

The Changing Nature of Combat Trauma Medicine

Lieutenant General James G. Roudebush

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Moderator: Ladies and Gentlemen, on behalf of the Air Force Association, welcome to the Air and Space Conference 2008. Our speaker is the Surgeon General of the Air Force. As such, he manages the Air Force Medical Service and is the chief advisor of health matters to the Chief of Staff and the Secretary of the Air Force. He will make a presentation and, if time allows, open the session up for questions. Each of you should have a copy of the speaker's bio. I will now turn the podium over to Lieutenant General James Roudebush.

LtGen Roudebush: Very well, thank you. [Applause]. It's a pleasure to be here with you.

This week has been very instructive on a variety of levels. I trust that most of you were at the Chief's remarks this morning that I think is illustrative of how critical the team approach and the everyone engaged approach to be able to accomplish our mission is, and I think that resonated very clearly in General Schwartz's remarks, and I think you'll see that this afternoon.

There are certainly portions of this that will be familiar to a number of you. There will be perhaps portions of this that are unfamiliar, but I really look forward to the dialogue because this week is, the value is the interchange and the opportunity to both learn and better understand perspectives, concerns, and also where the gaps might be, because that truly is what helps us go forward. Identify the gaps and move forward.

So this afternoon, we will move fairly quickly through the familiar and hopefully have some time for some give and take, and I would be very interested to know what's on your mind and what your thoughts are.

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The mission is very simple, very clear. The mission of the United States Air Force is to fly, fight, and win in air, space, and cyberspace. And that, as really revised and I would say focused by both General Schwartz and Secretary Donley, captures it very, very well.

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And as you heard this morning, the priorities are very clear - to reinvigorate the Air Force nuclear enterprise, to bring both accountability and lethality and precision to that enterprise, to partner to win the joint fight, to develop and care for Airmen and their families, modernizing our aging air and space inventories, and acquisition excellence. And it's not a choice. It's an imperative. And that is where we are going.

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The domains, as they have been described, are air, space, and cyberspace. Air dominance is something that's very familiar to us all. That has been our primary milieu for decades. We understand that very well, and we've been very effective in dominating that air domain; however, in terms of global access, as we heard very clearly this morning, being able to move as required for our national interests or those interests of our friends, allies, and partners - that kind of access globally is not a given. It's earned every day.

And there are areas in the world where access is not necessarily readily available. And certainly, we can all think of the examples, whether it be in North Korea, Iran; however, increasingly, places like Venezuela is increasingly capable and is actually, as a territorial power, is becoming increasingly able to exert will in their realm of influence.

So it's not a given and it's earned every day. Certainly space is a domain that has been familiar to us for a very long time, but we've thought of it as a sanctuary when in fact it's no longer a sanctuary. The Chinese demonstrated that very clearly when they took out one of their own satellites, not in a low orbit, and took it out electively and demonstrated that space is no longer a domain. So that is not a given, and it's something that we need to be concerned with.

And cyberspace as a domain is an interesting place, if we can think of it as a place. It's an asynchronous place. It's not a continuous domain like air and space. It's asynchronous. It could be a server. It could be a network. It could be an application.

It could be a variety of things that we all have to be concerned about and think of in the way that those three play together in terms of air, space, and cyberspace, for our ability to both control our destiny as well as being able to influence activities for friends and foes around

the world. They all three play together in a very real way, so it's not separate domains. There is a continuum that flows through those, and the Air Force, as a force dealing with precision, lethality, persistence, and the unblinking eye, actually operates within each of those virtually 24/7/365; linked most often, but sometimes unlinked.

And for each one of those capabilities that allows us to operate in those domains, there is Air Force medicine that is supporting that activity, supporting the people that are actively engaged in that, whether they are on an active platform or somewhat distant from the fight. But Air Force medicine supports each one of those capabilities and does so in a doctrinally coherent fashion, as well as supporting the full spectrum of joint capabilities.

And if there was a walk-away from General Schwartz's remarks this morning, it is all about joint. It is about the success of the joint team. It's not about the success of any one of the components; it's the success of the joint team. And that is what the Air Force brings to that, and Air Force medicine supports that. Every Air Force capability as well as supporting the joint war fight in a very forward-leaning way.

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For us, in the Air Force, every base is an operational platform. This is not necessarily the case for our Army, Navy, and Marine counterparts. For them, basing is, in general, a point of departure that they utilize to prepare and depart and go forward and do the mission, whether it's afloat or as ground maneuver. But for us, every base is an operational platform.

