

Enhancing Firefighter Safety Post-fire Regarding Personal Protective Equipment:

A Quality Improvement Study

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Structured Abstract

LOCAL PROBLEM

Firefighters are required to wear personal protective equipment (PPE) during and after fire suppression in order to prevent exposure to carcinogenic toxins. When PPE is not worn or properly decontaminated, firefighters are exposed to harmful toxins that could cause various health related issues. This has led to an increased need for educating firefighters on the importance of properly decontaminating PPE post-fire suppression. A local fire and rescue service have had five to six cancer related deaths over the past 12 years related to possible toxin exposure. Firefighters have expressed that they try not to take short cuts but sometimes it happens because mouth gear can make breathing difficult. Each firefighter is then forced to make judgment calls about removing PPE. Currently, there are no formal guidelines in place for properly cleaning gear at the selected site. While firefighters may sometimes use on-scene decontamination wipes to clean gear post fire suppression, there are no mandates.

PROJECT PURPOSE

The purpose of this project is to evaluate the proper protocol when wearing PPE in order to increase the safety of firefighters and reduce toxin exposure.

METHODOLOGY

Stevens Star Model of Knowledge Transformation is a 5-point evidence based practice model that is used in order to organize existing and developing concepts to improve care and outcomes by integrating research into practice. This is obtained by focusing on the five points: (1) discovery research, (2) evidence summary, (3) translation to guidelines, (4) practice integration, and (5) process-outcome evaluation. When applying the Star Model to the DNP Project, Point 1 was obtained by transforming the information obtained from the interim fire chief during the interview. Current practices at the selected site were discussed and clarified. Transformation occurred by using search engines to gather research evidence on the importance of properly decontaminating PPE. Point 2 consisted of exploring guidelines specific to decontaminating PPE on a local, regional, national, and international level. Point 3 was applied by establishing guidelines for PPE decontamination. Point 4 occurred when observing firefighters during training sessions and gathering evidence from research. Point 5 was implemented by receiving individual feedback from firefighters regarding the creation of guidelines and how they feel performing specific tasks.

RESULTS

During the development process, the team consisted of firefighters from Fire Station #20 shift A, shift B, and shift C. The team proposed and discussed the processes for decontaminating PPE after a fire call. Guidelines were created and discussed with the team for review. The firefighters at Fire Station #20 agreed that they would be willing to pilot the proposed guidelines. Recommended guidelines and products were then submitted to the Battalion Chief and Fire and Safety Chief for approval. Recommended guidelines were approved and permission was given for Fire Station #20 to move forward with implementing recommended guidelines. Recommended guidelines will be proposed to adopt at the local level among all fire and rescue stations. Perhaps recommended guidelines may be used as a starting point for the creation of a protocol regarding firefighter health and safety.

IMPLICATIONS FOR PRACTICE

Evaluation of PPE as well as time spent wearing equipment is important in order to keep firefighters safe. Development of recommended guidelines was successful and firefighters were able to provide insight on the ease of implementing the guidelines into practice. Attention to this matter is important due to the many health risks when firefighters do not wear their gear properly. Spotlight on this clinical issue will allow for better safety outcomes, and firefighters will be more aware of the importance of personal health. Consideration of self may sometimes be a little difficult to do in a profession that requires one to focus on the wellbeing of others.

Keywords: toxins, PPE, firefighters, cancer, decontamination

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