



Fire prevention education delivered by on-duty fire fighters: cluster randomized controlled study

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Presenting work done in partnership with
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Objectives

Four main points motivated a door-to-door, on-duty fire fighter delivered, fire prevention education program in Surrey, BC. These points are:

1. Working smoke alarms and public education reduce fires and save lives.
2. Not everyone has a smoke alarm, and smoke alarms do not last forever.
3. It is possible to increase the likelihood of houses having working smoke alarms.
4. This must be a data-driven process, and there is no one-off, quick fix.¹

This talk discusses the background research that drove this initiative,² the evaluation outcome, and the ongoing directions of these activities in Surrey, BC.

Protocols

Analysis of almost 50,000 residential fires across Alberta (AB), British Columbia (BC), and Ontario (ON), involving 663 deaths, revealed:

- The death rate per 1,000 fires increased by 74% in the absence of a working smoke alarm.
- Only 36% of houses that experienced fires over this 5 year period had working smoke alarms.
- Alarms stop working with time.

Fire risk is non-random – there are high-risk people, properties, and places.

Although case studies have demonstrated that public fire education works (Schaenman et al., 1990, Proving public fire education works), there is a lack of cluster controlled evaluations to provide conclusive support.

In 2008, the Surrey Fire Service commenced a series of door-to-door, on-duty fire fighter delivered, public education visits. The impact was evaluated with respect to a cluster randomized control group.

At the time of evaluation (November, 2010), 18,473 high-risk dwellings had been visited (by June, 2012 this will have increased to 40,000 homes). Fire-prevention information packages were distributed and smoke alarm checks were undertaken where possible. Information packages covered the following topics:

- Letter from the Surrey Fire Chief offering a no-charge home safety inspection and installed smoke alarm upon request.
- Smoke alarms.
- Home fire escape plans.
- Children and fire.
- Senior fire safety.
- Kitchen fire safety.

Deliveries were completed in temporal cohorts, involving about 2,500 homes being visited each time. To complete the visits normal training duties were suspended for a 2-week period. Using GIS, Census data, and recent fire history, high-risk addresses were identified that captured the greatest densities of:

- Elderly citizens,
- Families with young children,
- Highly disadvantaged individuals,
- Highly residentially mobile individuals, and
- High fire-density areas.

Findings

Recently released in the Journal of Safety Research³ the following main findings emerged from this evaluation:

- Relative to cluster controls there was a 4.4 times greater reduction in the rate of fires for homes visited by the program (63.9% reduction in the annual rate of fires over the evaluation period in intervention areas compared to 14.6% reduction in control areas).
- Increased activation of alarms when fires occurred post-intervention, with no increase for controls.
- Increased containment of fires to the object of origin post-intervention and no increase for controls.
- Trends indicative of reduced dollar damage for fires post-intervention, with no trend for controls.

In combination with two other data-driven prevention initiatives (boarding up vacant houses and electrical fire safety inspections on indoor marijuana grow operations) between 2006 and 2011 the city has seen a 48% reduction in the annual rate of residential fires per 1,000 dwellings, and a 40% reduction in fire-related casualty per 10,000 residents. The City has increased in population by 24% over the last decade.

Logistics

One data-driven strategy to manage the logistics involved with this type of prevention initiative is to use the natural fluctuations in work-loads to find additional time in the normal schedule of activities. Also, focus on risk, starting with the highest risk areas, as this is where you will get the greatest return on prevention investment.

Moving Forward

Strategies such as this can become victims of their own success. The problem with fire prevention education and smoke alarms cannot be treated with a single intervention. On-going commitment is required. Coordinated, sustained, multifaceted approaches designed to build on the Three E's of injury prevention (education, environment, and enforcement) are needed.

Surrey Fire is: (a) generating creative approaches to ongoing testing of alarms in high-risk homes, (b) monitoring the temporal cohorts as a routine part of trends analysis, and (c) spearheading a movement towards ensuring there is a working smoke alarm in every Canadian home.

Given the range of effective prevention models that exist, there is no excuse for not doing something.

References

¹ Garis, L., & Clare, J. (January, 2012). Smoke alarms work, but not forever: posing the challenge of adopting multifaceted, sustained, interagency responses to ensuring the presence of a functioning smoke alarm. Research note, released by the University of the Fraser Valley, available for download at http://www.ufv.ca/CPSCJR/Reports_and_Publications.htm

² McCormick, A.V. (2009). Residential fires in Surrey, BC: 1988-2007. University of the Fraser Valley.

³ Clare, J., Garis, L., Plecas, D., & Jennings, C. (2012). Reduced frequency and severity of residential fires following delivery of fire prevention education by on-duty fire fighters: cluster randomised controlled study. Journal of Safety Research, available online.