F.E. Warren allows us to provide strategic nuclear deterrence, for example, in a global fashion, but there's no deployment involved. Unless you consider driving 160 miles out to a missile silo to be a deployment, and for those who do that with some regularity it can be fairly austere. But F.E. Warren provides that capability from F.E. Warren Air Force Base.

Peterson Air Force Base manages space constellations from Peterson Air Force Base, not necessarily in deployable capability but a global asset; global impact.

Whiteman provides global strike from Nobnoster, Missouri; not necessarily what you would expect from the central United States, but clearly a capability that we're

able to project anywhere in the world in a very predictable, focused, and lethal way.

Likewise, Vance, the mission is training. But that base, as an operational platform, provides trained personnel able to do that portion of the mission.

Creech, certainly managing the UAVs. And I think we heard in a very, very forward-leaning way the importance of the UAV capability to the Air Force and to our nation, operated from Creech Air Force Base. Not necessarily deploying but certainly having impact halfway around the world.

So every base is an operational platform. And Burlington, Vermont, I mention very specifically because that is a total force base from which we exert power but do so in a partnership with our Guard. And at a variety of bases, our Reserve counterparts provide in each one of those bases as an operational platform.

And Charleston. Certainly global mobility is something that we're all familiar with.

And overseas, Kadina, for example, or Balad, same story. Projecting power forward from our bases.

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But the fact is we've been at war 18 years, and this has been an obstacle that has had both a palpable and very real effect on people, on equipment, on capabilities. Eighteen years at war. We deployed Desert Shield/Desert Storm and did not come home and have continued to be operationally active in a variety of locations around the world, overtly and covertly since that time. And, aside from the combat applications or the course projection applications, providing humanitarian disaster relief wherever needed for our friends and allies around the world. So it has been a busy 18 years, and there is no end in the foreseeable future. That's an OpsTempo that will continue for the foreseeable, and I think we need to plan for that.

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And therein lies the challenge, finding the balance. Balancing the risk, winning today's fight, but being prepared for tomorrow. Because tomorrow's fight, very likely, will not be precisely the same as today's fight. In fact, it may not even remotely the same as today's fight. And if we succumb to the temptation to perfectly

prepare for today's fight, then tomorrow we will be perfectly prepared for yesterday's fight and not prepared for tomorrow. And that is a risk. But we need to do it within constrained resources. This is the challenge.

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Now for us, in terms of our expeditionary medical support, it allows us to be very effective, very lean, light, deployable, scalable and very, very effective. And we can operate across the entire spectrum of operations, from disaster response to major conflict, and we're doing that today.

In fact, the crews that have been deployed for Gustav and Ike are just now beginning to redeploy. So we have had individuals in the field, principally Guard, some Reserve, some Active, but we have been operating across that spectrum 24/7/365 for quite some time, and it has proven to be a construct of extraordinary efficacy.

It is economy of force, but it is also a packaged capability that you can put where you need it to be, literally within 24 hours and be effective very shortly thereafter.

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And in terms of preparing for eventualities around the world, we do have on-call assets, both in USAFE, in PACAF, and here at home. EMEDS 25 augmented with capabilities that are prepared to deploy in response to issues and concerns or requirements within the continental United States or within Europe or in the Western Pacific. But those are standing by as we speak.

And we're prepared to deploy for the recent hurricane alert, but I think we can all think of episodes in WESTPAC, the tsunami for example. Typhoons will certainly be in play in the not-too-far-distant future, and certainly activities in Europe could give rise to that. So that capability exists and is ready to move.

We also have something we call the Humanitarian Relief Operation Capability Package. The HUMROCP for folks that like acronyms. It is a stand-alone EMEDS 25 that is designed to go out with the base operating support, which our EMEDS generally does not contain.

We usually fall in on base operating support provided by the line. In this instance, however, the base operating support is made part of the package, with civil

engineering, security forces sufficient for a permissive environment - simply to provide perimeter security - but the service's capability to support an EMEDS 25 for up to 90-120 days, principally designed to go forward for disaster relief in either the Pacific or perhaps in Europe, although it has been utilized in the United States.

When a tornado hit Kansas, we were able to provide and EMEDS 25 through the Guard that was actually utilized by a local community to provide the infrastructure for care, because their facilities were basically erased. And it has been utilized at home as well, but that too is on call.

