

[00:00:00] Good afternoon everyone, and welcome to the FICEMS Pre-Hospital Blood Transfusion Summit. We're glad to have you, whether you're here in person or whether you're joining us online, um, we're here to have a conversation, very important conversation about expanding access to lifesaving blood pre-hospital blood transfusions.

Before we begin, a couple of housekeeping items. Um, if you have something to share, please do so in the chat. There should be a live, uh, streaming chat at the bottom there. For folks that are watching virtually, go ahead and either jot some notes down off to the side and bring those up during a public comment period.

Or you can go ahead and drop those in the chat. We'll see them and bring 'em to the attention of the panelist or whoever is speaking at the time and direct the question that you have to them. Um, again, we will have a designated time for question and answer, uh, towards the end. And, um, that is all the housekeeping.

So to officially [00:01:00] open the summit today, I'm pleased to introduce Peter Simshauser. Peter serves as Chief counsel for the National Highway Traffic Safety Administration. And prior to joining NHTSA, Simshauser was Chief Legal Officer and legal compliance officer for Motional, a joint venture to develop, deploy, and commercialize automated vehicle technology.

He closely worked with federal and state legislators, excuse me, regulators to navigate evolving policies and secure, um, approval for vehicle deployment. Earlier in his career, he was a partner at Skadden Arps, uh, representing companies across the multiple sectors in healthcare, financial services, insurance, and, um, with complex litigation and government investigations.

Uh, please join in, join me in welcoming Peterson Simshauser.

Thank. Hey everybody, this, this room's a little awkward 'cause there's like screens here and [00:02:00] cameras there and people here. I'm gonna look at the people. Um, I hope that's okay. Um, so, um, I first really want to thank everyone for coming. Um, and thank you, everyone for their interest in this, um, really important topic.

Um, it's one that, um, we at NHTSA see a lot of opportunity around. Um, and I'm gonna keep my remarks quite brief, but I will touch on that quickly. Um, you know, I'm told we have a lot of people online. I wanna thank them for making time. Um, I especially want to thank the people in the room, like we're

going to be, uh, I'm fortunately, I've got a bunch of stuff that has jumped on my schedule in the last 24 hours, so I'm gonna be in and out a little bit.

Um, maybe a lot. Um, but I, um, I do want to um, thank you for being here and especially those people who have either given up their lunch hour or hours or have some, have managed to plan around that. So thank you for that. We, um, really appreciate um, uh, NHTSA and DOTs. Federal partners, [00:03:00] um, in fi cams. Um, you know, we've got, uh, defense, HHS, uh, DHS, um, the FCC and DOT.

So, um, a great federal team. Um, Dr. Kramer just came in the room. I had a chance to meet him, uh, in person just a few minutes before this. Um, I really wanna give a shout out to him for, uh, all of the great work that he's done in bringing this about. Um, um, I know you're a NHTSA alum, but we have to find time to talk about, uh, your tenure at, at the agency as well.

And, um, and thank you for, um, bequeathing Gam to us. Um, uh, he is a worthy successor and, uh, and a great colleague. Um, so, and I assume there are, um, members of the stakeholder community as well. And, um, we appreciate you all, uh, being here and, and being part of this effort. Um, I want to, um, you know, let people know, uh, from Claire's introduction, obviously I came to, [00:04:00] um, NHTSA with a little bit of subject matter expertise on one of our main initiatives.

Um, automated, uh, driving systems, um, uh, behavioral safety, um, was, was and still is new to me. Um, and pre-hospital blood transfusion was something that I heard about for the first time, um, when I started in January. Um, and it was, um, quickly brought to my attention, uh, as a great opportunity. And, um, I just, I wanna say it clear.

Um, I am all in. Um, this is a, uh, wonderful opportunity. Um, I commend the people who have identified it and brought, um, brought attention to it, um, and seek to find ways to expand and grow it. And I want to do, um, whatever I can using the NHTSA platform that, uh, I'm privileged to be part of, to try to accelerate that.

Um, this is, um, a great opportunity. Um, [00:05:00] uh, you know, it was funny. Um, I was gonna say something about, and I think it is true, particularly in rural areas where there are, um, good distances from hospitals, uh, to equip ambulances and the technicians with this lifesaving medical care. Um, but I was speaking to Jonathan and he said, and, and you know, the data show that it is

very, very effective in urban environments where people are, um, minutes away from hospitals as well.

So, um, so, you know, let's all keep the partnership going, but also try to find ways to accelerate it. Um, one of my comments, uh, to one of my colleagues when we were walking here today, um. It was, and I feel this very sincerely, um, if three plus years from now when we're looking back, um, at these four years that are, you know, passing quite quickly, um, one of our legacies is that this meeting and the efforts that we and the teams made, um, to accelerate the [00:06:00] implementation and use of pre-hospital blood transfusion, um, is one of our legacies.

Um, that would be wonderful. Um, and so we, we are gonna do everything and we're committed to doing everything in our power to make that possible. Um, I know, um, that there are logistical and financial, um, obstacles, um, hurdles along the way, um, in terms of, um, concerns around blood wastage, um, concerns around getting, um, you know, the various partnerships, the 9 1 1 centers, the hospitals, the surgeons, um, to collaborate and work together.

And we wanna do our part to, um, facilitate that collaboration, uh, and, and, um, get the care, um, delivered. Um, we have partners from, um, from the military here. Um, you guys have led the way with this, um, care. Um, and we have a lot to learn from you and, and appreciate you sharing and pitching in. [00:07:00] Um, those really are the main things I wanted to be sure to touch on.

Um, I do want to flag that, um, that our state partners at NHTSA, who we fund for, um, uh, for roadway safety efforts, um. We are, we are, um, working with that community and looking forward to partnering. Um, we wanna make it, um, a little bit more user-friendly perhaps than it has been to date in terms of using NHTSA funding for pre-hospital blood transfusion projects.

Um, we have guidance that the team is working on. Um, we we're gonna get that out. But in the meantime, um, if there are state representatives who have issues, um, who wanna participate and want to be sure that they're doing it in a way, uh, that optimizes their use of NHTSA funding, please reach out and let's have the dialogue.

Um, with that, I'm gonna, uh, pass it on to, um, I think it's the introduction of the committee members. Um, and I [00:08:00] thank everyone again. Thank you.

Okay. Now I'm pleased to introduce Jonathan Green. He's the Deputy Assistant Secretary at asper, otherwise known as the Administration for Strategic Preparedness and Response within the Department of Health and Human Services. Uh, Mr. Green is serving as our chairperson this year for FICEMS. Um, he brings a dec decades of experience and expertise in public safety, emergency medical services, and federal response coordination.

Uh, he leads a national effort to prepare for, respond to and recover from public health emergencies, disasters, and he works closely with federal, state, tribal, local, and international partners under the National Response and Disaster Recovery frameworks. His extensive career spans over 20 years in public service at the local level, and seniors leadership roles in the federal agencies focused on operational medicine, vow security, and countering weapons of mass destruction.

A [00:09:00] paramedic since 1990 and a member of the federal. He's a paramedic since 1990 and is a member of the Federal, senior, uh, executive service since 2013. His depth of experience and commitment to public health preparedness make him a highly respected leader in our nation's emergency medical and disaster response community.

Please welcome me and please welcome me. Please welcome, help me welcome Jonathan Green.

Thank you, Claire. I appreciate the introduction. Um, good afternoon or good morning, uh, depending on the time zone you happen to be joining us from, and thanks again for being part of today's FICEMS Pre-Hospital Blood Transfusion Summit. As the Chair of the Federal Interagency Committee on EMS, I am very proud to welcome our federal and state partners whose collective work supports the advancement of emergency medical services Nationwide, FICEMS was established to ensure coordination among federal agencies and to strengthen EMS systems across our [00:10:00] country from rural and tribal lands to large metropolitan areas.

It is my pleasure to introduce our federal and state EMS representatives joining us today, when I call out the name of your agency, please identify yourself, department of Health and Human Services, the Administration for Strategic Strategic Preparedness and Response. That's me, the Centers for Disease Control and Prevention.

Hi, Cria Gregory from CDC. Thank you, Cria Health Resources and Services Administration.

Good afternoon. This is Theresa Morrison Connect. Thank you to the Indian Health Service.

This is the Centers for Medicare and Medicaid Services. Good afternoon, this is Captain Skip Payne. Good afternoon, Rodney Walter, moving to the Department of Homeland Security.

[00:11:00] Is somebody on from the Chief Medical Officer's Office or the Office of Health Security

and then moving to the United States Fire Administration. Hi, Rick Patrick. All right, Gam, it's your big moment. Department of Transportation. You're making me nervous. Hi everyone. Uh, Gam Wijetunga with NHTSA. Thank you. The Department of Defense

and Federal Communications Commission.

Yeah. And finally, state EMS Directions. David Firth from the FCC. Oh, I'm sorry. Go ahead. I, sorry. Uh, David Firth from the FCC. Sorry, I was, uh, trying to make my unmute, mute. Thank you, David. And Elizabeth Basnett, director of the California Emergency Medical Services Authority. Thank you Liz. Appreciate you joining.

And I will now turn it back [00:12:00] over to Clarie.

Now I'd like to introduce the next speaker of our session on post crash care in the safe system Approach Gam Wijetunga. Uh, he's the director of Office of EMS at NHTSA. Uh, he has over two years, excuse me, two decades of experience at OEMS and Gam brings a deep commitment to people centered systems improvement in cross sector collaboration.

He's led a national effort, uh, to strengthen EMS workforce development, post crash care and emergency preparedness, including key initiatives like EMS Agenda, 2050, and EMS Workforce Agenda for the future. In addition to his federal leadership, Gam remains deeply connected to the field of volunteer to the field as a volunteer paramedic and fire captain in Wheaton, Maryland.

Please help me welcome Gam to the. Speeding.[00:13:00]

Thank you so much, Clarie. So let me, uh, I'm actually gonna do a screen share for my, uh, for my slides here, but bear with me while I master the technology.

Let me just check and make sure it's coming through. If I could get a thumbs up.

We see you, Gam

Good. Okay. Um, so I'll, I'll keep my remarks, uh, brief. I know the, uh, the committee has heard me talk before about the, uh, the importance of the safe system approach and the centrality really of post crash care to that approach. Um, when I talk about the safe system approach, I would just emphasize that what it has taught me is that, [00:14:00] uh, the key to advancing innovation is collaboration among partners.

And when folks talk to each other, that's where we have the opportunity to learn new things. And I think really that's what brought us here today. So, um, several years ago, uh, the National Academy of Sciences, uh, published their report, a national trauma care system, integrating military and trauma systems to achieve zero preventable deaths and the National Academy of Sciences.

When they brought together leaders from the military and civilian communities, they estimated that, uh, 20% of uh, injury deaths in the United States would be preventable with optimal emergency care. And within NHTSA that, that made us, uh, really ask, uh, what, what could we do with our partners to, to advance, uh, emergency care?

And one of the lessons that the National Academies, uh, talked about that they took from the [00:15:00] military's experience in Iraq and Afghanistan was the concept of focused empiricism. Um, and the way I summarize focus empiricism is using the data that you have, even though it may be imperfect, uh, and, and acting with extreme urgency when you're dealing with a crisis of death.

Um, and obviously in Iraq and Afghanistan, there were a lot of war fighters that were being severely injured, and the military used this approach. Uh, meanwhile in the United States with thousands of roadway deaths per year, um, we face really the same imperative that there is the need to act with urgency in order to save lives.

Um, so what does our data currently tell us? Um, uh, in 2022, we know that there were more than 42,000 [00:16:00] people that died from the injuries that they sustained in a crash in the United States. And of those, uh, according to NHTSA's fatality analysis reporting system, we know that 42% of these fatally injured people were still alive when EMS arrived on the scene, but then died within a 30 day period.

Um, so I think as any responder knows, there are a lot of victims who are still alive when you arrive on the scene, but then succumb to their injuries. Um, so there's, there's an opportunity for us to apply innovation to, uh, to save lives. And just to put it in perspective, um, this is using 2022 data on the screen.

You see the 42% of those victims, uh, in gray dots, um, that were still alive at the scene, but then died. And, uh, in blue on this map, you see US [00:17:00] counties that had EMS blood transfusion programs. This is as of April of 2024. Um, I think as many of the folks involved in the Blood Coalition now, this, this number continues to grow quite rapidly, so we're making great progress.

Um, uh, of our, uh, 42,000 people who died in crashes in, in 2022, about 1100 of those were children, 14 years and younger. And among children in 2022, 55% of those fatally injured children were still alive when EMS, uh, arrived on the scene, and again, this is obviously a burden that everyone in the system of care, uh, carries with them from 9 1 1 to responders on scene to, uh, partners, uh, working within the hospital to try and save their lives.

And I think this is why blood represents really an urgent opportunity to, uh, [00:18:00] to reach these victims and prevent, uh, fatalities. I. So, uh, I am, uh, I'm confident I'm, I'm preaching, uh, to the choir on this slide, but just the baseline things for, for folks that don't come from medical background, from partners, that, that don't come from medical background.

We know that the number one preventable cause of death from injury is blood loss. And, uh, to put it simply, uh, people die when they don't have enough oxygenated blood circulating in their body. And, uh, fatal bleeding can, uh, happen in as little as five minutes. And for our, uh, our nonclinical partners, um, something that some folks might not realize is, uh, you know, you can, uh, you can have an external bleed, so you might come upon a crash or any type of injury where you see blood coming from the victim, but you can also die from an internal bleed.

You can lose your [00:19:00] entire blood volume within your internal cavities. So some victims, uh, die without any visible, uh, external bleeding. And this is why, that is why this intervention of pre blood transfusion is, uh, is so important. It's about replacing that blood loss and buying time, uh, for the, for the victims of these, these injuries.

Again, uh, speaking to an EMS and 9 1 1 audience, uh, we know that, uh, seamless care improves survival. And I think this is doubly important when we talk about pre-hospital blood transfusion because it's the entire system of care,

uh, that is needed in order to stop bleeding and get blood to these victims and then get them to definitive care at a trauma center, at a, at a hospital.

So the, the pieces of the, the components of the system and the people that are involved in this system are doubly important when we're talking about these serious injuries. And that starts with 9 1 1 [00:20:00] activation. Uh, the use of emergency medical dispatch by 9 1 1 bystander care on the scene, uh, timely on scene care by first responders and EMTs and paramedics, and then triage and transport through to definitive care.

Were other critical interventions have to happen to save these victims and it's blood, uh, pre-hospital blood transfusion that buys us that time in order to make that, to make that happen for these victims. So, um. I do wanna, while I have, we have people tuned in, I do wanna make sure folks are aware about a, a big opportunity at the, at the local and regional level, the Safe Streets and Roads for All grant program, which, uh, was created as part of the Infrastructure Investment and Jobs Act.

Um, SS4A is a, is a very innovative, uh, grant program that makes funding available [00:21:00] to localities to develop, uh, comprehensive highway safety plans at the local level, and then also to test, uh, uh, different interventions as well. As part of that plan, we have a, a, a fast approaching deadline on June 26 for planning and demonstration grants.

There's roughly \$900 million available, uh, with this next application period, and I know it's already June, but, uh, the, uh, there is still time to put together an application. Uh, folks at the Department of Transportation have put in a lot of work to make these applications as streamlined as possible. So the deadline is approaching, but if you haven't looked at this program, I encourage you to do so.

It's a unique opportunity to improve roadway safety at the local level. Um, I'll just pause for a second 'cause we purposely put a QR code that'll take you directly [00:22:00] to that website where you can learn about the program and put in an application, and we'll make this available later as well. But I do wanna highlight one, uh, project award that was announced using FY 24 funds to the University of Arizona.

