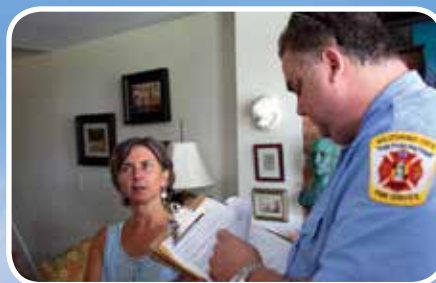


PARTNERING FOR PREVENTION:

A Community-Academic Response to Home Fire Risks in Baltimore



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

JOHNS HOPKINS CENTER FOR INJURY RESEARCH AND POLICY

MESSAGE FROM THE DIRECTOR



Thank you for your interest in our fire and home safety work in Baltimore.

This brochure describes an innovative community-academic partnership—the Johns Hopkins Home Safety Project. By working together with the Baltimore City Fire Department (BCFD) and community organizations, the partnership identified needed home safety services, delivered those services, and demonstrated the impact of our collective efforts.

We built on decades of fire prevention services provided by the BCFD, especially their home visiting program. By enhancing these services and focusing on three strategies—smoke alarms, CO alarms, and safe hot water temperatures—and by applying nationally accepted best practices, we made homes in Baltimore safer through the Home Safety Project.

Fire and burns are not just a problem for families in Baltimore City. They are a concern for families around the United States. At the Johns Hopkins Center for Injury Research and Policy we are committed to assuring that our research is relevant to the public, and organizations and agencies at the local, state and national levels. We created this brochure to share the results of our work with practitioners and policymakers who can use the lessons learned in Baltimore to enhance home safety efforts in many other communities.

We hope you enjoy reading about this work, and that you find it helpful in your efforts to make homes in your communities safer.

Sincerely,

A handwritten signature in cursive script that reads "Andrea Gielen".

Andrea C. Gielen, ScD, ScM
Professor and Director
Johns Hopkins Center for Injury Research and Policy



FIRES IN BALTIMORE

The Baltimore City Fire Department (BCFD) responds to approximately 2,800 residential fires each year. Between 2008-2010, 64 people died and over 200 people were injured in home fires in the City.¹ These fires are devastating to the families involved, and disruptive to the communities where they happen. While fires occur in every part of the City, living near vacant properties increases one's fire risk.² Approximately 7% of the City's homes are vacant, resulting in excess risk.² According to data from the Baltimore City Health Department, children living in Baltimore are four times more likely to die in a house fire than children nationwide.³

Building on the BCFD's existing home visit program that has been installing free smoke alarms for decades, the Johns Hopkins Home Safety Project brought together old and new partners with the goal of finding ways to enhance the reach and impact of these home visits. Together, the partners developed and evaluated a new way of conducting home visits. We were guided by published best practices and results from focus groups we conducted with community members and firefighters.

¹ Unpublished data. Baltimore City Fire Department.

² Schachterle SE, Bishai D, Shields W, Stepnitz R, Gielen AC., Proximity to vacant buildings is associated with increased fire risk in Baltimore, Maryland, homes. *Injury Prevention*. 2012; 18(2): 98-102.

³ Office of Epidemiology and Planning, Baltimore City Health Department, Childhood injury deaths in Baltimore City, 2002-2006. Baltimore City, MD, BCHD, February 2008.



“The fire department's signature prevention activity is free smoke alarm installations, which we provide free of charge to any City resident. Despite decades of effort, we knew that we had more people to reach because too many homes in Baltimore were still unprotected. This partnership offered a way to enhance our program and learn important lessons to share with fire departments across the country.”

—Chief James Clack
Baltimore City Fire Department
April 2008-July 2013

FIRES IN THE UNITED STATES

Nationally, fire departments respond to over 366,000 residential fires each year, resulting in more than 2,500 civilian deaths, 13,000 civilian injuries and billions of dollars in property damage. In 2011, a residential fire was reported every 85 seconds.



Putting the Program Together

Understanding the perspectives of our partners and community members was essential to building a “new and improved” product - namely, an enhanced home visiting program for the fire department. To solicit these perspectives, and with the help of our fire department partner, we conducted 10 focus groups with 65 firefighters and 2 focus groups with 28 community residents. In addition, we met several times with the fire department leadership to discuss the future of the program.⁴

With input from the focus groups and partners, the BCFD revised its existing home visit program by:

- Creating a new home visiting curriculum to improve the educational impact of the fire safety messages;
- Defining specific roles for firefighters during the home visit to maximize efficiency and accommodate their differing interests and skills;
- Changing the data collection form to improve its utility;
- Obtaining 10-year, lithium battery smoke alarms from our state health department partner; and
- Training all firefighters in the new data collection and home visiting procedures.