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Now this is something that may be familiar to some of you, but it's an en-route care construct that is a very interdependent leveraged approach that utilized the capabilities of the Army, the Navy, and the Air Force to care for our service men and women in harm's way forward. And it's, as I say, it's a continuum but it really starts - and we'll take OEF and OIF as the case in point - but it starts here at the point of injury, which could be an IED blast. It could be a sniper. It could be a variety of circumstances.

But it starts at the point of injury, where the life is saved of that injured Soldier or Marine or Airman. The life is saved by better lifesaving care, because of better training, combat lifesaver, better equipment - homeostatic bandages, one-handed tourniquets - the life was saved at the point of injury by the Navy corpsman in support of the Marines, by the Army medic, by an Air Force PJ in a variety of circumstances, or an Air Force medic that may be forward deployed in support.

But the life is saved, and the individual - the injured individual - is transported to the first damage-control surgery, which could be in an Army [CASH] or a Navy surgical company but most likely will be at the Air Force theatre hospital at Balad in Iraq or the Air Force theatre hospital at Bagram in Afghanistan. The first damage-control surgery is accomplished.

The patient is stabilized, and literally packaged for transport by a CCAT team, a critical care medical transport team with the kind of equipment that will allow them to transit that patient on the Air Evac mission from - let's say Balad - to Landstuhl, which is not only six to seven hours, transit that patient and not only simply sustain that patient's condition but improve that patient's condition so that when they arrive at Landstuhl that

individual is ready for the next triage, the next surgery if that's required, whatever's required to further improve that individual's condition.

And then repackaging occurs and transit on to Andrews or San Antonio - Brooke Army - or Navy, Balboa, wherever it may be. But transit from Landstuhl forward, again for these critically injured individual with a CCAT team - about eight to nine hours to Andrews. Again, the condition is improved, and then the individual is moved to the center of excellence.

For individuals with severe extremity injuries, that's usually Walter Reed. For individuals with significant head injuries, that's usually Bethesda. If it's a burn, likely Brooke Army. Or it could be a VA polytrauma. It could be a variety of destinations, but going to that center of excellence.

So it allows us to take an individual who is severely injured, save the life at that point of injury, and to begin a progressive sequence of care provided by Army, Navy, Air Force - the Air Force, principally, with the en-route care, the theatre hospital at Balad, the Air Evac - but the Navy and Marine also provide important portions of that care interdependently - we're not duplicating each other, we're leveraging each other - to get that casualty back to definitive care, generally within three days.

Sometimes a little more, but if need be, thanks to the tanker - and we certainly heard the case made for the tanker - if need be, we can go direct from Balad to Andrews or Balad to San Antonio if it's a burn because of aerial refueling - and get that patient precisely where they need to be in the most expeditious fashion possible. So this is a leveraged interdependent but extraordinarily effective method of caring for our casualties.

The highest injury severity scores of any casualties in the history of warfare. Upwards of a 90 percent-plus survival rate. And if you get to the facility, if you are able to get to the facility, you're about 96 percent survival rate and above. The numbers vary a bit, but those are numbers that we have seen achieved on a consistent basis.

And the fact is it's because it's interdependent, leveraged, and absolutely focused economy-of-force care that puts the capability right time, right place, exactly where it's needed. And does so with a very light footprint forward. It does not require all that many assets forward.

For example, Air Force beds in theatre Afghanistan and Iraq for the Air Force is 120. We had thousands of beds during Desert Shield and Desert Storm. And took care of far fewer patients. Economy of force. To date, we moved back over 53,000 patients in OEF and OIF. Over 12,000 battle injuries. And have done so consistently, safely, repetitively. Very, very interdependent leveraged joint capability.

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This says it perhaps better than words.

[Video shown].

LtGen Roudebush: We'll try it one more time. If it doesn't come up, it's okay.

[Video shown].

LtGen Roudebush: Sorry about that.

The point is, the C-17, which had Air Evac designed into it has proven to be a very, very capable platform. The fact is, we can move patients on virtually any air mobility platform, whether it's a KC-10, a 135, a C-17, a 130, a C-21, it's possible to adapt to any of those, picking the best tail in the flow.

But the fact is that the C-17 with Air Evac designed into it has been effective. And with regard to the tanker circumstance, I would simply say that the Air Evac requirements are part of the KCX, however that turns out, is part of that requirement and we think that's an important aspect built into every airlift platform, whether it's KCX, KCY, KCA. However those turn out, Air Evac needs to be a part of those, and those are in fact moved into the requirements so that that is part of the capability that those aircraft deliver.