The University of Arizona put in an SS4A, uh, application for a planning and demonstration grant. And, uh, DOT announced a \$7.5 million award to the U of A to start their EMS physician one program. And, uh, one of the things that this program will do is within, to, within the Tucson metropolitan area, will enable

EMS physician response to the scene to initiate blood transfusions for the first time.

So we're really excited to see, uh, this program, uh, get underway. And again, I think it just highlights the opportunity for our [00:23:00] EMS partners.

Um, again, this is the QR code. Uh, it'll take you directly to the website. We have several training webinars that are up there and extensive guidance on how to apply as well. So I encourage you to, to take a look. Um, and this QR code would, will take you directly to webinars that the department put on specifically for both EMS and for 9 1 1 on how to apply for SS4A grants.

We're really excited about this program. I think it's a unique opportunity to improve your capabilities at the local level and bring interventions like pre-hospital blood transfusion, uh, to your community. So if there are no questions, I uh, will hand it back to the chair

or not, and I in turn will hand it back to Clarie. And thank you for handing it back. [00:24:00] So this point in the, in the meeting we're gonna talk about the science and we're gonna talk about the standards. Um. This session, we're going to explore the latest research and clinical insights and pro programmatic standards, like I just mentioned, shaping the important, uh, this important field.

First, we're gonna hear from Dr. Holcomb. Dr. Holcomb is a highly respected trauma surgeon and professor, uh, with the University of Alabama in Birmingham. Dr. Holcomb brings a unique perspective shaped over two decades of experience as in the military, in military service, including frontline surgical care during combat deployments, such as the Battle of Mogadishu after retiring.

As from as a colonel from the U S Army, transitioned to the academic medicine and now leads cutting edge research in trauma resuscitation. He's also recognized as an innovator and an entrepreneur in health it, and serves on multiple scientific boards. Dr. Holcomb is a strong advocate for understanding [00:25:00] that vehicle crashes are not random accidents, but predictable events that can be, uh, prevented.

After we hear from Dr. Holcomb, we'll then hear from Dr. Christine Leper. She's an assistant, uh, professor of surgery at University of Pittsburgh, and an attending trauma surgeon who specializes in pediatric trauma and transfusion care. Dr. Leper runs a clinical and translational research program focused on trauma induced coagulopathy in children and advances in hemostatic resuscitation.

She combines her clinical experience with rigor, rigorous research to improve outcomes and pediatric trauma care. After that, we'll have someone here in the room, uh, Tracy Nichols, who will speak on the Accreditation at Standards program, um, for, uh, Tracy comes to us with a strong background in laboratory science and blood banking, and she brings critical insights on how, uh, [00:26:00] programs maintain compliance and quality to ensure safe and effective.

Blood transfusion practices. Please welcome Dr. Holcomb, Christine, Dr. Hi, Christine Leper and Tracy Nichols.

So, uh, going back to my military background, uh, and, um, I always like to have a bottom line up front. Dried plasma, whole blood, I think will be very commonly used to resuscitate bleeding patients, especially pre-hospital. Uh, personalized resuscitation is coming. I'll have a couple slides about that. And oid, which for the non-medical folks in the room is the clear fluid that you see on TV is good for diarrhea, uh, and dehydration.

It actually is much more dangerous than blood products for patients in hemorrhagic shock. Next slide.

I, I'm not gonna talk about the history, which I happen to like a lot. Uh, but if you go back over the last [00:27:00] 160 years or so, whole blood and plasma reused extensively only from the seventies into the nineties did we get confused with, uh, uh, whole blood. Oh. Uh, with crystalloid. And we're coming back to that over the last 20 years.

Next slide. This are real pictures from, uh, world War ii. These are not pictures from a movie of medics giving dried plasma pre-hospital, where whole blood and, and dried plasma was the standard of care. Whole blood in the hospital, dried plasma, pre-hospital, and, and we're getting back to that again. Thank goodness.

Next slide. Beautiful. So, going from World War II to, to, uh, Iraq and Afghanistan, we, we coined this phrase, damage control resuscitation that was really resuscitating people differently, uh, who are seriously ill. Next slide. These are the components at this time, at that time of DCR damage control resuscitation.

And it really is stop leading any way you can use whole [00:28:00] blood. Uh. Use balanced resuscitation, use plasma as a primary resuscitation fluid and minimize crystal oil. Gam you talked about, uh, focus in empiricism. This was

focus in empiricism back in, uh, 2003. Next slide. If you look at the civilian side, and this is what I was taught when I was a surgery resident.

Uh, the resuscitation was really based on 78 patients, three small studies, two thirds with no control group. And they used products no longer available, uh, in the late, in the mid to late nineties, but it drove resuscitation for 30 years. The data were really bad, uh, that drove what we did. The, these papers would not be published today, uh, in the, in the modern era of, of data science.

Next slide. I am gonna talk just for a minute about crystalloid, the clear fluid that, uh, again, is on all TV shows and in every rig in the United States. Next slide. When I was a brand new faculty, we gave 20 liters of normal saline, uh, five to 10 units of red cells, [00:29:00] almost no plasma, very little platelets, and rarely cryoprecipitate.

And the patient's bled Kool-Aid and 100% were clinically coagulopathic. That was the norm when I was a young faculty surgeon back, uh, in 1990, 91. Next slide. I put this paper up from 92, and not with the details, but just look at the amount of crystalloid that we routinely gave, whether in a study or in a control group.

10 to 20 liters is what was normally given and published as a state of the state of the art. Nine two. Next slide. And if you look at on every bag of normal saline and lactated ringers and lactating ringers, it says, don't use in lactic acidosis. That is hemorrhagic shock. Uh, the pH is six to seven and a half, and in every bag of normal saline, the pH is five.

So if you just look at what's on every bag of these products, we should not be using this clear fluid for patients that are bleeding. Next slide. [00:30:00] Uh, Brian Cotton published this paper in the mid two thousands, and it's actually a very good paper. It talks about, uh, crystalloid and its effects now It's a cellular, metabolic and, and whole, whole animal level.

Um, and then many other papers. And the summary of all of this is every paper where you give less crystalloid going back to 1968 versus more. The patients do better. Less crystalloid, the patients do better. Next slide. I, I know this is, uh, a little, uh, for the, for the nonclinical people in the group. I apologize for this picture, but this is your bowel on crystalline.

Uh, it exploded outta the abdomen. You couldn't put it back in. Uh, this was considered a success story in the early two thousands. Next slide. We were taught that crystalloid is good and blood is bad because, uh, blood is

pro-inflammatory and, uh, transfusion related acute lung injury with the test answer, [00:31:00] uh, when you're asked about this on the test, next slide.

But when you look at the data, right, you look at the data and when you look at crystalloid and blood together, each 500 milliliter of crystalloid infused during the first six hours was associated with a 9% increase in a RDS. Blood products were not a risk factor for lung injury, which is that inflammatory consequence.

Next slide. So we coined a term called crawley instead of trolley, uh, oid, RIC related acute lung injury. For those in the room, this is my sy joke in this talk, okay? You're supposed to laugh at this point. Next slide. Subsequently, a large number of studies were done, um, with, uh, you know, prompt and proper NIH, single center multicenter.

Lots of studies done. I'm not gonna go over all of them 'cause we don't have time, but all of the studies really kind of came around and said that more balanced resuscitation, less crystalloid is better for patients, better for outcome. Next slide. [00:32:00] The mechanism of, of which I'll have two slides really relates down to at the cellular level and, uh, permeability and the leaky capillaries and the glycocalyx.

And without getting into great detail, suffice it to say that, um, ev the glycocalyx is shed cell, the, uh, endothelial cells become permeable plasma and blood products repair that reverse, that permeability and crystalloid, uh, perpetuates and causes edema, perpetuates that permeability and causes edema. Next slide.

And this just shows it again at the, at in a mouse, uh, endothelial cell resuscitated with plasma versus, uh, normal saline in the plasma re constitutes the glycocalyx, reverses that permeability, whereas normal saline keeps it going. Next slide. Uh, the proper study and published in 2015 looked at balance resuscitation versus unbalanced.

Next slide. And what we showed [00:33:00] was the time to hemostasis in large number of trauma patients multicenter, prospective in randomized. But, but the balance resuscitation allowed us to achieve hemostasis faster than, than, uh, excuse me. More patients achieved hemostasis, although the time to hemostasis was exactly the same.

Next slide. And the decrease in angulation was significant. So more people stopped bleeding and uh, the time to exsanguination was exactly the same. Next slide. The Kaplan Meyers, although those two outcomes were important, the

Kaplan Meyers were not different. So the 24 hour and 30 day Kaplan Meyers, although the, the group that got the balance resuscitation was, uh, had a higher survival though not significant, at 24 hours and 30 days.

Next slide. But at three hours, which is when all bleeding stops one way or the other, it, these were significant. Next slide, and you can't read this slide, but the complications of giving double the amount of plasma and double the amount of [00:34:00] platelets was, were exactly the same. There's not an increase in the pro-inflammatory complications.

Next slide. And I just showed, you know, we showed, uh, single, we showed that one patient the bowels earlier. This is this patient, uh, 10 years later that I operate on and with a balance resuscitation, um, took out part of his lung, part of his liver, and you can see the resuscitation there. Two liters of crystalloid in 24 hours.

Next slide. This is right immediately post-op with packing above and below the diaphragm. Next slide. And then, uh, five days post-op, the packing's out. The wounds are closed in the patient's home in 10 days. Dramatically different, dramatically different, uh, same surgeon 10 years later. The only difference was the resuscitation.

Next slide. Um, we move forward to 2017 and Jeremy Cannon published that, uh, that damage control resuscitation or balanced resuscitation is kind of standard of care, uh, over the 20 years. Again, as, as, uh, you all have [00:35:00] all said, Mr. Sauer and, and green and, and Gam le leg, um, lessons from the military translated in civilian world where the number of casualties is, is up to a hundred times greater than what we saw in Iraq and Afghanistan.

The, the impact of the casualties in the civilian world is dramatic. Next slide. How about pre-hospital? Everything I've talked about now before this is hospital, what about pre-hospital? And, and I just highlight the website there, the pre-hospital transfusion Coalition, and I'm sure John Kromer and others will talk about this, but, uh, a lot of this pre-hospital information is, is on that website.

Next slide. Out of, uh, Afghanistan. Stacey Schacker published this paper in Jam in 2017, where pre-hospital blood versus no pre-hospital blood in military casualties in Afghanistan in combat, was associated with a huge increase in survival. Uh, five versus 19, at 24 hours in 11 versus 23% at 30 days. In equals 505 [00:36:00] patients prehospital blood transfusion, uh, clearly saved lives in that non-randomized study.

Next slide. And then a year later in the New England Journal of Medicine, uh, prospective and randomized study that I think is an extraordinarily important study. Level one data multicenter New England Journal civilians, huge improvement in survival. 23 versus 33%, uh, at 30 days, 10%, absolute 30%, uh, relative difference in outcome.

And it occurred at three hours, just like we saw in the proper study as well. So, and this includes the traumatic brain injury patients, uh, so common in the civilian world. Next slide. So, resuscitation today is either with, uh, balanced components or whole blood. Uh, the balanced components is hard to do, especially pre-hospital.

It's hard to give, uh, balance one to one, to one pro cryo, uh, uh, in the hospital, much less pre-hospital. Next slide. So what about whole blood? [00:37:00] Um, whole blood, of course, as I said at the very beginning was, was a standard resuscitation fluid for majority of the time, since we've been giving blood since the late, uh, 1860s.

Next slide. And, and multiple publications over the last, uh, almost decade now, showing that that at every step along the way, that it's a very logical conclusion to give whole blood to patients. Next slide. The, uh, at the bedside. And the, and the nurses really tell us this, as well as the blood tax as well as the technicians.

It's, it's much easier and simpler. There's less paperwork. Uh, it's easier to hang a single unit of, uh, whole blood versus multiple components. Next slide. They love whole blood. Next slide. And it's easier and cheaper to make. How about that? Um, next slide. So this is, uh, as we transitioned in, uh, Houston, Texas from components in the emergency department and pre-hospital, we [00:38:00] transitioned a whole blood back in 2017 because of these reasons.

Next slide. However, uh, we, uh, put a fair amount of work into describing the deficit, if you will, of, uh, patients who should have gotten whole blood or val or blood products pre-hospital, uh, but aren't getting it. So about two point a half percent of EMS ground EMS agencies are carrying, uh, pre-hospital blood today, 2.5% and only about 1% of eligible patients are receiving, uh, pre-hospital blood.

And this comes from, uh, the nemsis data. Next slide. One of the questions people ask is about, uh, women of childbearing age, do they get low titer, o uh, o positive blood? And when we talk to women and when, when a female surgeon, Dr. Ulrich asked women with a, with several surveys and others have done the same thing, uh, they, uh, after education and [00:39:00] asking

questions, rou, uh, overwhelmingly say that they would rather have low titer, of positive and risk, and have the small risk of allo immunization versus, uh, not surviving.

Next slide.

Yeah. And, and just to go on, uh, Josh Hazelton published this paper now three years ago, showing a dramatic improvement with whole blood versus component therapy in, uh, over 1600 patients. Next slide. So it's the ultimate balanced resuscitation fluid. There's lots of military data, a lot of civilian observational studies.

Uh, there are no multicenter randomized studies, but they're coming. Next slide.

These are two ongoing prospective randomized studies. Troop is an in-hospital and lights is pre-hospital, both over a thousand patients multicenter. So in another two to three years, [00:40:00] we'll have data, uh, high quality data published in high quality journals. Uh, to an, to definitively answer this question funded by the DOD and the NIH.

Next slide. There, there is really worldwide impact of this change in care. Uh, this is from PubMed, uh, a couple days ago. It, uh, you know, over 50% of TRA level one and two trauma centers are using whole blood. Like I said, the, the real gap is pre-hospital and Gam. That SS4A project that you described. We spread the word as well.

We hope that that will help implement, not study. Uh, the studies are done. We need to implement blood products pre-hospital. Next slide.

The, uh, that's now there is not enough low titer o whole blood, right? It's just our blood donor colleagues are, are, uh, just can't su today, can't supply the amount. And that's not a negative comment. It's just kind of a fact. Uh, I think clinical practice is moving a little bit faster than, than, [00:41:00] uh, our donor colleagues can supply the product.

And so liquid plasma is a, and I think a very viable alternative. It's cheaper, um, uh, costs one 10th of cost and is, uh, can be made more available. Next slide. Matt Levy, who's on the, on the call, uh, and Don Jenkins and, and several others have, have published papers in the last couple months about this, about bridging the gap between what our patients need and what we can give them based upon the logistics and supply.

And, uh, right now we're really pushing this liquid plasma as a, as a, uh, alternative. It's not a, it's not a secondary alternative. Actually, the data's better with liquid plasma than it is with whole blood today. Next slide. So what do we teach our residents today? And, and, you know, I'm at a meeting down here in Florida, and we've talked about this an hour ago, TXA two grams, which we didn't talk about today.

Uh, balanced resuscitation either with components, whole blood, uh, starting with liquid [00:42:00] plasma, we teach 'em to heal the endothelium. I'll go that slide. I talked about the mechanism and we prevent the secondary injury of edema, edema in the brain or the lung. Any place or the bowel is really bad and we want to prevent that.

Next slide. The near future is dry plasma is gonna be available hopefully, uh, in the next year or two. The, this, this product is at the FDA right now. Um, 11 countries around the world have a dried plasma product that they use routinely. Next slide. And looking, uh, more towards the future. You know, people talk about, uh, traumatic brain injury in the civilian world.

