

Safety by design and collaboration - Case study

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1. Background

The handling of surgical instrument trays (in particular, loan sets) has been identified at both National and State levels as a significant musculoskeletal injury and disease risk[1]. There are a large number of surgical equipment providers supplying a range of road cases, tubs and loan sets but there are no national industry guidelines to provide advice on the safe design and handling of this equipment. The range and quantity of surgical instruments has substantially increased in recent years resulting in greater use and handling of surgical loan sets. In addition the high cost of purchasing equipment and the huge range of choices available, indicates that hospitals will continue to loan equipment from suppliers rather than purchase it for both practical and economic reasons. As a result of these issues, a national intervention and compliance campaign was initiated by the Heads of Workplace Safety Authorities (HWSA), recommending that 'particular attention be paid to the design of containers, handling of loan sets, use of lifting equipment, work area design and liaison with suppliers through to end users.[1]'

In August 2009 WorkCover NSW established a national working party, through an expression of interest, to address and solve these issues. The Surgical Loan Sets working party included representation from key industry stakeholders and HWSA delegated specific representatives from each jurisdiction to provide technical advice and support to the working party.

2. Project objectives

Key project objectives included:

- researching existing design and handling issues arising from the use of current transportation cases (road cases and tubs), surgical instrument trays and associated systems of work.
- developing a guide to provide practical guidance for designers, manufacturers, suppliers, couriers, hospitals and users of surgical instrument trays and outline their legislative obligations.
- designing, building and testing a prototype (model transport case) to substantially reduce the risk of musculoskeletal disorders (MSD).
- developing a communications strategy to ensure that the rollout of both the model transport case and the guide occur in an effective, unified and consistent manner across the industry.
- providing recommendations and timeframes for the implementation of the guide, transitional arrangements and post implementation compliance campaign

3. Methodology and process

A thorough review of relevant literature and current guidance material was conducted by the working party to inform the project approach and methodology. This included reviewing 'The Safe Steps – Manual Handling Slips and Trips in Hospitals Campaign, 2008' and the Victorian guidance note[2] that was developed on this issue in 2005. Subsequently, the working party engaged with industry to undertake further research, including inspections of numerous central sterilising supply departments (CSSD), surgical instrument suppliers and courier transport services.

Research findings confirmed that the various types of road cases and tubs used to transport surgical loan sets presented a major risk with serious implications for workers across this industry sector. The majority of cases and tubs were not designed for the task and resulted in inappropriate manual handling practices being employed by workers handling this equipment.

To further explore these findings a discomfort survey was designed to measure the level of discomfort experienced by employees while handling roadcases, tubs and surgical loan sets as part of their job. This survey was provided to a range of stakeholders over a period of three months (Sept to Nov 2009). A total of 135 responses were received from clinical nurse specialists, CSSD staff, technical aides and surgical supply warehouse staff. The results of this survey are illustrated in Figure 1, which shows that 60% of respondents claimed that the discomfort they experienced was related to their present job which directly involved the handling of surgical loan sets.

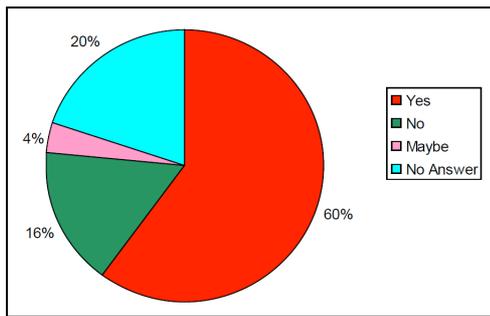


Figure 1. Discomfort due to job.

The project focussed specifically on identifying, eliminating and controlling the risk of musculoskeletal injury and disease associated with the equipment design, work processes and working environment during:

- packing and unpacking of surgical instrument loan sets by supply organisations
- loading and unloading of road cases and tubs in and out of courier vehicles by single courier operators
- unpacking and packing surgical loan sets by the end user (CSSD staff)

In June 2010, a prototype transport case was designed and manufactured with the assistance of a contracted industrial design engineer (Dr Lance Green). This was followed by a rigorous prototype testing regime conducted across NSW in July/August 2010. Testing involved conducting an assessment of the working performance of the prototype and an ergonomic comparative study, which compared the existing systems with the model prototype system. Comparative risk ratings were calculated for the existing and prototype related processes in each workplace using a risk factor checklist, based on 'the National Code of Practice for the Prevention of Musculoskeletal Disorders from Performing Manual Tasks at Work (2007)'[3].