Now this, for those of you that it's a little difficult to see, but again, the economy of force. Iraq and Afghanistan, two level III facilities which are very, very capable facilities, Air Force theatre hospital at Bagram, Air Force theatre hospital in Balad, plus nine level I and II facilities which are smaller facilities - Kirkuk, for example. Al Udaid is another.

Eleven Air Evac crews and seven CCAT teams in theatre, with seven Air Evac and six CCAT teams in Europe to continue that transit upstream. So it's a very lean but very capable laydown.

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But it's not just OEF and OIF. Around the world, Air Force medics are busy every day. Overtly and covertly supporting the national interest, whether it's a military mission or building friends and allies and relationships with nations around the world or supporting operations in Antarctica or, as the President travels around the world, positioning Air Force surgical teams in key positions to respond if required with the presidential party. Or, as the Soyuz capsule bounces across the steppes, we're there to help recover that capability as well. So Air Force medics are engaged around the world every day.

As you know, 2000 to present, 202 global missions over a million-seven patients seen. So, it's certainly a very high OpsTempo in OEF and OIF, but it's a high OpsTempo around the world.

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It's important to remember that Air Force medicine exists within the larger construct. We belong to the line of the Air Force. We serve the line of the Air Force and the joint mission, but military medicine is the MHS, the Military Health System, funded by the Defense Health Program, so we are related in a very real way by those relationships.

But the missions for the Army, the Navy, and the Air Force are all very similar; certainly providing a healthy, fit, and protected force, taking care of our communities so that our families are healthy and resilient, providing casualty care and humanitarian assistance where that's required; all focused around a core of education, training, and research. So in that regard, all three medical services are very, very similar and very much focused in the same direction.

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But one wiring diagram for the Air Force. Air Force medics work for the line of the Air Force. That is not necessarily the case in the other services, but for us it's a construct that works very well. The Air Force medical capabilities are directly aligned with the line mission in a very real command and control way. And we believe doctrinally that has been very effective for us. It really focuses Air Force medics on the mission at the wing level, really where the mission is being both planned and

executed, and we think it is a very, very effective construct; one that we think has merit and needs to endure.

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But as we think about our wings, our bases as operational platforms for our Air Force writ large, our medical groups at each wing are our medical operational platforms, whether it's a clinic or a hospital or a medical center. That clinic does three very important things. One, it provides that healthy, fit force. It takes care of our airmen, assures that their health is optimally supported, that they are fit, that they are protected, vaccinated, surveilled, all those things that are required to have a healthy, fit force. That really is job one at the medical group level.

But we also take care of families and the community. We deliver the health care benefit with this medical group construct. A key part of our taking care of our Air Force family, both the service men and women, as well as their families, and our retirees to the full extent that we can do that.

So first mission; healthy, fit force. Second mission; taking care of families and communities. Third mission; providing trained, competent, current, and deployable medics that achieve that level of training, currency, and competency, through delivering that health care to our communities and our families.

So it's a leveraged system that gives good care to our communities, takes care of that mission, but also provides medics that are prepared to do this mission at home but also deploy.

So each group - medical group - whether it's a clinic, hospital, or med center is in fact an operational platform for us and needs to be thought of in just that fashion.

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But we can't do it alone. There are many locations where, for example, we do have a clinic and we need that strategic relationship, that alliance through the TriCare contracts or with our local health care providers to assure that we've got the full constellation of care that is required in any given community. And we also need the opportunity to have access to the acuity and case complexity that we may not find in every facility to be sure that our Air Force medics are fully trained, competent, and prepared.

So for that, we rely on strategic relationships. For example, at Lackland, Wilford Hall, University of Texas at San Antonio, provides the opportunity to have access to that additional case complexity and opportunity to have the skills that we require.

At Keesler, we work with the VA. At Wright-Patterson, we work with Wright State, both for access to case load but also for training relationships.

So strategic relationships for access to caseload, complexity, and opportunities to train as well as academia and formal relationships for graduate medical education, residencies, fellowships, and the like. We can't do it ourselves. We cannot make it all within our facilities within our DoD medical system. And we do need those strategic relationships. And more and more, as we work with our VA, those federal relationships are becoming more important. So relationships and partnerships really are the way of the future. It cannot all be provided simply within our health care system.