The, um, it's largely blunt, although there is a fair amount of penetrating. And when you look at the secondary analysis of the pamper study, that England Journal paper that I studied earlier, that I mentioned earlier, real big benefit was in the blunt injured TBI patients, especially those who were taken from the scene to the hospital directly, not trans, not transferred.

So what this means to [00:43:00] me is that there's a time element involved. It takes time to transfer. Those patients did not seem to benefit, whereas the patients who did get pre-hospital plasma were those who were taken directly from the scene. The time element of early plasma for TBI is really important. Next slide.

Now, it's interesting in the group of patients who both t the TBI patients who got either whole blood or plasma, it looks like that. And again, a secondary analysis that the patients who got plasma for blunt TBI did better than the ones who got whole blood. There's some risk, uh, reasons that may, that this may be true.

Uh, we gotta tease out the mechanism and, uh, this, this paper talks about that. It's really interesting. Next slide. What is the future? I think it's personal. As we start wrapping up in the last couple slides. Personalized medicine. Uh, we can take these biospecimens, you get biomarkers, you can make little chips and put in, and within [00:44:00] a minute or two, we can hopefully determine, you know, if you're young and female, you need this kind of resuscitation.

If you're old and male like me, you need that kind of resuscitation. If you have a penetrating injury or blunt, you need something between personalized resuscitation rather than one. Uh, one, one size fits all. Next slide. For the clinicians in the room. We know what these are. These are the I stat and the ultrasound machine.

These things used to be huge, right? A lab, a lab test was in a, yeah, a machine that filled up a whole counter. Uh, the ultrasound machines were really big, now they fit in your pocket. So I think the future is personalized medicine. Uh, drop of blood on a chip with a handheld device, and it will tell us how to resuscitate differently based upon mechanism, gender, and this specific proteomics of the patient.

Next slide.

I just re reiterate, the pre-hospital transfusion organization. These are the logos from the three, uh, some of the logos from the 300 individuals [00:45:00] and organizations that are participating in this pre-hospital group. And, uh, Gam and Mr. Simshauser and Green, thank you for the opportunity to speak today. And, uh, I guess we'll hold questions to the end.

Thank you very much.

Thanks for bringing those up, Clarie. So, um, again, um, Dr. Christine Leeper, uh, from the University of Pittsburgh, um, very much appreciate the opportunity to speak today. Next slide. Um, these are my disclosures. None relevant to this talk. Uh, next slide. So, you know, as this audience is acutely aware, um, and as many have said today, traumatic injury is the leading cause of, uh, death in children in this [00:46:00] country.

So depending on the age group, it's anywhere from 58% up to 86% of the total annual mortality. Uh, next slide. This figure shows, uh, that motor vehicle collisions and firearm related injuries are going head to head here as the leading cause of trauma mortality in children. And so now, more than ever, understanding pediatric trauma is an urgent priority.

Next slide. Um, and we need to prioritize understanding this better because, um, the increasing frequency of major hemorrhage in children, and also because children fare quite poorly after sustaining major injuries, uh, the mortality rates in children are actually higher than in adults, um, by an order of magnitude.

Um, so thousands of lives could potentially be saved with timely and effective care. Next slide. Uh, death due to bleeding occurs quickly. Uh, so hemorrhagic death is traced here in red, and you can see the median time to bleeding is 17 hours. 90% of death has already occurred by 24 hours. So, [00:47:00] uh, interventions to treat bleeding must be, uh, presented as close to the time of injury as possible.

Next slide. Um, and those treatments, uh, include this bundle of care called damage control resuscitation. And, uh, Dr. Holcomb pioneered this, and you've heard it straight from the source. So I won't belabor the point here. We can go to the next slide. Uh, this may include, uh, things like, um, component therapy, red blood cells, plasma and platelets, or whole blood.

Uh, next slide.

So, um, you know, regardless of which one is used, we know that blood products use an adult pre-hospital, uh, as associated with survival. Um, and that small delays in time to transfusion can have really outsized impacts in, um, increasing mortality. Um, the idea of, uh, early blood product used by out-of-hospital EMS for adults has generally been accepted, um, as an effective practice.

Next slide. Uh, this is not yet the case [00:48:00] for children who are ineligible to receive blood products in many regions, um, which raises concern if we're providing the very best care to this vulnerable group. And so I, it's time to sort of reframe this issue as a question of, you know, why not prehospital transfusion for children?

Uh, next slide. Uh, again, it's been well described that crystal for resuscitation in the setting of traumatic hemorrhage and shock causes harm. Um, so we can skip here. Uh, thank you again, Dr. Holcomb, except to say, uh, that in addition to, uh, treating diarrhea, crystalloid is also really great for, uh, making spaghetti.

Uh, next slide. That's my medical joke for you all for the, uh, you can. Next slide. So, you know, there have been a few cohort studies, um, meaning descriptions of small groups of children who received, uh, blood products pre-hospital compared to children who received crystalline only. And there were no transfusion related complications reported.

No increase in clinical complications. Um, and you know, we know that [00:49:00] children receive blood products for multiple indications while they're in the hospital. So this is generally a safe practice. Next slide. So, after

feasibility and safety, we really wanna assess a blood product Transfusion improves survival as compared to blood product transfusion in the trauma bay.

Next slide. Um, to do this, our group used the Pennsylvania Trauma Systems Foundation database, um, which draws from over 50 contributing centers. Um, we looked at children up to age 17 who received blood product transfusions and stratified them into two groups. So one who received blood pre-hospital, uh, compared to those who received blood in the emergency department.

Uh, next slide. Uh, there were 559 children included in this analysis. Um, 70 or small percentage of whom received pre-hospital transfusion and the remainder who received transfusion in the ed. Next slide. Uh, so the bottom line here is that both 24 hour mortality and in-hospital mortality were clinically and [00:50:00] statistically significantly lower in the pre-hospital group compared with the emergency department group 16 versus 27% and 21 versus 32% respectively.

Next slide. Uh, looking here, this is EMS time. So you can see that between the time spent on scene and in transport, these kids are typically reaching the emergency department in less than an hour. So moving treatment closer to the time of injury by just a matter of minutes made a huge difference. Next slide.

Uh, so we then calculated the number needed to treat, uh, which here is the number needed to transfuse in the pre-hospital setting in order to save one child's life, and that number was five. Next slide. So, you know, I do wanna acknowledge how daunting is the task of setting up a pre-hospital blood program.

Um, obviously there are many clinical and logistic hurdles. Um, this requires skilled pediatric providers, weight-based dosing, pediatric specific guidelines, uh, [00:51:00] et cetera. So the implementation piece can be particularly challenging and you'll hear a little bit more about that later on this afternoon. Uh, next slide.

Uh, but you know, despite that, you know, these data show that early prehospital transfusion is associated with increased survival compared to transfusion in the emergency department. Um, and that bleeding pediatric patients also benefit from early hemostatic resuscitation. So although the logistics of pre-hospital blood program are complex strategies to shift hemostatic resuscitation toward the immediate post-injury period should be pursued.

Next slide. Um, in terms of sort of evidence-based guidelines, um, these were recently put out by, uh, the NIH funded group. Uh, who participated in the Pediatric Traumatic Hemorrhagic Shock Consensus Conference. Um, the quality of data was generally lower, but there was a hundred percent consensus achieved on the statement that in dramatically injured children in hemorrhagic shock, it is reasonable to consider [00:52:00] pre-hospital transfusion by out of hospital EMS for injured children based on product availability and clinical judgment.

Uh, next slide. Um, you know, there are a number of resources for folks who are looking to learn more about a prehospital blood program, just some of which I've listed here. Um, but hopefully there will be lots more discussion to come later today. Um, and with that I will conclude and, uh, thanks again for the opportunity to be here.

Um, and, uh, happy to take any questions in the chat.

Hi. Welcome everybody. Um, so now I'm gonna talk a little bit about our standards and accreditation program for the pre-hospital transfusion. Next slide please. So, I wanna just start with our mission, which I think says a lot. Um, you know, our mission is to improve lives by making transfusion medicine and biotherapy safe and available and effective worldwide.

And I think [00:53:00] available is the key there. We want that blood product available wherever that patient is. And then our vision is to connect the communities that are dedicated to advancing the transfusion medicine from the donor to the patient and from the lab to the bedside and wherever that bedside is.

Next slide please. So, just wanna talk a little bit about the numbers and, um, this first bullet. I think, you know, as I was preparing this, it just sort of hit home that, you know, AABB was founded in 1947 due to an emergency, a dockside freighter explosion, so perfect for this audience today. And then, you know, 10 or so years later.

That's when we developed our first set of standards, which were the blood bank and transfusion standards. And now, fast forward 70 years and we have come full circle is what I would like to say because now we have included the emergency pre-hospital transfusions. [00:54:00] Um, AABB reaches out to many areas. Um, we have 10 sets of standards and counting another one to come out.

This year we have over 5,000 professional members in 80 countries and 1300 accredited facilities in 40 countries. Next slide. So, uh, the emergency, uh, pre-hospital transfusion standards, um, were new this year, effective April 1st, and those will be updated every two years to drive the safety and effectiveness of these transfusions and improve that patient care at the site of injury.

Um, how did they get developed? You know, we, um, reach out to a number of experts in this field, um, to, to develop those standards. And we're gonna support these emergency professionals no matter where they are. So fire departments, police stations, air ground, uh, wherever that location is, we're [00:55:00] here to support you.

And the standards is the first step, and then that's the basis of our accreditation program. So to become accredited, you're gonna be aligned with each and every standard that was created. Um, next slide please. So just a quick picture of, um, it takes a team, you know, to produce these standards and these are the individuals that, um, were involved.

Next slide. And this is a list of everybody's name and, um, I'm sure each and every one of you probably know somebody who's listed here. Next slide. So here's sort of a brief overview of that standards development process. It does take a while, over a year. Um, we convene those national experts in person and also virtually, um, on meetings.

But one thing I do wanna point out is that there's also a public [00:56:00] comment period. So each and every one of you can help us to make the next set of standards. If you did not participate in this one, we have two comment periods. We have one 30 days before we start working on the next edition. And then once we get it in a draft form, it goes back out for 60 day.

And we do look at each and every comment that comes in after that. There's a final review internally at a, b, B with technical, legal and regulatory experts as well as our board of directors. Um, next slide.

And just to, uh, give you a brief overview, if you're not familiar with any of our standards, they're all set up, um, using these 10 operational areas, which really cover everything happening from starting at your organization up through documents and safety. Um, and that'll be the same no matter what book of standards you pick up that we publish.

[00:57:00] Next slide. So we've went through the standards now. So why accreditation and accreditation is gonna take your operation to the next level. So

it's gonna be your market distinction, it's gonna inspire trust in the community. Um. And this is gonna be proven because we're gonna come on site, right? So you're gonna have those standards, you're gonna look at your processes, you're gonna say, yep, we're doing everything as required.

We're gonna be that verification step. We're gonna come on site, and we're going to check your processes, your documents, and other items to ensure that you're in compliance. Um, our ultimate goal is to improve that blood supply management, um, and have confidence that everything is being stored and handled properly, and ultimately to reduce the waste and the negative impact on that blood supply.

Um, it's a risk management, um, mitigation [00:58:00] strategy. So, um, it's gonna allow you to identify and resolve quality and safety concerns, and also to, to monitor reoccurring things and, and identify that before there is a bad outcome. Next slide.

So once you're accredited, what are the, what does that look like and what are those benefits? Um, ongoing support, um, for suce, successful, excuse me, operation and growth and connection to our community of experts. Um, to advance even further, you know, where will we be in five years, um, the patient safety and, and, and care.

And we also offer continuing education, many different other educational resources, uh, regulatory support. Um, we do have, um, contacts that, um, are liaisons from the FDA, when with, you know, new [00:59:00] issues come up or new products that we can make sure that we adjust appropriately. Um, an opportunity to do, be one of the volunteer a, b, b assessors to go out in the field and do assessments and build connections and also see how other people are addressing problem areas.

And then we also have opportunities for leadership and growth with committees or work group, um, projects. And, um, and we want to bring this group of experts into, into our, um, community as well. Next slide.

So what are the first steps? And some of the myths that are out there is that when you submit that application, you know, ABB is coming in the next week or two to do your onsite assessment. And so sometimes people sort of wait to apply, but that's not the case. Um, we want you to apply early. When you apply, your application is vetted, and then you're assigned [01:00:00] to a technical specialist within our facility that's gonna work with you hand in hand, answer

your questions, work through challenges to prepare you for that onsite assessment.

We're gonna have you perform your own self-assessment against our standards and identify any gaps. And then once you're ready, then we're gonna come on site, be because we want that onsite to be a positive experience and one where we can learn and educate along the way. Next slide.

So what the accreditation process is, it is highly collaborative, uh, with your one-on-one with your technical specialists. We want you to succeed. Uh, we do have timelines that we will supply you with, but we also understand things happen. So you really do drive the pace of this process. If you say you need three more months, we're gonna work with you, [01:01:00] um, to do it on your time schedule.

And then some other myths that we wanted to make sure that this group understood is that, um, it's not a pass fail test, you're gonna pass. It's just the time that we're, it might take to get there. It's not a one-time test. We're gonna come and we're gonna look at you every two years and it's not a time test because you are driving that timeline.

So, next slide.

And just, you know, I've said this a few times, but I just wanna, you know, you all to ensure that you are gonna get that white glove support. You're gonna have that one-on-one, you're gonna talk to the same person throughout the whole onboarding, uh, process. Next slide. So the next three slides are really more in depth of the process.

Um, once your application, um. Submitted to us and you are deemed [01:02:00] eligible. Um, I'm not gonna get into a lot of those, but I just wanted to put it here on the slide to let you know, as I spoke earlier, it's not submit your application and we're coming the next day. So you have to be a hundred percent ready before you can apply.

Um, you can see there is usually six months to a year depending on the, um, timeline that you're able to sub to submit that self assessment to us. So next slide. And this is further, um, in that onboarding process of how we're gonna respond and review and go back and forth with you. Um, and then we are going to come on site and that first initial onsite is gonna be something that, uh, is scheduled.

So you're gonna know the day that we're gonna show up to visit. Next slide. And then lastly, after you're onboarded, then you sort of go into this two year cycle. Um, if you have any, um, nonconformances is what we [01:03:00] call them. If we find anything where you're not meeting a standard, you're gonna, um, submit us a corrective action plan.

You're gonna receive your, um, AABB accreditation certificate. Um, and then every two years you're gonna go through that same process. Um, next slide. So I wanna thank you all for having me here today. I wanna let you know that we do look forward to supporting you in this journey. It's very important that the patients are able to receive the blood product where at the site of injury.

And if you have any questions, my email is here along with um, standards, uh, next slide. And once again, just thank you. Um, we'll take questions at the end.

Thank you Dr. Hol and Dr. Lipper and Tracy for the great presentations. So now we're gonna move on to start talking about implementation. How do we implement a [01:04:00] prehospital blood program? Um, we've got a group coming in from Cobb County. Uh, they're with us joining us online, and they're gonna talk about Patient Zero that first time.

They were able to save a patient with Prehospital blood after a vehicle crash. Uh, their program was launched earlier this year, um, but we're fortunate to have them join here today and talk about their programs. Also joining them will be the blood supplier in their area, life South Community Blood Centers.

Um, let me introduce those that are gonna be speaking. Um, Andrea Pritchett, she's the systems manager with Cobb County Department of Emergency Communications. Dr. Eric Nicks, he's the medical director for Cobb County Fire and Emergency Services. Nick Adams, he's the EMS Division Chief for Cobb County Fire and Emergency Services.

