MMAHEN Health-Energy Summit - Intersection and Benefits of Health and Energy Efficiency

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September 7, 2016
Intersection of Health and Energy Efficiency

Linking Energy and Non-Energy Benefits to Social Determinants of Health
Social Determinants of Health

Five Key Factors Underlying SDOH:

1. Economic Stability
   • Poverty
   • Employment
   • Food Security
   • Housing Stability

2. Education
   • High School Graduation
   • Enrollment in Higher Education
   • Language and Literacy
   • Early Childhood Education/Development

3. Neighborhood and Built Environment
   • Access to Healthy Foods
   • Quality of Housing
   • Crime and Violence
   • Environmental Conditions

4. Health and Health Care
   • Access to Health Care
   • Access to Primary Care
   • Health Literacy

5. Social and Community Context
   • Social Cohesion
   • Civic Participation
   • Discrimination
   • Incarceration
Direct Links to Social and Physical Determinants of Health

The link between residential housing and health are known to include three inter-related aspects:

• Conditions of the home environment

• Conditions of the neighborhood

• Housing affordability
Housing Related Health Problems – Lead Poisoning

- 535,000 lead poisoned children
- Learning disabilities/ loss of IQ points
- Attention Deficit Disorder (ADD)/ Hyperactivity
- Speech and language delays
- 700% Increased School Drop Out Rate
- 600% Increased Risk of Juvenile Crime
- Dramatic Decreases in Long Term Earnings
Known Long Term Effects: Violent Crime

Credit: Chemical & Engineering News: February 2014- By Lauren K. Wolf
Business Case for Lead Poisoning Prevention

• For every $1 spent on lead hazard control programs there is a $17-$221 return on investment

  Source: HUD, Gould

• Monetized Benefits of Prevention = 2.2 to 4.7 IQ point increase results in increased lifetime worker productivity @ $723,000 per child* = $110 to $319 billion

  (discounted 2000 dollars for each year’s group of 3.8 million two-year old children)  Source: CDC

*$954,000 per child adjusted for inflation
Housing Related Health Problems - Household Injury

• Home injuries cause more than 10 million emergency room visits per year

• 18,000 unintentional home injury deaths occur each year and household injury is the leading cause of death among children

• 13 million preventable home related injuries occur annually costing $222 billion in medical costs

• 54% of all falling-related deaths of older people are caused by seniors falling down at home

• Fires, electrical hazards, and other household injury risks
Housing Related Problems - Asthma

- 25 million Americans with current asthma diagnosis including 6.8 million children
- Asthma rates are increasing annually
- 3,500 asthma related deaths annually
- Asthma accounts for over 15 million doctor visits, and nearly 2 million ER visits each year
Housing Related Problems - Asthma

• 14.4 million asthma-related missed school days (#1 reason for absenteeism = asthma)
• 14.2 million asthma–related missed work days from asthma
• The Commission on Building a Healthier America* found that 40% of all incidents of asthma are attributable to home-based environmental health hazards
Other Housing Related Health Problems

• Poor Indoor Air Quality
  • Carbon Monoxide
  • Particulates
  • Volatile Organic Compounds
• Radon Exposure
• Mold
• Asbestos
• Thermal Stress due to Extreme Heat and Extreme Cold
Non-Energy Pathway linking Non-Energy Benefits (NEB) to Social Determinants of Health (SDOH)

**Investments in Energy Efficiency and Weatherization Interventions**

**Direct Energy:**
- Change in kWh supplied
- Change in kWh consumed

**Energy Outcomes:**
- Reduce Energy Demand
- Demonstrate Leadership
- National Energy Security

**Non Energy Outputs:**
- Air Quality
- Health
- Economic

**Non-Energy Outcomes:**
- Environmental
- Occupant Health
- Macroeconomic
- Direct Economic
  - Individual
  - Community

**Social Determinants of Health**
1. Economic Stability
2. Neighborhood & Built Environment
3. Health & Health Care
4. Education
5. Social & Community Context
Benefits of Energy Efficiency in Affordable Housing

• Reduce GHG emissions & other environmental impacts
• Reduce energy costs (i.e. wealth retention)
• Improve indoor air quality
• Increase comfort
• Increase home value
• Reduce reliance on energy assistance programs
• Reduce risk of eviction and foreclosure
• Increase family stability
• Preserve affordability
• Increase economic benefits through job creation and market development
Intersection of Health and Energy Efficiency

The Comprehensive Housing Assessment & Intervention Approach – The GHHI Model
One Family’s Story

Dewayne Davis, age 8, suffered from asthma caused by his unhealthy, energy-inefficient home which was full of asthma triggers.

- Old carpets = allergens
- Water leaks = mold hazards
- Deteriorated windows = air leaks
- Broken hot water heater and furnace
- Defective gutters = water leaks
- Chipping paint = lead hazard
- Broken tile = safety hazard
- Broken ducts = higher heating bills

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A Fractured Delivery System
The GHHI “No Wrong Door” Model

- Single Intake System
- Comprehensive Assessment
- Coordinated Services
- Integrated Interventions
- Cross-Trained Workers
- Shared Data

- Lead Hazard Reduction
- Asthma Trigger Control
- Fall/Injury Prevention
- Energy Efficiency
- Weatherization
- Rehabilitation
How does it work?