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The opportunity to innovate, and I'll just touch on several examples. Refractive eye surgery for those of you in aerospace medicine - background in that - you know what a history that has been. We went from a point where spectacles were the only options that we had. Contacts were anathema to the point where we adopted contacts, and darned if those didn't work pretty well. And we started looking at refractive surgery, and PRK, as we learned more about that, it turned out to be a very useful modality, and now LASIK is also an accepted modality in terms of improving visual performance as we go forward. And I'll talk a bit more about that.

The Joint Theatre Trauma Registry in Iraq and Afghanistan is a key component to our ability both to deliver care but also to improve the care that we deliver. We'll talk a little bit about the wound VAC, which is a real plus for moving patients, and then a little bit about Biological Agent Identification, which has application both here at home but also in the deployed environment.

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Again, the refractive eye surgery. Moving forward, first with PRK and then into the realm of LASIK. We now know that with a properly screened population, it is safe, effective, and an opportunity to improve and increase

visual performance, particularly in circumstances where increasingly we have additional instruments of operational warfare, whether it's night-vision goggles, whether it's visors that may carry a variety of images, but the fact is that spectacles are a liability and, in fact, if those can be eliminated from the equation the visual performance is in fact improved.

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The Joint Theatre Trauma Registry. Soon after we started OIF and were taking increasing numbers of casualties, it became very, very clear very quickly that we needed to know more about those casualties; the patterns of injury, the outcomes as modes of intervention and therapy were applied, so that we not only understood the care that we were providing and the injury pattern, we were able to mitigate and prevent some injuries.

For example, early on, we were finding casualties - ocular casualties. Implemented ballistic eyewear, and that came down very quickly.

Early on, we noticed a number of neck injuries with shrapnel blasts. The Kevlar collars. Then we started noticing the kind of penetrating injuries at the gaps in the Kevlar, whether it was in the axillary region or in the groin, and reshaped the protective gear to account for that. Now obviously there's a heat load that goes with that, but if you are able to adapt to the injury patterns and prevent, then that is absolutely the best care that you can provide.

And that Theatre Trauma Registry allowed us to do that; to understand the wounding patterns, to get at those kinds of issues, and also to look at how we were taking care of injuries, both from a therapeutic modality, whether it's blood or blood products or surgical procedures of a particular variety. What were the outcomes? And were they as we would prefer, or could we improve on that?

And the Theatre Trauma Registry has allowed us to do that, as well as identify gaps and capabilities so that we can apply the research, get at those gaps in order to assure that we give anyone injured the best possible chance 1) for survival, but 2) for a full and productive recovery to the full extent possible. And this Theatre Trauma Registry has been a key tool in allowing us to get at that.

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The vacuum-assisted closure device is something that would be very familiar to us all if you've ever shrink-wrapped anything or you've vacuum-sealed any sort of - you know, whether it was food, or whether it was clothing, linens, that sort of thing - there's all sorts of vacuum storage devices.

But the fact is that if you don't have to close a wound, particularly a wound that's going to have to be reopened, or a wound that may need to be debrided because you can't tell precisely where that line of viable tissue begins and the dead tissue ends, this vacuum-assisted closure is very, very valuable. It allows you to seal a wound, to transport the patient very quickly. It allows the physicians and the therapeutic teams at the next stop or on the other end of this Air Evac process to have access to that wound in a very clean pristine way without having to open, remove sutures, staples, packing; those sorts of things. So it's a real plus in wound care.

And it's far more comfortable for the patients because you don't have to go through those wound pack, unpack, pack, unpack, pack, which for any of you who have ever had that done is not a particularly pleasant process and quite often will require anesthesia or additional medication, which in and of itself is not necessarily where you'd rather be. You like to keep the medication load as light as you can.

So this vacuum closure device is a real plus, and is now in the final stages of testing to assure that we understand all the each's about this. But this is a real plus for our folks being sent back.

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And of course, the Biological Agent Identification. If you are, or we are, or anyone is exposed to an agent - a biological agent, let's say - if we can characterize that agent in real time, then we can begin to mitigate the potential impact of that, whether it's treatment, whether it's quarantine, whether it's evacuation, whatever the next best step might be, if we know what that agent is then it gives us a real leg up. But if we have to wait two to three to four days for a culture, then your opportunity to intervene has been significantly compromised. So using the JBAIDS and similar technology, we are now able to begin to characterize those agents and infectious diseases in a way that allows us to start to get in front of the potential outcomes and really to begin to mitigate risk.

