

# PREVENTING WORKPLACE VIOLENCE

## EVALUATING THE PMDB PATIENT SAFETY PROGRAM

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The Prevention and Management of Disruptive Behavior patient safety program is intended to teach VHA employees strategies for reducing violence within their facilities. Is it accomplishing its goal?

In the health care industry, patient violence is prevalent. In fact, 50% to 54% of health care workers report experiencing physical abuse while on the job at some point during their career.<sup>1</sup> Medical and mental health profes-

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sions are among the six occupations classified as putting workers at highest risk of homicide—which is the number one cause of physician death in the workplace.<sup>2</sup> Aside from the safety issues, the effects of this violence on employee retention within the industry are considerable. A 2002 study found that emergency department employees who experienced workplace violence suffered significant decline in morale and job satisfaction, resulting in earlier self-termination of employment.<sup>3</sup>

Numerous programs have been implemented within all types of health care institutions to help clinical staff control and manage disruptive and violent patient behavior.<sup>3-10</sup> Within the VA, the Office of Occupational Safety and Health (OSH) developed the Prevention and Management of Disruptive Behavior (PMDB) patient safety pro-

gram, the purpose of which is to enable VA employees to prevent, identify, and manage disruptive and violent behavior in the workplace.<sup>2</sup> Although this program has been in use for over two decades, it has evolved considerably over the years.

The latest version of the PMDB patient safety program was implemented at the Syracuse VA Medical Center (VAMC) in March 2003. Beginning in September 2003, we conducted a six-month study to evaluate the educational efficacy of the program as it is presented to our employees—as 16- or eight-hour courses intended for, respectively, employees with or without patient care responsibilities. We agreed that effective teaching of the PMDB patient safety program would correlate with posttest scores demonstrating a minimum increase over pretest scores of at

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least 20% and hypothesized that both the pretest and posttest scores from the 16-hour courses would be significantly higher than the pretest and the posttest scores from the eight-hour courses. Here, we present the results of our study.

### PROGRAM DESIGN

Participation in the PMDB patient safety program is mandatory for all employees of the Syracuse VAMC. At the time of our study, the program was offered once a month; now it is offered bimonthly. Employees are encouraged to sign up at their earliest convenience after receiving their supervisor's approval. To attend, staff are excused from work and told to wear comfortable clothing.

For the purposes of our study, the same two instructors—a registered nurse and a licensed practical nurse—taught both the eight- and 16-hour courses. Each had received instructor training and course certification at the Stratton VAMC, Albany, NY in July 2003.

### Eight-hour course

The eight-hour course opened with a 45-minute pretest developed by the OSH and consisting of 64 true/false items and nine “fill-in-the-blank” items. The test was subdivided into five sections: precipitating and predisposing factors of violence risk, verbal and nonverbal intervention, personal safety skills, working as a team, and personal contact skills.

The first half of the course focused on didactic lectures covering nine modules: (1) introduction to workplace violence, which explained the different forms of violence, the prevalence of violence in the workplace, and the proper ways of communicating with pa-

tients and families; (2) predisposing and precipitating factors, which dealt with indicators and precipitants of disruptive behavior; (3) environmental strategies, which discussed environmental and administrative strategies for reducing patient violence; (4) verbal and nonverbal intervention, which emphasized assessment of self, patients, environment, stress levels, and appropriate verbal and nonverbal interventions for various stress levels; (5) limit setting, which discussed appropriate timing and effective methods for limiting the escalation of disruptive behavior; (6) personal safety skills, which taught escape from various grabs and holds; (7) therapeutic containment, in which a three-person immobilization technique was demonstrated briefly; (8) geriatrics, which identified predisposing factors for disruptive behavior among elders as well as effective communication methods and interventions to use with this population; and (9) weapons, which described the various forms of weapons used currently (including a “cell phone gun”—a 22-caliber weapon that can fire four bullets out of a false antenna) and proper procedures for dealing with armed patients.

The second half of the course consisted of hands-on training in personal safety skills. Participants learned the safety stance and how to escape from single and double wrist grabs, choke holds, front and rear hair pulls, and two-handed one-wrist grabs. Participants repeatedly practiced these techniques in pairs, which were assigned based on body size. Instructors also demonstrated, without student participation, wrist grabs with startle reflexes, death grips (headlock), tie grab escapes, and, in more de-

tail than in the first half of the course, the three-person therapeutic containment. After the physical training, participants viewed a 45-minute video summarizing the didactic materials.

