Strong Medicine Interview with Jonathan Gates, April 11, 2014

Q: [00:00] So this is Jacob Moses. And today is April 11th, 2014. I'm here with Dr. Jonathan Gates, at the Brigham -- Women's Hospital. And we're going to record an interview as part of the Strong Medicine Oral History Project. Dr. Gates, do I have your permission to record this interview?

A: Yes, you do.

Q: Thank you. So first we want to start with a few questions just about yourself and where you're from. So if you could just tell me a little bit about how your career in medicine started.

A: Well, you're going way back now. Well, my dad was a physician. He was a family practice physician for many years in Dedham, which is the town I'm from, and certainly provided the role model, to follow his footsteps in medicine. And it's something I've wanted to do -- as a small child. And went to medical school in New York City, at Cornell -- and knew I wanted to do surgery, wasn't quite sure at the time what kind of surgery. And I came up to Boston in 1983 as an intern in surgery, at the Beth Israel Hospital here in Boston -- and did my six years of training in general surgery. And

then I went on to cardiac surgery and eventually vascular surgery, here at Brigham and Women's Hospital. So when I finished up in vascular surgery, I started -- and really pursued my intended goals of being a trauma surgeon and a vascular surgeon. And that's what I've been doing ever since I started in 1991.

Q: Right. And can you give me a sense of what your typical day is?

A: Well, it can be very varied. (clears his throat) And there are times... You know, things have changed, certainly, and evolved over the years. I've always, you know, taken call for both trauma and vascular surgery. Our vascular call is a week at a time. Trauma call, when I first started out, was every other night -- for about the first 10 to 12 years of my career as an attending. And then, now that we have more help on board, it's less frequent than that, which is a good thing. But certainly, for a young attending, it's the only way to start, as I see it. It was a great experience and a very reservoir experience. And, you know, it's hard to predict now. But some of it depends on when you're on call. There are times when... You know, you never know what comes in the door, from the vascular surgery standpoint or from trauma. There are times when -- you

know, we do have elective cases in vascular surgery -- and have them scheduled. And there are times you might be called to the operating room to help other services in situations where there's unexpected bleeding. So there -- I do have a clinical practice. I have an administrative practice with the Trauma Service and a research component to all this, as well. And over the years, there -- more of one than the other but, you know, now I would say it's heavily clinically oriented, both in the operating room and in a outpatient sort of -- clinic setting, but also in -- you know, with respect to both trauma call and vascular call.

Q: That's fine. And what's your current position in the institution?

A: I'm a vascular surgeon, a member of the Vascular and Endovascular Division. And I am the director of the Trauma Center, and which I've been since 1995. I'm a trauma surgeon, as well, and a surgical intensivist.

Q: Great. So I'm curious to know how the day began on Marathon Monday, 2013, before you knew what was going to happen.

A: (clears his throat) It was a routi-- fairly routine Monday. I want to say that there were... It was relatively light in the operating room, in terms of

cases. It is a civic holiday, and in the state of Massachusetts, that, you know, documents Patriots' Day. And I believe I had finished up a fairly straightforward case early in the morning, was back here in the office and doing some paperwork and preparing for the next day, when I received a phone call on my cell phone from the trauma program manager, who was at the finish line. And she had reported that there'd been an explosion somewhere near the finish line. And so my instinct here was to log on to the internet and see, on CNN, if there'd been any report of that, and logged -- looked, on the cell phone. And there was, again, no notification of any problems. So I started to make some inquiries and actually had a second phone call, from the orthopedic attending on call, asking me the same thing, had I heard anything. [05:00] And I said I hadn't, but took a quick survey about who was on for trauma and -- that day -- I happened to be on for vascular surgery that day -- and told the orthopedic surgeon I'd meet him in the Emergency Department and we'd figure it out pretty quickly. So I left here, went up to the emergency room, and found that we had already had about three or four admissions at that time. Figure it was probably about ten minutes after three o'clock, so had been under way probably about 20, 21 minutes, by that