Now this goes along with technology, but it also goes along with policy because the FDA and others certainly have their view on diagnostic capabilities and how that fits into the continuum of care. So this is far from simply a military issue. This is a real public health, national health construct that we are working through. But this is a real plus that we think will give us a real leg up now and in the future in terms of dealing with these potential threats, both man-engendered as well as nature-engendered.

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Other things that, of course, we're working hard on is seamless warrior care; certainly after the Walter Reed circumstances that came to light in February of '07. We understood that there were circumstances where we needed to take better care of our Soldiers and Sailors and Airmen and Marines. And we also put a lot of sunlight on the disability evaluation system, which clearly needs work.

So in terms of beneficial effect of those circumstances, we have made a great deal of progress and are working with obviously our Army and Navy counterparts as well as the VA and the Office of the Secretary of Defense to make sure that we have that precisely where it needs to be. Work left to be done, but much progress made.

Recruiting and retention for us in military medicine is a challenge. Certainly there is a nursing shortage nationwide, for example, and it is very challenging to operate in that milieu and certainly have the kinds of nursing capability that we need. Likewise with physicians, likewise with our enlisted personnel. No one can be taken for granted in this construct, and we do have challenges within recruiting and retention but we are making some headway in that that we think will pay dividends in the not-too-far-distant future.

Clinical currency. I mentioned the fact that we need these strategic partnerships to assure that our physicians, nurses, technicians, have the opportunity to train, be current and competent, and that does require caseload and complexity, and that's not always entirely within our system, so it does require those partnerships to be sure that we have it.

Joint basing, BRAC, to get those activities implemented. I know certainly within the aerospace medicine world, the BRAC activity for both the Brooks City Base and Dayton, Wright-Patterson, are a challenge but I think we're making real progress there.

And then, of course, the escalating health program costs, because we live within a constrained DoD topline that only goes under best cases up about two to three percent per year. But the buying power is actually less because of increased personnel costs, increased fuel costs, so the DoD topline is not moving sharply upward. In fact, it's a very, very tightly fiscally constrained circumstance.

And within the DoD topline, of course, there is fighting the Global War on Terror, there's taking care of our personnel, there is recapitalizing for all three services. I mean, this is not a simple or straightforward issue. But the fact is that health care within that construct is going up at a significant rate and is obviously of concern. So our line and civilian leadership certainly have that on the scope as we are working to take our capabilities forward.

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But at the end of the day, it's mission ready for us Airmen, Soldiers, Sailors, Marines. Understanding that we need a healthy, fit force but healthy, resilient families are also an important part of that. I think it's always important to note for an all-volunteer force, this individual chooses to join. This family chooses to stay. So it is a circumstance that we need to be sure that we pay very close attention to the way that we care for our airmen and our families.

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And, of course, mission-ready medics providing that healthy, fit force; operationally focused medical support, well-cared-for and resilient families, joint-interoperable mission-effective, but at the end of the day earning the trust of that all-volunteer force. Because one of the reasons - often a foundational reason that these great men and women will raise their hand and swear to support and defend - is that they know they'll be cared for today, tomorrow, ten years from now, twenty years from now. They trust us to provide that care, and that's trust that we earn every day.

And it's also the trust of the moms and dads and husbands and wives that send us these wonderful people. So that trust is really at the foundation of all that we do, and we need to earn that trust every day.

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So how are we doing with this? This is a story with which many of you will be familiar. Sergeant Dan Powers is an Army sergeant who was in Baghdad. His squad had dismounted and was on patrol. He felt something coming at him from the right side, felt a blow but steadied himself, actually was able to subdue the individual who had basically stabbed him with a steak knife up to the hilt in the temple. Buried it up to the hilt.

So Dan actually had this individual down, and one of his battle buddies said you need to sit down. And he was not feeling particularly good, but he was still very capable of what he was doing. But he took the advice, sat down, and his comrades took care of the individual - captured him, I'm told. But they said we need to get you to the [CASH], and off they went.

By this time, Dan realized that this was not just a simple blow to the head; this was something far more than that. So in the Humvee, while they're driving him to the [CASH], he called his wife on the cell phone to say honey, I'm okay. Well, okay is a relative thing. But he called her on the cell phone. This is not uncommon. The connectivity is something that needs to be accounted for. It's a good thing, but it does give you interesting circumstances.