This revised program became the standard BCFD home visiting program and was rolled out City-wide effective April 2010.

The Johns Hopkins Home Safety Project was designed to test additional enhancements to the BCFD home visiting program. Following best practices and supported by focus group results, we added several enhancements, including:

- Community health workers went door-to-door to inform residents in advance about an upcoming home visit and encourage them to be home to receive free, important, life-saving services.
- Specially trained health educators accompanied the firefighters to provide additional education on tap water scalds and carbon monoxide poisoning.
- CARES—a mobile safety center—accompanied the firefighters to the neighborhoods during the home visits to facilitate access to additional home safety education and products.
- Carbon monoxide information was provided along with either a free CO alarm or a coupon to purchase discounted CO alarms from CARES or at another Johns Hopkins safety resource center.

The standard BCFD home visiting program was implemented in some neighborhoods and the enhanced home visiting program in others. The Johns Hopkins Home Safety Project studied the implementation and the impact of the two programs in these communities to determine which one resulted in safer homes.

⁴Frattaroli S, McDonald EM, Tran NT, Trump AR, O’Brocki RC 3rd, Gielen AC. “Igniting interest in prevention: using firefighter focus groups to inform implementation and enhancement of an urban canvassing program.” *Journal of Public Health Management and Practice*. 2012; 18(4) 382-389.

SMOKE ALARM DISTRIBUTION PROGRAMS

Smoke alarms substantially reduce the risk of death in the event of a fire. A national survey of fire departments, conducted by the Johns Hopkins Center for Injury Research and Policy, found that although 90% of fire departments conduct some type of fire prevention activity, only 51% distribute or install smoke alarms.

The CDC-sponsored Smoke Alarm Installation and Fire Safety Education (SAIFE) program was found to increase smoke alarm coverage in high-risk communities. The program recommends installing tamper-resistant, 10-year lithium battery smoke alarms on every level of a home, educating the resident about smoke alarm maintenance and fire safety, and community promotion of the program.



Implementing and Evaluating the Program

In total, 21 fire companies participated in the home visiting program between April 2010 and April 2011. Residents in six census tracts received the standard program and residents in a matching set of six census tracts received the enhanced program during 171 home visiting events. Of the 3,216 residences where someone was home during the event, we successfully completed 2,197 home visits. During these visits we tested the water temperature and installed 3,816 new, 10-year lithium battery alarms. We distributed 712 coupons for CO alarms and provided 344 additional free CO alarms. Six to nine months after the home visits were completed, we conducted follow-up visits with 708 families who participated in the home visiting program.

The evaluation included:

- Documenting what happened at each home that was visited;
- Following up with residents six months later to see if smoke alarms were still up and working, and to check for CO alarms and hot water temperatures; and
- Interviewing members of the partnership to understand how the partnership worked.

“It was always an aim of this work to make sure that whatever we did was what the community wanted, and that whatever we found, we would share our lessons learned with the families who participated in the project, with neighborhoods across the City, and with community leaders. Helping to connect the research to the community is one of the important roles that EJP helped the researchers accomplish.”

—Pat Tracey, *Environmental Justice Partnership*



Created in 2004, CARES is a 40-foot truck outfitted like a home environment. A partnership between the Johns Hopkins Center for Injury Research and Policy and the Baltimore City Fire Department, CARES travels throughout the City bringing fun, interactive educational exhibits and low cost safety products to families.



“The Fire Department and researchers have their own unique perspective and I tried to bring mine—to represent the voice of the residents of our neighborhoods—to help these professionals understand how the home visiting program really played out in our homes and in our communities.”

—Beth Myers-Edwards
Banner Neighborhoods
Community Corporation

What should happen in the home visit?

Four different roles were needed to implement the home visit program: supervisor, installer, educator, and data collector. These roles were not necessarily assigned based on the firefighters' specific interests or skills and they could vary. Specific tasks to be completed by the installer and educator included:

For smoke alarms

- explain the 10-year battery
- show hush feature and how to use alarm
- provide instruction manual
- screw in alarm on every level

For home safety education

- distribute home fire safety checklist
- discuss fire escape plan, cooking safety, electrical safety and heating safety

A simple checklist was used to remind firefighters about the educational messages they were trained to cover.