time. And the emergency room was -- seemed busy. And so then it took a quick look to realize that we had -- what to expect from this explosion, that the Hospital Incident Command System was already up and running for the Marathon, as it usually is every year. But clearly, their role was going to be different from what usually happens. And knowing them well and having drove with them and having spoken to them numerous times in the past, it was a very easy communication and a very quick rundown as to what had been -- what information we had at hand at that time. So it was clear to us that we, as an organization, would have to respond to an influx of many patients but an unknown number at that time. So my next call was down -- back down to the office, to my secretary. And essentially I said, "All hands on deck. I think we're going to need to hunker down for an influx of a number of patients." And I had a pretty good sense that most of our trauma surgeons were here that day, here in the office, whether in the ICU or, you know, doing general surgery or whatever it might be, their duties of the day. But we had basically a full complement. I spoke to the orthopedic surgeon up there -- we met -- and mentioned to him that I think that, you know, he'd better determine what his resources were and assemble them in

the Emergency Department. At that time, Hugh Flanagan, a very, very senior, excellent anesthesiologist, met us up in the Emergency Department, as well. And the chief resident on the Trauma Service, otherwise known as the Cushing Service, here at the Brigham, came to me and said, "What can I do?" And my response was, "I think you need to take a measure of what we have for resident resources and begin to sparse them out according to the patients that come in." We fairly quickly decided that, for each patient that came into the Emergency Department, we would be able to treat them as though they were the individual patient that day and assemble a team as we normally would for any other trauma patient that comes in. And that team consisted of an airway resident, a surgical resident, a trauma attending, and the nurses that would be needed to care for that patient. And we knew that -- in the first wave of patients, we had maybe seven or eight patients -- that we would, you know, be able to meet that demand reasonably well, as we got a better sense that most of our staff was available and most of our resident staff was available.

Q: Can you give me a sense of how many hands were on deck, and sort of...? At what point would the decision of how to break up teams become a harder one?

A: Well, I know... And I would say we had seven trauma attendings here. (clears his throat) Being on for vascular surgery, you know, it was clear to me that there would be a role for vascular surgery. But -- this does-- might not exactly answer your question but, realizing that we would need both trauma surgery, orthopedic surgery, anesthesia, ICU, OR involvement to deliver the best care for this group of patients, we were able to assemble representatives of all of those services very quickly. It was very clear to me that, as a vascular surgeon on call that day, the last thing I would need to do was actually go into the operating room. And we had (clears his throat) had a drill several years ago. And that drill was here. I can remember yet, on a rainy Saturday morning, we drilled for multiple patients. I think it was about 50 patients that were brought to a number of hospitals in the city. And the scenario was such that there'd been airplane crash at Logan Airport. So the 50 patients were brought in, in waves, to the Brigham. (clears his throat) And we were in a pretty good process, at that time, of triaging the patients and deciding who would maybe go to the operating room. And unbeknownst to me, the people that were in the Hospital Incident Command Center had designed this scenario so

that we would be overwhelmed, so it would be now a mass-casualty situation, and I would be forced to go down the operating room. (clears his throat) In doing so, it clearly became obvious that we were no longer able to triage the patients in the usual fashion. So early on, [10:00] when we had multiple -- or many patients that came in during Marathon Monday, it was clear to me that my role was not to go into the operating room, that my role was to marshal those resources that we would need and make sure they were delivered according to our, you know, disaster planning. Fortunately, many of our vascular surgeons were here. And some of them were in the operating room. Some of them were in the office. And we were able to bring down a complement of about four or five of them in fairly short order. So again, we were able to mount a response from the Trauma Service, from even the ICU, from the Emergency Department, from orthopedic surgery, and from vascular surgery. On top of that, we have the Burn Service, that deals with complicated wounds. And even plastic surgery became involved right away. So in terms of numbers, it's hard for me to know. We had a good complement of all that attending staff. They're fellows. They're residents. And the general surgery residents were here, as well. So

the response was robust, right across the board -- the emergency room staff well staffed. People came in from home to help out. Nursing staff, as you know, and others have referred to this, the fact this happened at a change of shift. So you almost have twice as many nurses as you normally would at any other time during the day.

