Assessing the Cost of Implementing A Wellness-Fitness Program for Firefighters

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The findings and conclusions in this study are those of the authors and do not necessarily represent the views of NIOSH
Introduction

• Fire fighting is one of the most dangerous occupations in the US

• Fire fighters (FFs) are exposed to
  - Long hours of work and shift work
  - Strong emotional involvement and high intensity activities
  - Human suffering
  - High heat, low oxygen, high carbon monoxide, chemicals, …

• These exposures contribute to:
  - Cardiovascular disease (CVD)
  - Musculoskeletal disorders (MSDs)
  - Cancer

Source: Kerry Kuehl, OHSU
Introduction (cont.)

• CVD aggravated by physically stressful fire suppression activities account for the high death rate among FFs (Moe et al., 2002)

• 81 FFs died in 2012 while on duty; most of them from CVD (FEMA, 2013).

• Around 69,500 FF were injured on the job in 2012 alone (NFPA, 2013)

• These contribute to a significant cost from lost work days (LWD), higher insurance, medical bills, etc.

• Disability retirement among FF is 20 times greater than among workers in the private sector (IAFF, 1997)
Wellness-Fitness Initiative (WFI)

- In response, IAFF and IAFC developed the Wellness-Fitness Initiative (WFI) program.

- WFI is intended to improve the mental, physical, and emotional capabilities of FFs and to help reduce deaths, injuries, and costs.

- It includes medical evaluation, fitness assessment, injury prevention and rehabilitation, behavioral health, and data collection and reporting.

- Though there is some information on the impact of wellness interventions for FFs, there is very limited information on the intervention costs at the Fire Department (FD) level.
Objective and significance of the study

• Improve the understanding of the cost of each WFI component at the individual FD level
  – This information can be used to identify remaining gaps in our understanding of the cost of implementing WFI

• Findings can be combined with previous work on the effectiveness of WFI to better understand its cost-effectiveness at the FD level
Method

- Through a contract with the University of Arizona, we collected cost information from the Tucson Fire Department (TFD)
- TFD has participated in the WFI since 1997
- Data were provided by TFD and their occupational health provider, WellAmerica
- All data were aggregated and de-identified
- We collected cost information for 2002-2012 on WFI program components: medical, fitness, injury prevention and rehabilitation, behavioral health, and data collection and reporting
Tucson Fire Department (TFD)

- 500,000+ served
- 21 stations
- ~80,000 calls per year
- ~600 FFs
- TFD FFs are an average of 41 years old, 95% male
Results

1. Medical evaluation cost
1. WFI-Medical evaluation cost

1.1. Background

- Group health insurance (GHI) is provided through the City of Tucson
- Occupational health services are provided under contract by WellAmerica
- There may be cost-shifting between GHI and WellAmerica (e.g. some FFs may not seek physical exams from GHI)
- The cost data have been adjusted for inflation using the medical consumer price index
- All cost figures are presented in 2012 U.S. $ /FTE FF
1. WFI – Medical evaluation cost (cont.)

1.2. Medical evaluation includes:
   - Standardized and annual physical examination
   - Vision and Hearing tests
   - Pulmonary evaluation
   - Aerobic/cardiovascular evaluation
   - Cancer screening
   - Immunizations and infectious disease screening
   - Referral to personal healthcare provider as needed
   - Written feedback to FFs
   - Data collection and reporting
1. WFI – Medical evaluation cost (cont.)


<table>
<thead>
<tr>
<th>Item</th>
<th>Average</th>
<th>Standard deviation</th>
<th>Coefficient of variation (CV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Exams</td>
<td>$380</td>
<td>41</td>
<td>0.11</td>
</tr>
<tr>
<td>Return-to-work exams (non-workers’ compensation)</td>
<td>$3</td>
<td>0.55</td>
<td>0.17</td>
</tr>
<tr>
<td>Source patient testing</td>
<td>$1</td>
<td>0.68</td>
<td>1.01</td>
</tr>
<tr>
<td>Injection fees</td>
<td>$1</td>
<td>1.07</td>
<td>0.82</td>
</tr>
<tr>
<td>Medical evaluation (total)</td>
<td>$385</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 2010 & 2011 were not considered due to absence of info for number of FFs

- The CV is high for testing and injections since patient testing is provided on an as-needed basis and the response to the H1N1 “swine flu” outbreak in 2009
- We also collected detailed unit cost for each medical service
Results

1. Medical evaluation cost

2. Fitness
2. WFI – Fitness cost

2.1. The fitness component includes:
   – On-duty time for exercise
   – Exercise equipment/facilities
   – Exercise specialist
   – Peer Fitness Trainers (PFT) must be certified by IAFF/IAFC or the American Council of Exercise (ACE)
   – Fitness evaluations and exercise programs
   – Nutrition counseling
2. WFI—Fitness cost (cont.)

