Introduction: Safety Intervention Effectiveness Evaluation

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1.1 What is a safety intervention?

A safety intervention is defined very simply as an attempt to change how things are done in order to improve safety. Within the workplace it could be any new program, practice, or initiative intended to improve safety (e.g., engineering intervention, training program, administrative procedure).

Safety interventions occur at different levels of a workplace safety system (Figure 1.1), including the level of safety management and various human and technical sub-system levels in the organization that management can influence. An additional level of the system in Figure 1.1, above the organizational, pertains to the laws, regulations, standards and programs put in place by governments, industries, professional bodies, and others. Examples of interventions at this level include the Safe Communities Incentive Program (Safe Communities Foundation, Ontario, Canada), the Safety Achievers Bonus Scheme (South Australian Workcover Corporation) and small business insurance pooling (CRAM, France). This guide does not deal with interventions at the community level, although some of the issues discussed are applicable.

Figure 1.1 Levels of intervention in the workplace safety system
1.2 Effectiveness evaluation

We are focusing here on **effectiveness evaluation** (also known as outcome evaluation or summative evaluation), which determines whether a safety initiative has had the intended effect. For example, such an evaluation might answer the question, does the new incident investigation process instituted three years ago (for the purpose of decreasing injuries) actually prevent injuries in subsequent years? This type of evaluation is the “CHECK” portion of the PLAN-DO-CHECK-ACT (PDCA) continuous quality improvement cycle.4

Although injuries are often measured in an effectiveness evaluation to determine whether the initiative has had an effect or not, there are two situations where this might not be the case. One of them arises from injury outcome data that is unreliable or invalid - (e.g., while evaluating an initiative in a small workplace). In this case a surrogate measure of safety could be used (e.g., a checklist of safety conditions), if shown to be valid for the circumstances in which it will be used. The other situation is where the program’s explicit objective is not to decrease injury incidence, but rather, some other objective such as improve worker or management competence or attitudes.

However, if the purpose of the program is to ultimately affect injury incidence by targeting competence or attitudes, it would be beneficial to include a measure of injuries or a valid surrogate.

1.3 Overview of the evaluation process and the guide

Figure 1.2 provides an overview of the effectiveness evaluation process. Much of the activity in evaluation precedes the point where the intervention or initiative is introduced. Although evaluations can be done

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1.4 Other types of evaluations

Other types of evaluation, besides effectiveness evaluation, are useful in the process of improving safety in the workplace. They will only be described briefly here. A needs assessment can be carried out to determine exactly what type of intervention is required in a workplace. Analyses of injury statistics, incident reports or employee surveys, as well as interviews with key workplace personnel (e.g., safety manager, disability manager, union representative, etc.) can identify particular safety issues. This determines what type of intervention(s) should be chosen or designed to address an identified need.

After choosing and introducing a new safety initiative to a workplace, a process evaluation (also known as a formative evaluation) can be used to determine whether the new initiative is being implemented as planned. It assesses to what extent new processes have been put in place and the reactions of people affected by the processes. Furthermore, the refinement of a new initiative and its implementation before its effectiveness can be measured. If the process evaluation determines that the initiative was not implemented as planned, the time and trouble of conducting an effectiveness evaluation might be spared, or at least delayed until it becomes more meaningful.

Finally, economic analyses can be used to evaluate workplace interventions, including cost-outcome, cost-effectiveness and cost-benefit analyses. They also depend on effectiveness information. The first two analyses estimate the net cost of an intervention (i.e., the cost of the intervention
minus the monetary saving derived from the intervention) relative to the amount of safety improvement achieved. (Monetary savings include reductions in workers’ compensation premiums, medical costs, absenteeism, and turnover, etc.) This yields a ratio such as net cost per injury prevented.

In a cost-benefit analysis, monetary values are assigned to all costs and outcomes resulting from an intervention, including health outcomes. Furthermore, a net (monetized) benefit or cost of the intervention is calculated.

Drummond et al. [1994], Haddix et al. [1996] and Gold et al. [1996] are useful introductions to economic evaluations.

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