Q: At what point was it apparent to you sort of the nature of this event? Had you -- had you seen injuries like these before? And were you also looped into the story as it was unfolding in the news media or among sort of -- communications within the hospital?

A: The communication within the hospital... So our group, our small command group of orthopedics and trauma and the operating room, was able to interact very well with the Emergency Department and the Hospital Incident Command Center. I relied on them to feed us information as to what was going on on the outside. So that we had evidence that there had been two explosions, that we were expected to have many patients, probably, as we would expect, coming in waves. There was a report in the media that there might have been a third explosion. So we didn't know what to expect from that. It turns out I think it might have been a controlled fire or something like that. But other than that, I really had no access

to the outside. Because we were fairly tied up with the current activities. But I will say that they did an excellent job in keeping us abreast of what was going on. Because that was important in order for us to make the proper decisions about the patients that we had. Part of triage is trying to decide who needs what resources when. And there were patients that we clearly had earmarked for the operating room. But if we had a second wave or a third wave or a fourth wave of more severely injured patients, they may need to take a priority to the operating room, when the other patients could wait in a line, obviously making that decision for patient safety all the time. But those are the kinds of decisions that we would have to make in a fluid manner, as more information became available. (clears his throat)

Q: So you mentioned this disaster planning, with mass casualty training. How closely did this sort of correspond to that training and what was prepared for? And were there points where the fluidity of the situation required deviating or improvising?

A: Well, I think the -- (clears his throat) no drill can really mimic exactly what the next disaster is going to be. But it provides a framework from which to work. And I think that the communications setup and things like

that were set in place. And we obviously took advantage of that. When you think about it, too, we drill every day, by taking care of trauma patients, just like this. Now these patients sometimes are victims of blasts, sometime-- many times are victims of gunshot wounds and stabbings. And many times it's not just one patient but multiple patients. And many times there are blunt injuries, falls, motor vehicle crashes -- motorcycles. So (clears his throat) many times there are -- the mechanism may differ but the end result on the human body is very similar, bad injury, bad extremity injuries, multiple injuries, multiple perforating wounds, intra-abdominal injuries, whatever they might be. So by taking care of patients over years and years and years, it is drilling for more patients all at once. And the institution, but the individuals caring for the patients do develop a collective knowledge about how to care and how to recognize, you know, patterns of injury and things like that. So that said, I think that we were in good position to manage these patients and recognize injury and deal with them surgically. But there was, again, no way to predict how we [15:00] would respond in this. And what I found is that one of our important lessons, that's sort of reaffirmed from this, is that people really do

need to... And they did this to a -- to a T during the Marathon bombing and the medical response. They know what to do. And they know how to work together, work together as a team. And I think, if you allow people to do what they do best, that you can expect the best results. A little bit of flexibility allowed in that, I think, goes a long way. And a perfect example of that (clears his throat) is my interaction with Hugh Flanagan. Hugh is, as I mentioned, a well seasoned, well-respected anesthesiologist here. He's been a great supporter of the Trauma Service for many, many years. And for that I'm very grateful. We've done a lot of work together, for the smooth transition of trauma patients from their site of injury to the ED to the operating room. And to his credit, he was here with us on that day and made the unilateral decision to really, I would say, smooth over a practice that we've done for many years, which is to identify patients who need an operating room and make sure that happens in a very quick fashion. We call it "direct to the OR." And he made the decision that, all of these patients that we've dictated would go to the OR, he'll insure that they leave the Emergency Department and go specifically to the operating room as designated, rather than stopping in the pre-anesthetic area or what

we might do in a more elective or semi-elective or urgent situation rather than an emergent situation. And that moved them more quickly through the system, insured great communication during the different levels of care, because the same team traveled with them. And there weren't a lot handoffs that were required, other than the team that's bringing the information with the patient down to the operating room. And there wasn't a lot of room for error or miscommunication. So I think that helped a tremendous amount. And when I look at that, that's something that we do in a microcosm every day but he really, you know, had perfected that, made the unilateral decision and it worked very well for our benefit.

