

The Checklist Manifesto: How to Get Things Right *by Dr. Atul Guwande*

KEY TAKEAWAYS:

- Dr. Atul Guwande, author of *Better and A Surgeon's Notes*, addresses one of the major medical leadership challenges of our times, "How to consistently provide excellent medical care in the 21st Century," and become a High Reliability Organization.
- Due to ever increasing complexity in their fields, the Aviation and Construction communities have long ago turned to the use of checklist systems to ensure that they get "Everything Right Every Time."
- The medical community has already adopted several excellent checklists, to include the use of "vital signs," Universal Protocols prior to surgery, and Central Line Infection Prevention Time Outs.

On Halloween night, a highly-trained San Francisco-based trauma surgeon was treating a stab wound patient during a trauma code, and everything seemed to be going according to plan, until the patient suddenly crashed. Emergent surgery revealed an unexpected injury to the patient's aorta, and through heroic efforts, the patient's aorta was repaired, supportive care was rendered, and the patient recovered.

Upon review of this situation, the Surgeon and his team looked for any clues that they may have missed prior to the patient's sudden deterioration. Recognizing that there are a thousand ways things can go wrong with a stab victim, they concluded that everyone got ALMOST every step right, except...that no one remembered to ask what the weapon was. During the surgery, a senior surgeon commented that he hadn't seen an injury like this since Vietnam, and he was correct: the patient had gotten into an argument with a bayonet-wielding "Soldier" at a Halloween party. The result of this mistake was nearly catastrophic.

In the 1970s, philosophers Samuel Grovitz and Alasdair MacIntyre published an

essay on the nature of human fallibility: "Why do we FAIL at what we set out to do in the world?" They concluded that, in many areas, we face what they termed "Necessary Fallibility:" some things that we want to do are simply beyond human capacity. We are not omniscient or all-powerful. Much of the world is outside our understanding and control.

However, they went on to argue that there are substantial realms in which control IS within our reach. In these realms, we have just 2 reasons why we may nonetheless fail:

1. Ignorance: Science has given us only partial understanding of the world and how it works.
2. Ineptitude: Knowledge exists, yet we fail to apply it correctly.

Thinking about Medicine in the 21st Century, it is striking how greatly the balance of ignorance and ineptitude has shifted. For nearly all of human history, people's lives have been governed primarily by ignorance, but in the last several decades, science has filled in enough knowledge to make ineptitude as much our struggle as ignorance.

Take Myocardial Infarctions for instance; we have only discovered its risk factors, and how to treat and prevent this condition since the 1960s. Now, most of our problems stem from ineptitude: making sure we apply the knowledge we have CONSISTENTLY and CORRECTLY. This hasn't proven to be easy, as patients frequently receive incomplete/inappropriate care from providers (30% Stroke patients; 45% Asthma; 60% Pneumonia). Getting the steps right is proving to be brutally hard, even if you know them.

The 9th edition of the World Health Organization's Disease Classification system listed 13,000 different diseases/syndromes, 6000 drugs and 4000 medical and surgical procedures. In just one century, the training requirements for a medical provider have expanded from a high school diploma and a one year medical degree to college, medical school, 3-7 years residency training and often Fellowship/subspecialization. Despite this, our patients still experience a 50% avoidable post-surgical death rate. The underlying problem is that, in this age of sophistication and complexity, training and experience are important but not the

full answer. We currently have stupendous knowledge, in the hands of highly trained, skilled, hard-working people who accomplish extraordinary things, but avoidable errors are common and persistent because the volume and complexity of what we must know has exceeded our individual ability to deliver its benefits correctly, safely or reliably. We need a different strategy, one that builds on experience and takes advantage of knowledge people have but somehow makes up for our inevitable human inadequacies: the simple CHECKLIST!

The aviation industry has acknowledged the benefits of checklists for 80 years. In 1935, Boeing developed the Model 299, by far the most advanced aircraft of its time. Boeing's most experienced pilot was flying the aircraft before a group of Army Generals in an exposition to select the military's future airplane, and everyone knew that Boeing would easily beat all the competitors. Yet, the 299 and Boeing's ace pilot crashed shortly after take-off, and not only did Boeing lose the contract but it almost went bankrupt.

Boeing faced the challenge of what to do differently. Clearly training was NOT the answer, as they had recruited the best test pilot in the US. Many critics claimed that the 299 was "too much airplane for one man to fly." What did Boeing do?

They developed a simple list of items for the pilots to check. No "rocket science" here, just simple things that "everyone knows they should do." How much difference did Boeing's checklist make? Over the next 30 years (over 1.8 million miles of flight time), Boeing pilots did not have a single major accident. Army Generals changed their minds and bought what would become the B-17 Bomber, which gave Allied Forces a decisive air advantage in the bombing of Nazi Germany.

What about in Medicine? In essence, we have been using a checklist for years. Nurses introduced the "vital signs" to help ensure the healthcare team does not ignore these key elements. But doctors (with our extra years of training and specialization) often think we would not benefit from something as simple as a checklist...

In our complex environment, we face 2 main difficulties: the fallibility of human memory and attention, and the possibility that we may "skip steps" even when we remember them. Checklists help to protect us in both of these situations. In 2001, Peter Pronovost, Johns Hopkins Critical Care chief, developed a "doctor checklist" for minimizing central line infections which included 5 simple steps such as "putting on full sterile gown." In the observation

phase, nurses used the checklist to evaluate for compliance, and doctors skipped at least one step 33% of the time. In the next month's enforcement phase, when nurses intervened if a step was about to be skipped, the Hopkin's 10-day Central Line Infection rate dropped from 11% to 0%! This simple checklist helped providers with memory recall and clearly set out minimum necessary steps in the process. When many people questioned these results ("well, you can do this at Hopkins, but what about the real world?"), Dr. Pronovost took his program to state of Michigan. Despite widespread staffing shortages, his simple checklist helped to save 1500 lives and \$175 million in just a few years!

For those who worry about what the checklist might mean for medicine, the central question is when to follow protocol and when to follow judgment. Dr. Guwande suggests using checklists to get the "stupid" stuff right, but leave room for craft, judgment and the ability to respond to unexpected difficulties. Throughout the rest of this excellent book, he provides multiple opportunities for all of us to improve the care we provide our patients. I encourage the use of the simple checklist to provide our patients with the best care that the 21st Century can offer.