“As the official health agency for the state of Maryland, we are always pleased when we see that our resources are used to positively influence the health and safety of Maryland residents. This project's commitment to disseminating the lessons they learned means that all of Maryland's residents can ultimately benefit from the work of this unique partnership.”

—Maryland Department of Health and Mental Hygiene Center for Injury and Sexual Assault Prevention
Jade Leung, Chief of Injury Prevention Division

Findings From the Evaluation

Q. Did the enhanced program result in more participation by residents?

A. Yes. Residents in the six census tracts that received the advance visit by the community health workers compared to residents in the six census tracts that did not have advance notice were significantly more likely

- To let the firefighters come in—75% vs 62% of residents who were home
- To agree to have smoke alarms installed—95% vs 92%
- To have more smoke alarms installed—1.9 alarms vs. 1.7 alarms on average per household

A remaining challenge, however, is that only 40% of families in all twelve census tracts were at home when the fire department visited their neighborhood.⁵

Q. How useful were the home visits for residents?

A. Virtually all (98%) of 652 participants in the follow-up survey said the home visit was useful—87% rated it as very useful and 11% rated it as somewhat useful. More than one half (55%) reported making changes to their home because of something they learned during the home visit.

- Installing tamper resistant, long life battery alarms resulted in high rates of protection six months later. Virtually all (97%) of the 1,385 installed smoke alarms we tracked were still up and working at follow-up. Of the 612 homes that were fully protected with one working smoke alarm

on every level at the conclusion of their home visit, 81% were still fully protected six months later.

- Direct distribution of CO alarms to residents resulted in high rates of protection six months later. A majority—88%—of the 80 CO alarms we distributed and tracked were up and working six months later. Of the 712 coupons distributed, 161 were redeemed. Although few people redeemed coupons, those that offered free CO alarms were more likely to be redeemed than coupons that only offered discounts.
- Testing and controlling hot water temperatures remains a challenge. Of 286 residents who were advised during their home visit to turn down their tap water temperature, only 35% had safe hot water temperatures at follow-up. On observation of the water heater, the temperature gauge was difficult to set to a safe temperature.⁶

Q. How well was the new standard home visiting program implemented?

A. All firefighters received training and materials in support of the new standard home visiting program. Content to be covered by the firefighters during the home visit included both smoke alarm and general home safety information (see text box). The research team completed a detailed process evaluation checklist during the home visit to document what was done.

Firefighters correctly installed the smoke alarms by screwing them in 73% of the time. They explained how to use the alarms only 17% of the time. A Fire Safety Checklist that was to be given to residents was distributed in slightly more

than half the visits (53%), and electrical safety was discussed only 6% of the time.

The process evaluation revealed important information. There was great variability in which elements the firefighters implemented consistently. This means that we don't yet know the true impact that a fully implemented home visiting program could have on protecting residents.

Q. How well did the partnership work?

A. Although there were challenges in maintaining high levels of community engagement early in the project, partners thought their time was well spent because fire prevention and home safety are important public health problems to be addressed, and the partnership was clearly focused on them. The project was complex, and evolved over time, making it difficult to keep everyone involved in the many day-to-day decisions made. Partners uniformly agreed that the group functioned respectfully and efficiently, and that enhancing fire prevention services in Baltimore was an important and shared goal. Engaging the partners and the community at every step of the process, including through dissemination of the results was highly valued.

⁵ Gielen AC, Shields W, Frattaroli S, McDonald E, Jones V, Bishai D, O'Brocki R, Perry E, Bates-Hopkins B, Tracey P, Parsons, S. "Enhancing Fire Department Home Visiting Programs: Results of a Community Intervention Trial." *Journal of Burn Care and Research*. 2013; 34(4): e250-256.

⁶ Shields WC, McDonald E, Frattaroli S, Perry EC, Zhu J, Gielen AC. "Still Too Hot: Examination of Water Temperature and Water Heater Characteristics 24 Years After Manufacturers Adopt Voluntary Temperature Setting." *Journal of Burn Care & Research*. 2013; 34(2): 281-287.

Recommendations

1 EXPAND THE NUMBER OF FIRE DEPARTMENTS THAT PROVIDE HOME VISITING

PROGRAMS. Residents highly value home visits by firefighters and benefit from these interactions. Residents learned new information and smoke alarms remained functional six months after the visit. Future programs should address remaining challenges, such as finding times when a majority of residents will be home and finding the most cost-effective program delivery models for different communities. Local fire services will also need to find resources to obtain 10-year lithium battery smoke alarms and CO alarms. New ways to address tap water scald burns during home visiting programs are needed.