Q: It's so interesting to hear you stress, in some ways, sort of the continuities between everyday practice and the response on Marathon Monday. I'm curious, too, about sort of your reflections on what made this different. Or what is it like when it's no longer a drill for a mass-casualty event and how does this deviate from just an amplification of the everyday?

A: You know, the -- I think the -- (clears his throat) a lot of their -- when this happened, there was a lot of unknown at the time. One of my last concerns was for

security. And part of the reason was because the -- certainly the State Police, Boston police, and the FBI were intimately involved at the hospital, collecting evidence and for other reasons. So, you know, having worked with them in the past, it was very clear that they would do their job and help us do our job. Because there was such unknown about what was actually transpiring across the city, it was a little hard to know, perhaps, would there be a local problem at the hospital that would interfere with what we needed to do. But I think that sort of melted away with the -- with the presence of the authorities, that were in a position to make that decision and basically watch our backs while we were able to do what we needed to do.

Q: So when you say local problem, meaning the hospital as being a potential target or...?

A: Yes. In fact, one of the institutions in the Boston area had had a backpack that was dropped off in the Emergency Department. It was enough to close them down. So that's something, you know, from a historical standpoint, is not unheard of in other parts of the world. And it's something that, you know, one needs to be vigilant about.

Q: Was there communication between the hospitals, that you were aware of, at the time? Or was that happening more

at sort of this command-central level?

A: I think that it was happening above and beyond my level. I think that there was good communication, obviously, in the pre-hospital environment about distributing patients across the city. And I would give great credit to the Hospital -- the Incident Command and Boston EMS in doing that. There was good communication between our hospital incident command and those of others hospitals to kind of get a sense for what they were seeing for patients, and in relaying information to the caregivers as to whether or not there were potential radiation or biologic [20:00] hazards. It was pretty clear early on that that was not the case. Later on during the course of the day, we did have a little bit of communication with the other hospitals at the trauma service level or at the operating room level. And I think there was one request for additional equipment, and which we might have used up or consumed and, obviously, having so many hospitals in the Boston area, looked to other hospitals to provide that equipment. And that's something, certainly, that we're revisiting as we look to see what went well and what could be improved. But I think good hospital-and-hospital communication at the clinical level is also critical. And that's something perhaps we'll fine-tune

in the future.

Q: I'd imagine that the nature of your work means that the patients who are treated on that day, you know, many of them, you know, it -- their story didn't end there and this has really continued. Curious sort of how that changes, when care moves from an emergency response to working with patients on, you know, decisions after an event like this.

A: Well, you know, early on the care is what we call damage control. And it's purely to stop bleeding and controlling contamination. And then later on there were, in many cases -- and about three-quarters of the patients underwent a second procedure or more procedures, damage control being, you know, primarily to stabilize the patient -- and then subsequent procedures designed to improve their -- you know, their morbidity or reduce their morbidity or provide them a final result. Clearly, there were decisions to be made about levels of amputations, when to close wounds, and if an amputation would be necessary or if we should pursue a limb salvage procedure. And that's true across the board, at the other hospitals, as well. And those are decisions that we make with the patient, with the patient's family -- and try to really individualize those decisions.

Certainly there is a lot of discussion and controversy in the literature as to whether or not, and patients are better off, in certain situations, with an amputation or to really go the extra mile and preserve the limb. And, you know, we take very seriously the -- you know, the amputations or, you know, level of amputation, because it does impact on one's functional ability thereafter. Sometimes it is very much the right thing to do. It prevents, you know, prolonged hospitalization, recurrent hospitalizations, recurrent infections, if we're really trying to save a limb that is not salvageable. But so it's important for us to work with the patient and their family to understand what our thinking is, to understand -- to make sure that they realize that we really are -- you know, take very seriously these recommendations and discussions with them, to make sure that we fine-tune whatever happens to these patients -- to their needs. And this is, again, something we do on a daily basis, whether it's a vascular patient or a trauma patient, with a very similar problem. You know, we understand the consequences of whatever we -- whatever path we choose. And we want to make sure the patients understand that. I think it's very important. Because it's also important, I think, in their recovery to understand why they're

where they are and then how they got there. So certainly those are the discussions that transpired over the next several days. And hopefully, knowing that it's a very thoughtful, caring decision that's been made, that it would help them through the recovery in rehab and the days thereafter.

