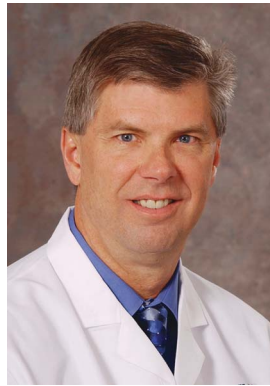


## A speck of sand

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Have you ever walked on the beach and felt the warmth of the sand under your feet, squeezing between your toes as you walk? Most of you have probably scooped up a handful of sand and let it run slowly out of your hand. Have you ever wondered how many specks of sand were in that handful? By definition, a grain of sand measures between 0.25 and 2 mm in diameter. Assuming an average size of 0.3 mm grains and a beach with a sand depth of 3 m, there are 163 billion grains of sand in 1 m<sup>2</sup> or 1 billion grains of sand in 1 ft<sup>3</sup>. I spent many hours on the beach as a college student, honing my skills as a beach volleyball player. I cannot imagine how many grains of sand I walked over in those years on the beach, but it was a lot. Scientists at the University of Hawaii have actually done the calculations and can tell you that there are an estimated 7 quintillion grains of sand in all of the beaches and deserts on Earth. And with 7 billion people in the world, that is a billion grains of sand for every person that we share this Earth with. That comes out to 1 ft<sup>3</sup> of sand for each one of us.

In 1910, a young girl by the name of Agnes was born in Skopje, Macedonia. She would become known as one of the 20th century's greatest humanitarians. Her father died when she was 8 years old, after which Agnes became exceptionally close to her mother. Although they were far from wealthy, her mother openly invited the destitute to her home for meals. When asked who those people were, Agnes' mother said, "Some of them are our relations, but all of them are our people." Coming from a devote Catholic family, Agnes attended both public and convent-run schools, and at the age of 18 years, she decided to become a nun, joining the Sisters of Loreto in Dublin, Ireland.

It was there that she became known as Sister Mary Teresa. Over the next many years, she taught in schools run by the Sisters of Loreto in Calcutta and subsequently become known as Mother Teresa. But in 1946, she experienced a calling, one that told her to abandon teaching and to work in the slums of Calcutta. Two years later, she received permission from the convent, put on the now-familiar blue and white sari, and walked into Calcutta's slums with the simple goal of aiding "the unwanted, the unloved, the uncared for." Mother Teresa's accomplishments are legendary, earning her among many other recognitions, the Noble Peace Prize and sainthood in the Catholic church. She established a leper colony, a nursing home, an orphanage, clinics, and affected millions during and after her life. How did she do all this? She did it because it was what she believed in. She did it by faith, by belief in what she thought was right, and by dedication to accomplishing what she thought was right. Her goal was never fame. She saw a problem, which in her case was poverty, and she figured out a means to address it. As her accomplishments became known, she received financial and bureaucratic support, but during the many years prior, her accomplishments were individual and came from the heart. Among her many famous quotes, she said "do not wait for leaders; do it alone, person to person." Agnes made a difference.

Everyone knows the term "blue baby syndrome," and every parent has breathed a sigh of relief when their child was not born with a genetic disorder, including tetralogy of Fallot. Tetralogy of Fallot is a surprisingly common heart defect with 1 in every 2,500 babies in the United States born each year with it. With modern surgical intervention, most babies live reasonably full and active lives, but that was not the case in the early 1900s. Children with tetralogy of Fallot were often severely incapacitated with oxygen deficit. But the remarkable minds and persistence of Drs. Helen Taussig and Alfred Blalock changed that forever, with the creation of the Blalock-Taussig shunt. But behind the scenes was the intelligence and drive of a young black man from the South, who traded his occupation as a carpenter

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to become a laboratory assistant to Dr. Blalock. His name was Vivien Thomas, a name that most do not know, but who was instrumental in the development of the Blalock-Taussig shunt and the eventual cure for blue baby syndrome. Most of what Thomas did is only found in the history books. Although he set his sights on becoming a doctor, his financial and social status at that time largely prevented his entrance into medical school. But his intellect and his passion for cardiovascular physiology led to a life-changing procedure that saved the lives of many children and the heartbreak for their parents. His is not a household name, nor one that even most physicians know, but behind the scenes, Vivien Thomas made a difference.