And David George, he's the district's chief. Um, after that, present this presentation. We're gonna open the floor for questions. [01:05:00] Um, again, a reminder about the public comment period. We, if you have questions online, please drop those in the chat. I'll get those read out. Um, and after that, we'll take a short break after the public comment period, we'll take about a 10 minute break and then restart.

So, um, please join me in welcoming the Cobb County representatives. Uh, and y'all gimme just a few seconds to get mag my desk so I can share your slides. Thank you, Clarie. While you're getting back to your desk, I'd also like to

introduce, uh, one of our field providers who has delivered, uh, blood in the field, who's also joining us.

Uh, paramedic engineer David Klemen. Um, my name is Nick Adams. I am the EMS Division Chief for Cobb County Fire Emergency Services. And today we'd like to share with you, uh, some of our successes and what it took us to implement our program. Next slide please. One of the things that was mentioned earlier today is that it really takes the collaboration from all of our [01:06:00] partners in order to have a successful implementation of a blood program.

And that's exactly what we started with. We started with a, a good relationship with our emergency communications department, starting with 9 1 1. Our private ambulance providers, both Metroland Ambulance Service and Puckett, EMS, LifeSouth, our community blood center, and also our local hospitals, WellStar Health Systems and our medical directors that have a relationship with them.

Next slide please. Chief George. Uh, uh, David George Cobb Fire, um, here also with David Pine as chief that introduced. Um, so a little bit of background about Cobb County. Um, so our department consists of 29 fire stations. Um, we're covering about 305 square miles. Um, we're a combination of ALS and BLS units.

We've got, um, ALS and BLS fire engines. Um, we have ALS, uh, rescues. Um, we also have a, uh, ALS Medical Operations Team. We'll get to more of that in just a minute. [01:07:00] Um, so yeah, we run, um, in the upwards of, uh, 70 plus, uh, 70,000 plus, um, incidents per year. Um, so we're located a little bit northwest of Atlanta, uh, suburban, um, type of, uh, community.

Um, we've got, uh, uh, um, everything from the high rise districts, um, in interstates, the lakes, um, kind of the city area and then also rural areas. Um, so, uh, as far as our, uh, blood products, um, when we initially initiated our, um, blood program, um, that, that was produced or that was brought on by our medical operations team, so these are our tactical paramedics.

Um, they often run calls with, um, our SWAT team. Um. So they, they operate in an austere environment. Um, so the idea was, uh, that Chief Adams had brought forward of, of implementing free hospital blood. We're trying to figure out [01:08:00] which, which unit to start this out on, and it was kind of a no-brainer. Um, we, uh, we, we plugged in our, uh, ops tool, um, to go ahead and pilot this.

So they're, uh, located pretty central in our county. Um, they, they have access North west, um, in territories. Um, we went over and kind of talked about, um, what, what type of, uh, calls that they would be dispatched to. So, um, these are gonna be some of our, uh, severe hemorrhage, uh, shooting, stabbing, um, uh, severe traumatic injuries.

NetOps is also dispatched to extrication incidents people, uh, hit by, by and so forth. Um, so those were a lot of the, the major call classes that the team is dispatch. Um, so yeah, essentially, um, research, uh, through the advisement of, uh, Dr. Nicks, our medical director, um, he was basically identifying about one in a thousand, um, incidents that we potentially could [01:09:00] administer blood problems.

So that's a little bit of a background about our department and, um, and, and how, how the calls are implemented. Thank you Chief George. Next slide. So, hi, I'm Andre Pritchett from Cobb County nine one. Um, so when Chief Nick Adams brought us the idea of the pre-hospital blood program, his goal was to involve the med ops right at the point for the initial dispatch so that our challenge became figuring out how to automate that step so we wouldn't rely on someone in the field or dispatch having to remember when to make that happen.

So first we researched how our pro qa, which is our EMD dispatch software, sends the call to our CAD system. And then next we reviewed our CAD provisioning, which is how we programed the CAD and realized that we could use our IRF mapping along with the modifying circumstances to interpret the codes that are sent from pro QA and to a signal that would include the med ops unit.

So Chief Adams, Dr. Nick and their team, they [01:10:00] identified the specific determinant code and the protocols that they wanted, the med ops dispatch to, particularly those that were related to the serious hemorrhage using the RF mapping and the modifying circumstances that allowed us to target those responses directly and automate the addition of the med ops unit at the point of the initial dispatch.

So if we can make the CAD do what it's designed to do, making things easier for both the dispatchers and the responders, why wouldn't we do that? Right? So, and I know that this is not on my slide, but, and I realize this may not be important, or I'm sorry, this may not be the case for all agency, but I think that it's important to highlight that here at the Cobb DEC, that we have a strong and supportive relationship with our public safety partners, specifically in this case, the Cobb County Fire Department.

And as they continue with this presentation, I believe that you'll see that this project is a testament to how effectively we collaborate and the strength of our teamwork. Thank you, Andrea. Next slide.[01:11:00]

So when we first started down this road, we, we act initially had a lot of trouble locating a source of blood. We, we tried to work with some of our local hospital systems, and that proved to be somewhat difficult. Um, so about, um, I would say about a year ago, life South Community Blood Centers started moving into our community and we reached out to see if they could potentially be a partner with us.

And I'm, I'm very proud to say that that was the case. Um, uh, we have, uh, Galen Unal on the line, uh, from Livestock Community Blood Centers. Yeah, thank you Chief. Um, our, our relationship with Cobb, even though it's been brief, it's been very, very, I think, uh, full and enriching on both sides. From a, from a blood provider standpoint, our, our job is to get them the blood products they need.

We're using the component therapy, using the Pac red cells and the liquid plasma, but it's been deeper than that. They're, they're helping us target more donors within the [01:12:00] community. Um, and as we all know on this call, there's a, there's a real shortage for blood and specifically type O blood. And, and this relationship and this partnership's gone a long way to that.

So it, it's been good for all of us and our hospitals that we're working with are, are enjoying the relationship as well, knowing that their patients are getting blood quicker and more effectively. So it, it's been tremendous.

Thank you. Next slide. So now we'd like to share some of the cases that we've experienced. Um, within the first three days of launching our pre-hospital blood program on February 14th, uh, we had our first patient, uh, chief George and David Kliman.

Yes. So within three days of launching this, we were dispatched, med Ops was dispatched to a patient who was ejected for only a year motor vehicle crash. PD was on scene, was able to actually stop the patient from, uh, hemorrhaging. [01:13:00] When I arrived on scene, the patient was actually, uh, unresponsive, no radial pulses, no bp, uh, weak carotid pulse and en route to the hospital.

The, uh, ambulance provider. Um, our ambulance provider was pumping the MS at the, to him. We were transporting and Puckett was getting ready to intubate the patient. And, uh, I read a study that said resuscitate before intubate.

So I asked him to hold off the intubation and ventilate the patient was able to give the patient, uh, two grams of TXA one unit of packed red blood cells, one gram of calcium, uh, gluconate.

And then well one, uh, unit of plasma. And the patient actually woke up, was actually able to start talking to us. We were actually able to keep the patient just on a, uh, non-rebreather to actually deliver 'em to a level one hospital and dock the patient's outcome. Yeah, so it was kind of nice to, uh, be the physician taking care of this patient with the blood administration.

This being our first case, I was the assigned physician just randomly. Uh, but this patient had uh, uh, partial amputation from a [01:14:00] limb and uh, basically was in class four shock when EMS got to her. Uh, the blood pressure had stabilized by the time she got to the er, but she did require additional blood products.

Excellent.

And this is actually one of the cases that we're most proud of, uh, here. We had a 26-year-old male who was in traumatic arrest when the EMS arrived. Um, David Kla. Yeah. So I was actually, uh, pulled, was notified, actually interesting from dispatch. I was on another call and dispatch actually said, Hey, this is a potential blood case for you guys.

So when I arrived on scene, um, cop fire was on scene. They were actually just defibrillating the patient. They were securing an advanced airway and they just gained IO access. The patient was confirmed to just be in a PEA rhythm. There was some debate on scene, whether they had a carotid pulse or not. Um, when I had look at, uh, pupillary response, they actually had pupillary response.

So I started administering. [01:15:00] Uh, after the two grams of TXAI started administering, uh, the PAC red blood cells. And as we were putting the patient on the long spine board, somebody said, Hey, I think that we, and so we stopped what we were doing, had confirmed weak carotid pulses, finishing packaging the patient and route to the hospital.

I finished up with calcium glutamate, the plasma at this time it was, it was really cool. The patient had a good carotid pulses, still no radial, so I administer another packed red blood cell and plasma. And before we arrived at a level one trauma center, the patient was actually attempting to, to pull their IGEL out.

And they're maintaining enough ventilations that once again, we put the patient on a mount breather. And doc, this is one, this is one of our, uh, proudest outcomes here. This patient, uh, was in the right place or had the right people at the right place at the right time. Uh, within 90 minutes of arrival to the er, the patient was placed on ECMO because, uh, this patient had pulmonary hemorrhage that was having difficulty oxygenating [01:16:00] the patient.

Uh, they received additional blood products and it was mainly from extremity injuries that they had the blood products, uh, administered. This patient has subsequently been discharged. I think their hospital course was about 30 days. Uh, but they've since been discharged and, you know, this is a patient that would be a hundred percent dead, uh, without blood products.

Excellent. Thank you. Next slide. So our takeaways from, from our experience with, uh, initiating and getting prehospital blood out to the field is one, it's, we, we've seen prehospital blood. It absolutely saves lives in the cases we've seen. Uh, it's, it's amazing when our paramedics are excited about what they're seeing.

As said earlier today, this is absolutely the greatest change I've seen in my 30 year career as far as trauma, uh, and trauma care. Uh, we do know that partnerships and planning are absolutely essential. If it wasn't for our relationship with our 9 1 1 system, I don't think we would have the, um, [01:17:00] opportunities that we're seeing.

We we're able to get to scenes quicker and be more effective. Uh, the quicker that that blood gets on board or blood products gets onboarded to a patient, the better, the better the outcomes that we're seeing. Uh, for us, whole blood was not available. Uh, we weren't able to find it anywhere in our, in our systems.

Uh, so we, we, we partnered with LifeSouth and started using component therapy of the pac, red Blood cells and the plasma. And we're showing that at, at it is still absolutely effective. Uh, as the physician was saying earlier today, uh, thank you for allowing us to present today and thank you for your time.

We'll be more than happy to stick around for questions later.

Okay. Rivertown, it's time for the public comment period. Um, I've got a few questions online that I need to run back over and read out in a few minutes, but I wanted to open it up to the room. Is there anyone in the room ask a question? Please come up and ask a question.[01:18:00]

Okay. Uh, great, great to be here. Um, we're from the, from the Air Force Army National Guard Bureau Joint Surgeon's Office. Um, my questions have to do with a whole string of things that we've been hearing, uh, think I may be asking for other people too. Um, how do you overcome the, when there's not enough old negative blood, how do you overcome in the civilian sector, um, type specific blood, blood products, plasma, how do you storage, uh, how do you store them?

And if you transfuse pre-hospital, does that delay your arrival time to the trauma center? Thank you.

Questions, that's a lot all at once. So, uh, uh, if you don't mind, I'd like to jump in there. Um, Galen, being that you're with our blood bank provider, do you, can you talk directly about, um, access to blood? [01:19:00] Sure. Uh, what we've decided to do with all of our EMS facilities, both air and ground, is, is we are pro, we are providing O type O red cells and liquid, a plasma.

Um, and because it's a trauma situation, we haven't found that the RH negative needs to be there. There's just not enough eg in the world to, to have it available for that pre-hospital transfer transplants and transfusion. So that's why we went with a liquid A and the opa a a. As far as the availability, currently, our OPA availability is fairly strong.

One of the things we offer. All of our EMS is the, is the ability to return blood products that way that typo red cell isn't getting wasted. Um, and if, if it's not used in the field, for example, in cob, we can take it right over to the hospital at Kennestone and, and they can use it 'cause they're a much more frequent user.

And that's been very, very beneficial. [01:20:00] Um, but as, as far as storing the components and, and their readiness for the patient, chief Adams, I'll turn that back over to you.

Sure. If, if nobody else wants to address it. Um, in cov we maintain, um, the blood supply in a, in a cooler, especially designed for, um, maintaining blood. It is FDA approved. Uh, it's, it's literally, if you haven't seen it, it's about the size of a, of a small, what you would, a picnic, picnic basket style cooler.

Um, you know, we, we do have, uh, very stringent regulations that we, we monitor the temperature of the blood, uh, actually in real time. And if it ever gets out of range, uh, we, we get an immediate notifications on all of our cell phones. Um, Dr. Nicks, do you have anything to add to that? Uh, I think the, uh,

o negative thing is, uh, it's hard to mount an RH response, uh, during somebody that's having hemorrhagic shock.

So we, we still [01:21:00] infuse o positive blood. We, we track them at the hospital to see if their RH negative and have protocols in place for that. I think Dr. Holcomb has a statement. Yeah, if I can just, uh, address some of those questions. The, the most of the civilians are implementing what the joint trauma system and the military implemented in Iraq and Afghanistan over the last 20 years is transfusing, O positive, uh, red cells type a pla, liquid type A plasma, uh, and then working on the storage capability.

So the, the implementation once you have, and Galen, I, I would really congratulate you on your moving forward. And then also, uh, recycling back into the hospitals. You know, that's, that's really important as we've kind of worked on implementation across the country. Uh, the really o once the blood supplier, uh, has product of, of all the different kinds, then it's kind of worked out how to do this right?

You can keep it cold, you can keep it at four [01:22:00] degrees Centigrade, you can warm it up, uh, and you can tr and then there's SOPs of who gets who gets the blood. All that's been kind of worked out, uh, honestly, and I'm, I'm not minimizing the work, uh, and especially what you guys have done, what it's been done now in 250, 244 ground agencies across the country and spreading like a wildfire.

Thank you.

Are there other questions or comments in the room? Seeing, seeing none, I have one online. Uh, captain Payne, are you prepared to speak about, um, reimbursement or blood programs? Sure. So the, um, CMS and the ambulance fee schedule, um, reimbursement for pre-hospital blood transfusion, um, counted year 2025. We finalized, um, the, the [01:23:00] language there to allow ALS to, um, adding the administration of pre-hospital blood transfusion for low titer, o positive, no negative whole blood transfusion therapy, um, pac, red blood cells plasma, or a combination of the pac, blood cell, uh, red blood cells and plasma, um, that, uh, provides.

And, and we are aware, we've heard, um, from the industry that that does not cover all of the costs of providing this, this, um, treatment. However, um, it is a step in a positive direction. So we wanted to, um, acknowledge that change and also, um, let you know that we're continuing to work with our FMS partners and

subcommittees to, um, see where else we, we can, um, make some positive inroads into this area.

Thank you. Thank you, Sarah. Tracy, I've got a question about accreditation. How much is it gonna [01:24:00] cost?

Yeah, so accreditation, um, there are a number of things that go into it, but on average you're probably looking at 4 to 5K per year for accreditation.

Dr. Holcomb, I've got a question online. Um, someone asks, are there any contra indications to adding or providing blood to patients with LVA ds?

Okay, with LVAS, that, that's a little bit of a curve ball. The, uh, I, I would say LVAD [01:25:00] patients not infrequently get blood products. Um, I, I know that our helicopter crews have, uh, in Houston, when I spent a lot of time with them, would transfer patients on LVA DS and had blood products available. Uh, especially if they get, uh, disconnected.

Depends on, on what kind of LVAD they have, you know, external circuits, internal circuits, et cetera. But I, I wouldn't hesitate to give a patient who was in, uh, blood products with an LVAD in, they, they get lots of blood products usually over time, over time. I, I would make a comment about the reimbursement.