### 16-hour course

The 16-hour course was divided over two days into two eight-hour sessions. It opened with a pretest identical to the one used in the eight-hour course and, in fact, the first day was identical to the eight-hour course. The second day was spent reinforcing personal safety skills and demonstrating and practicing each maneuver of the three-person therapeutic containment. This technique requires one person to hold the aggressor from the back, while two others hold and hang down from each of his or her arms. When the aggressor is sufficiently fatigued from struggling, the person at the back is signaled to bring him or her to the ground slowly and gently. Participants were instructed to talk to the aggressor continually to assess for any respiratory difficulty or pain. Every participant was required to demonstrate the ability to perform the maneuver in each of the three restraining positions while an instructor played the role of aggressor.

Throughout the entire second day, we elicited instructor and participant feedback. If time permitted, participants were shown a 45-minute review video and encouraged to critique the techniques illustrated.

At the conclusion of both the eight- and 16-hour courses, a posttest (identical to the pretest) was administered, after which instructors discussed correct answers for every question. Participants were encouraged to ask

questions at any time during the courses, except while taking the tests. To minimize fatigue, two 20-minute breaks and a one-hour lunch period were built into each eight-hour day.

No participant identifiers were used. To track individual performance on pretests and posttests, each participant was assigned a number. The pretest was collected immediately after completion. The posttest, however, was collected after the answers were discussed so that participants could view the specific test questions as they were being reviewed by the instructors. Participants were advised not to change their answers during the review and discussion period.

**STUDY OBJECTIVE**

The objective of our study was twofold: first, to assess the pretest and the posttest scores of both the eight-hour and the 16-hour courses independent of one another and, second, to calculate and compare the magnitude of improvement, or increased knowledge, between employees attending the eight-hour course and those attending the 16-hour course.

To ascertain the degree of increased knowledge of violence prevention, we calculated the relative change in each employee's test scores. For example, an employee who scored 60% on the pretest and 75% on the posttest achieved a 25% relative change or improvement—the change in score from pretest to posttest (15) ÷ the pretest score (60) = relative change (0.25 or 25%).

After controlling for the baseline test score, we used the analysis of covariance (ANCOVA) to: (1) calculate and compare the relative change (with relative change being

**Table 1. Comparing overall test scores for participants enrolled in the eight-hour versus the 16-hour course on the PMDB\* patient safety program**

Parameter	Length of course		P value
	Eight-hour (n = 65)	16-hour (n = 59)	
Mean pretest score (SD)	61.3% (7.3)	66.1% (8.1)	< .001
Relative change† (SD)	23.9% (11.8)	24.2% (11.8)	.916
95% confidence interval	21.0–26.8	21.2–27.2	

\*PMDB = Prevention and Management of Disruptive Behavior. †Relative change was adjusted for test scores at pretest.

defined as the dependent variable, length of the course—eight versus 16 hours—as the between-subjects factor, and pretest score as the covariate), (2) calculate 95% confidence intervals (CIs) on the mean relative change of the eight-hour cohort (n = 65) and the 16-hour cohort (n = 59), and (3) determine whether the mean improvement between the two groups was significant. We used Statistical Analysis System version 9.0 (SAS Institute Inc., Cary, NC) to perform these statistical analyses.

**TEST RESULTS**

As we expected, participants in the eight-hour group scored significantly lower (*P* < .001) on the pretest than did those in the 16-hour group (Table 1). This may be attributed to the fact that employees assigned to the 16-hour course had patient care responsibilities and, thus, more experience dealing with disruptive patients than their colleagues without patient care responsibilities, who were enrolled in the eight-hour course. Another possibility is that, compared to the cohort of participants without patient care responsibilities, the cohort of patient care workers

had more education, which could positively affect their test taking abilities.

Subsection scores for the pretest ranged from 40.5% ± 11.7 (SD) in the eight-hour course in the area of personal safety skills to 76.5% ± 10.5 in the 16-hour course in the area of verbal and nonverbal intervention (Table 2). Pretest score differences between participants taking the eight- and 16-hour courses were significant for three of the subsections: personal safety skills (*P* < .001), working as a team (*P* = .015), and personal contact skills (*P* = .023). No significant differences were found, however, in the areas of precipitating and predisposing factors of violence risk (*P* = .480) and verbal and nonverbal intervention (*P* = .178).