So how did Mother Theresa and Vivien Thomas make such remarkable accomplishments? It certainly was not because they were rich or had influential parents. Mother Theresa came from the small European country of Macedonia, and Vivien Thomas was a young black man from the South, in an era when young black men were afforded little to no opportunities. So how did they change history? They did it by following their passions. In their respective quiet and unassuming ways, they did what they did by being passionate about it, and they made a difference.

It is both a gift and an honor to be a surgeon. Our parents sacrificed no small amount of time, energy, and finances to provide us with an environment in which to go to school, study, and learn. College and, certainly, medical school undoubtedly put financial strains on our parents that we never knew about. They just made it happen. We have had innumerable instructors and mentors during medical school, residency, and fellowship, who have taught us not only the anatomy that we operate on but also how to do it with the intricacy that the human body demands. And we have been given the mental and physical gifts to be able to take our patients' health into our hands, both figuratively and literally. We have spent countless hours of our lives generating a reputation, upon which we now have the honor of patients entrusting their very lives with us. But that reputation and honor have come with a huge price tag. We have spent thousands of hours perfecting our knowledge and skills. A significant number of those hours have been at the expense of our families and even our own well-being. And always being a "nice guy" can be difficult with high stress and minimum sleep, to the point that surgeons have sometimes been labeled with fairly unflattering terms. In his book *Second Thoughts of a Surgical Curmudgeon*, Dr. Mark Ravitch wrote of the arrogance of the surgeon. While he writes of the arrogance of humans in general in the overplowing of land, overpopulation, overgrazing, and exhaustion of water tables, he speaks to the perceived arrogance of surgeons. He acknowledges that there are certainly those surgeons who are so supremely confident in their brilliance and skill that their plan could not possibly be bettered by anyone else, and if it failed, then it was certainly the fault of the patient. And as he said, these are imperfect men and women. But for the rest, he believed that arrogance is inherent in the life and work of a surgeon. He comments that we feel good about changing nature's plan by creating new tracts for nutrition and breathing, we alter natural selection by keeping people alive who were otherwise destined to not survive, and we even replace dying organs with good ones taken from someone else. But ultimately, it is that arrogance that demands perfection from everyone taking care of our patients, who we have made the calculated decision to open with a knife, with not the

hope but rather the expectation that our patients will return to a productive and happy life. And through that expectation, we as surgeons and particularly as trauma surgeons, have the honor of making a difference every day we go to work.

But I want to challenge you to make a difference outside of the familiar environment of the emergency department, the operating room, and the intensive care unit. In July of 2015, the world lost a trauma icon in Dr. Norman McSwain. It is said by those who worked with Dr. McSwain that he started each day with his residents and colleagues with the question "what have you done for the good of mankind lately?" That question was not directed at only those with the power and high level connections to make worldwide change, but to everyone. Only a tiny percentage of the US population does what we do, but we have a very unique set of knowledge and experience that we share daily with our patients, nurses, medical students, residents, and fellows. What if you took that expertise to the local law enforcement agency, the local EMS provider, or the high school down the street? If what you taught those people was used even just occasionally, can you imagine how many lives you will affect? How many of you have taken the American College of Surgeons' Stop the Bleed course? There are now more than 1.3 million people trained, with more than 76,000 registered courses offered to date in 116 countries. There are nearly 66,000 instructors in the United States. Are you one of them? Surgeons actually represent a pretty small number of those teaching the course. I did my very first course right here at the Western Trauma Association (WTA) meeting in Snowbird, Utah, exactly 3 years ago. Since then, I have taught more than 1,000 people, from lay folks to trauma surgeons. It is easy and it is fun to teach. It is what we do every day, but for most of the students in the course, it is very foreign. But when they leave the class, they have new knowledge, new confidence, and feel a little more empowered to help someone who is potentially bleeding to death. And who knows, maybe someday one of those students will know how to compress a bleeding wound or apply a tourniquet properly and save a life because of what you taught them. You will probably never know, but that is not the point.