Q: So most of those decisions were made within a span of days after the event?

A: Yes. Yeah. And that is true in general, in similar populations. There are patients that have had significant injuries that, you know, sometimes those discussions come up about delayed amputations but I think that's the minority of patients.

Q: You were mentioning a bit, before we started talking, about events elsewhere in the -- in the world. Do you have experience seeing those kinds of disaster events and familiar with how response, you know, may have differed here than how it might have elsewhere?

A: Yes. You know, I'm... And again, you look back over the years, even here in Boston, and how the institution has responded to other disasters, or similar disasters, maybe on a smaller scale. But I can certainly remember how the hospital responded, I want to believe, back in 1994, when there was a shooting at a local business and, which, we

in short order had five [25:00] operating rooms open for penetrating wounds. And certainly that was, you know, extraordinarily well done. That was followed, you know, years later and many patients later with, you know, the fire in Warwick. And we were able to clean out our ICU in two hours and accepted about 13 patients from that fire. The Burn Service did a tremendous job, and as did the nurses, and in finding other locations for those ICU patients in very short order. And these are, you know, things that we're faced with periodically, even here at this institution, in using, you know, limited resources and making them available for new patients as they come in. But certainly I look at all of this as, you know, just what we do on a daily basis. And, you know, it's -- I look at our Brigham response to the Haitian earthquake as very much what -- you know, what we've been training for. And a number of us, both from anesthesia, nursing, and the Trauma Service, as well as the residents in general surgery, had the opportunity -- and in orthopedic surgery, I should point out -- to go to Haiti in 2010, in January, soon thereafter. And (clears his throat) it was a different -- obviously, different experience but -- in many different ways but similar in many ways too. When we landed there, it was within the first ten days of the

earthquake. We were taken to the general hospital there, which was a public hospital, which was in shambles. Three-quarters of the buildings were damaged beyond repair. And there were no functional operating rooms. I'm not sure how many they'd had beforehand. But that area, which was called an orthopedic trauma area, which was their OR, was unsafe, as deemed by the engineers. There was one building -- single-level -- that we used and created four operating rooms out of two rooms. One of the benefits... And again, you can't underscore teamwork more than in scenarios like this. But when we arrived, I had the benefit of meeting the 82nd Airborne contingent, that was based out of the hospital. They had arrived about 48 hours before. And they had 134 soldiers there, 12 of whom were medics. And so I met with their lieutenant colonel, a gentleman named Rob Malsby. And I... Clearly, he had resources we needed. In setting up the ORs, we had a lot of equipment and a lot of drugs and basically had no security. So their -- one of the... It was very hard to distinguish. We figure there were probably about 1,000 patients at this makeshift hospital. And it was hard to determine who was actually there as a helper, who was there as a translator, who was a patient, and who was a family member. And by inc-- in engaging

the 82nd Airborne, I asked Rob -- I said, "This is..." You know, "What --" he basically said, "What can I do for you?" And I told him. I said, "We need some help. And if you've got some medics, we could use security, transport -- and help us locali-- locate some supplies." And he said, "Anything you need. I'll give you six guys." So he gave me these six medics. And we were able to then really get a better sense of the lay of the land and the grounds and what resources were already there. Set up a security contingent that kept the OR sort of relatively sterile, relatively clean. We knew who was coming and going. (clears his throat) And then we set up a pre-anesthetic area, post-anesthetic area -- and had a better sense from them, too, in their short 48 hours they'd been there before we were, as to what supplies were potentially available and really kind of what the grounds were like and what had for -- potentially for radiology studies -- to dialysis machines to tents to emergency room to other services that perhaps were already there. And we were able to then locate some storerooms that nobody had identified as a source equipment. And they had antibiotics and dressings and surgical equipment, that had been donated from Haitian people outside of the country, not specifically for the