So got him to the [CASH]. They said you need to get to Balad. So they got the rotor going to get him to Balad, just a 15-20 minute chopper flight, because at Balad we have the head and neck team. Turns out it's an Army neurosurgeon operating in an Air Force theatre hospital, very joint, but that was at Balad. So they got Sergeant Powers to Balad. Dr. Teff, the Army neurosurgeon, saw him in the Emergency Room, and said we need to get you to the OR, but while we're doing that Dr. Teff wanted to consult with his partner in the United States, Dr. Armonda, who is an Army neurosurgeon at Bethesda.

So they were imaging - getting the pictures of Sergeant Powers. Dr. Teff sent the pictures to Dr. Armonda, who I am told was on the Beltway. So he pulled over, downloaded these, all HIPAA compliant I'm sure. [Laughter]. Downloaded these, is looking, and he says you need to get him here. You know, as soon as you can. So Dr. Teff says - and the knife's got to come out - he says I got it. So off Dan goes to the Operating Room.

In the meantime, we're starting to spin the Air Evac. We've got the airplane identified. We're identifying the Air Evac crew. And we're identifying the CCAT crew, which, by the way, was a blend of Active Guard and Reserve. So

we're getting - we're generating the airplane, getting fuel, getting the AR set up, because they said you need to get him here as quickly as you can, which means air refueling. So now we've got Mildenhall in the loop, starting to spin the air refueling sorties to get this done while we're getting the C-17 gen'd, while we're getting the CCAT team, the AE team.

And in the meantime, a Marine had been shot in the neck by a sniper and needed to go direct to Bethesda as well. So now we've got two patients for this Air Evac that is spinning up.

So got to the OR, got the knife removed with significant blood loss; however, managed to control that. Got him stabilized. Got him packaged - as we talked about - along with the Marine, onto the airplane, and launched.

So now we've got a C-17, which, by the way, because of the head injury was flying at near sea-level cabin altitude, which means you have to fly lower. It takes more gas, another AR track as you go, so just further planning. So the C-17 is off for the States with these two patients.

Landed at Andrews, got the patients to Bethesda safely, effectively, and did it within 24 hours. From point of injury to the OR at Bethesda. Leveraged, joint, absolutely incredible in capability. But this is how it comes together. So it's medical, it's line, it's a variety of assets all coming together in a very focused way that allows you to have a story like this.

And I had a chance to talk to Dan sometime later at the TriCare meeting last January, and he had just had cranioplasty to get the skull contours back where they needed to be. He had staples in, and he said can't wait to get the staples out. And I said probably pretty irritating, and he said, no, can't wear the helmet.

That's Dan. You can kind of see him there. But he and his wife are delightful folks, and he can't wait to get back with his unit.

So there is what military medicine coming together in the way that we've talked about really brings that capability and builds that trust for those folks that go in harm's way.

Slide.

So that's the story. As I give this in Washington to a variety of constituencies, quite often on the Hill and

other places, I'll say these are our metrics. Everybody likes metrics. Well, collectively - Army, Navy, and Air Force - we have the lowest disease non-battle injury rate in history in one of the most challenging environments in history. And we have the lowest died-of-wounds rate in history in the face of the highest injury severity scores we've ever seen. So as metrics go, I will give you those two metrics.

And then I ask if there's questions, and generally they don't have many. So. But I would be certainly welcoming to hear your thoughts or questions. So I will turn it over to you.

Yes, ma'am.

Question: [Inaudible].

LtGen Roudebush: Yeah, the question has to do with our MILCON budget, our facility recapitalization.

Over the last, well, I'll say 10-15 years and perhaps back a bit further, it has clearly not been what it needs to be; however, in this last cycle there has been a great deal of attention paid to the MILCON requirement and I think we are moving much more towards a plan that will allow us to get back in balance. We have a ways to go. And it will take significant work to do.

But getting the BRAC implemented is certainly a challenge within that activity, but that also has benefits and value as we take that forward. But recapitalizing our facilities remains a challenge, but it's very much on the scope, both for the Department of Defense as well as our civilian oversight on the Hill.

Question: [Inaudible].

LtGen Roudebush: The MILCON budget, in and of itself, no. I can't give you necessarily a dollar figure, but in terms of allowing us to get at our most pressing needs, we are getting those requirements attended to and I think we're going to have some success in that. But that needs to be a consistent and perpetual process. It can't be one year and out. So we'll be working hard to be sure that we've got into the flow for the out years as well.

Yes, sir. You had a question back here?

Question: [Inaudible].