**Magnitude of improvement**

The posttest results showed a 23.9% ± 11.8 adjusted relative improvement from the pretest scores for the eight-hour group. The 16-hour group showed similar results, with a 24.2% ± 11.8 adjusted relative improvement.

Adjusted relative subsection score changes ranged from 11.7% ± 12.7 in the eight-hour course in the

**Table 2. Comparing subsection test scores for participants enrolled in the eight-hour versus the 16-hour course on the PMDB\* patient safety program**

Parameter	Length of course		P value
	Eight-hour (n = 65)	16-hour (n = 59)	
<b>Precipitating and predisposing factors of violence risk</b>			
Mean pretest score (SD)	65.4% (8.3)	66.6% (9.9)	.480
Relative change <sup>†</sup> (SD)	16.9% (12.9)	15.1% (12.8)	.431
95% confidence interval	13.8–20.1	11.8–18.4	
<b>Verbal and nonverbal intervention</b>			
Mean pretest score (SD)	74.2% (8.5)	76.5% (10.5)	.178
Relative change <sup>†</sup> (SD)	11.7% (12.7)	12.6% (12.7)	.677
95% confidence interval	8.6–14.89	4.0–15.9	
<b>Personal safety skills</b>			
Mean pretest score (SD)	40.5% (11.7)	53.6% (18.9)	.001
Relative change <sup>†</sup> (SD)	31.3% (21.2)	34.5% (21.3)	.422
95% confidence interval	26.1–36.5	29.0–40.0	
<b>Working as a team</b>			
Mean pretest score (SD)	68.3% (14.7)	74.6% (13.5)	.015
Relative change <sup>†</sup> (SD)	22.6% (20.1)	24.9% (20.1)	.533
95% confidence interval	17.7–27.5	19.7–30.1	
<b>Personal contact skills</b>			
Mean pretest score (SD)	51.7% (16.4)	57.5% (11.6)	.023
Relative change <sup>†</sup> (SD)	32.9% (21.3)	36.8% (21.4)	.322
95% confidence interval	27.7–38.2	31.3–42.3	

\*PMDB = Prevention and Management of Disruptive Behavior. <sup>†</sup>Relative change was adjusted for test scores at pretest.

area of verbal and nonverbal intervention to 36.8% ± 21.4 in the 16-hour course in the area of personal contact skills. For participants in both courses, significant improvements were found in the three subsections dealing with personal safety skills, working as a team, and personal contact skills. Lectures and discussions of these sections were conducted closer to the posttest, which could explain the better retention of material. Topics covered in these subsections also were emphasized repeatedly

throughout the physical training portions of both the eight- and 16-hour courses.

**Surprising findings**

There was no significant difference ( $P = .916$ ) in the adjusted relative change, or overall score improvement, between participants taking the eight- and 16-hour courses. Nor were there significant differences in adjusted relative change within any of the test's subsections between participants in the two courses.

We had expected participants in the 16-hour course to score significantly higher on the posttest, as they had on the pretest. The underlying assumptions were that knowledge and experience would be reinforced by the course presentation and that participants in the 16-hour course would have less new information to process than those in the eight-hour course.

Possible explanations for the lack of difference between the two course groups include: (1) much of the information was new to both

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groups; (2) participants in the 16-hour course may have failed to retain information because they took the posttest at the end of the second day, while participants in the eight-hour course took the posttest at the end of the first day; (3) physical activity and training on the second day may have led to physical exhaustion and poorer test performance for participants in the 16-hour course; and (4) employees with prior patient care experience may be less willing than those without patient care experience to learn new guidelines, preferring instead to rely on older, familiar techniques and knowledge.

### STUDY LIMITATIONS

Although they were instructed not to do so, participants may have corrected posttest answers during the review and discussion period, leading to a disproportionate amount of correct answers. This could have been prevented and the study im-

proved if posttests had been collected before participants had an opportunity to review the correct answers. Sessions were not always conducted on the same days of the week, which may have contributed to lower or higher test scores. Additional errors may have occurred with regard to test scoring, as there may have been inconsistency in the

way in which individual scorers awarded point values to fill-in-the-blank responses. Since participants in the eight- and the 16-hour courses were drawn from disparate populations, it's not clear whether data differences are due to the differences between the courses or differences in the populations.