Most of you are members of surgical organizations other than the WTA, but how many of you attend the meetings to sit in the audience, listen to the lectures, get some CMEs and go home? How about getting on committees, where a lot of focused work is done to ultimately advance the level of care our patients receive? It is fairly easy to be on hospital-based committees, and these are certainly important, but how about local, state, and regional committees? It takes a little extra work, and we are all busy, but the rewards are significant. There is a great little book by Parker and Anderson called "212 degrees — the extra degree." In it, the authors make the point that, at 211 degrees, water is hot. At 212 degrees, it boils, and boiling water creates steam, and steam can power a locomotive. So one degree can be the difference between something that is very hot and something that can power a machine. That little extra effort, that one degree, can make tremendous differences.

We can do life-changing things both as individuals and as groups. From its beginnings as an offshoot organization of a bunch of skiing doctors, the WTA is clearly making a difference. The WTA's Multicenter Trials Committee and the Critical Decisions in Trauma Committee, also known as the Algorithms Committee, are great examples. During a conversation in a bar

between Drs. Jurkovich, Cogbill, and Moore, the concept of sharing data between both small and large centers to scientifically answer questions formed the beginning of what became the WTA Multicenter Trials Committee. That was 1987. One year later, the first WTA Multicenter Trials Committee article was presented and published, describing the multicenter experience of more than 1,300 hepatic injuries. Ten years later, the first prospective randomized study was completed, and in 2009, the first funded study was completed. Since that conversation at the bar, the WTA Multicenter Trials Committee has been chaired by Drs. Cogbill, Knudson, Kaups, Kozar, Cohen, and Brown. Most importantly, 42 publications from more than 80 institutions have contributed to the way in which we treat our trauma patients today, with several more ongoing.

Although a little newer, the Algorithms Committee has similarly made significant contributions to the science of trauma surgery. Born out of a call for evidence-based care at a past presidents meeting, the committee became a reality in 2012. The charge of the committee has been to develop algorithms that are easily accessible and can be quickly implemented, all based on sound scientific evidence and expert surgeon expertise. Under the leadership of Drs. Biffl, Albrecht, Brasel, Inaba and Martin, the WTA Critical Decisions Committee has 30 publications to date. More than 33 members of the WTA are contributing authors.

We are all too familiar with the sickening frequency of gun violence. As trauma surgeons, we see the results, and they can be heartbreaking. But a few years ago, a survey of the members of the American College of Surgeons revealed some surprising sentiments, with a not insignificant number of surgeons profoundly opposed to gun control. In a rather bold move, 2018 WTA President Dennis Vane proposed to the board of directors that a position paper be generated by the WTA voicing the association's concerns and suggestions for limits on certain weapons. Not only did it pass the board unanimously but Dr. Vane also received a standing ovation when it was presented at the business meeting and received approval. But it did not stop there. Drs. Vane, Moore, and Scalea took the challenge to the National Press Club following the meeting.

At last year's board of directors meeting, President Roxie Albrecht suggested the creation of a violence prevention committee to further research and generate action for this deadly national crisis. That committee was formed and is now active under the guidance of committee chair Dr. Rochelle Dicker. And in August of this year, the Western Trauma Foundation voted financial support for the American College of Surgeons Committee on Trauma's creation of the Firearm Injury Prevention Clinical Scholar in Residence program, allowing a surgical resident or fellow to gain firsthand experience in firearm injury prevention research, advocacy, and health policy, while earning a master of science degree from Northwestern University. I recently received a complement at another trauma association meeting for the public stand that the WTA has taken in an attempt to somehow reduce the carnage that we see as a result of gun violence. The WTA has and continues to meet the challenges of improving trauma care and making a difference.

