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## **Evaluating the Impact of CRM Training In the Operating Room**

Prepared for

Canadian Patient Safety Institute

by

Natasha Wentzell  
Graduate Student

and

Mark Fleming  
Director

**CN Centre for Occupational Health and Safety  
Saint Mary's University  
Halifax  
Nova Scotia**

tel: 902 491 6253

fax: 902 496 8287

e-mail: [cncohs@smu.ca](mailto:cncohs@smu.ca)

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## 1. Introduction

This summary report includes:

- 1) An overview of the project funded by the Canadian Patient Safety Institute (CPSI) studentship program
- 2) Project results
- 3) Student learning outcomes

## 2. Project Overview

The current project involved evaluating the effectiveness of Crew Resource Management (CRM) training in enhancing teamwork in the Operating Room (OR) at St. Boniface General Hospital Winnipeg Manitoba. CRM is defined as “*using all the available resources- information, equipment, and people- to achieve safe and efficient flight operations*” (Lauber, 1984: 20).

The overall goal of the training was to build competence and a culture of accountability within the surgical team. The aim of the program evaluation was to assess the impact of the training on participants’ attitudes using a pre and post training research design. CRM training is designed to reduce error and increase team effectiveness (Wiener, Kanki & Helmreich, 1993). CRM training is most commonly used within the aviation industry to develop flight crew communication, decision making and leadership skills. There is good evidence from aviation that CRM training improves team attitudes (Helmreich, Wilhelm, Kello, Taggart & Butler, 1990; Helmreich & Wilhelm, 1991), knowledge (Salas, Fowlkes, Stout, Milanovich & Prince, 1999), behaviours (Goeters & Muscke, 2000) and accident rates (Diehl, 1991; Grubb, Morey & Simon, 2001). Due to the similarities between flight crews and medical teams; CRM training is now starting to be implemented within healthcare to reduce the number of preventable adverse events.

The specific CRM training program implemented at St. Boniface was developed in 2004 by Dr. Donald Moorman of Beth Israel Deaconess Medical Centre in Boston. The goal of this course was to improve team effectiveness by training OR staff in communication, pre and post operative briefings and leadership. The training was delivered to small multidisciplinary (e.g. nurses, anaesthesiologists, surgeons and residents) groups. Training multidisciplinary teams is an important feature of this training intervention, as it facilitates the development of an agreed set of behaviours (e.g. closed loop communication) to ensure effective team work.

The evaluation of the course involved surveying participating surgical team members prior to receiving the training and again after training had been completed. The survey tool used in this evaluation was an adaptation of the Operating Room Managements Attitudes Questionnaire (ORMAQ). It is especially important to evaluate CRM training programs within healthcare because although these training programs have been adapted to apply to healthcare, many of the concepts and methods used have been borrowed from different industries (e.g. aviation). Furthermore, CRM training as a method for improving patient safety has face validity; evidence of this connection does not exist at this time (Pizzi et al., 2001).

## 3. Project Results

The team training program implemented at St. Boniface General Hospital was evaluated using a pre/post research design. All staff members working in the OR were asked to voluntarily complete an adaptation of the (ORMAQ) (Schaefer & Helmreich, 1993; Helmreich, Sexton, & Merritt, 1997). We employed a number of strategies to increase the response rate (e.g. sent a second survey to participants. In total 33 staff members completed the ORMAQ (27 at Time 1, 17 at Time 2). Of those 33, only 11 individuals completed the ORMAQ at both times. Only those

individuals who completed both questionnaires were included in the analysis. The low sample size (n =11) prevent the use of statistical analyses to determine if self-reported attitudes and behaviour changed significantly following the training. This study highlights some of the challenges in conducting self-completion survey research in an healthcare environment. Further research is required to evaluate CRM training programs to determine if the desired outcome is obtained.

As a result of the low response rate to the team training evaluation the project did not take as long to complete as originally planned. The reminder of the student’s time was devoted to starting another patient safety project. The second project consisted of developing a new patient safety culture audit tool (PSCAT). The PSCAT was developed as a self-assessment tool for health care organizations to evaluate their patient safety performance using a set of 10 objective indicators:

**PSCAT Indicators**

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1. Senior manager patient safety education	6. Performance monitoring
2. Physician patient safety education	7. Incident reporting
3. Clinical managers patient safety education	8. Organizational learning
4. Non-clinical managers patient safety education	9. Disclosure
5. Clinical teamwork	10. Workload management

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The development of this tool consisted of three phases:

- Literature review of patient safety culture
- Developing cultural indicators
- Interviewing patient safety experts who evaluated the content of the PSCAT

This project is expected to continue on past the CPSI studentship and we are in the process of planning a reliability and validity study that will assess the psychometric properties of the PSCAT.

**4. Student Learning Outcomes**

The objectives of the CPSI studentship program are to advance patient safety knowledge and to provide students with the opportunity to be involved in patient safety projects. We believe these objectives have been met. This opportunity has been very valuable to the student. Even though the original patient safety project was not as successful as we had hoped it to be; it provided the student with a realistic preview of some of the challenges one faces when conducting research on patient safety within the healthcare setting. This opportunity has also provided the student with new knowledge on patient safety that will be beneficial when completing their thesis dissertation which will also be in the area of patient safety.

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