drywall, floor boards as needed. Other related mold and moisture prevention measures involve weather-stripping and insulation.
Reduced unintentional injuries	Interventions, such as installing socket covers and cabinet locks, that protect children will be more effective than providing education and materials alone. Integrating the strengths and experience of the providers will reduce costs and increase access for preschool-aged children affected by home hazards.
Reduced exacerbation of respiratory illness	By cleaning furnishings, such as area rugs and drapery, allergens can be significantly controlled and reduced. Also fixing/replacing faulty stoves and gas heaters can remove noxious fumes that affect the respiratory tract.

Reduced risk of lead poisoning	Education, outreach, home visits, parent training, and training for children are intended to increase detection and remediation and, thereby, reduce incidence of symptoms.
Improved participating families' quality of life	Interventions based on the assessed needs will reduce exposures to household hazards and thus improve health status, decrease the use of health services and pharmaceuticals.
Increased awareness	Community outreach and education activities will raise awareness and increase the capacity of organizations to create healthy housing for children.

B. Data Collection and Analysis

1. Baseline data

- Comprehensive asthma survey questionnaire
- Visual assessment of the home (heating, ventilation, plumbing, appearance of mold/moisture, etc.)
- Specific inspection form for each room (moisture, mold, lead paint)
- Lead hazard assessment questionnaire and visual inspection checklist
- Home safety and injury prevention questionnaire/checklist
- Active air quality monitoring
- Passive samplers for specific chemicals
- Blood tests from participant children (lead and allergen testing):
 - Complete blood count;
 - Blood lead level (if greater than 10 µg/dl, the lab will follow standard reporting protocol and report to the local health department).
 - Allergen specific IgE to various asthma triggers including dust mite, cockroach, rodents, and ten different molds.
- Bulk dust samples collected and analyzed for mold and allergens (dust mites, cockroach, mice).

Tests performed and samples taken at the dwelling unit (this is in addition to other checklists) will include the following:

- Dust wipes for lead content;
- Test supplied smoke detectors, outlets, switches, and fixtures;
- Carbon monoxide readings in habitable rooms and near fuel burning devices;
- Temperature and humidity in habitable rooms;
- Water temperature;
- Roach indicator trap count

2. Analysis methods

- Descriptive Statistics
- T-test pre vs. post mold and moisture removal
- Spatial continuity characterization pre vs. post cleaning

- Antigen probability distributions post minus pre for spatial characterization of change
 - ANOVA on cleaning efficacy by surface type
 - Knowledge survey results will use matched analyses to assess changes in knowledge through a chi-square analysis. An alpha level of .05 will assess statistically significant differences.
 - Clinical and Environmental data will be analyzed using SAS statistical software.
3. Data collection procedures
- Tracking the Homes: Using a tracking spreadsheet developed for the County Lead Program, the process from application approval to remediation completion will be charted. Entries will include the inspector; completion dates of assessment and interventions; and funding sources.
 - Tracking Clinical and Environmental Samples: Data will be double-entered in a relational database.
 - Databases will be constructed through Microsoft Access software to correspond to the surveys.

Process Evaluation

A. Establish performance milestones

1. Recruitment, effectiveness and sustainability, by enrollment rate versus drop-out rate one year after project has been initiated.
2. Rate of reduction of unintentional injuries, as indicated in reviews of journal entries at end of project.
3. Rate of reduction in environmental hazards, as indicated by a comparison of results of pre- and post environmental assessments for mold and allergens at end of project.
4. Reduction in blood lead levels, as indicated by blood tests after lead hazard control interventions have been completed.

B. Evaluate staff capacity

1. Weekly staff meetings will be used to review expectations of staff, barriers encountered, and to keep the lines of communication open.
2. Monthly reports from the Field Coordinator and Environmental Education Specialist will provide the project director with updates.
3. Refresher meetings for the outreach workers in the project are conducted on a monthly basis to obtain feedback, reinforce outreach education and disseminate new information.
4. The Environmental Education Specialist, Field Coordinator, and Investigating Public Health Sanitarian will be trained in interviewing techniques.
5. The American Lung Association will provide training for staff and consult on education materials.

C. Track source and uses of funds

1. A detailed budget, including estimated costs for each intervention, has also been developed and will help track the cost-effectiveness of various measures.
2. A Microsoft Excel workbook is used to monitor budgetary performance. The budget is monitored by line item and fiscal year, and compares actual expenses to the amounts allocated.

D. Evaluate participant intake

1. Determine whether enrollment is meeting expected numbers and referral sources on a quarterly basis. If enrollment is not on track, examine and discuss ideas for meeting these project expectations.
2. Validate the questionnaire used to screen possible injury risk study participants through one-time home inspections of applicants not eligible to participate in the study.

E. Evaluate actual intervention activities against planned activities

1. Project activities will be monitored with a Microsoft Access database, controlled and maintained by the grantee.
2. Sub-grantees will submit reports on the status of all activities before the end of each reporting period, using a standardized Microsoft Excel spreadsheet provided by the grantee.

F. Allow for and incorporate staff and participant feedback

1. Will be submit and review questionnaires provided to staff on a quarterly basis. Will determine at that time whether performance goals are being met and whether any changes suggested by staff are necessary. Any negative results will be assessed in respect to staff capacity and training.
2. Will provide follow-up surveys to participants at the end of the project.

G. Monitor for barriers to implementation

The database referenced in Part E of this section, will record information such as the following:

1. Names and contact information, type of referral, medical condition, and type of property;
2. Individual risk factors present in the home, including tobacco smoke, pets, rodent or insect infestation problems, and water damage;
3. Results of air, bulk, MVOC, and settled dust samples.
4. Clinical, environmental, and interventions status;
5. Times and dates of all interventions and assessments; and
6. Staff or outreach worker comments about any problems they may encounter.