Sometimes, making a difference means going against the grain. In a 2006 article published in the *Journal of Trauma*, Dr. Frank Spencer wrote of his experience in the Korean War. Through some persistence, he got himself assigned to a medical

company of the US Marine Corps 1st Marine Division, located about 2 miles behind enemy lines. Dr. Spencer was fairly typical of physicians called to active duty at that time, with a grand total of 4 years of training—2 years in residency training at Johns Hopkins Hospital, with 1 year as a surgical intern and 1 year in the cardiac catheterization laboratory. He then went to the University of California, Los Angeles, for another 2 years of training, which included 1½ clinical years and a half-year starting an experimental surgical laboratory. With this rather ominous training background, he was appointed chief of surgery in the forward Marine unit to which he was assigned. Being equally devoid of much formal military training, he chose to challenge the official military orders of the time that stated, "All arterial injuries will be ligated except for those of the face and neck." Now, this came from earlier combat experience where injured soldiers were often many hours away from surgical care, and as expected, there was a high rate of amputations and significant morbidity associated with that practice. But with the use of helicopters and rapid access to surgical care, Dr. Spencer took on the challenge, assembled surgical teams in two medical units, and began repairing arterial injuries, with a success rate approaching 90%. His successes led to the adoption of vascular repairs in battlefield injuries in Korea and subsequently in Vietnam. Reflecting later on the risks he took of military court martial and why he did it, his reason was "Do what's best for the patient, not for you!"

Wikipedia defines *status quo* as the existing state of affairs. Webster's Dictionary adds "normalcy" to the definition. What neither one says is that status quo also means making no change. And making no change often means no progress and no improvement. Do not accept the status quo. We are critical when we read journal articles, so why should be less so in our everyday medical practices? We have trained all over the country and practice at hundreds of different centers. We all have methods and techniques that work best for us, and we should never be told how to be a surgeon. But practice guidelines are developed by groups of smart surgeons who study the existing literature and create suggestions on how to treat certain conditions based on that literature, as exemplified by our own Algorithms Committee. Those guidelines can be adopted by your division or your hospital to provide evidence-based standardized care. And they work. But like the status quo, they can become outdated or no longer applicable to changing technology. Follow the guidelines and you will be average. Instead, look beyond. Guidelines are advice or recommendations. If they need changing, do it. How many times in your careers has a student, a nurse, a resident, or a fellow asked why we do something? And how many times have you generated some pacifying answer, because you were not sure of the real one? If you cannot identify a good reason for doing what you have always done, ask why. If you exhaust all realistic alternatives to the status quo and have no reasonable options to improve upon it, then, and only then, should you accept it. You will never improve if you accept the status quo. Be curious and try to find the justification behind what your normalcy is.

I am challenging you to make a difference in your practice, your community, or even larger, but be open to those who make a difference in you. As trauma surgeons, our patients first present to us in the emergency department, having often times



just experienced one of the worst events in their lives, so the opportunity to form a patient-physician relationship is difficult. But we all have our mental library of those patients with whom we formed a unique bond because of their injuries.