The AALS two, uh, addition was really important by CMS. That's a huge first step. And what we need now is every agency that carries blood to submit a bill, even if you know you're not gonna get reimbursed right now, we need to create that demand signal with the insurance agencies and with CMS of submitted bills.

I know it's, or it's more work, but we need that to [01:26:00] happen. I would just put that plea out there.

Thank you, Dr. Holcomb. Um, another person online asks about scope of practice. Um, there's gonna be some changes that have to happen to scope of practice, so I'm gonna let the director of the office of EMS start, but I believe. John Kramer during this discussion later, we'll address that as well. So you'll get all the answers you want to that question.

Yeah. Thanks. Thanks, Claire. Um, yeah. So EMS scope of practice is, uh, regulated at the, the state level, not at the, the national or federal level. Um, and, uh, but we do, one of the things that, that NHTSA manages at the national level

is the national EMS scope of practice model, which is used as a, uh, guide by really all, all the states, uh, in, in the, in the us.

Um, the, [01:27:00] the most recent version of the national EMS scope of practice model did not include initiation of blood transfusion at the, uh, at the paramedic level. So one of the things that we will be doing is, uh, as, uh, as my boss, chief counsel Simshauser mentioned, we have a interagency agreement now with the Department of Defense's Uniformed Services University, um, for our pre-hospital blood demonstration programs.

Another part of that interagency agreement will be working, will be supporting work by the National Association of State EMS officials or NASEMSO, for revision of the next version of the national EMS scope of practice model. So we will be tackling the issue of, uh, blood transfusion, uh, jointly, uh, with, uh, with DOD and with with NASEMSO, and we hope to start that work, uh, very soon.[01:28:00]

I got one more question from online. Uh, Cobb County, uh, one person online is asking about, um, blood logistics. How do you track your blood and how do you track the temperature? They also, another, since you're gonna be speaking, they just happen to wanna know how far away you are from your hospitals. Uh, that's a great question.

Let me address first kind of the how far away we are from hospitals. Uh, it was mentioned earlier today, um, that this is, you know, a huge benefit to rural areas that are not far from the hospital. And I, I would say we're, we're within moments from a level one trauma center. Um, Kennestone Hospital, which was mentioned earlier, is in the county seat, which is Marietta directly in the center of the county.

So, um, wor worst case scenario with the really bad Atlanta area traffic, it may take us [01:29:00] 30 minutes to transport a patient from the hospital. Um, it was also mentioned earlier, or the question was asked, are we delaying, uh, transport times, uh, in order to start delivering the blood product? And we were absolutely not.

This is something that's happening as the patient is moving from the accident scene to the hospital. Uh, but we found that even in a system like ours where we, um, you know, we're actually sandwiched right between two level one trauma hospitals. Um, we're still seeing benefits of patients, uh, getting blood on board, um, uh, as soon as as possible.

Um. Your other question was logistics and I, I don't wanna share any product names unless you gimme permission to do so. Uh, but we do use a, uh, uh, actually two online tracking systems to help us keep up with the blood, um, and the products, uh, one is attached to the, to the cooler that, that is constantly logging temperatures and, and keeping that available to us online.

Uh, it's a product that goes [01:30:00] with the cooler that we use. And another is, um, uh, tied into an inventory management system that a lot of fire and EMS agencies use across the nation and now has a, uh, blood module product that helps us, uh, track, um, uh, how the blood passes from person to person, when to turn it back into a lifestyle of community blood center so that, um, that we can get it back into rotation with the hospital system.

Uh, so it doesn't get wasted. Uh, our program's been going on, uh, now for about four months. We're about to hit our four month anniversary. Um, and I'm proud to say that we have not wasted a single drop of blood. So, um, you know, that's, if, if that's a concern, um, we've been able to do it a system just to our south and the city of Atlanta.

Uh, they've delivered hundreds of units of blood and I, I believe they've only had a single wastage. So,[01:31:00]

thank you, sir. I have a mic now, so I'm gonna sit here and talk to you from here. Um, Dr. Holcomb or Dr. Lipper, uh, could either one of you talk about the difference between, uh, lco reduced versus non leuk reduced, uh, whole blood for pre-hospital transfusions? Yeah, I, uh, across the United States, the majority of whole blood that's given is lco reduced, uh, comes from American Red Cross and others, uh, in San Antonio, Texas.

The blood that the DOD uses and collects is not leuko reduced. Uh, the um. There's a lot of, um, I'd say there's a lot of, a little bit of myth, uh, and some fact, uh, related to LCO reduction, the, uh, L reduction filter probab probably degrades the platelet function to a certain degree in the whole blood. And, um, and there's no demonstrated benefit in trauma patients of leuko reduction.[01:32:00]

There is in other patient populations, but not in trauma patients. So if I had to choose, I would use non leuko reduced.

It's also cheaper.

Okay. On that response, I'm gonna go ahead just to, just to follow up, Dr. Holcomb, would you, would you encourage them to, uh, you still use low titer, whole blood? Oh, yeah. I, I would use low titer. I would use the 2 56 titer Galen. Uh, that gives you about 80% of the whole blood population. Uh, there are, uh, systems that use lower titers that there I can find no data driven benefit to a lower titer.

2 56 is what the DODs use since Vietnam without a, without a known problem, by the way.

So a lot of, a lot of this is mixing logistics and supply with a quality product, honestly, and, and trying to thread the needle a little bit, uh, and, and understanding data [01:33:00] versus tradition.

Okay. I'm gonna have to close the public comment period now so we can stay on schedule. Um, let's go ahead and take about a 10 minute break. It is a quarter till now. Um, let's just go ahead and take a 15 minute break. We'll meet, reconvene at two o'clock. Thank you guys.

Welcome back from the break. Um, next section is about countermeasure counterparts. Um, we're gonna be talking about a systems approach First. We're gonna have speakers from um, 9 1 1, and then we're gonna have speak to folks from Highway Safety. Um, let me first introduce, uh, Ty Wooten. He's with the International so [01:34:00] Academy of Emergency Dispatchers, and we have Joni Harvey online.

She's the deputy coordinator for the National nine one program in the office of EMS and NHTSA. Ty is a high, highly experienced, uh, emergency communications and 9 1 1 professional. He's got a strong background in developing training and emergency communications programs. He also has background in emergency management and extensive expertise in 9 1 1 and operations, public safety liaison work and organizational leadership and alliance building.

Joni serves, as I said earlier, is the de the deputy coordinator for the National 9 1 1 program in nits office of EMS. She's got 23 years of experience in public safety and emergency communications. She brings the deep leadership experience and a national perspective on enhancing the effectiveness of 9 1 1.

Joni is a former state 9 1 1 administrator for Michigan, and she serves enrolls from 9 1 1 communicator to deputy director to [01:35:00] firefighter. Um, she's actively engaged in building stronger partnerships across all levels of

government. She support and improve emergency communications. Ty and Joni, go ahead and begin.

Everybody help me welcome.

Good afternoon everyone. I'm going to go ahead and get us started. Um, so I just kinda briefly want to touch on a couple quick things before I turn it over to Ty. And I wanna start off just making sure that everyone. Kinda gets our understanding of our overview of 9 1 1 and how it actually impacts highway safety.

So it is, it is our perception and understanding and, and we are loud and proud to say that 100% of 9 1 1 calls can have an impact on highway safety. And we say that because, and this doesn't matter if it's, if it's a incident that occurs on the roadway, it doesn't matter if it is, you know, like we said, that 50 car pile up.

It could be Ducks [01:36:00] crossing, it could be someone calling with a toothache. And we say a hundred percent of those calls because depending on what 9 1 1 does with that call, we are either dispatching someone to respond to that incident and we are putting more wheels on the road. So if we're putting more wheels on the road, that's gonna have an impact on highway safety.

If we have to send multiple units, if we are dispatching our units, lights and sirens versus not, or if it's something that we can handle without having to dispatch any units at all. We are obviously improving our, our highway safety on the roadways. So we are very passionate about nine one one's role and it's impact on highway safety.

One of the, one of the ways that 9 1 1 really can touch that as well is through post crash care and the improvement of post crash care using call taking protocols. So call taking protocols are, are [01:37:00] twofold. Well, three technically. So we have a way of asking questions so we can determine, um, what's going on with that, with that patient or with the emergency or the situation.

So. Depending on what's going on. So that's a triaging method. We can provide bystander care. So there's instructions that we can give to motor vehicle crash. We have people that call in sinking vehicles. They can call if they have an accelerator stuck, if there's a medical issue going on at the scene of a motor vehicle crash or, or many other types of incidences.

And then we also, um, can, like I said, build in response plans so that we can help determine what type of response needs to happen. Do we have to send responders to the scene? Do we have to send multiple responders to the scene and do we have to send those responders lights and sirens? So talking about using the protocols and the [01:38:00] many ways that they can be very valuable when it comes to highway safety.

Specifically, we wanna talk today about establishing their use when it comes to the blood programs so they, they can be incredibly valuable with this. An example Andrea from Cobb County actually shared their experience and how they're using it, and that's ideally what we want to see. So we want to see some protocols that are in use where you can establish some criteria to identify who your candidates are going to be to receive free hospital blood transfusion and then build that into the response plans so that when we are dispatching our EMS units and our other responders to the scenes of those motor vehicle crashes, then we can dispatch the blood units as well.

So it's a way to help better, to do some better resource management of the blood and to get it to the scene when the responders are arriving as well. [01:39:00] So, um, I'd like to turn it over to Ty Wooten at this point and, uh, he's gonna elaborate more on protocol usage and prehospital blood. Thank you, Joni. I, I think you described it very well in that, you know, it really comes down to three different aspects of what, uh, you know, 9 1 1 has an impact relative to, uh, changing the outcomes that, uh, occur in an incident.

And so, you know, whether it's identifying through, questioning the information that, uh, we need to gain from the callers to make sure that we have the right response and improve ultimately the standard of care that we are delivering across, uh, the spectrum. That's key to what we're trying to do with, uh, structured protocols and the use of emergency medical dispatch, as well as other structured protocols for [01:40:00] fire and police as well.

But since we're speaking directly about EMS and pre-hospital care or pre-hospital blood today, I think it's important for us to understand that, you know, looking at and identifying, asking the right questions in, in a manner in which that will elicit the right response is key so that we can gain the insights that we need to make sure that we have the right response, uh, and get the right people there with the right tools.

And I think as we look at it from a perspective, from, uh, you know, the academies', uh, perspective and, and what we try and do is not to try and, uh, tell agencies what they should be sending or how they should be responding, but

providing them with the best, uh, pre uh, determined, uh, insights, uh, relative [01:41:00] to the information that's provided to us by the callers so that they can use the different.

Uh, quivers within their, uh, you know, or tools within their toolbox to, uh, to make sure that they're getting the right response, uh, and to the right place in the, in the right and manner and, and the fastest time, uh, based on the needs of the situation. So I think, um, whether it's providing that with, um, the determination that, hey, pre-hospital blood would be beneficial in this case, so let's get those, uh, assets moving, or also giving those pre-arrival instructions.

You know, we've been, um, providing pre-arrival instructions relative to things like Stop the bleed, um, is, is an important part. Like if we can help to stop the bleeding before, uh, units get on the scene, and then we can [01:42:00] administer, um, those, uh, pre-hospital blood, uh, units and different resources and, and mechanisms, then that can also have a better improvement and improve the outcomes, which is really what we're trying to accomplish, um, and improve the outcomes, uh, as we move forward.

The academies of emergency dispatch have been around for 45 years, and we've been researching, uh, lots of things to help to get to the things that we're, we're working in today. And really it's about the science of emergency communications and the, the science of emergency is where, uh, is our kind of focus in what we do at the International Academies of Emergency Dispatch and trying to get the information, uh, and learn from, uh, the users that we have.

And over 1509 1 centers across the United States and, and, and, uh. [01:43:00] Nine one and emergency communication centers in 59 countries worldwide. Taking and capitalizing on that information and that data really helps us to, uh, have information that will help improve those outcomes as we move forward. Joni, I don't know if you have any specific questions that you wanted to ask or look at, but I think it's one of the key elements that, from my perspective, I think is important that we talk about, and I think it was important that we heard from those, uh, folks at Cobb County is the early integration of building a, a working group that includes 9 1 1 in any pre-hospital blood, uh, program.

It's important for you, uh, any, anybody who's thinking about developing this, making sure that you're communicating with, bringing [01:44:00] on board those folks, um, who, uh, work in those 9 1 1 centers so that you can make those determinations and ultimately improve those outcomes in best, in the best way we can. I thank you, Ty.

I, I know that you can only speak for, um, IAED protocols. Um, but can you just speak a little bit to their readiness for, um, using them in a pre-hospital blood program? Like, is there a big overhaul that's that, uh, an agency would have to do to them, or, you know, what does that look like to use those to identify patients who would meet that criteria and then build them into that response plan?

I, there really would not be a lot of work that would need to be done. I think I was speaking to, uh, Dr. Kramer at the break and some of the information, it sounds like that the pre-hospital, um, blood coalition has [01:45:00] already provided and is putting out on their website in the, either today or in the coming days, uh, to help identify the opportunities for, uh, pre-hospital blood.

From the get-go, it becomes very easy. Then we can begin to look at, um, identifying those determinant codes, we call 'em determinants. Um, that based on the information that were provided, the determinant with maybe even a potential suffix that, you know, gets into the very details. Then I believe that's what Andrea was talking about.

Uh, in Cobb County, there are specific little nuances based on age and sex and other aspects and or circumstance of the call that we are able to flush out that make it relatively easy for those determinations to happen, uh, with [01:46:00] our tools, um, very, very easily. I think it would become, it's just a matter of the medical director, uh, making the determinations and, and working through those, uh, systems and through, uh, their nine one communications, uh, folks to, you know, identify those areas and then say this is something that we would like to, uh, see whole blood brought on.

Okay. Thank you. I think we're done, Larry, unless there is a question. Nothing at this time. Perhaps later on when we have public comment, please stick around for that. Yeah. Um, up next we'll hear from two individuals that are leaders in the district here in Columbia, district of Columbia. They're doing what they can to strengthen post crash care and improve outcomes for, uh, patients on the roadways around here.

First, we'll have, um, Rick Burt. Rick Burt is, uh, the director [01:47:00] of the Washington DC Highway Safety Office, and he leads a team of dedicated implementing, dedicated to implementing evidence-based strategies to protect all roadway users. He's got over a decade of experience and highway safety and prevention, including national leadership as a former president and CEO of students against destructive decisions or sad.

He works closely with youth, nonprofits, government agencies across the country and advances to advance mobility safety, and to bring, um, that passion and expertise, excuse me. He now brings that passion and expertise to his job here in the nation's capital. Joining Rick is Ali Chavez. Uh, she serves as a post crash care liaison for the DC Highway Safety Office.

Uh, through her work with the National Association of State EMS Officials, Ali brings both recent research and program experience to the role she's serving in. Uh, she's previously worked as a senior project manager with the University of Maryland Medical Center [01:48:00] and a psych coordinator for the Crash Injury Research and Engineering Network, also known as Siren.

Her career is focused on trauma systems, EMS, post crash care interventions, and she's helping DC explore what comprehensive post cash care can look like in an urban setting. Please join me in welcoming Rick and all

person. There we go. You have to be smarter than smarter than the microphone. Thank you, cl and thank you to the committee for having us here today. Always a pleasure to collaborate with our colleagues at NHTSA. Uh, on behalf of my boss, uh, mayor, mayor Bowser, I wanna welcome you either in person or virtually to the District of Columbia here in dc.

We are truly focused on what we can do to collaborate with our partners, to think locally and act globally, to change culture on our roadways. And for those of you who have been in roadway safety, uh, for a while, you might be familiar with the old anti of the four E's. And as a new highway safety office director, man, I [01:49:00] came in pumped.

