

In Conversation with...Jack Barker, PhD

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Editor's Note: *Jack Barker, PhD, is Vice President of Research and Development for Mach One Leadership and a commercial pilot for a major airline. Dr. Barker began his career in the Air Force and proceeded to get his doctorate in cognitive psychology. His research has centered on high-performance teams, crew resource management (CRM), and training. He has trained hundreds of commercial airline pilots, as well as pilots and others working for NASA in the Space Shuttle program and Mars mission. His company, like several others, works with health care providers and organizations in an effort to translate aviation safety principles to health care.*

Dr. Robert Wachter, Editor, AHRQ WebM&M: How did the field of crew resource management (CRM) in aviation emerge and evolve?

Dr. Jack Barker: Before the advent of CRM, we thought that all you had to do was train the crews how to do their individual jobs. It was all about the technical training. When we realized that the most technically proficient crews with the best constructed and maintained aircraft were still crashing airplanes, we realized that there was some other aspect to getting the mission done. The idea evolved, in the late 1970s, that some crew behaviors needed to be improved. At that time, we started training crews together, teaching them how to communicate most effectively and how to maximize their available resources.

RW: How is it different when you're training, for example, an astronaut crew who will always work with each other, versus team training for commercial pilots and other personnel, who are going to be working with different people on virtually every flight?

JB: That question—of "fixed" versus "formed" teams—comes up in both aviation and health care. A fixed team stays together for a long time, just like a great sports team whose players have been together for years. So for crewing in the military, we aimed for fixed teams, in which teams stuck together for a year or two. We actually did several different experiments to see whether these teams had the best results. To our surprise, we found it wasn't necessarily true, in large part because the fixed teams actually start to ignore standard operating procedures. Whereas, in the formed crews, those that are just put together for the mission, they tend to follow the rules and are probably safer in the long run.

RW: What were your impressions of what would make the best team "player" when you started your work and PhD studies, and how did that evolve as you saw the field grow?

JB: It used to be that selection was based only on technical proficiency. Now part of the selection is, "How would I feel after a day of flying with this person in a confined cockpit where we're making decisions and working together?" That's a teamwork question. I think also we've gone through a couple of generations in aviation where now these team behaviors are expected. Even though you may be the captain of the airplane, you are now expected to accept, even welcome, someone questioning your decisions and what the team is going to do.

RW: All right, let me shift to health care. Coming into it, I would imagine that you believed that there would be a lot of analogies between doctor and pilot, and that a lot of the aviation model would be directly transferable.

JB: When I first started working in health care, yes, I figured that everything from our checklists and briefings to our communication policies and programs would be directly applicable. As I delved further into it, I realized some of these things probably aren't directly applicable. In aviation, we have a lot of emergency checklists and procedures because we deal with a more limited set of problems. In health care, the tasks are not as routine, and that makes checklists and emergency procedures less applicable. Our environment is also structured differently. Pilots work in a cockpit; it's a confined environment. We don't physically mix with the rest of the crew, specifically the flight attendants, ground mechanics, flight planners, or air traffic control. Our communication is done via the radio or intercom. Conversely, in the emergency department or operating room, normally the team is all working together. Physicians, technicians, nurses, anesthesiologists, surgeons, other specialists, etc., are all in that same room working together. So the teamwork and the communication style will be very different.

RW: Any other areas where the analogy breaks down? Sometimes people mention how part of the reason that checklists might be more applicable in aviation is that you can build in the time to go through the checklist calmly before you take off, and medicine often doesn't have that luxury.

JB: It is, of course, situationally dependent because in health care there are instances where you do have the time to go through some checklists, if it's a routine procedure. But certainly if it's an emergency situation, it may be more difficult. This area still needs attention, but one of the reasons that we have checklists in emergency situations in aviation is so we don't forget anything—it allows us to remember things that under pressure we might normally forget. Checklists can be helpful in certain areas of health care, where the time pressure is severe and there is opportunity to maybe miss some steps or forget some possible resources or things that could be done—it can be another tool.

