



## Six Things Every Physician in the OR Needs to Know About Teamwork Training and Checklists

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Preventable medical errors account for more deaths each year than breast cancer, automobile accidents, or drownings.<sup>1</sup> Poor communication among health care workers is the most common cause of these medical errors.<sup>2</sup> Nearly 70% of sentinel events have communication cited as a root cause.<sup>3</sup> Closed malpractice claims from various clinical settings showed that ineffective communication and teamwork contributed to medical errors and patient harm in 43%<sup>4</sup> to 70%<sup>5</sup> of cases. Another study cited communication breakdowns as the primary contributing factor in approximately 75% of root cause analyses of adverse events and close calls.<sup>6</sup> Despite efforts to change these statistics, for more than a decade communication failure has been cited as the number one contributing factor in reported sentinel events.<sup>7</sup>

Surgery is not immune to teamwork and communication errors. Critical information in the surgical environment is often transferred in a reactive, ad hoc manner, and communications anxiety and stress between clinicians is frequent.<sup>8</sup> Assessments of surgical teams in the operating room by trained observers revealed a 30% communication failure rate.<sup>9</sup> Not surprisingly, failures in communication were implicated in 43% of surgical adverse events. Additionally, the failure of the team to be vigilant and cross check one another played a role in more than half of the adverse events in the OR.<sup>10</sup> Resident physicians from the surgery, internal medicine, and obstetrics/gynecology training programs of a university teaching hospital reported communication failures as a factor in 91% of adverse events and near misses.<sup>11</sup>

The U.S. commercial airline industry was once plagued with similar types of errors, and as a result had an unacceptably high rate of accidents and passenger deaths. Both NASA and the Military Inspector General identified that 70% - 80% of aircraft-related fatalities were a result of human error and poor teamwork.<sup>12</sup> The industry's response was a program of teamwork training and checklist usage called Crew Resource Management (CRM). The resultant decrease in accidents prompted the FAA to make the use of CRM programs mandatory at all major U.S. airlines. The aviation industry's success in reducing critical errors has spared many lives and saved a great deal of money.<sup>13</sup> The wide-spread use of CRM has contributed to reducing the risk of dying on a U.S. major jet air carrier flight to 19 per billion, an 86% drop from the 1990s.<sup>14</sup>

While it is important to note that patients and hospitals are more complex than airliners and airports, more than 20 years of teamwork research and experience in high-risk industries such as aviation, nuclear power, and military operations have clearly demonstrated that team training can overcome the primary communication and collaboration causes of adverse events.<sup>15,16,17</sup>

There is also a growing body of evidence that CRM-based patient safety programs have the same error-reducing effect in health care settings as in other industries. Here are six things every physician needs to know about CRM-based programs in the OR:

## 1 Teamwork training programs and checklists are evidenced-based and improve patient care.

Multiple peer-reviewed studies have documented that teamwork training and checklists reduce preventable errors and medical malpractice suits, and increase the safety and quality of patient care. The link between effective teamwork and improved patient outcomes was demonstrated by a recent RAND report that reviewed 16 studies and found empirical support for the relationship between teamwork behaviors and clinical patient outcomes (e.g., risk adjusted mortality, cardiac arrests, nosocomial infections, adverse events, adverse drug events, complications).<sup>18</sup> Peer-reviewed literature in health care settings indicates that medical teamwork training improves the quality, safety, and cost-effectiveness of health care delivery. Specifically, the impact of teamwork on clinical outcomes has been studied in operating rooms,<sup>19, 20, 21, 22</sup> inpatient medical and surgical wards,<sup>21, 22, 23</sup> and ICUs.<sup>24, 25, 26, 27</sup> This research has documented the relationship between teamwork and improved clinical processes and patient outcomes such as reduced medical errors<sup>28, 20</sup>, improved surgical team performance,<sup>19, 20, 22</sup> better provider adherence to clinical guidelines,<sup>24, 25, 29</sup> lower hospital lengths of stay,<sup>23, 27, 30</sup> greater gains in patient functional status,<sup>31, 32</sup> and reduced patient mortality.<sup>26, 27</sup>