I was excited. I knew about education. I could talk about how we do educational based programs. I knew about enforcement and the importance of working to, to secure, uh, making, making sure and supporting our law enforcement and the work that they do. Uh, I knew about engineering and a road diet and how we can change to build smarter and safer streets.

But when you get to that fourth e emergency response and you talk to colleagues across the country in highway safety offices, everyone kinda scratches their head. What do we do with emergency response? Well, you know, if we buy a Jaws of life, that, that will help support post crash care, or well, you know, let's, let's have a, have a representative from the fire department on our community coalition.

I, I think if there's one thing that we've learned, it's through partnerships and through collaboration. That's really how we see innovation And the definition of iNHTSA nity, I think certainly rings true here, that if we keep doing the same things. We're gonna continue to see those numbers, those lives that are lost, those families forever affected by roadway [01:50:00] crashes.

So the highway safety office here in the nation's capital, we wanted to bring that innovation to foot. And so we were proud to partner with the National Association of State EMS officials, n ciso, to say, Hey, what more can we do? How can we leverage what we've been able to do through our liaison network to bring to light, uh, a similar position in working with all the varying partners in the area and the arena of post crash care.

Now, you might think in an area like the District of Columbia, 68 square miles, Rick, how hard could that be? It's a very complicated 68 square miles. Uh, and there are lots of competing factors, priorities. We have this, uh, this, uh, thing called the federal government here. We have lots of, uh, influence from our neighboring jurisdictions.

And so, um, I'm thrilled that we were able to work with this. And so to bring to life that idea of creating what I'm still gonna call the first in the Nation post Crash Care liaison with Allie. So Allie, I, I'm hoping you can tell the folks just a little bit about your position [01:51:00] and what a, a day in the life of a post crash care liaison looks like.

Sure. So, thanks Rick for, it's hard to follow Rick in these situations because he just pumps the crowd up. So I try to maintain that energy. But a day in the life of my current position, a lot of it is working to promote collaborations and also maintain collaborations that we've previously had. So the highway safety office.

Uh, previously had, had already started establishing prior to my position, strong relationships with our Office of Unified Communications and with our fire and EMS here in dc What we have really tried to do is work with those agencies on identifying problems that they're having, whether it's within their own agencies or with collaborating with outside agencies as well.

So, a couple of things that we're working on is we have promoted collaborations between, uh, DC FIRE and our OUC office to work on their cad. Um, we are, um, [01:52:00] really starting to highlight some of their successes. So during national EMS week, um, E-M-E-M-S Appreciation Week, we went to their facility, um, and we highlighted the crew that, uh, responded to a majority of the motor vehicle crashes within the district.

Um, and by doing this, we've really expanded past just, you know, working within the chief ICEMS within, you know, the feds HQ office, but now we're really getting down into the weeds and we can talk to people who are working these crashes, um, and responding to them on a daily basis to see what kind of challenges they're having as well.

Um, we've also worked on some other problem identification things like data access. So one of the things that we did was establish a data use agreement between the MSO and our, uh, DC Health, um, agency. So we're able to, um, eventually we're gonna be able to do a deep dive. So all these whole blood cases that we're working on DC has a very well established whole blood program.

So we'll be able to track those patients from the time of the crash through their hospital admission [01:53:00] or that is the hope, um, so we can get some more data and some more comprehensive information from that as well. Um, and then obviously we're, we're so close to the Nisa EMS office, so we're working on a couple of initiatives with them.

Um, and I think that just really barely scratches the surface of kind of what we're working on. You know, I alluded to the, the, the fading of the four E's. And now we all have adopted a safe system approach, which I'm, I'm glad to see, but I think there's still, still a temptation. When you look at that beautiful graphic of the safe system, there's still lines that separate each one of those layers.

And if we're not careful, those lines from can go from becoming a graphic to actually a practice. And so one of the things that I think Allie highlights so beautifully is that when we're thinking about safer roads, or we're thinking about safer people or safer speeds, we need to have the expertise of EMS and all of those conversations and the liaison position, uh, has been able to allow that to happen in a very, you know, seamless way.

So a couple a couple tips [01:54:00] for my state highway safety office, uh, colleagues that are on the line, you know, certainly reach out to, uh, your, the agencies that I just alluded to, reach out to the Stemo collaborate and figure out how you can start to build those relationships to our EMS partners on the line.

If you don't have a relationship with your highway safety office, you are missing out. Not only are they smart, funny, good looking people, they are also an incredible wealth of subject matter expertise and funding. Uh, I don't know about your offices, but certainly we don't have more people time or money than we know what to do with.

And so, particularly as we think about how we can collaborate, we can share resources and share best practices. The highway safety office in every state, territory or district is uniquely qualified and situated to do just that, to bring together different perspectives, different stakeholders, and to provide funding that can solve real world problems.

Allie alluded to a couple of those thinking about our cad. How do we in a very complex and dense urban infrastructure like DC [01:55:00] get better accuracy to respond? Because that difference in, in response time of a minute or two, as you all well know, can be life and death. How can we work to support, uh, innovation and safety amongst our EMS crews?

How can we make sure that we're supporting them in, in preventing roadside deaths, which is, we know is a NISA priority. And then the whole blood program, I gotta, I gotta brag on our, our DC FIRE and E-M-S-D-R-D-C feds, they have created, I think, what is a world class whole blood program. Last year there were 126, I'm gonna say 126 cases higher than that, uh, over 126 uh, cases of where whole blood was administered here in the district.

I know six of those were, were related to roadway, roadway trauma. Four of those people survived because of that whole blood program. And when I think about countermeasures and tricks in our toolbox, 'cause our, our shared mission is to save lives and to make our roadway safer. And when I think about countermeasures, that work and that phrase Whole [01:56:00] Blood Works and highway safety offices have to have a mechanism to be able to support that work because those four, that counts for about 10% of our fatalities that happened in the district last year.

And if I can think of any countermeasure that overnight can save 10% of fatalities over our roadways, we need to be doing everything we can. And I very much appreciate the NHTSA hiring or the EMS office for their support and helping states think through that and certainly appreciate the acting administrator's leadership in this area.

'cause I think that is so important as something that we can do. Um, Allie, I know there's a lot more we're thinking about for the future too and some things that are on the horizon that maybe we can share with the folks as well talk about a little bit of those as well. Yeah, so I think one of the biggest things, and you kind of touched on this too, is the highway safety offices really do wanna help.

But from working with a number of the highway safety offices that have reached out through a couple of our networks, they genuinely just don't know

how to help. And a lot of that comes from not having the partner input in them telling you what the issues are. Um. Whether it's, you know, collaborating with certain [01:57:00] agencies, whether it's a funding obstacle, whether it's data access, um, even if you have access to the data, access to the data, you know, what are we doing with it?

So one of the things that we're gonna be working on, um, with NEM o and with the d DC Highway Safety Office is actually creating a sort of toolkit that'll kind of assist the highway safety offices, but also, um, assist different organizations that might be outside of the highway safety office. And how can you really support those systems within your state or within your jurisdiction.

And then if you were to want to have a post crash care liaison, you know, how would you go about doing that? What sort of funding sources are available for those types of things? Um, and then really what do you do with my position or someone, you know, sharing my position mm-hmm. Uh, once you have that established.

Yeah. One of my favorite stories is, um, there was a company who was really struggling because they were the nation's largest producer of MOPS and mop sales. Uh, in the early two thousands had plummeted. No one was mopping and they [01:58:00] couldn't figure out why anyone was mopping. So they, you know, hired consultants, they brought together people, they did all of the things that that big business does to understand a problem.

And they, they changed the design, the color, the how, how the mops were sold. They couldn't quite get mop sales up. So someone in some back room said, Hey, maybe we should actually talk to some people who mop. Let's see how they actually use the mop, and let's see what, what we can do to make the mop better.

And so they did that and they heard a lot of great feedback. And the number one thing they heard, funnily enough, was people hated ringing out the mop and the dirty water that came from the mop. So, uh, the company took reinvented something and that now has become the Swiffer. And as it become the corner of the company's bestselling products, not because of focus groups or because of bright ideas, all because you talk to the people who are every day trying to wring out the water highway safety offices, have to talk to our fire EMS partners who every day are living this life.

That's how we make a better mop. And [01:59:00] so I encourage you, if you do not, again, have that relationship with your highway safety office, visit the Governor's Highway Safety Association website, gsa.org. There's a wonderful

listing of every state and territories highway safety office. Find that contact. If you need help, reach out to us.

We are happy to, to make a new friend for you in your highway safety office and bring to them your ideas. Bring to them your problems. Talk about the challenges you're facing. That's how we make better mops. That's how we'll save lives, and that's how we will get to zero, which is not just a number on a page, but it's the lives that we can save by working together.

Thank you all so much.

Thank you, Ty. Thank you, Rick. Thank you. At, so, our next SEC section is called A Tale of Three Agencies. The Next Level Innovations in Post Crash Care, we ne we titled it that because we wanted to showcase EMS leaders across the country that are pushing boundaries to advance [02:00:00] care for crash victims in the field.

These innovators are turning act ideas into action. They're strengthening systems and improving clinical outcomes, and bringing new tools and training to their communities. We're joined by three outstanding leaders representing three different models of EMS innovation. First, Dr. Levy is Dr. Matthew Levy is a Medical Chief Medical Officer of Howard County Maryland Fire and Rescue Services, and serves in multiple leadership roles at Johns Hopkins University, including Associate Professor of Emergency Medicine and Deputy Director of Operational Medicine in EMS.

Dr. Levy is bringing, gonna be bringing system level views of his work, shaped by the involvement, his involvement with federal preparedness efforts, public safety medicine, and as chair of the National Stop the Bleed Coalition after Dr. Bleed. Excuse me, Dr. Levy. We will hear from Dr. Uh, Matthew [02:01:00] Angelita. Uh, he's the EMS Medical Director for Colorado Springs Fire Department and a MR and as well as an emergency physician at uc Health Memorial.

Under his medical leadership, Colorado Springs Fire Department, uh, began one of the first fire based, uh, programs with whole blood in the field. Uh, today, he'll share why, he'll share what he's learned and how will he works with, uh, others to improve, uh, post crash care. After Dr. Angelis will hear, we'll be joined by, uh, David Long from Tidewater EMS in Virginia.

Tidewater is a region in Virginia and in that region, um, David has served about over a little over 25 years, um, in operations and coordination. David is a

strategic leader who's worked across agency lines to streamline emergency care and delivery and how it is expanding. [02:02:00] Um, today, uh, his focus is on collaboration, planning, team development, and, uh, driving innovation in the Tidewater region.

Please join me in welcoming Dr. Levy, Dr. Angelita and David Long. Hello everybody. My name is Matt Levy. I'm the EMS Medical Director and Chief Medical Officer for Public Safety at Howard County Maryland. And it's a privilege to join you today during this seminar to speak a little bit about our Prehospital Blood program and some of the lessons learned from its implementation to level set for a moment.

We know that not all patients suffering from hemorrhagic shock due to either severe injury or illness have and will survive that first golden hour to getting them to Definitives care at a tertiary care center. And so we began to model our program after those that started back in 2015 and 2016 based upon some of the outcomes data that we were seeing.

Our program went live in 2023, and we chose to use tiro positive Whole Blood for the reasons that many [02:03:00] of you already know. But intuitively, it contains all the components that are being lost when someone is actively bleeding, uh, before definitive hemorrhage control can be attained. Uh, but also because of the fact that 82% of the population is already RH positive in North America.

It was very important to myself, my colleagues in our community that we were responsible stewards of blood supply in general, and we sought to build a zero waste blood system where we could rotate our blood product back into the blood transfusion and blood bank community. And so we really sought out a blood bank partner who could help us with that.

And as you could see in this little infographic here, we rotate our blood every 14 days. Our program itself, as I mentioned, went live in 2023. We have EMS supervisors in Howard County that respond to our most critically ill calls, and we chose to upfit those supervisor vehicles with blood storage, uh, technology, and also with the training necessary.

Uh, we used the [02:04:00] Delta ICE cooler, no conflicts of interest with that. Uh, based upon everything we could find, it was the most appropriate tool to use for our system and we've been very happy with it. Our blood is supplied by Inova Blood Services, which is in Northern Virginia and is exchanged every 14 days.

We built a robust training program, uh, for our EMS supervisors. That training program is actually open to any of our paramedics who want to go through it. Uh, consists of about four hours of online modules, and then those who are credentialed to administer blood, which are our EMS supervisors, they go through some additional in-person simulation training and competency sign off along with annual currency and competency trainings.

And monthly, or it's really quarterly blood program updates that we do is teleconferences. Every single case of prehospital blood administration is reviewed, ideally within 24 hours, but realistically it's within 12 hours and we have a hundred percent reviewed. Those cases. We track those in detail and we look at the outcomes.

And then we have case conferences that we participate in on a monthly basis, [02:05:00] and then quarterly. We additionally bring all that data together.

Regarding the blood administration itself, we use the Warrior Light compact fluid warmer. Again, no conflicts of interest with any of these products here. And the patient facing compact disposable unit has a three year shelf life stability. Uh, we will administer the blood always under pressure. It could be via pressure bag or via rapid infuser system.

And one of the lessons learned that we've had has been we, we really do use that pressure infuser system quite regularly. Uh, that's for two reasons. Number one, we found that we do get the blood in faster. Number two, it also keeps people current with that equipment and it works remarkably well. I would also mention that in addition to using this equipment for blood administration, we also use this equipment for resuscitation when we have to do volume with crystalloid for like, let's say hypothermic patients.

So we've had a good case, couple cases like that. Now in the state of Maryland, we use statewide EMS protocols and there's uniformity in the protocol and clinical [02:06:00] criteria that we use for administration of blood. We use a physiologic based system where we look for hypotension as age defined plus other sides of hemorrhagic shock.

It could be severe, uh, it could be tachycardia, it could be, uh, lactate, which many people are not testing lactate in the field. But tidal CO₂ of less than 26, uh, we look for shock or perfusion exam, whether it's defined by altered mental status or delayed capillary refill. We also look for overall clinical presentation in the setting of known blood loss.

So they have to have blood loss as well. With regard to some of the logistics and nuts and bolts of our program, here's a map of Howard County, Maryland, and you can see the location of each of our EMS supervisor bases on there. The idea was us was for us to be able to get blood to any patient within 20 minutes in the county and we're able to achieve this based upon population traffic congestion and the location of those supervisor vehicles.

Each of the supervisors has at least one unit of low, tighter row positive with the central county supervisor having two units on board. Uh, there is parody and [02:07:00] comparability with how we're doing business across all EMS blood programs, both ground and air. In the state of Maryland. Currently, the Maryland State Police Aviation Command has blood and all of its aircraft.

And four of our counties in Maryland, Howard, Montgomery, Frederick, and Carol also have blood with a few more in the stages of, of planning their programs as well. So we use, and it's important to us that we have parody across these programs so everyone is familiar with each other's equipment and also where, again, using that standard statewide protocol.

So there's consistency. Now there's only one hospital in Howard County. It's a comprehensive community hospital, not a trauma center. They don't have 24 7 surgical capability. So our closest trauma centers are by ground anywhere between 15 to 45 minutes, depending upon where in the county the emergency is.

Uh, and then we use air transport to help save time when necessary. I would say that, um, bringing the patients by ground, particularly from the western end of the county to one of the trauma centers, the blood program has had tremendous input and [02:08:00] tremendous, uh, I said impact, excuse me, on the outcomes of those patients.

'cause we're able to get that blood on board, uh, well before they get even out of the county, let alone into the, into the city for the trauma center. It is important to us that we respect and value all patient's wishes. So when patients are conscious and do have capacity, we ask 'em if they would wanna receive blood and if they don't, we respect that and we continue with conventional treatments.