Results of the comparative study confirmed that the new design, when used in conjunction with a safe system of work, significantly reduced the risk of MSD's, as represented in figures 2 and 3 below.

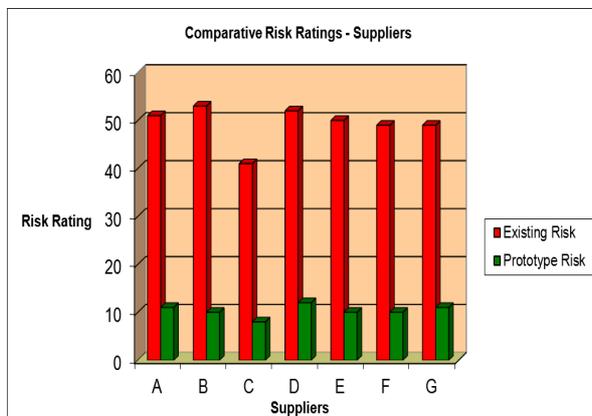


Figure 2 Comparative Risk Ratings – Suppliers

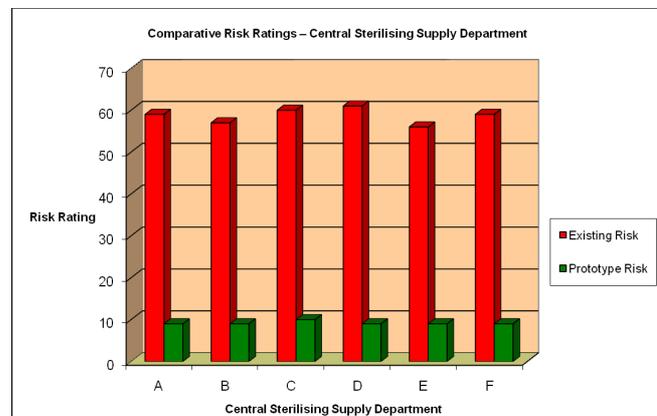


Figure 3 Comparative Risk Ratings – CSSD

Recommendations for improvements to the transport case design were made as a result of these findings. The working group then collaborated with experienced design companies to develop the final design principles and specifications which were approved by the working group at their final meeting in February 2011.

4. Project outcomes

In March 2011, the Guide entitled 'Design and handling of surgical instrument transport cases' along with the final report on the surgical loan set problem solving project[4] was endorsed and approved for release by HWSA. The Guide is available to industry through HWSA and WorkCover NSW websites.

The six major medical device companies (represented on the working party) engaged a company to manufacture a new transport case to meet the design principles outlined in the Guide. In April 2013, these companies took receipt of the new cases and utilised them to transport surgical instrument trays to hospitals. As the rollout of cases continued, CSSD's, suppliers and some couriers implemented changes to their work environment and systems of work to align with the principles outlined in the guide.

During 2014, WorkCover NSW conducted a series of visits (25) to numerous hospitals, medical suppliers and couriers in the Sydney metropolitan and Newcastle areas to evaluate how the new transport cases and recommended systems of work had been implemented. An implementation questionnaire was completed at each visit. Results of these visits indicated that:

- hospitals are receiving 75% of their loan sets in the new transport cases,
- medical device companies are delivering loan sets in the new cases in 95% of deliveries.
- 54% of hospitals and 67% of medical device companies are following principles outlined in the Guide.

5. Conclusion

Safety by design is a key strategy that regulators should promote in order to achieve improvements in work health and safety[5]. The collaborative work undertaken by the Surgical Loan Set working party has greatly reduced the incidence and risk of MSD's associated with handling surgical instrument trays. This work has positively influenced stakeholder behaviour in terms of realising the benefits of reducing the risk of a musculoskeletal injury occurring by eliminating and minimising hazards by design.

References

1. HWSA, *Safe Steps – Manual Tasks, Slips & Trips in Hospitals National Intervention & Compliance Campaign*. 2008.
2. WorkSafe Victoria, *Orthopaedic Surgical Instrument Sets - Reducing Risks Of Musculoskeletal Disorders*. 2005.
3. Safety Australian Compensation Council, *National Code of Practice for the Prevention of Musculoskeletal Disorders from Performing Manual Tasks at Work*. 2007: Commonwealth of Australia.
4. WorkCover NSW, *HWSA FINAL REPORT - Surgical Loan Sets Problem Solving Project*. 2011.
5. Safe Work Australia, *Australian Work Health and Safety Strategy 2012-2022: Healthy, Safe and Productive Working Lives*. 2012.