earthquake. But they do this on an annual basis anyways. So we been able to kind of identify areas that had been untapped, in terms of resources. And again, it goes to show you how, in a crisis resource management situation, you use all the information you can at the time. And what they had learned was of a lot of value to what we needed. And that shows, to me, how collaboration works so beautifully. So they were really able to, again, kind of watch our back, help us out. And, you know, I must say they -- that what they did is to help transport patients, to help us communicate, you know, with [30:00] other services that were being provided. And one of the more important things they allowed us to do is to evacuate patients to the *Comfort*, which had arrived probably about two or three days before we did, outside of Port-au-Prince. So when we arrived, we were only able to evacuate to a higher level of care, if you could, 6 patients. And with the arrangements we made with the US Army to evacuate patients to the *Comfort*, we were -- on the last day we were there, figure about ten days later, we were able to evacuate about -- I think it was maybe 60 patients a day. So there were certain things we couldn't provide, because sterility was not perfect. But certainly the *Comfort* had all services available. And

there were patients we could identify that would have -- or need internal fixation. And that would have to be done sterilely and that could -- be -- not be done where we were. We were somewhat confined with doing amputations and compartment syndrome fasciotomies, but certainly nothing that would require the implantation of hardware. And that's why it was so important for us to stabilize, identify, and then get them evacuated to a higher level of care. And unfortunately, during this period of time... In any situation of unrest, there are continuing needs of a population that's stressed. And the usual things we see in a -- in a city in stress, whether it's assault, stabbings and shootings, and blunt injuries from people falling from buildings and things like that, continued. So we were there in a position to be able to care for them. But certainly it was -- it allowed us a sense to take what truly was chaotic at that time and put some order into it, by collaborating with services from other parts of the country, other parts of the world, and -- again, can't say enough about the helpfulness of the US military in that.

Q: So it seems like collaboration is one of the -- sort of the key linkages between those -- these two experiences. And one of the difference is maybe sort of availability

of resources or infrastructure. Are there other...?

A: I think you hit it on the head. It is... You know, in the Haitian situation, resources were really quite limited, in terms of surgical resources. We began to develop and better align our human resources and encourage some of the Haitian people come back and put them to work, in terms of sterilizing equipment and helping us in that way and helping to care for the patients, both pre- and postop. We were then able to, you know, over time, get more equipment in terms of antibiotics and surgical equipment, as we found some of it on the -- on the hospital grounds but also as it came in from humanitarian reasons. But I can't underscore enough that collaboration, in any situation one finds oneself, I think, is critical. Because everyone there I look at as part of the solution. And it's our limitation if we don't extract that information from those groups of people. And that's why... You know, it was very... I mean, the Haitian people are wonderful people to work with. They really were there. They knew we were there to help. And they were there to help in any way they can. And they did. They really did. And, you know, you have to imagine these are people that are -- may have lost loved ones -- still missing loved ones, and, you

know, are able to sort of co-- rise above that and contribute to the help that their people needed. But again, you know, if you look at the disparate resources -- and used them, I think the collective outcome is that much greater. But we're used to doing that in medicine and in surgery, in particular, and in trauma. And, you know, back home, where we have plenty of resources, both human and otherwise, we're used to working together. And it's part of what we do. Surgery is a team sport. It's also a contact sport. (laughs; clears his throat)

Q: I wonder if one of the other differences, too, is that you're a member of this Boston community. So what -- you know, what does it feel like when you're both a healthcare provider but also, you know, a citizen of a -- of a city that's undergoing an event like this?

A: Well, you know, there's, obviously, a lot of proud medical tradition in Boston. And we've got a lot of great, you know, hospitals and medical schools in Boston, as well. And, you know, I've been back here in Boston since 1983 and had a lot of good friendships among the medical community. So you ha-- do have a sense we're all in this together, whether it's at this institution and the people I've known for so long -- but at, you know, other hospitals here in Boston, whether it's Beth Israel,

Boston Medical Center, Tufts, or MGH. We know each [35:00] other and we, you know, work together, collaborate together, and see each other at meetings and things like that. So certainly you know that you've got a great team, you know, working alongside you. And that, in and of itself, is a tremendous boost, as well.

