

**Introduction** Employee safety incentive programs are a form of communicating to engage employees to increase the use of safety controls ranging from the use of proper tools, pre-task planning, to the use of personal protective equipment. We developed a safety communication and recognition program designed to encourage improvement of physical working conditions and hazard reduction in construction. The program communicated how well both the work site and individual subcontractors were controlling hazards on the site.

**Methods** To evaluate the developed program, we completed a cluster randomised controlled trial on eight worksites for approximately five months per site. Pre- and post- worker surveys measured changes in safety climate (n=615 with follow up rate of 88%). Multi-level mixed effect regression models tested the effect of B-SAFE on safety climate as assessed from surveys. Focus groups (n=6–8 workers/site) provided qualitative measures of changes not measured via the surveys.

**Result** Safety climate score at intervention sites improved. The intervention effect size was 1.64 (3.28%) (P-value=0.01) when adjusted for month the worker started on-site, total length of time on-site, as well as individual characteristics (trade, title, age, and race/ethnicity). At intervention sites, workers noted increased levels of safety awareness, communication, and teamwork compared to control sites. Managers noted that subcontractors worked together and workers were engaged in the communication and receiving the data.

**Discussion** The program led to many positive changes, including an improvement in safety climate, awareness, teambuilding, and communication. The program is a simple approach to engaged workers through effective communication infrastructures and had a significant, positive effect on worksite safety

### 1597c SHARING SOLUTIONS IN PARTICIPATORY ERGONOMICS – A KEY TO SUSTAINABILITY

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**Introduction** Musculoskeletal disorders (MSD) and slips, trips, and falls (STF) are a major source of workplace injuries. In Ontario, MSD account for upwards of 40% and STF account for almost 20% of all lost-time claims depending on sector. Our objective was to integrate stakeholder perspectives about the implementation of a participatory ergonomics program.

**Methods** The project builds on a recently completed pilot study and process evaluation of the Employee Participation in Change (EPIC) program in three work sites (391 workers) within one organisation. Individual interviews were conducted with Program Champions (n=3) and an interactive stakeholder workshop, including a moderated focus group (n=13), was held. Data from Program Champions informed the interactive workshop. Focus group data centred on strategies for knowledge sharing and program recommendations. Transcripts and field notes were analysed for emerging themes.

**Results** Participants reported positive experiences with program implementation. EPIC has been sustained and incorporated into existing health and safety procedures at all sites. Improvements in communication about safety were noted in all cases. Funding to implement changes remains a challenge in all sites.

Program champions, site administrators and worker representatives led discussions consistently noted positive changes

but also described the need for iteration in solution development. Focus group results included suggestions to reduce program training and paperwork burdens. Key barriers included the time it takes to implement solutions.

Frontline workers continue to use EPIC hazard identification tools and practices, and communicate about hazards and solutions regularly. The 'raised awareness' from EPIC has persisted. A key facilitator to success included the role of ergonomics consultants.

**Conclusion** EPIC program stakeholders participated in an interactive workshop to inform improvements in program delivery and evaluation of a participatory intervention. Participants noted that sharing solutions across sites would have been useful earlier. Future implementation research will incorporate solution sharing opportunities.

### 1597d PARTICIPATORY ERGONOMIC PROGRAMS IN COMMERCIAL CONSTRUCTION PROJECTS: ENGAGEMENT WITH MULTIPLE ORGANISATIONAL LEVELS TO IMPROVE EFFECTIVENESS

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**Introduction** Effective participatory ergonomic programs require cooperative engagement of management and workers to identify hazardous tasks and implement useful solutions. We report findings from participatory programs within seven single employers on different multi-employer construction projects.

**Methods** We trained all employees in ergonomic principles, hazard recognition, and use of a participatory approach to identify and implement feasible solutions. We measured program delivery and effectiveness through training records, number of identified hazardous tasks and solutions, and number of employer-controlled and worker-controlled solutions implemented over a three-month period.

**Result** Most (91%) of the 95 workers were trained; participating workers identified 105 hazardous tasks. Equipment solutions for 43 of these tasks were the responsibility of the employer; workers were responsible for 44 tool and 8 work practice solutions. Ten hazardous tasks without solutions related to the construction environment and/or schedule that were controlled by the primary contractor. Relatively few employer-controlled equipment solutions (33%) were implemented during the project while 75% of the worker-controlled tool solutions were implemented.

**Discussion** These results highlight two barriers to implementing effective solutions in single employer participatory ergonomic programs:

- employers do not involve workers in selecting useful equipment for projects, and
- primary contractors control the project schedule and environment.

The complex organisation of multi-employer sites and frequently changing work tasks and environments may account for the varied effectiveness of participatory ergonomic programs in construction. Most programs have engaged workers within single employers, rather than being integrated within