In March 2000, a professional scuba diver came to our trauma center after an accident occurred while he was refilling his dive tanks. A typical dive tank is made of steel or aluminum, and when full, has a pressure of around 3,000 psi. Filling a dive tank to 3,000 psi generates heat, so to reduce the expansion of the gas, tanks are placed in a cold-water bath. Bill had taken all the usual precautions, but the tank exploded. I later saw the site. A couple feet behind where he had stood was a 500 gallon propane tank. That tank was dented from Bill being thrown against it, and the concrete platform under which the dive tank had been, had several radiating cracks. When Bill arrived at our trauma center, a flight medic was carrying his mangled leg in a plastic bag. I will never forget Bill saying to me “doc, I’ve been walking on that leg for 64 years. It sure would be nice if you could put it back on.” Of course, I could not, but I spent the next few weeks debriding the high thigh-level amputation, eventually shaping it into a stump that would accept a prosthesis. And because I knew our hospital orthotics folks did not get involved until long after the stump had healed, I contacted a prosthetic company whose employees are all amputees themselves. Their early involvement was both helpful for Bill’s psyche, but also for guiding me regarding their needs for the stump. A year later, I received a phone call from Bill. He said that he was going back in the water a year to the date after the accident, and he wanted me to go diving with him. And yes, even with only one fin, he swam faster than me with two perfectly capable legs and fins. And no, he did not swim in circles. Some years later, I tried to contact Bill to say hi, but I did not get to talk to him. I spoke with his caretaker instead because Bill was now suffering from dementia. But after his accident, Bill went on to be a staunch advocate for both residents and visitors to the Florida Keys with disabilities. His position on the Florida Keys Council for People with Disabilities was filled by someone else when Bill passed away in April 2011, but he spent 10 years ensuring that even people with disabilities could enjoy the beauty of the water that the Florida Keys had to offer. There is no doubt that I helped to make a difference in Bill’s life, who went on to make a difference in countless others’ lives. But it came full circle, because in some intangible way, Bill made a difference in mine as well. He was the quintessential reason why we spend all those hours of our lives taking care of people whose lives just encountered a major obstacle, and the hours we spend getting them past that obstacle and back to a meaningful life. We have a pretty incredible job! And I will never forget Bill.

Many of us have had the opportunity to use our medical skills outside of the usual hospital environment. Some of our WTA members have added to their surgical skills the ability to protect the people we serve by joining the law enforcement world and have made some remarkable impacts. Some have taken their skills to the challenging environments of third-world countries, bringing much needed medical care to many who otherwise would have had no chance at improving their quality of life. For me, my ventures into the prehospital world have been some of the most enjoyable and rewarding aspects of my career as a trauma surgeon. Although most EMS medical directors in the

United States are our emergency medicine colleagues, we are a unique group among surgeons who deal directly with paramedics and who are the first to provide hospital-based medical care when the trauma patient arrives on the EMS gurney. And not only do we provide a broader insight to injuries in general, we know what happens to patients in the hours, days, and sometimes weeks after they leave the emergency department. Prehospital providers spend years honing their skills and many, many hours practicing those skills in some of the toughest environments imaginable, but the results of those efforts are seldom seen by them. Becoming involved as a medical director or advisor, or even just a friend of your local EMS agency can bridge that gap, and I cannot begin to tell you how much it is appreciated. It is also a means of elevating the level of care provided to our patients before we ever see them. I have always felt that the more I have to work with when the patient arrives to my trauma bay, the better chance I have of returning them to their lives. My 25 years as an EMS medical director has shown me how eager prehospital personnel are to learn. And spending a little time at a fire station with a crew is just as much fun for me as it is for them. Giving back to them goes a long way.

I have always said that I can be a great surgeon, but I am nothing without the team behind and alongside me: the emergency department nurses, the operating room staff, and the folks in the blood bank that somehow just keep that blood coming when we need it most and have no time to ask for it. But perhaps the most important members of that team are our families. They are the ones who wait to eat dinner until we get home, later than we had promised. They are the ones who see the day’s turmoils in our eyes and somehow know how to say the right thing. They are the ones who allow us to make a difference.

This is a trauma meeting so I keep talking about trauma surgeons. But what I am saying is meant for everyone. You do not need to be a trauma surgeon to make a difference. My wife Janice has the biggest heart of gold of anyone I know. She goes out of her way every day to make someone smile, to make someone feel better, or to get through their day just a little easier. When she is not overwhelmed taking care of me and our family, she also manages to find time substitute teaching severely mentally and physically handicapped kids in our school district. She does not get paid much, but her gift to those kids is immeasurable. The stories she tells me leave me awestruck, because I could not begin to do the things she does. We all have our talents and our passions, and following them and sharing them is how we can change others’ lives in a positive manner. No matter what your occupation is, follow your passions, and use your talents.