LtGen Roudebush: Well, of course military medicine rests and resides in western medicine, in U.S. medicine. So over time our medical capabilities within the broader construct of U.S. medicine has certainly allowed us to get at some of these issues with greater efficacy. But through this Joint Theatre Trauma Registry, for example though, we have been able to demonstrate, with very significantly injured individuals, methodologies in terms of the use of blood products and surgical techniques that allow us to both enhance the rate of survival as well as the degree of rehabilitation that's available as you work through that damage control.

Technology is certainly a significant factor. Understanding the injuries with better imaging, whether it's MRI or CT, gives you a far better understanding of the anatomy and what you're dealing with than certainly surgeons have had in the past. And we have that capability right there at the theatre hospitals and at the [CASHes] and, to a degree, at the Navy surgical company. So that gives you a significant leg up, but the real key to this is, in fact, moving these casualties to that definitive battle damage control surgery in the shortest time possible.

Now, as a challenge, Afghanistan is a more challenging environment because of the topography and terrain and distances. Iraq is fairly conducive to fairly rapid transport because of the proximity of the assets as well as the terrain is not a particular problem. Afghanistan gives us more challenges in terms of getting the medical capabilities where they need to be in relation to the troops in contact. So, Afghanistan is more of a challenge.

But I think it is technology. It is medicine writ large, having advanced. It is the ability to move and get folks to definitive care in a timely fashion that has allowed us to do this. All of those have come together.

Other thoughts or questions? Yes, sir.

Question: [Inaudible].

LtGen Roudebush: Well, as we think about those things that we need to do with precision every day, every time - You know being absolutely superb yesterday is not necessarily being absolutely superb today or tomorrow. It is something that requires absolutely constant vigilance and constant engagement to assure that you go forward with that. You know, it's a matter of that focus, the precision, the consistency, and always the accountability

to be sure that we have that in place and in line. Those things that you simply cannot fail at.

And we certainly count medicine in that area that - you know, second best is never where we want to be. So we want to be on track, on line every day, fully engaged and fully focused. And we are. And I think you see the outcome. But that - I mean every day you earn that trust. It's not a given. You earn it. Absolutely.

Other questions? Comments? Yes, sir.

Question: [Inaudible].

LtGen Roudebush: I don't think medical is excluded or isolated within that. I think that will be part of a much broader discussion that will occur in the days to come. So I wouldn't say with any certainty one way or the other. But it is certainly a mindset that we all share with demanding missions, that you have to be absolutely on target, every time, in compliance.

Very well, we'll - yes, sir.

Question: [Inaudible].

LtGen Roudebush: I think we will continue to leverage technology. For example, as we look at how we care for critically ill or injured patients. Using computer-assisted methodologies to monitor particular parameters, like oxygen saturation. To assure that we keep the saturation precisely where it needs to be in a constantly changing environment allows us to be much more precise. So allowing technology to help us focus and be more precise in our treatments.

I think the capabilities in terms of rapid transit will remain somewhat as they are. But if you think about other capabilities, oxygen-carrying fluids, if you will, so that you may not be necessarily restricted to the use of whole blood or blood products, allowing us to provide better care both at the point of injury as well as the definitive care as we move on.

DARPA has been doing some leading-edge work in terms of those kinds of areas that will allow us to be actually more precisely engaged, perhaps even a bit further forward in terms of wound care. So I think there's opportunities within that milieu of care to make significant moves forward, but I think we'll build on a foundation of what we've learned in terms of proximity, timing, our ability to move patients to definitive care, and do it in a safe way.

Now we're also, as I said, designing Air Evac into all the lift platforms to assure that wherever we find ourselves we are able to deliver that kind of care and do it in a reliable and consistent fashion.

Question: [Inaudible].

LtGen Roudebush: Certainly. Well thank you. Yes, sir.

Question: [Inaudible].

LtGen Roudebush: No, I think in terms of our humanitarian assistance, our Med readies going out and working in countries that are developing and where that sort of activity is useful, will continue. It is very, very effective in terms of building those relationships, but it's also effective in the training and experience that we get as we do those sorts of things. So, it meets a variety of very important requirements as we go forward with that. I don't think we'll see any less of that.

And, of course, that's a matter of national policy. That's not simply military policy, because the country teams have a big play in that; the ambassador and others, in terms of what you do, how you do it, who you do it with. But it's an important tool and I think one that will persist.

Well thank you so much for your attention. I look forward to having a chance to trade thoughts with you as we go along in the meetings. So thank you.

[Applause].

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