In the OR, surgical teams who have had teamwork training demonstrate significant increases in the quality of pre-surgical procedure briefings and the use of effective teamwork behaviors to overcome communication errors during cases.<sup>33</sup> Surgical teams using a scripted patient handoff checklist reduced technical and communication errors and provided improved patient information transfer.<sup>34</sup> Those OR teams using a pre-procedure checklist reduced the rate of deaths and complications by more than a third, reduced unplanned returns to the OR, and reduced surgical infections.<sup>35</sup>

## 2 Not only are they the right thing for your patients, teamwork training programs and checklists create a better place to practice medicine.

Improved teamwork and communication between clinicians has been linked to improved job satisfaction, lower job stress, and reduced turnover.<sup>36</sup> In the OR, preoperative briefings have been shown to increase team satisfaction,<sup>21, 37, 38</sup> and improve the OR safety climate.<sup>21</sup> Better teamwork performance has also been linked to improved patient satisfaction.<sup>39</sup>

Beyond improving the interpersonal work environment, if OR teams, through effective teamwork training and use of tools like checklists, fix their communication and collaboration issues, they eliminate the main causes of procedural error, inefficiency, resource waste, work-arounds, patient inconvenience, and delays.<sup>9</sup> As all physicians know, the operating room team cannot be as efficient or as safe if all members of the team are not present in the room and the ability of the team to respond quickly to unforeseen circumstances is reduced if the CN is not present. Surgical teams using a pre-procedure briefing tool experience fewer incidents where the CN must make an unplanned trip to the core for missing supplies and equipment. If a trip to the core must be made, less time will be spent there. Team briefings, accomplished with a script, reduce total surgical flow disruptions per case.<sup>40</sup>

## 3 Off-the-shelf Checklists rarely work well. They must be customized to local practices.

One of the most important parts of the World Healthcare Organization Surgical Safety Checklist is a small sentence on the very bottom of the checklist form: ***“This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.”***

No matter what type of checklist they are trying to create, surgical teams ignore this advice at their peril. In ten years of work with hospitals and ASCs I have never seen an OR successfully adopt an off-the-shelf checklist. Just because the checklist worked somewhere else is no guarantee it will work in your OR. Checklists must be created by the clinicians who will actually use them, and not by administrators or the staff at another hospital. Effective checklists are modified to fit the culture, work flow, and practice patterns of the institution where they will be used.

The most successful checklists are site and surgery-specific and developed in a collaborative manner responding to the needs and views of all members of the care team.<sup>41</sup> For example, at the Mayo clinic, pre-procedure checklists were developed with input from 56 different members of the surgical team including surgeons, certified surgical assistants, certified surgical technicians, registered nurses (including circulating nurses), perfusionists, and certified registered nurse anesthetists.<sup>40</sup> Successful surgical checklists are driven by integration of staff feedback at all stages of the design and implementation process.

## 4

### Teamwork training and checklist usage have a financial ROI.

The financial rewards of effectively using a teamwork training and checklist program can be substantial. Captive insurers have extended a 10% reduction in malpractice premiums for physicians who participated in teamwork training and completed online courses.<sup>42</sup> In my own work with hospitals it is not uncommon for hospital insurers to extend six-figure premium rebates (to as much as \$270,000) to the institution in response to the improved claims experience. Because fewer errors are being made, institutions have experienced as much as a 50% decrease in open claims files for potentially compensable events and a 33% decrease in claims dollars per surgical discharge.

