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Briefing guide study: preoperative briefing and postoperative debriefing checklists in the Veterans Health Administration medical team training program

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Abstract

BACKGROUND: The purpose of this study was to examine the outcomes of checklist-driven preoperative briefings and postoperative debriefings during the Veterans Health Administration (VHA) medical team training program.

METHODS: A briefing score (1, never started; 2, started then discontinued; 3, maintained on original targeted cases; 4, expanded to other services; 5, briefing all cases, all services) was established at 10.1 ± .3 months after introduction of the checklist. Outcomes included antibiotic and deep venous thrombosis prophylaxis compliance rates before and after use of the checklist.

RESULTS: Antibiotic (97.0% ± .1% vs 92.1% ± 1.5%; P = .01) and deep venous thrombosis (95.7% ± .8% vs 85.1% ± 4.6%; P = .05) prophylaxis compliance rates were higher after initiation of a surgical checklist.

CONCLUSIONS: Checklist-driven preoperative briefings and postoperative debriefings are associated with improvements in patient safety for surgical patients.

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KEYWORDS: Briefings; Checklists; Communication; Operating room; Teamwork; Training

Teamwork and communication failure are a leading cause of adverse events in health care, including the operating room. Medical team training (MTT) and use of aviation-based crew resource management (CRM) techniques has been associated with fewer communication errors, enhanced teamwork, and less technical errors. The use of a checklist-guided preoperative briefing to verify that the correct personnel, equipment, and clinical information is available before surgery has been associated with improvement in patient outcomes, operating room efficiency, staff satisfaction, and patient safety indicators.

The purpose of this study was to understand the effects of checklist-driven preoperative briefings on specific patient safety measures within the Veterans Health Administration (VHA).

Materials and Methods

The VHA MTT program, as described in detail previously, includes specific training on the use of preoperative briefings and postoperative debriefings, checklists, team-
work, and other CRM techniques. More than 12,000 operating room, postanesthesia care unit, and surgical intensive care unit providers underwent training. One hundred thirty facilities conducting surgical services in the VHA were included between March 4, 2005, and June 17, 2009. The Briefing Guide (BiG) study focused on 74 (57%) facilities that responded to e-mail and telephone questionnaires and requests for a copy of their surgical checklist. The BiG study (2008-110733) was approved by the VA Ann Arbor Research and Development Committee on January 13, 2009.

Checklist-guided preoperative briefing and postoperative debriefing compliance was monitored by conducting quarterly semistructured interviews with implementation teams from each facility. Briefing scores were established using a previously described scale for each facility at the time of the last follow-up interview (mean, 10.1 mo). 

Patient safety outcomes for the BiG study included antibiotic (surgical infection prevention) and deep venous thrombosis (DVT) prophylaxis compliance rates. Rates were compared for the quarter before the date of the MTT learning session to rates for the quarter 1 year after the date of the learning session. Antibiotic compliance rates were determined by quarterly random chart review for patients having procedures identified as appropriate for prophylaxis by the Centers for Medicare and Medicaid Services Surgical Infection Prevention Project. These procedures included coronary artery bypass grafting; other cardiac surgery, colon surgery; hip arthroplasty; knee arthroplasty; hysterectomy; and vascular surgery. Surgical infection prevention compliance rate was calculated as the number of surgical patients reviewed receiving prophylactic antibiotics within 60 minutes of the time of the surgical incision divided by the total number of selected surgical patients reviewed (×100).

Charts were reviewed for patients identified as appropriate for DVT prophylaxis and included those having the following procedures: intracranial neurosurgery, general surgery, gynecologic surgery, urologic surgery, elective hip replacement, elective total knee replacement, and hip fracture surgery. Patients with reasons for not receiving mechanical or pharmacologic prophylaxis were excluded from review. DVT compliance rates were calculated as the number of surgical patients reviewed who received appropriate prophylaxis, anytime from 24 hours before to 24 hours after their surgery, divided by the total number of selected surgical patients reviewed (×100). Data, prechecklist versus postchecklist, were compared using a 2-tailed, paired Student t test. A P value of less than .05 was considered significant.