Q: I'm curious about how -- sort of the days after the event itself, what kinds of reflections happened among these teams to evaluate, you know, the response. And I think you've mentioned a couple of different indicators that allow you to, rightfully, judge it a successful response. But I'm curious if you can sort of tease out some of the different aspects that you look at retrospectively to analyze the -- what happened.

A: You mean to look at our medical response, in general? (clears his throat) Well, you know, obviously there are -- you look at the outcomes... And, you know, I think the medical community in Boston's very proud of the fact that there is no in-house mortality. And that is one measure of success. But obviously, there are other measures. And that might be, on a deeper dive, morbidity, which are complications, and disability, which we worried about a lot. And those are the other measures of success. They're perhaps less clear cut, obviously,

than mortality. But we look at the -- you know, if you look at our data compared to what other experiences have been across the world in similar events, they're not identical. Everything's a little bit different. As I mentioned, every disaster's a little bit different. I think the collective response was excellent, and, you know, right across the board, hospital to hospital. And, you know, I think there's a tremendous amount of satisfaction from that. But it also, like every disaster drill or every day in trauma -- we look at what we do and reevaluate it and reevaluate it and debrief it and figure out what we could do better. Anytime something perhaps is a strain on the system, like this, it affords an opportunity to really figure out what if. And, you know, questions we ask is what if there were more victims, what if the... We had a preponderance of lower-extremity injuries, partly because of the trajectory of the secondary projectiles, which were low down to the ground. But there are, you know, suicide bombers in Israel and other parts of the world which -- in which the -- they might be in a more crowded area and an enclosed area, higher explosives, that have the potential to be much more devastating, and perhaps more taxing to the medical system in general. In this situation, where we had

multiple casualties, it wasn't really a mass casualty, where -- which, by definition, would be a situation in which the patient needs outstrip our resources. And we -- really never in that situation. But it makes you question what if. What if we did have, you know, far more patients, with a huge demand for blood products? And where would we get those blood products from? The truth of the matter is people do step up. And you have a walk-in blood bank. And that would be immediately available. And I know the -- we heard that response from people, who would help in any way. And I think that's very laudable. But, you know, what -- would we be able to mount enough surgical teams to manage that, across the city? If one hospital were overwhelmed, for whatever reason, would we be in a position to transfer or distribute patients better? Better communication amongst the hospitals, to kind of keep their finger on the pulse, to get a sense for whether or not we even need to send a surgical team to another hospital -- is always a possibility. So I think it's important to be able to have that communication, to be able to have the flexibility to be mobile and to think outside the box too. And I think that's how our response would be in future situations. And I think it's important to get

that information out there, so that other hospitals in other systems, in other places in the country that might be faced with a similar disaster would understand that framework that we tou-- we described and then how they can build upon what their resources are or determine now where there may be gaps in their delivery of care, in the event of. So I think that's why it's important for us to be talking about this, as well.

Q: Are there specific changes that have been implemented?

A: There are. And, you know, there... One that comes to mind, in particular, is the registration process that we have for patients. We do have a very -- I must say, a very good registration process for unidentified patients that come in to us, and, which, there's a packet of information that's automatically available. And over time, when the patient becomes identified, that's then married to the unidentified medical record number. But what we found in this situation is many patients shared similar last names. Many patients were unidentified. And our medical record numbers differed by one digit. So there was potential there for an unidentified male or unidentified female that differed by only one digit to perhaps become confused in the -- in the multiple x-rays or labs or trips to the operating room. So what we've