2.2. Cost per FTE FF during 2004-2012 (2012 $)

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost/FTE/year</th>
<th>Comment/assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Fitness Trainers (PFT)</td>
<td>$20</td>
<td></td>
</tr>
<tr>
<td>Training and certification</td>
<td>$16</td>
<td>PFT assumed to work for 10y</td>
</tr>
<tr>
<td>Annual renewal cost</td>
<td>$2</td>
<td></td>
</tr>
<tr>
<td>Overtime for fitness assessment</td>
<td>$2</td>
<td>Only for 40% of the work</td>
</tr>
<tr>
<td>Exercise equipment</td>
<td>$24</td>
<td></td>
</tr>
<tr>
<td>Fixed</td>
<td>$19</td>
<td>5 years life span</td>
</tr>
<tr>
<td>Repair and Maintenance</td>
<td>$5</td>
<td></td>
</tr>
<tr>
<td>Fitness (Total)</td>
<td>$44</td>
<td></td>
</tr>
</tbody>
</table>

The cost for training time is not included based on WFI recommendations to encourage on-duty time for exercise, and provide exercise specialist services and PFT.
Results

1. Medical cost
2. Fitness
3. Injury and rehabilitation
3. WFI – Injury and Rehabilitation cost

3.1. General note

• The program includes
  – Clinical services – “industrial athlete” approach
  – Transitional duty (injury rehabilitation)
  – Injury prevention program including designation of safety officer
  – The safety officer is supervised by a Deputy Fire Chief who also devotes some time to safety
3. WFI – Injury and Rehabilitation cost (cont.)

3.2. Cost

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost/FTE/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety officer salary ($78,148/year)</td>
<td>$93</td>
</tr>
<tr>
<td>Injury and rehabilitation (Total)</td>
<td>$93</td>
</tr>
</tbody>
</table>

- We have not included the salary for the Deputy Fire Chief while we are trying to understand the portion of his/her time allocated to the WFI
Results

1. Medical cost
2. Fitness
3. Injury and rehabilitation
4. Behavioral health
4. WFI – Behavioral Health cost

4.1. The behavioral health component includes:
    – Behavioral health (BH) specialist qualifications
    – Periodic BH evaluation
    – Access to comprehensive counseling services
    – Behavior modification
    – Employee Assistance Program
    – Counseling for substance abuse
    – Counseling for stress
4. WFI – Behavioral Health cost (cont.)

4.2. Cost

- TFD refers employees to the City of Tucson Employee Assistance program or other free counseling services in the community, such as Jewish Family Services
- We are trying to understand how to assess the cost of BH services
Results

1. Medical cost
2. Fitness
3. Injury and rehabilitation
4. Behavioral health
5. Data collection and reporting
5. WFI – Data Collection and Reporting cost

5.1. General note

• The WFI recommends that management and labor support systems that confidentially collect medical, health, and fitness data

• WFI has a 35 item questionnaire and a 58 item physical assessment information tool that would be used in a Health Information Registry
5. WFI – Data Collection and Reporting cost (cont.)

5.2. Cost

- TFD collects data
- Injury database maintained within TFD
- There is opportunity for improving this component
- Administrative Assistant – 60% time

<table>
<thead>
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<th>Item</th>
<th>Cost/FTE/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin assistance for data collection (60% of salary</td>
<td>$27</td>
</tr>
<tr>
<td>($22,500/year)</td>
<td></td>
</tr>
<tr>
<td>Data collection (Total)</td>
<td>$27</td>
</tr>
</tbody>
</table>
Conclusion

• The WFI is a holistic program aimed to improve the quality of life of FFs and reduce the costs of illness and injury

• The components of the WFI include medical evaluation, fitness, injury and rehabilitation, behavioral health, and data collection and reporting

• Using information from TFD, we estimated the cost of most components of WFI per FTE FF per year

• We will continue with our effort to assess the cost of the components we do not yet fully understand
Conclusion (cont.)

• We can also categorize costs as fixed and variable to better understand them

• These results could help other FDs to estimate and better understand the costs of WFI components

• Findings can be combined with work on the effectiveness of WFI to better understand the cost-effectiveness of WFI at the FD level