We also recognize that not all EMS clinicians are comfortable receiving or administering blood, uh, due to personal or religious reasons. And, and so we have, we're fortunate that it be very rare for us to have a blood call in the county where there wouldn't be a second paramedic on board who could step in.

We do a quick timeout before we give the blood. We look for medical alert tags. We look for a power of attorney card. Anything that would indicate the patient wouldn't wanna receive blood if they're unconscious, so we can't ask them. But when in doubt, we're always gonna act in the clinical interest of the patient.

After the call, we add a procedure note to every patient care report as well as review in detail and log the case with all the data elements and a physician's authorization letter, [02:09:00] including the unit ID number for the blood that was given is attached to the patient's chart as well, and blood would be replaced during the next business hours or the next morning, whichever is sooner.

When we look at the clinical performance of this program, you could see that we've given a total of 41 units of blood to 34 individual patients. Two thirds of them are male, two thirds of them are trauma, and 71% of those traumas are roadway related. So not insignificant by any means. The average shock index of these patients is 1.45 before that first unit of blood in post transfusion is 0.92.

So we're making a significant impact, uh, by helping to buy that time back, which is the whole genesis of this program. The vast majority of our patients receive one unit of blood, although it doesn't say it up here, I wanted to add that. And you could see that 52% of them go to trauma centers with not an insignificant number going to community hospitals based upon what's going on with their, uh, clinical status.

Most of the medicals and then all the medicals are gonna community hospitals, raw survival, all patients in the series [02:10:00] 24 out of 34, approximately 71%, um, survive. That includes those that were in arrest. Those that, if we take those that had an arrest out of that equation, we're looking at 24 to 26, uh, or roughly 92%.

So pretty impressive survival there. We're very proud of that. I'd like to wrap up by talking about some of the lessons learned. First and foremost, a strong partnership with the blood bank is key. You don't have to reinvent the system, but you should take lessons learned and adapt them to make them work.

When you think about your hospital partners as you're building a program, don't forget about your community hospitals. They're gonna be receiving all these medical patients getting blood, and there's something to be learned from every case of pre-hospital blood administration debrief. These cases, give feedback, learn, teach.

It is important to keep detailed records. It's the only way we're gonna measure and improve, to contribute to the science and to the body of knowledge and to education. And if you can't get low tide row positive due to challenges with the blood supply in your region, consider packed red blood cells.

Consider plasma. [02:11:00] Anything but crystalloid is really important for hemorrhagic shock. Uh, obviously low or positive is the preference, but if you can get one of these others, I would highly encourage you to keep moving forward with your program. Remember, as I alluded to earlier, not every patient wants to receive blood and not every practitioner wants to give blood.

So have a plan for what you're gonna do in those situations. Make this awareness level education available to everyone in your system and remember that ongoing education and training and competencies and currencies are very important. And lastly, but certainly not least, you have to embrace and engage in active blood drive and blood donation activities in your community.

If our blood supplier community is going to be willing to entrust us with this incredibly valuable resource and precious commodity, we have to be good stewards of it, and we also have to contribute to its collection and donation to ensure their's sufficient supply. I'd like to thank you very much for the opportunity to present and share our lessons learned.

We've chronicized some of those in this free online manuscript, which you could see here, and we also have an online public facing webpage [02:12:00] about our program so you could learn more. Thank you so much and I wish you all much success.

Okay, well, I'm not Dr. Angelita, but my name is David Long and I currently serve as the executive director of the Tidewater Emergency Medical Services Council. And I thank you for the invitation to share a regional approach to Whole Blood. Next slide. Uh, the Tidewater EMS Council is a 501(c)(3) nonprofit that supports and coordinates regional EMS delivery focused on reducing death, uh, and disability.

Next slide. Our region, uh, covers 2,700 square miles, serves a population of 1.2 million, and involves over 5,000 EMS providers, 58 EMS agencies. Uh, 14 receiving hospitals, and currently four designated trauma centers. Next slide. Uh, our blood, uh. Initiative efforts began, uh, in 2019 and were promptly interrupted by COVID, uh, in 2020.

Uh, but we were able to [02:13:00] resume in 2021, and our program went live in October of 20, uh, 22. Next slide. So, discuss our regional approach to whole blood. Uh, I'm gonna begin with a case review. Uh, in May of 2023, there was a motor vehicle collision involving a sedan with four occupants, and the patient in this case review was in the rear seat behind the driver and was unrestrained.

The initial assessment revealed undetectable pulses and agonal respirations. So what does crash data reveal about this patient's odds of surviving? Next slide. Um, um, there's a, there should be a slide that essentially, uh, demonstrates, uh, from the, from NHTSA that EMS responds over 1.5 million traffic crashes every year, and that 42,939 people die as a result, you know, of significance there, uh, 40% or greater of the patients were alive when EMS arrived [02:14:00] on scene, but later died while being transported to the hospital, um, or in the hospital.

Uh, for here in 2023, the data from NHTSA reports that there were 90, uh, fatal motor crashes in the Tidewater region. So given that 40% of the patients were alive and later died, illustrates that life-saving treatments delivered too late, do not improve survival. And in fact, Stacy Shackelford of the, uh, joint trauma system is quoted as saying, uh, for high risk casualties, transfusion should be initiated within minutes of injuries.

Here you can see approximately 36 minutes, regardless of location, uh, pre or in hospital, and this is where EMS lives. Next slide. So the Tidewater region's approach to whole blood initiative was to eliminate redundancies, uh, leverage volume discounts, uh, achieve regional standardization while leading to enhanced compliance.

Um, and that, uh, cut out a lot of duplication, which reduced cost. Next slide. So the whole blood initiative [02:15:00] began while assembling a diverse group of stakeholders that were willing to challenge the status quo. Uh, assembling this group is extremely important, as you heard previously, um, from speakers today.

So we began, um, there was less than 1% of MS agencies, transfusing whole blood. So when time is of the essence, consider r and d, and that isn't research and development, but that's rather rip off and duplicate. So get shout out here to Dr. Peter Anti and Dr. Juan Chesney for that advice. Um, basically means we don't have to start from scratch that people have already blazed this trail.

Find yourself some subject matter experts. We found Randy Schafer and John Berry as a blood banker. Uh, you won't find any better than those folks. Um, is there a need have to be able to look at, uh, what your data tells you. We

conducted a three year retrospective look using transfusion criteria and identified 240 cases annually that met transfusion criteria.

Then you're gonna be asking yourself, well, where did this blood come from? Between hospitals, blood suppliers, [02:16:00] blood centers, um, the who, what, when, where, uh, how and why. Um, certainly there's a cost element, but by the same token then there's, uh, uh, access and availability issues that you'll have to, to deal with.

There are some significant challenges here, um, but you obviously wanna seek ways to get to Yes. Uh, funding a whole blood program isn't cheap, but it is the right thing to do. Um, for FY 25, um, as an illustration, we, we've spent \$217,000, that's roughly \$120,000 for blood, uh, \$53,000 for disposable transfusion supplies, and another \$44,000 on durable equipment.

Um, blood does have a shelf life and it will expire. So you need to be creative and innovative in you're planning to minimize waste. Not all hospitals or not all blood suppliers are willing to take, um, blood products back, uh, at day 14, like Dr. Levy, uh, just talked about. So we actually entered into an agreement with one of our local hospitals, Naval [02:17:00] Medical Center, Portsmouth, to take back our short gated blood through a memorandum of agreement.

Uh, so you have to be prepared to put blood back into the system. So as mentioned, blood drives are an essential part of any blood program. Uh, next slide. There's lots of equipment out there. I'd say you find what works for your agency or program for us, we chose speed and heat. Um, Dr. Lavy already covered these devices, so I won't, uh, labor here.

And, uh, next slide. Uh, pre-hospital blood transfusion protocols are very similar. You're gonna see very little, you know, uh, change, uh, regardless, uh, of where across the country. Research continues to shape the criteria and reveal opportunities to enhance the transfusion. And in our, um, in our case, um, we've added the advanced resuscitative care bundle, you know, following the example set by Tom Grantsville and New Orleans EMS.

So we've added TXA and calcium to our, uh, home blood program. Next [02:18:00] slide. So in the Tidewater region, uh, we chose a crawl, walk, run approach beginning in October of 22, uh, with, uh, just a single jurisdiction focused on adult trauma only, and progressed to now having five jurisdictions involving eight EMS supervisors during low titer or positive whole blood transfusions for pediatric and adult patients of trauma or suffering from medical etiology.

And we hope to add the ninth, um, later this year. Next slide. So as of today, we've transfused 297 units of whole blood. Um, our data from calendar year 24 shows, uh, our on scene times are roughly 16, uh, minutes and 29 seconds. Um, here we emphasize the blood transfusion, the TXA and calcium administration. So we take an extra minute or two, um, while we, um, uh, manage our patients.

Our transport times are 13 minutes, uh, 20 seconds. And of our patients that receive a blood transfusion, 71.1% [02:19:00] survive to discharge. If they survive the first 24 hours, then uh, we have a 90, uh, 4% survive to discharge. Uh, next slide. Uh, research is and continues to be of great importance to the pre-hospital whole blood transfusion programs, uh, and collaboration with Sentara Healthcare.

In Eastern Virginia Medical School, we have an active IRB to research calcium and trauma, and hypocalcemia is associated with increased mortality and decreased time to death. And our data currently indicates 43.7% of our trauma patients had critical or low levels of ionized calcium. Uh, next slide. We also conducted a retrospective observational study based on 18 months of data.

We collected, uh, to compare survival rates of patients receiving pre-hospital whole blood transfusion with their destination being either a level one or a level three trauma center. Uh, next slide. So the level one trauma center average hospital length of stay was [02:20:00] 7.1 days. The level three trauma center average hospital length of stay was 6.9 days.

We only one patient that was transferred from the level three to a level one trauma center. So this study suggests that patients receiving pre-hospital blood transfusion may not require transport to only a level one trauma center and supports the development of whole blood protocols in communities without access, uh, to a level one trauma center.

Uh, next slide. So how did all this, you know, affect, uh, the Tidewater region, our five, uh, cities that are carrying blood products and, uh, how it's affecting our patients today? So if we look at, um, our case that we began with, that call was dispatched at two 18, uh, in the morning, and crews arrived on scene at 2 28.

So at 10 minute response time, patient was assessed and removed from the vehicle with a focus on lifesaving interventions and whole blood was administered at 2 48, um, am That's within the 30 minutes, um, of the call being [02:21:00] dispatched, uh, and arriving at the hospital at 2:55 AM Uh, in addition to whole blood, uh, patient treatment included CPR and RSI.

And as you can see, the patient suffered several traumatic injuries, um, but was discharged, um, for rehab after 51 days, uh, for a patient that might have died. Otherwise, this patient received whole blood within 30 minutes, improving the odds of survival, and this is why we do it. Uh, next slide. So, our goal in the region continues to be coordinating, um, at least one blood drive each month, engaging the community, spreading the word, and offering incentives.

And we find that these are the things that help, uh, attract people, uh, to raise our, our donation rates. Next slide. We, uh, essentially are using a, um, blood center. Uh, it's called the Blood Connection outta South Carolina. They currently have a presence in Georgia, South Carolina and North Carolina, and now in Virginia.

[02:22:00] And, uh, they've been a fantastic partner to work with. And these are some of the ways that you get ts. So when you're, um, your, uh, your, your standard, uh, blood supplier in region, uh, tells you that they're not willing to support your program, you, you have to find ways again to get ts next slide. Um, we campaign to improve community awareness, give blood and secure financial donations as part of our process of ensuring the blood availability to those folks that are carrying it and using it, um, on a daily basis in the region.

Next slide. And I think part of that strategy means that you have to prepare and, and doing so you can see we scheduled blood drives through the remainder of the year. Our goal is a minimum of 20 units collected at each drive, which would put us roughly at the same 240 units we estimate to administer that we would, um, take in, in, um, in donations every year.

And next slide. I just want to, uh, [02:23:00] I like Dr. Levy, uh, say thank you and, um, uh, for this opportunity to share our program with you, and happy to answer any questions if you have them.

Thank you guys so much. Uh, Claire, you can hear me okay? Yes, sir. Go ahead. Uh, my name's Matt, Angela, just, I'm an emergency medicine physician here in Colorado Springs. And then I do EMS Med direction, uh, for Colorado Springs Fire and a MR. Next slide. Uh, what I want to do is just give you a little background.

Our, our city, um, is roughly 195 square miles. Um, we have, um, north of 65,000 medical incident calls a year, uh, close to 90,000 calls for service. Um, we train and educate 750 pre-hospital providers here in the city across 25 stations, and then with a contracted transport company, a MR, um, serving as our transport entity.

Next slide.[02:24:00]

Start with a little bit of a case just to highlight the importance of pre-hospital whole blood. Um, with regards to national highway traffic safety. Um, approximately two months ago, we had an 8-year-old male who was walking across the street here in our city, um, when he was struck by an automobile that failed to yield in a crosswalk.

Um, the vehicle drove over the patient, um, crushing his pelvis, and when EMS arrived, his initial blood pressure was 58 over 43. He had a heart rate in the one 60 breathing almost 30 times a minute, um, with a shock index, um, approaching three. Um, we had dispatch attach our blood response unit at the time of the call, um, based on our medical priority dispatch, um, system, and the blood response medics arrived approximately 30 seconds after the initial responding EMS unit and the decision was made to initiate blood transfusion almost immediately.

Within seven minutes of being struck by the automobile in the city, the patient had [02:25:00] blood infusing through an intraosseous line in his lower extremity. He was transported to the local trauma center where multiple life-threatening injuries were diagnosed, ultimately receiving additional transfusions at the hospital, uh, transferred to a pediatric care center and subsequently two weeks later, discharged to home, um, with no cognitive deficits, uh, expected to lead a very normal, happy and healthy life.

Um, we see this story over and over again in our city. Um, we, uh, as Dr. Levy mentioned earlier, see about 60 to 70% of our blood transfusions are related to automobile accidents, um, motorcycles, auto pedestrians, et cetera. Um, so blood transfusions by EMS definitely improves the outcomes and, uh, the health of our citizens on our roadways.

Next slide. Uh, and just a reminder, uh, I think we've heard this twice already today. Um, our colleagues in, um, new Orleans [02:26:00] published a fantastic trial analyzing traditional EMS care IE waiting until you get to a hospital to initiate your blood resuscitation with their, um, acute resuscitation care bundle or blood transfusions and calcium and TXA by EMS.

Um, and what they found is they were cutting mortality roughly in half. So a 40 to 60% reduction in morbidity and mortality for patients who get their first unit of blood from EMS. Next slide. They also did a subgroup analysis, which I think is worth mentioning because we commonly hear from trauma surgeons in hospitals that why would we delay access to the hospital?

Isn't it better just to scoop and run? It seems awful expensive and time consuming to have EMS professionals carry blood. And the reality is that, um, when EMS teams engage in their local trauma response systems, um, we get blood in patients significantly faster, um, in their trial 12 minutes faster. Um, if EMS delivered blood, um, so we have some national data telling us that we [02:27:00] really can afford a little bit of delay to the hospital in order to infuse blood, um, and execute this care in the pre-hospital or EMS setting.

Next slide. So what did we do here in Colorado Springs? Um, our program, uh, dubbed the power program, the pre-hospital o positive whole blood emergency resuscitation program kicked off in May of 2022. We have two supervisory vehicles each carrying two units of low titer, o positive whole blood, um, responding in wi within our city boundaries, and then rendez building with surrounding counties.