RW: In terms of culture, what did you expect to see when you began meeting doctors, nurses, and hospital administrators?

JB: What I've seen has paralleled what happened in aviation when people first started requiring team training in the early 1980s. There was a lot of pushback, especially from the older captains who thought, "I don't need this. I'm a great pilot. I've never crashed an airplane. Why would I need this?" It took time for people to come around. I've actually been quite pleasantly surprised by the people in health care, their

quick acceptance of these concepts. There certainly has been some pushback, often because people don't really understand what this is all about. But once the idea is out there, we start to get more buy-in. When they start to realize that if they truly work as a team and everybody is watching out for that potential error to trap or mitigate, it's going to help keep them from making a terrible mistake. In terms of the different providers, in general the nurses have been incredibly receptive, more so than the doctors.

RW: So you're sitting there in this hermetically sealed cockpit. The levels of hierarchies that need to be bridged seem to be relatively less extensive than in health care. You have the pilot, co-pilot, and flight engineer—all of them are professional people relatively high up on the organizational totem pole with strong understanding about how each other was trained, and fairly similar professional and social status. Whereas, as you said, there's so much mixing in medicine that you have the issue of the head of cardiac surgery dealing with maybe a brand-new nurse or a clerk or a perfusionist, someone with a very different status. Is that an important issue?

JB: I think it's a very important issue. Whenever we do health care teamwork training, we emphasize that probably the most important part is communication. All the research data reveal that the majority of errors are due to poor communication. The barriers to effective communication are very important to recognize and then break down. In our training, we emphasize the leadership portion with both pilots and doctors. Whoever the leader is, that person can really create a team climate that's conducive to everyone communicating freely and comfortably.

Hence, one of the greatest tools—and it's already transferring very well to health care—is the team briefing. This can be just a short briefing before going into a procedure or even before starting the day. It really helps because now the team is on the same page, they understand any places along the line where they may have some contingencies or hiccups and how to best deal with them quickly. Beforehand, they just went along and processed their patients, with no open communication about how to deal with potential issues. The team briefing is about making the members more proactive. It's also where the leader establishes the team climate. And it can be done in just a few simple words such as, "I'd love everybody's input. Feel free to openly express any kind of questions or concerns that you have as we go through this procedure today." And then the team leader has opened the door for people to feel a bit more comfortable. And it's also important to get all the team members to identify themselves and their roles. Because every once in a while you may have someone who is new, and you need to find out what their skill set is and also make them feel part of the team—that's part of establishing the crew climate.

RW: How has your training program evolved and what lessons have you learned as you've actually gone into health care institutions and tried to make this training work?

JB: We're finding that the people in health care "get" it—they really understand what this is all about and start to learn the behaviors and change some of their ways of doing business a lot faster than we thought they would. We've come into some organizations and, based on our first days' observations and early surveys, we've identified individuals who we thought would be very much against the concept. And to their credit, most have quickly changed around once they see how useful this can be. We've also found that there are a lot of key things that can help right away, improve teamwork, and reduce errors. Things like the team briefings and debriefings. We try to frontload them and have people start using them before we get

into some of the more complex aspects of a CRM program.

RW: We all have in our mind's eye the ornery senior surgeon who drives the biggest car, is the biggest money-maker, doesn't want to change at all, and is clearly at the top of every pecking order. Have you seen him? I assume it hasn't always gone perfectly with people like that.

JB: No, it hasn't gone perfectly. But we haven't run into a situation where it has been entirely rejected. I'm sure there may be times that we think that people are accepting it and willing to change their behaviors, and yet they go back to doing things exactly the same way after we leave. That's to be expected. It was the same way in aviation. It will take a couple of generations before this becomes the standard way of doing business. In aviation, we still have people who are not true believers in teamwork. But the rest of the team can draw them in and support them to make it as safe as possible.