done is created a situation where they're expecting unidentified males or females and have them differ in either the color that might be attached to their name or the name of a town in Massachusetts, so that, if you had an unidentified male/Dedham, you're not going to mix that up as easily as you would -- unidentified male/Needham. You know what I mean? So the more sort of redundant protection we can -- we can instill in the system, the better that will be -- not that there was any mix-up. But we could identify a situation where there could be. And that's why we want to remove that concern from the system. It gives us pause as to how we would generate blood, as I mentioned, if we need far more units. I think about 100 units were consumed that day. But at many of these major general hospitals, as well, that would not be uncommon in a given day. But I think citywide probably, you know, that is on the order of about 100 units. But in the event of, you know, a larger disaster, how would we generate more blood? And the blood bank is involved in these discussions. And I will tell you, that -- for me, it's exceedingly satisfying to see, not only the day of but in the debriefing and in the concern about what we could do better or what if, how could we respond differently, there's not an individual

or a group or a service that doesn't do their absolute best to fine-tune what they do on a daily basis -- which I can tell you is exceedingly satisfying to see. One other thing that comes to mind, too, in terms of improvements, and I kind of touched on this a little bit earlier, is that we clearly realize that inter-hospital -- I think, clinical inter-hospital communication is very important, as well, so that if this were to happen -- if something like this were to happen again, I would be on the phone or have a surrogate of mine on the phone -- who would be in touch with our equivalent at another hospital in Boston or the other hospitals, to kind of get a sense for what their experience has been. Because their will be learning on the fly, as well. And wha-- if they were to learn something perhaps that works for them, that would be something that would be immediately applicable to us. And that sort of takes me back to our experience in Haiti. When we had arrived... And again, it underscores the communication and the transfer of information. When we arrived, there -- they were still in the process of cleaning up the area, if you will. And it sort of reeked of a disaster. And one of the early things we did is took a look at all these wounds, obviously. And they were fetid wounds. They were

infected, at the time. And so they would require debridement and dressing changes. And we instituted the use of Dakin's solution. And part of the reason is... I can remember walking on the campus of that hospital and saying, "You know, this is not un-comparable to the situation in World War I," where there multiple -- you know, the -- truly mass casualties. And Dakin's solution was developed in those -- in those trenches and the -- and the need for good wound care. So Dakin's solution's very easy to make from Clorox. And we were able to identify and find stores of Clorox on the fiel-- on the -- in the hospital grounds and were able to make our own Dakin's solution and use that to clean up the wounds. And if it's any surrogate of what we did, and in that period of time we were in the general hospital in Haiti, when we left it was a completely different appearance and smell to the place. And I think that part of that was the use -- cleaning up wounds and getting a handle on getting a better system in place, in terms of how to take care of infection. And I think we were able to do that.

Q: Wondering if there's -- if there's one image that pops in your head or that you [45:00] most strongly associate with that day or if there's one moment that is the most vivid for you.

A: You know, I think that -- maybe not exactly one image -- but, you know, clearly these are -- the injured are, you know, people that we know, that -- you know, that are very similar in their needs. And the feeling that I had -- the incredible feeling of satisfaction is to actually see the hospital response, collectively. Everybody -- there was really, truly a unity of purpose. And everybody in this hospital stepped up to what they needed to do, in ways that even I can't recount, but happened behind the scenes, and repeatedly. And these are really what I consider the unsung heroes of this event. But I must say, having worked here for so long, I would have expected no less. And certainly, you know, you do have images of people doing what they do every day, and doing it to perfection, you know, for the care of patients they don't know, and because they know it's their job. And it's their calling. And I think that's what I walk away with, after these events. And again, I saw, in Haiti -- you know, you see people I might not even know as caregivers doing what they do best at their home institution. And I did comment, I remember, when I was there... We had two chief residents with us, from surgery. And looking at them in the midst of this, sort of, disaster, you know, 3-1/2, 4 hours away from Boston,

you would have thought they were on the floors of the Brigham. I mean, it really looked... They were dressed the same, delivering the same level of care. And I thought that's an incredible, you know, moment and an incredible picture, in my own mind. And again, that was repeated here.

Q: Do you have any other final thoughts or stories that you'd like to share?

A: Nothing that comes to mind. (laughs)

Q: Well, thank you, so much, for your time.

A: My pleasure. My pleasure. [47:04]

END OF AUDIO FILE