Align  Braid  Coordinate
GHHI Model - Assessment and Education Team

**Environmental Health Educator**
- Conduct resident education
- Coordinate pre and post client health surveys
- Develop recommended action plans for the residents
- Coordinate follow-up client services

**Environmental Assessment Technician-Energy Auditor**
- Conduct pre-intervention environmental assessment
- Conduct energy audit
- Develop comprehensive scopes of work for the property
- Conduct post intervention assessment and audit
Scope of Work

The Scope of Work is a comprehensive, integrated intervention strategy.

• Itemizes the actions needed to eliminate a home’s hazards:
  o Lead Hazard Control and Reduction
  o Healthy Homes Interventions
  o Indoor Allergens
  o Safety
  o Energy Efficiency
  o Weatherization
Interventions: Lead Hazards

- Window replacement
- Paint stabilization
- Repair of structural defects
- Lead-specific cleaning
- Lead safe work practices
- Referral for Lead Violation Enforcement, Housing, Code Enforcement, Family Advocacy, or Medical Case Management Services
Interventions: Healthy Homes

• Integrated Pest Management
  o Gel Baits, Glue Traps, Reducing Entry Points, Cleaning, and Behavioral Change
  o Installation of mattress and pillow covers

• Air conditioners, dehumidifiers, & kitchen, bathroom, dryer venting

• Mold remediation

• Removal or steam cleaning of carpets

• Household Injury prevention measures, including:
  o Carbon monoxide and smoke alarms (with 10 year lithium battery)
  o Cabinet locks and electrical outlet covers  ◦ Trip and fall hazard repair

• Provision of a HEPA-vacuum and indoor allergen reduction kit

• Other Healthy Homes hazards (radon, asbestos)
**Interventions: Weatherization/EE**

**Interior:**
- Caulking
- Pipe insulation
- Air duct sealing
- Plumbing repairs
- Hot water heater blanket
- Programmable thermostats
- Furnace cleaning and repair
- Energy Star appliance installation
- Compact florescent light bulbs (CFLs)
- Bathroom, kitchen, and dryer venting
- Replacement of air filters on HVAC systems
- Foam insulation around cracks and crevices

**Exterior:**
- Energy Star window replacement
- Roof repair or Cool Roof replacement
- Exterior weather stripping and caulking
- Installation/replacement of gutters & downspouts
- Blown or rolled insulation in attic, basement, etc.
GHHI Model - Cross Trained Inspectors and Contractors

• Cross Training of Contractors and Inspectors From Multiple Fields to Increase Ability to Deliver Comprehensive Scope

• Increased Contractor and Inspector Capacity

• Development of Green Trades Accreditation

• Job Training and Economic Development for Residents of Low Income Communities
Supporting Environmental Assessment
Cross Training and Capacity of Energy Auditors
- New BPI Healthy Homes Evaluator Micro-credential

• Developed by the Building Performance Institute, Green & Healthy Homes Initiative (GHHI) and other key partners in the field
• Released in April 2016
• Cross training energy auditors on home-based environmental health hazard assessment, scope writing and intervention best practice protocols
• Supports the further integration nationally of Healthy Homes interventions with weatherization/energy efficiency intervention funding streams
• Go to http://www.bpi.org/professionals_hhe.aspx to find a BPI testing center in your area
A Solution Through Braiding

An integrated approach cost 25% less to implement ($12,057 vs $16,096), has kept DeWayne out of the hospital for asthma related visits, improved his school attendance and reduced the family’s monthly heating bills – and helped his mother achieve as well.

- Remove old carpets
- Remedy mold, install dehumidifier
- Install Energy Star windows
- Install furnace and hot water heater
- Replace broken gutters
- Stabilize chipping paint
- Resurface uneven floors
- Seal ducts, blow insulation

HUD (HHDP)
DOE (WAP)
Philanthropy
GHHI Baltimore Outcomes

Green & Healthy Homes Initiative: Improving Health, Economic and Social Outcomes Through Integrated Housing Intervention

• 66% reduction in asthma-related client hospitalizations
• 28% reduction in asthma-related client ED visits
• 50% increase in participants never having to visit the doctor’s office due to asthma episodes
• 62% increase in participants reporting asthma-related perfect attendance for their child (0 school absences due to asthma episodes)
• 88% increase in participants reporting never having to miss a day of work due to their child’s asthma episodes

Environmental Justice, Vol 7. Number 6, 2014
GHHI Philadelphia and Cleveland Outcomes

A look at GHHI Philadelphia’s impact:

• 70% fewer asthma-related client hospitalizations
• 76% fewer asthma-related client ED visits
• 62% fewer asthma-related client doctor’s office visits
• 53% fewer asthma-related client missed days of school or daycare

A look at GHHI Cleveland’s impact:

• 58% reduction in asthma-related client hospitalizations
• 63% reduction in asthma-related client ED visits
GHHI National Outcomes

Over 510,000 GHHI influenced green and healthy units

- Integration of weatherization/energy efficiency with Healthy Homes, lead hazard reduction and housing rehabilitation
- $404 average annual reduction of energy costs
- Up to 20-25% decrease in costs to government programs
- 1,100+ persons trained for the Green & Healthy Homes Workforce with a $4K - $8K increase in wages
- Attracting innovative funding sources for sites and local partnerships that are integrating health and energy services
Questions and Comments
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