RW: In terms of what you actually do when you go into an institution, can these behaviors be trained in 4 to 8 hours of conference room time, or is it a longer process? Think of the place that really wants to embrace this kind of training—what should they prepare themselves for?

JB: Well, I'd have to really make sure they really want to embrace it. Because you're talking about wholesale culture change. And we always tell people to plan on at least 12 to 18 months, or perhaps even 2 to 3 years, before you really get the final results. That's a long process, because a 4- to 8-hour seminar won't suddenly change behaviors. People can start to understand what the behaviors might look like, how they should work together a little bit differently, and what they can do. But it has to be a process of learning what the behaviors are, trying out some new behaviors, and getting feedback on them. Then you also have to adapt this teamwork behavior to your institution; there's no such thing as one-size-fits-all.

RW: What is the role of simulation?

JB: Simulation is important for technical skills, but we now also use it to help build team skills. Simulation is great because you don't "bend any metal," or, in the case of health care, you don't harm any people. As I've watched simulator use in health care, I think it's a great place to learn team training skills—communication, support, use of checklists, and more—without any risk of harming patients. Certainly there are some technical things that could be learned, but because of the current state of the health care equipment and technology, you're not going to be able to learn how to "land an airplane" like we can with simulators.

RW: But if you're thinking about going in the team training direction, do you need to spend \$100,000 for a simulator or can you do team and communication training without one?

JB: You don't need it. And the reason I say that is that it's not the *simulator*, it's the *simulation* that makes a difference. You can have a \$5 million simulator and have terrible simulation. Because you're really not training the specific team behaviors that you need to train. Even with a low-cost simulator, you can create scenarios that will teach people the skill sets they need when they actually run into that medical emergency or whatever the situation that demands great teamwork. And that's where putting the effort into the actual simulation scenario is more important than the actual simulator itself.

RW: Have you seen situations in which this kind of training really prevented an error in health care that would have happened otherwise?

JB: Well, we've had a couple of instances where people came back and told us that they probably stopped a mishap as a result of this training. After our first 8-hour training, a week later one of the staff called us and said that a nurse went straight to the department chair and said, "Hey, this has to stop. We're doing something in the OR that is against protocol that could cause the next accident." And the chairman of the department said, "I'll talk to all the surgeons and this will stop." And it did stop. That was pretty encouraging.

We also had another incident where one team member present during a surgery felt empowered to actually speak up when one individual sneezed and then, without washing his hands, touched something that was sterile and was just going to continue the procedure. Then this person who sneezed said, "Okay, yeah, you're right, I need to go wash my hands," and did it. The individual who spoke up never would have said anything prior to the training.

Probably the most encouraging thing we've heard was from a surgeon who adapted some of these behaviors and tools. He uses a team briefing, and he tells a story about how he actually puts the names of everybody involved in the operation on a white board, which even includes the woman who cleans up the OR after the surgery is done. He's had the same cleaning lady for probably the last 4 or 5 years but never knew her first name. The result of this little act was amazing—all of a sudden his OR was getting turned over faster than anyone else's! It was just a simple thing of including the person on the team. And that person truly is part of the team but was never recognized that way before. I think that's pretty powerful to show how a small change can really make a big difference.

RW: When I speak about aviation and patient safety, I sometimes observe that your incentive is different than ours because you die at the same time as everybody else after a bad error. Do you think that's a real issue or hyperbole?

JB: It's certainly true that, if our passengers perish, odds are pretty good that we're going to perish too. But in some ways that's not as bad as if I crash the airplane and I live and all my passengers perish. I think that's more the correct analogy for health care, because if there is an error or a team breaks down and the patient is harmed or killed, the health care providers have to live with knowing that they're responsible for that. To me, that is tougher, and I think that should be a greater motivation to try to do the best that you can to avoid error and improve patient safety.