### COMPARING OUR STUDY TO OTHERS

As with the present study, Lehman and colleagues compared pretest and posttest scores to evaluate the effectiveness of an education program aimed at preventing and managing violence. Their participants were VA employees with and without patient care experience who enrolled in a five-hour workshop. They too found significant differences between pretest and posttest scores. Specifically, participants improved in identifying precursors of violent behavior and in knowl-

edge of verbal interventions ( $P < .001$ ). The authors inferred that the VA employees had learned the presented material well and would be able to apply it in actual incidents.<sup>9</sup> Doyle and colleagues used pretest and posttest scores to compare two different instructive formats used in violence prevention and management programs: traditional film discussion format (FDF) and poster session format (PSF).<sup>11</sup> In the FDF group, participants included newly hired, licensed and nonlicensed health care workers, as well as management and other employees without patient care responsibilities. Instruction took the form of a standard lecture followed by questions and answers, a film, and a 10-page handout summarizing the course content. The pretest was given before the lecture session and the posttest was given immediately afterward. Participants had no access to educational materials at test time.

The PSF group demographics and job titles were similar, though the employees were not newly hired. The pretest was administered before the PSF started. No formal instruction was given to this group: Employees simply walked through and read each poster at their own pace while completing the posttest.

Through *t*-test analysis, pretest results showed no significant difference between the FDF and PSF groups ( $P = .05$ ). Posttest scores were significantly higher for the PSF group ( $t = 6.633, P < .001$ ). The authors concluded that PSF was a better instructional tool than FDF in the time-constrained and understaffed hospital environment.<sup>11</sup>

The FDF session evaluated in this study was very similar to our eight-hour PMDB course, since both contained a film, lectures, and handouts. The design of the PSF evaluation, however, makes it difficult to discern whether participants actually learned the material since answers were readily available for reference while they completed the posttest.

In 2002, Fernandes and colleagues went one step further

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Doyle and colleagues used pretest and posttest scores to compare two different instructive formats used in violence prevention and management programs: tradi-

when they examined the ability of the four-hour Prevention and Management of Aggressive Behavior Program (PMABP) to reduce the incidence of emergency department violence at St. Paul's Hospital, Vancouver, British Columbia.<sup>3</sup> Taught by the hospital's Department of Occupational Health and Safety, the PMABP was attended by emergency department nurses, physicians, and nonclinical employees. Skills used in assessing and preventing aggressive behavior—such as identifying risk factors and triggers; assessing staff attitudes, behavior, and goals; empathic listening; limit setting; and nonverbal and paraverbal skills—were offered. The PMABP also reviewed the types of physical attacks along with team control and restraint techniques. A team approach was emphasized and a team debriefing model was implemented.

The researchers performed a cross-sectional, prospective study measuring the total and mean number of physical and violent events at three and six months after the educational program was offered. The incidence of physical and verbal violence decreased at three months as compared to baseline. At six months, however, there was no significant decrease from baseline. The study authors concluded that the PMABP helps to reduce physical and verbal violence to employees temporarily but not over the long term. They suggested using refresher courses to prolong the benefits of violence management programs. Although they had not performed pretest and posttest analyses (and, thus, had not assessed the effectiveness of the PMABP),<sup>3</sup> their study did serve to evaluate the program's clinical impact.

Also in 2002, Calabro and colleagues assessed improvements in violence management knowledge through pretest and posttest analysis of a lecture and a physical skills training program.<sup>12</sup> They found significant improvements in knowledge ( $P < .001$ ), attitude ( $P < .001$ ), self-efficacy ( $P < .01$ ), and behavioral intention ( $P < .05$ ). Over the four-month study, the researchers observed a dramatic decline in reported patient assault and patient restraint. The authors attributed this to improvements in staff behavioral intention to administer learned techniques and structural changes in the areas in which assaults tended to take place.<sup>12</sup>

### OUR RECOMMENDATIONS

Our analysis has shown that both eight- and 16-hour programs were significantly effective in teaching VA personnel the information necessary to identify, prevent, and manage disruptive patient behavior. We recommend, therefore, that the current version of the PMDB patient safety program be continued at the Syracuse VAMC and implemented throughout the VA. In addition, we propose retesting Syracuse VAMC employees every six months in order to evaluate information retention. Furthermore, as a clinical follow-up to our study, we recommend assessing the impact of the program, as well as employees' abilities to manage disruptive behavior, before and after participating in this program. Specifically, the number of hospital incident reports prior to and after implementation of this program should be analyzed. ●

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