There is a story of an old man who was walking on the beach when he saw a small boy throwing something into the water. When he got closer, he saw that what the boy was throwing were starfish. There were hundreds of them on the beach, apparently washed ashore. When the old man asked the boy why he was throwing the starfish in the water, the little boy said that if he did not, they would die. The old man said “but there are way too many of them. The tide will be out long before you can throw them all back, and they will die.” The little boy picked up a starfish and threw it back into the ocean, and he said, “but at least I made a difference for that one.” Teaching one resident a special trick can be magnified for many of his or her patients over many years. Or simply spending an extra few moments

helping a student understand a perplexing problem can be appreciated far beyond that moment. Making a difference does not have to be a magnificent event, nor one led by a politician or movie star or famous quarterback. Every one of us can make a difference, big or small, and like the little boy, making a difference for just one person may make all the difference for that person's well-being.

I want to make one last point, one that may be particularly pertinent to us as a profession. Some of us decided to be a doctor when we were young, some not until much later. Some decided based on altruistic reasons, some from personal experiences, and some because it seemed like an exciting and challenging career. But I think we all saw a profession of being able to help make people better. And we have all felt not only the satisfaction of making our patients feel better but also the sheer joy of literally saving people's lives who might not have had that chance had they gone somewhere else. But we have also felt the devastating pain of families hearing of the tragedy that just took their loved one from them. And I will readily admit that I have fought back tears as I have stood in front of those families and watched them try to process what I have just told them. As trauma surgeons and surgical intensivists, we care for some of the sickest patients, and we do it 24/7. It is probably no wonder then that trauma surgeons are at the top of the list of medical specialties experiencing physician burnout. And that is not an insignificant fact when we look at the literature. A 2009 survey of members of the American College of Surgeons showed that 40% of the responding surgeons screened positively for burnout. And a more recent study showed that, among surgical specialties, burnout increased 10% between 2011 and 2014. These facts have been recognized, and steps are being developed to reduce the contributors to the epidemic, including physician well-being initiatives. Now, I do believe that addressing increasing workload, time spent staring at a computer screen writing obligatory notes, and administrative demands is important, but I also think that achieving satisfaction from the work that we do is important. Making our patients better can become a routine part of what we expect of ourselves, but if we step back a minute and realize how many people in the world can do what we do, the profound difference we make every day is an amazing thing. And for those really difficult cases, in patients whose blood pressure and pH are barely compatible with life, with the operating room floor covered in empty transfusion bags, and the next several

days of mind-racking intensive care, trying to keep them alive and minimize the myriad of complications that can lessen their chances of leaving the hospital alive and returning to an acceptable quality of life, when those patients return to clinic, do not think of it as a victory, think of it as what an incredible difference you made for that patient and that patient's family. You did not just do your job, you and the team you led allowed that patient a second chance in life. You made a difference, and maybe looking at it that way will make all the time staring at the EMR a little more enjoyable.

Several years ago, when I was at the University of Miami's Ryder Trauma Center, we had a severely injured patient, who, after extensive resuscitation attempts, did not survive. As everyone pulled away, the floor was strewn with paper, blood, and empty bags of intravenous fluids and blood products. In what seemed like a short 10 or 15 minutes, our next trauma patient arrived, going into that same resus bay. The housekeeping folks were so efficient that the room was spotless and ready for that next patient. And at that moment, I thought, boy, life goes on. But it did not for that patient's friends and family. While the world continued to spin and people went to dinner or for their evening jog, for that family, the world stopped for a time. But even for them, their friends got back to work and their lives, and eventually, so did the family.

I have always said that part of the deal of coming into this life is that you have to leave it. When we are 20, we are immortal. In our 30s, our immortality is toned down a bit when we realize we have responsibilities to our families. And as we get older, the concept of mortality becomes progressively more real. I know that someday my time to leave this world will come, and when it does, my friends and family will be sad for a while. But there will be no royal funeral, no procedure, or instrument named after me. In the big scope of things, I will be just be another speck of sand. But I will be comfortable in knowing that I made a difference during my life. Whether those people who I somehow helped remember me or even know who I was is not important, only that they are somehow, in some way, a little bit better because of something I did. So, I challenge you. Be a speck of sand, but go the little step, go the big step, but make a step, and make a difference.

#### DISCLOSURE

The author declares no conflict of interest.