In addition, physicians become more efficient when the institution at which they practice medicine reduces its OR turnaround times and improves the number of “uneventful cases” (e.g. cases that booked correctly, start on time, have no unplanned delays, and finish on time). Additionally, when surgical teams conduct a pre-procedure briefing, use standard communications scripting, accomplish the Universal Protocol with a checklist, and conduct a post-procedure debriefing, they dramatically shorten their case length times, even when learning to perform a new type of surgical procedure.<sup>43</sup>

## 5

### To get the benefits of patient safety, efficiency, and financial return, physicians must lead the use of checklists.

In aviation, the Captain of the crew leads the use of any checklist. The Captain “calls” for the checklist at the appropriate time and ensures it is done correctly. By determining when and how checklists are completed, the Captain has a valuable tool to effectively and expertly lead the team. Likewise, the most successful checklist implementations I have seen in health care are those where physicians lead the checklist process. They “call” for the checklist at the appropriate time and give checklist usage their undivided attention. This doesn’t mean the CN can’t actually “run” items on the checklist, but the

surgeon will always lead the start of any checklist. It should always be clear to the entire surgical team that the surgeon is in charge of the checklist process.

An effective checklist is actually a standardized communication tool. It is not a “tick sheet” designed just to get a check in a box. Effective checklists are a script to promote information exchange and team cohesion and should include a scripted briefing. The briefing should cover the status and stability of the patient, and clearly delineate team members’ roles, discuss the team’s immediate plans, and cover any potential pitfalls to those plans.<sup>44</sup>

To increase engagement and promote open verbal communication, the format of the briefing must be participatory, led by the surgeon, and with each member of the team asked to report their plan for the case, and raise any questions related to their area of focus.<sup>40</sup> Because team members must be prepared for their speaking part in the checklist they must actively scan, cross check, and assess what’s going on. This cross check helps the team detect any deviations or threats to the patient’s safety.

Assertively conveying to other team members these potential threats to the patient prevent small errors from becoming big errors. Therefore, every pre-procedure briefing should include a statement by the surgeon encouraging “stop the line” communication, such as, “If you see, suspect, or feel that something is not right, I expect you to speak up.” A nurse simply can’t make this sort of statement with the same impact on the team as when it comes from the leader of the team.

## 6

Effectively using checklists require only a small investment of your time.

Once expertise is gained, the length of time required to accomplish an effective briefing and checklist typically takes 1 minute or less,<sup>40</sup> and there will be zero delays in start times.<sup>40</sup>

In summary, for a small outlay in time, effort, and leadership, surgeons get a documented improvement in patient safety and quality care, a better place to practice medicine, reduced exposure to malpractice risk, increased efficiency, and a financial return on their investment.

**About the author:** Stephen Harden is President of LifeWings Partners LLC and co-founder of Crew Training International, Inc. (CTI). He has helped over 100 healthcare organizations in 29 states implement the best safety practices from aviation and other high reliability industries. He is also the coauthor of “CRM: The Flight Plan for Lasting Change in Patient Safety,” the definitive how-to text on implementing aviation-based safety tools in healthcare, published by HCPro.

Mr. Harden has been involved in human factors and safety training for a wide variety of military and commercial customers for 18 years, producing over 40 separate training programs for commercial aviation, military flight squadrons, heavy construction, military contractors, and health care. He served on the instructional staff of the University of Southern California’s School of Aviation Safety and is also a TeamSTEPPS™ Master Trainer.

A professional pilot with 33 years of experience, Stephen is a captain for a major international airline. His expertise in the field of aviation safety training has garnered him four personal awards from his airline for superior performance and one organizational award for Quality Achievement. Captain Harden was formally recognized by senior management as the individual contributing the most to the safety of flight operations.

Harden is a graduate of the United States Naval Academy. He accumulated over 300 aircraft carrier landings during service with the U.S. Navy and was selected to be an instructor pilot at the Navy’s elite Fighter Weapons School (TOPGUN). He holds an Airline Transport Pilot rating and Type ratings in B-727, B-737, and MD-11 aircraft.

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