

## **Maryland Firefighter Food Intervention, Research and Evaluation (FFIRE) Study (FEMA/AFG Grant # EMW-2007-FP-01040)**

**Purpose of the Study:** The Johns Hopkins Bloomberg School of Public Health partnered with the National Volunteer Fire Council and conducted a three year study with Maryland firefighters designed to reduce risk factors for the leading cause of on-duty deaths, heart attacks. The goals of the study were to explore the culture of health and wellness for firefighters; identify barriers to, and facilitators of, health and wellness among firefighters; and develop, implement, and evaluate a pilot intervention that addresses the identified barriers and facilitators. Using information from the focus groups, and experiences from working with two role models from state fire service leadership, we developed a pilot intervention that included nutritional education sessions, peer advocates, and providing tools for healthy eating.

**Study Participants:** Eight fire stations in Maryland (Bethany Station-Howard County Fire & Rescue, Cabin John VFD, Cresaptown VFD, Goodwill Fire Company, Joppa Magnolia VFC, Rockville VFD, Salisbury FD, Vigilant Hose Company) were enrolled in the pilot intervention, with 2 stations serving as the control group and 6 stations receiving the intervention. Three of the 6 intervention stations also had trained peer advocates for nutrition, to provide support to the intervention participants. The 2 control stations received intervention components after the final measures were taken on all study participants. The Johns Hopkins Team traveled over 9,000 miles throughout the intervention phase of the study. A total of 115 firefighters enrolled in the pilot intervention program.

**Intervention Components:** Three of the 6 intervention stations had 2-3 firefighters each trained by the Johns Hopkins Weight Management Center to be peer advocates for health and nutrition. All 6 stations received six monthly nutrition education sessions with cooking demonstrations. Family members and non-study participants were invited to attend the sessions. At all 6 stations we also provided tools (e.g., grills, nutrition library), obtained discounts on healthier menu items for firefighters at local eateries, and provided information on healthier vending machine items, local area farmers markets, and community supported agriculture programs to increase access to healthier foods. A “Biggest Loser” type competition was also held between the 6 fire stations in the intervention.

### **Data Collected:**

- Baseline, 2 months, 6 months, 12 months
  - Anthropometric measures: weight, waist circumference, body fat percentage, blood pressure
  - 100+ item survey of knowledge, attitudes, behaviors, physical health, mental health, demographics
- Baseline, 6 months, 12 months
  - Dietary intake, used online food frequency questionnaire
- Baseline and 6 months
  - Cholesterol and glucose
  - In-station food environment assessment
- Also collected evaluation information after each education session and information from study non-participants about their health and why they chose not to participate in the study.

### **Study Participants (115 participants):**

- 85% were males.
- Average age was 41 years old.
- 55% reported being volunteer firefighters; 14% were paid firefighters; 4% were EMS; remaining participants reported being some combination of volunteer firefighters, paid firefighters, and EMS.

### **Results of the “Biggest Loser” Competition (75 Participants):**

- The combined weight of participants at each intervention station decreased over the six months of the intervention.
- Average weight loss across each station ranged from 2.41 to 15.73 pounds.
- Goodwill Fire Company won the contest with an average weight loss of 15.73 pounds; Vigilant Hose Fire Company came in second place with an average weight loss of 8.86 pounds.

### Highlights from the Intervention and Education Sessions (from only the 6 intervention stations):

- Average attendance across the six educational sessions was 67% of participants.
- 83% of participants said their health improved by being part of the program.
- Participants said that their eating improved mainly because of what they learned during the cooking demonstrations and education sessions.
- While only 48% of participants said the food environment at the fire station changed over the program, 72% said the food environment at home changed because of being involved with the program.
- 58% of participants said they learned something about their health status they would not have learned if they were not involved in the program.
- Participants said the most helpful components of the intervention were: learning their physical measures, the education sessions that were offered, and the cooking demonstrations.

### Summary of Impact on Clinical Outcomes (bolded numbers are statistically significant)

| Outcome                                 | Control Stations     |                       |                       | Intervention Stations |                       |                       |
|-----------------------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                         | Month 0 -<br>Month 6 | Month 6 -<br>Month 12 | Month 0 -<br>Month 12 | Month 0 -<br>Month 6  | Month 6 -<br>Month 12 | Month 0 -<br>Month 12 |
| Weight (lbs)                            | -3                   | -2                    | <b>-5</b>             | <b>-6</b>             | + 1                   | <b>-5</b>             |
| Body Mass Index<br>(kg/m <sup>2</sup> ) | -0.4                 | -0.4                  | <b>-0.8</b>           | <b>-0.8</b>           | + 0.1                 | <b>-0.7</b>           |
| Body Fat (%)                            | -1                   | -1                    | <b>-2</b>             | <b>-1</b>             | + 0                   | <b>-1</b>             |
| Waist<br>Circumference (in)             | <b>-1.2</b>          | +0.2                  | <b>-1.1</b>           | <b>-0.5</b>           | + 0.3                 | <b>-0.3</b>           |
| Diastolic Blood<br>Pressure             | <b>-5.5</b>          | -0.7                  | <b>-6.3</b>           | <b>-5.2</b>           | +2.2                  | <b>-3.0</b>           |
| Systolic Blood<br>Pressure              | <b>-10.5</b>         | -1.0                  | <b>-11.5</b>          | <b>-10.5</b>          | <b>+5.0</b>           | <b>-5.4</b>           |
| Total Cholesterol*                      | <b>-26</b>           |                       |                       | <b>-17</b>            |                       |                       |

\* Total cholesterol was only collected at 0 and 6 months

### Highlights from the data:

- Participants experienced success in improving clinical risk factors for heart attacks!
- At the intervention stations, the greatest success was seen during the intervention, from 0 to 6 months.
- Some improvements decreased after the conclusion of the intervention period, but the net change from 0-12 months was still significant for most measures.
- Our motivated control stations also experienced impressive improvements in health; since they did not receive any intervention components other than having their measures taken, their changes were more gradual over the course of the 12 months of the study and follow-up period.
- Overall, these results show the significant health benefits of participating in a 6-month program at the fire station that includes taking health measures, education sessions, and cooking demonstrations to improve health.

\*\* Additional results from the study will be presented on Monday, June 18 at 4:00 PM at the 2012 MSFA Convention\*\*

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