2 COLLABORATE WITH COMMUNITY HEALTH WORKERS TO INCREASE THE NUMBER OF

RESIDENTS WHO PARTICIPATE IN HOME VISITING PROGRAMS. Community health workers were effective in providing advance promotion of the home visit, resulting in more residents letting the firefighters into the homes. Consideration should be given to whether they also may be effective in providing more safety education in advance of the home visit. In addition to directly increasing residents' safety knowledge, this could serve a "priming" function to help residents think about questions for the firefighters, which would in turn help the firefighters more specifically tailor their educational messages. In lieu of hiring their own CHWs, fire departments should explore partnering with existing community organizations and other home visiting programs.

3 ENHANCE IMPLEMENTATION OF THE HOME VISITING PROGRAMS TO MAXIMIZE IMPACT.

Our positive results could be enhanced if firefighters covered all of the required home visit elements more consistently. The low rate at which firefighters provided safety education to residents suggests the need to better understand and address the barriers they experience when conducting home visits. New strategies to reduce the burden on firefighters should be considered and evaluated. These could include assigning educational responsibilities to firefighters with interest and skills in prevention; having community health workers provide more of the education; and using new communication technologies like computer tailoring or videos to provide the education.



4 EXPAND PARTNERSHIPS WITH NEW COMMUNITY ORGANIZATIONS AND AGENCIES THAT CAN HELP PROMOTE FIRE AND LIFE SAFETY.

Several of the partners who came together for this project had not been previously engaged in fire or home safety work, yet all were supportive of the project's goals. Partners strongly endorsed more sustained community engagement and outreach. Conducting home visits based on neighborhoods rather than census tracts may offer an important opportunity to reach out to new partners who can help promote resident participation in home visits.

Participants and Project Roles

JOHNS HOPKINS CENTER FOR INJURY RESEARCH AND POLICY

Andrea Gielen, Professor and Director
David Bishai, Professor
Shannon Frattaroli, Associate Professor
Vanya Jones, Assistant Professor
Eileen McDonald, Associate Scientist
Elise Perry, Senior Research Coordinator
Wendy Shields, Assistant Scientist

Lead organization with overall responsibility for study protocols and conducting the project; led development of safety educator curriculum to supplement fire department's in-home education; obtained CO alarms; provided data collectors for program evaluation

BALTIMORE CITY FIRE DEPARTMENT

James Clack, Chief
Ray O'Brocki, Deputy Chief

Organized firefighter focus groups and top management team meetings; led development of firefighter training in new program protocols; conducted educational home visits, installing smoke alarms, testing CO levels, and recording process evaluation data

URBAN HEALTH INSTITUTE

Michael C. Gibbons, Associate Director
Carrie Arnwine, CHW
Sharon Johnson, CHW

Led hiring, training and supervision of community health workers who were key partners in providing advance notice to promote the fire department home visits

ENVIRONMENTAL JUSTICE PARTNERSHIP

Pat Tracey, Community Relations Coordinator
Barbara Bates-Hopkins, Community Relations Coordinator

Identified and contacted additional community organizations to promote the fire department home visits; led dissemination of study results in Baltimore communities

JOHNS HOPKINS CARES MOBILE SAFETY CENTER

Eileen McDonald, Director

Accompanied the fire department to neighborhoods during selected home visits to provide additional home safety education; redeemed coupons for CO alarms; sold other home safety products

MAYOR'S OFFICE OF NEIGHBORHOODS AND CONSTITUENT SERVICES

Provided additional opportunities to promote the fire department home visits

MARYLAND DEPARTMENT OF HEALTH AND MENTAL HYGIENE, CENTER FOR INJURY AND SEXUAL ASSAULT PREVENTION

Jade Leung, Chief of Injury Prevention Division

Provided smoke alarms to the fire department for use in the home visits

BANNER NEIGHBORHOODS COMMUNITY CORPORATION

Beth Myers-Edwards, Community Organizer

Provided additional opportunities to promote the fire department home visits; represented the voice of the community during all phases of the project

For more information contact:

Elise Perry, eliperry@jhsph.edu; 410-614-4027

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This work is dedicated to the memory of Carrie Arnwine and Sharon Johnson, the two Community Health Workers who tirelessly served their East Baltimore community since 2007. Their energetic spirit and hard work were vital to the success of the community outreach of this project.