Results

Facility and surgical checklist demographics are shown in Table 1. Surgical checklists were developed by an implementation team at each facility during the course of the MTT program. The most common elements listed among the 74 submitted checklists included were as follows: patient identification (68), procedure (68), equipment (67), position (65), imaging (65), antibiotics (65), blood availability (62), allergy (61), site (61), implants (59), DVT prophylaxis (58), and postoperative disposition (58). Based on this aggregate analysis, a VHA surgical checklist was developed, piloted, and finalized (Fig. 1).

The type of checklist (coefficient (r) = .04; 95% confidence interval, −.44–.52; P = .87) and the number of checklist elements (r = .006; 95% confidence interval, −.02–.04; P = .68) were not correlated significantly with final briefing scores. From the quarterly semistructured interviews with facility implementation teams, checklist-guided briefings did not wane during the study (unpublished Medical Team Training Status Update, June 1, 2009). Checklist-guided briefings occurred in 92% and 98% of facilities at the time of the first and fourth interview, respectively.

Reviews for prophylactic antibiotic compliance were performed for a mean of 78 ± 12 charts/facility: 45 ± 7 charts/facility before, and 33 ± 6 charts/facility after checklist implementation (P = .21). Similar data for DVT prophylaxis included 60 ± 6 charts/facility: 28 ± 4 charts/facility before, and 32 ± 4 charts/facility after the checklist (P = .47). Antibiotic and DVT prophylaxis compliance rates were higher during the 12 months after initiation of the surgical checklist compared with the 12 months before initiation (Fig. 2).
Comments

Teamwork and communication failure are a major cause of medical errors, including those that occur in the operating room.\textsuperscript{10} Large organizational databases confirm communication errors as a leading cause of sentinel events, including wrong-site surgeries.\textsuperscript{11} Aviation-based CRM techniques and tools, adapted for health care, appear to address these communication errors.\textsuperscript{3,12} Preoperative briefings guided by a checklist have been associated with improved teamwork and communication.\textsuperscript{13,14}

The current study showed improvements in antibiotic and DVT prophylaxis associated with the initiation and expansion of checklist-driven preoperative briefings. Even though the chart review confirmed that the patient actually received proper prophylaxis, it is possible that the improvement noted was simply better documentation. Facility compliance improvement also could be a consequence of the performance measures being introduced during the study period. Nonetheless, these results, showing a potential patient safety benefit using the checklist for the VHA as an entire organization, are corroborated by those previously published by a single, large VHA facility.\textsuperscript{5} The postchecklist VHA antibiotic prophylaxis compliance rate of 97.0\% ± 1.1\% compares favorably with the 81.7\% ± 3.2\% reported for non-VHA facilities during a similar time period.\textsuperscript{15}

A limitation of the study was the lack of morbidity (e.g., wound infection and venous thromboembolism rates, and mortality outcome data). This study measured changes in procedural compliance to assess the effectiveness of MTT within the VHA. The World Health Organization reported a decrease in
unadjusted mortality (1.5% to .8%) and morbidity (11% to 7%) associated with using the surgical safety checklist.4 Efforts are ongoing in studying the relationship between MTT checklist-driven surgical briefings, and adjusted surgical morbidity and mortality as captured in the VHA Surgical Quality Improvement Program (VASQIP) database.16

The MTT program has been successful in embedding checklist-guided preoperative briefings and postoperative debriefings into the VHA patient safety culture. Checklist compliance is a useful measure because it shows effective understanding and implementation of core CRM principles. Our results show that an integrated approach, such as that taken in the MTT program, which combines the use of checklist, briefings, debriefings, team communication, and culture change, can lead to a positive, sustained improvement in patient safety.

References