Next slide. Um, it's important to remember that, uh, states have different rules. Guarding, uh, regarding scope of practice for EMS. Colorado is a traditional ceiling state, meaning blood transfusions are not within the scope of practice of a traditional ground or ambulance, um, based paramedic. So we have to go through a waiver process in our state, um, which took a bit of time to develop and bill, but it's now [02:28:00] in place.

So anybody in the state of Colorado who wants to initiate blood transfusions by ground paramedics can apply for this waiver. And if they meet the requirements of the waiver, their paramedics are able to carry, transport and transfuse whole blood. Next slide. Uh, we did a single day, eight hour day training program for our blood response medics.

Um, this is highlighting all the equipment, um, tools of the trade guidelines, um, documentation, quality assurance, et cetera. Next slide. We did real life simulated trainings with moulage patients to help them develop real world experience with deploying blood in the field. Next, keep going. You can flip through.

That's some of my firefighters doing their training. And that's our first team of firefighters, um, who went through the training to carry blood. Next slide. Keep on going. Okay, so last slide. Uh, back one slide. So the [02:29:00] core concept that I wanted to talk to you guys about today is what I call the rotation concepts.

You heard from, um, Dr. Levy and David Long, um, ways to get blood into the hands of your firefighters, paramedics, and EMTs. And the city of Colorado Springs. We engaged in what I call the rotation concept. So we partnered with

local trauma hospitals who already store stock and transfuse low titer o positive whole blood.

Um, and we did some data analysis and what we found is that our region throws away between 20 and 30 units of low titer o positive whole blood every month, meaning these hospitals have to buy more than they think they're going to use. And because of the shortened shelf life we use a 21 day Luca reduced product here in Colorado Springs.

They were having to throw away, um, units of blood that expire on the shelf and we said, Hey, instead of throwing that blood away, can my firefighters carried around on their supervisory vehicles? To which the blood bank said, absolutely, it costs us nothing to store some of the blood with you. Um, you just have to prove to us that you can do it [02:30:00] safely and efficiently.

So in partnership with the blood banks, my Colorado swings, firefighters pick up blood, um, every Wednesday morning from the blood bank, um, and they load their coolers and head out for a week of possession with that blood. If they transfuse that blood, then we pay for the blood. We do that through philanthropic.

Um, here locally we have grants and, um, philanthropic donors who agree to pay the blood bank back for any blood used by EMS. Um, but if they don't transfuse the blood at the end of the seven day block, they return to the blood bank and they give the unit of blood back to the blood bank and they pick up a fresh unit.

Uh, with more shelf life, the trauma centers that we exchange blood with use blood at a much higher rate. And so a shorter shelf life is often not problematic for them. Um. The hospitals really don't have to change much of what they're doing. I think if you explore the hospitals in your region, you will find that they throw away a lot of blood products.

Um, that is just the nature of, um, blood utilization in healthcare systems. [02:31:00] And we went back to the hospitals and we said, Hey, we think we're gonna u um, reduce the total amount of blood products you have to buy because patients are gonna arrive to you healthier. With clots formed and less critically ill.

So you will use less blood products in your healthcare system. And we said, because EMS is transfusing 'em early in their hemorrhagic shock course, we think they're gonna spend less time in your ICUs and hospitals and less time on

your ventilators. Next slide. So we use the Delta ICE cooler. Again, I have no financial ties to them.

This is, uh, uh, intentionally designed EMS blood storage device in Colorado. We have lots of hiking trails and mountains and the ability for firefighters and the EMS professionals to bring blood to the patient where they lay was quite important to us. So the fixed cooling systems within apparatuses was not the preference for my firefighters and EMTs and paramedics.

So we use a Delta ICE cooler, which, um, is A-A-B-B-F-D-A validated. It stores blood at the [02:32:00] appropriate temperature and it can produce printouts, verifying blood temperatures, um, for your blood bankers so that they're comfortable taking blood back into circulation if it's been in the hands of a firefighter for a week.

Next slide. Every morning, uh, our firefighters exchange the internal liner of the cooler. The baby blue or teal tick if you will, um, with the old or outgoing, um, tick within the blue blood transport bag. Um, the cooler conditions on a mat for a brief period of time, and then the blood is moved from the old liner into the new liner and the cooler is closed.

The coolers are set to maintain blood temperatures for 72 hours because they're on supervisory vehicles. That exchange or shift change every 24. We have quite a bit of safety margin built in to the temperature management of our blood product. Next slide. We back that up with topical stickers on every bag of blood.

This is what our blood banks do when they receive blood from the supplier. Vital talent here in [02:33:00] Colorado, um, and these safety view stickers serve as a visual final inspection before infusion. My firefighters know that blood stickers that have turned red have gone outside of temperature, either too cold or too hot, and that blood is not usable for transfusion.

This is a nice visual indicator when we return blood to our blood banks, they can quickly peek at that sticker and know the blood has been safely maintained within its storage temperature requirements for the FDA. Next slide. We get firefighters to the scene of our blood response, um, calls in several ways.

Um, on the left hand side, um, we use EMD, um, codes, uh, and, and triggers to attach our blood response medics automatically. We did a systematic data analysis and we picked call types that had a 1% or higher, um, chance of requiring transfusion, um, and we automatically attach them. So common things

you would expect, gunshot wounds, rollover MBAs, auto pedestrians, [02:34:00] um, police department, um, related shootings.

You'll notice that three, um, two of the seven top reasons are automobile and highway traffic safety related. Secondly, we allow our primary responding medics to activate, um, the blood response unit. So within 30 seconds to a minute of arrival on scene, if they believe a patient may be experiencing a hemorrhagic shock event, they can add our blood response units, um, to the call.

Um, so we get our blood response teams to scene in those two manners. Next slide. You've seen a version of this already twice today from Dr. Levy and from David Long. We follow almost the exact same, uh, guidelines that are used in San Antonio, um, new Orleans, dc, et cetera. Um, patients must have two of the following.

The one unique thing that we're doing in our city and system is we've implemented point of care cardiac ultrasound. Um, and we did this because, um, you can imagine when a [02:35:00] firefighter or a paramedic arrives on scene and a patient's pulled from a vehicle covered in blood, um, and we check a pulse and we can't feel a pulse.

The question is, should we start a blood transfusion and try and resuscitate this patient, or are we too late? And this patient is a nons, survivable injured patient. And the way that we make that decision is we place an ultrasound on the patient's chest and we look for organized cardiac motion in patients with organized cardiac motion.

The survivability, um, goes up significantly, and those with no, um, organized cardiac motion survival is less than 1%. We do not transfuse those patients. We implemented this part of our guidelines specifically to avoid wasting blood products. These are valuable and expensive and we don't want to be transfusing folks who have no chance of surviving.

Next slide. That's my battalion chief. Um, showing off our butterfly ultrasound, uh, have no ties to butterfly. There are many companies that make excellent portable handheld [02:36:00] ultrasound devices. We chose this one because it is, uh, slightly different design with out physio electric crystals. Um, this device can be dropped or, um, handled by firefighters and paramedics without breaking easily.

It's a little more durable, um, than most. Um, so this is the device that we use in the field real time. Next slide. Uh, we use the same Q and flow war, um, warrior

system that you've already heard about today. Uh, again, I have no financial ties, but they've been, um, using this in combat developed in Israel, um, carried by our special forces operators, um, for more than two decades.

Uh, it's a relatively affordable, super durable way to warm blood, real time. We've learned, um, in our city and system that the key is less about warming the blood and more about the speed with which we infuse it. So all of our blood's administered under pressure bags or with the infusion devices you heard about earlier from the other folks on this call.

Next slide.[02:37:00]

So far in our first year, we have circulated, um, over 300 units of blood with no expired or damaged units of blood. Um, so that's rotating in and out of the hospital. We've transfused 104 units to patients, um, 91 patients. So some obviously get two units based on their, um, transport times to the hospitals.

And we've saved 74 lives. Um, prior to implementation of this program, cross matched patients had a roughly 30% survival. We're now, now seeing 75 to 80% survival rate. So EMS providers transfusing blood in the field at the point of injury, absolutely without a shadow of a doubt saves lives. We did waste one unit of blood.

Uh, this was a unit of blood that a paramedic firefighter had taken out of the cooler spiked, and started, um, the process to infuse. But as they rolled into the trauma bay, the trauma surgeons asked them not to initiate the blood transfusion, so the blood was put [02:38:00] back, um, um, put back in the trash bag. Uh, ultimately that patient did get two units of blood in the hospital, so I wish we had just proceeded with the infusion.

Um, I don't know that there's anything we could do different operationally to pre, uh, prevented that, but that is our one unit wasted, uh, in our first year. Next slide. Who gets blood. Um, mostly what you see on here are traumatic injuries, and a large majority of them in traumatic circulatory arrest, MBCs, traumatic hemothorax injuries of the abdomen, um, are automobile related.

So somewhere around 50 to 60% of those who receive blood from us are related to automobile accidents. Um, we do allow medical transfusions, so gastrointestinal hemorrhages, um, and then OB related hemorrhages you see popping up there. Um, as other common reasons to get blood that are not trauma related. We don't have a significantly large gun and knife club here in Colorado Springs.

Um, so, so our penetrating [02:39:00] trauma numbers are a little lower than you might see in other cities in the United States. Next up, we track a lot of data. Um, our primary, um, goal is to track survival, and what we're finding is somewhere around 80% of patients who get their first unit of blood survive again, when we cross match that to patients with similar injury severity scores, um, those survival rates hover around 30%, which is the national average.

Um, so it does work 40% improvement in mortality. Next up, same information here, we track them out 30 days. Um, again, 70 plus percent survive. Next slide. One of the common concerns is delays to access to the hospital. I know our trauma surgeons worry about this. We don't want patients, um, wasting time in the field.

On average, we add less than six minutes to our scene time if we incorporate a blood response medic. But the more important piece of information is that on [02:40:00] average, patients who get their first unit from EMS get their first unit of blood 20 minutes faster if EMS delivers it. So we're really not talking about time to the hospital, we're talking about time to blood transfusion, which is the life saving intervention that is offered in our trauma resuscitation base at the hospital.

Next slide. We track all kinds of things to see if blood's having the effect we expect it to have. Um, one of the fun ones is mental status. We have lots of trauma resuscitations now where patients begin their blood transfusion and they wake up and start asking the cruise questions, what's going on? What happened in my accident?

Where am I going? Um, the difference between a GCS of 11 and nine is your ability to follow commands and interact with folks on scene. This is massively important in the way we evaluate and work up trauma patients at the hospital. It's quite helpful to have a GCS above 11. Next slide. We also analyze transport destinations.

Um, for those of you who aren't aware, [02:41:00] healthcare systems that participate with EMS and support EMS and ground delivered blood also recuperate business dollars. Um, those EMS entities often will choose your facilities to take their patients to. So if you're looking to drum up business and make money, find an EMS system in your neighborhood that needs blood on ambulances and start working with them.

They will bring their trauma patients to you. Next slide. Obviously I mentioned earlier that we told the hospital we would save money for them, so we do track a

couple of core metrics for our hospital providers. The first one that you see here is total number of blood products used. We use about half the blood that we normally would if a patient gets their first unit from an EMS provider.

So the average EMS delivered blood patient gets a total of 2.72 units of blood, whereas those who wait until they arrive to the hospital on average get four and a half units of blood. So we use about half the total blood products if we let EMS start [02:42:00] that blood early at the point of injury. Next slide.

We also track ICU days. Most of you may not be aware of this, but ICU admissions pay fantastic for the first 72 hours. And after 72 H hours, hospitals start to lose money on ICU patients and, and patients who receive their first unit of blood from EMS, we cut the average ICU length of stay to under three days as compared to those who wait for their first unit of blood at the hospital.

Their average IC length of stay is over five days. This saves the hospital thousands of dollars per patient ICU admission, um, and honestly likely pays for the whole blood program, uh, in its entirety. Next slide. We look at waste. This is blood bank data and information. The tall blue lines that run along the top of the screen are before EMS started transfusing blood.

We were wasting large amounts after the program went live. You can see that November, December, and I don't have January, February, March, [02:43:00] April and May on there, but our wastage has gone down to almost zero within the hospitals. We are not throwing away a valuable resource anymore. All the blood that the hospitals buy is being given to patients who are bleeding to death before they die.

Next slide.

I think I'm done. Alright, let's take about a five minute break so we can get the room, uh, reset for our next discussion. When we come back from break, we're gonna be, uh, starting up with a, a panel discussion to determine how EMS agencies and blood organizations can build partnerships see you in five.

Thank you and welcome back from the break. Uh, let's go ahead and begin our panel discussion to help us with this conversation. Dr. John Kramer will be our, uh, will serve as our facilitator. Um, Dr. Kramer is a board certified emergency medicine [02:44:00] in em. Excuse me. Board certified in emergency medicine and in, in EMS, uh, he's got more over 45 years of experience and he serves as the coalition chair and EMS physician for the pre-hospital Blood Transfusion Summit.

In this role, he brings a deep clinical, deep clinical expertise and longstanding commitment, MS systems improvement to support the coalition's mission and expanding access to lifesaving blood products in the pre-hospital setting. Dr. Kramer's leadership helps. You can stop any time though. Oh, Dr. Kramer doesn't want me to too dis horn any longer.

So, um, I'll turn it over to Dr. Kramer so he can begin. Thank you, Larry. And it's, it's nice to be in a position where I can turn to you and say, you can stop now without having the ture of being your [02:45:00] boss, which means I can have a conversation with you after this. You, you certainly can. Thank you, sir. Thank you so much for, um, your joining us today, both in person and online, and to the, uh, NHTSA overall, the Department of Transportation, specifically the office of EMS for pulling this all together.

Um, I have the, the pleasure this afternoon of talking with you very briefly about the pre-hospital Blood Coalition and some of the activities that the coalition is on, but then we're gonna shift gears and, uh, talk about the discussion from the blood community's perspective. The folks that, that we have on the panel today are not only, uh, active participants of the pre-hospital Blood Transfusion Coalition, but are also active participants [02:46:00] in their community and helping to address the needs that we all have on the pre-hospital side to be able to conduct these transfusion programs, um, while maintaining and, and making sure that we maintain the blood supply for the community.

And I'll get into that in just a second, um, when I make a couple of, of background EMS comments, but I'd first like the panel just to introduce yourselves, if you would please. Yeah. I'm Bill Block, I'm president and CEO of Blood Centers of America. Tracy Nichol, the Senior Director of Accreditation and Compliance at a eight BB.

Good afternoon, Pompe Young, um, chief Medical Officer of the American Red Cross. Diane Kalma, vice President of Government Affairs for America's Blood Centers. Hi, Courtney Hopkins, vice President, corporate Medical Director for Vital. [02:47:00] And what for the EMS folks? When, when we think about the EMS community, we think about all of our professional associations.

Well, these folks represent the professional associations of the blood community and the, the standard setting and accreditation organizations as well as leaders in the private sector, in the blood community. So it's, it's important for, uh, for us to have all of that perspective. If we could go to the first slide please.

Just very, very quickly on the Prehospital Blood Transfusion Coalition, um, little over two years ago as the. Number of prehospital agencies conducting transfusion programs really started to pick up. A number of folks just sat down and were talking about, you know, this is happening in San Antonio, this is happening in in Harris County.

This is happening [02:48:00] in, um, to use David's example in the Tidewater area and around the country. And, and all of those things were developing very strong programs, but there were a lot of questions that came up about coordination and collaboration. And that's really what led to the formation of the coalition.

The coalition really is designed to bring folks together to help facilitate the, uh, rip off and duplicate activities that were referred to earlier and, and to help people come together to learn from each other. The coalition, uh, does not want to be a regulatory agency. It has no, um, interest in developing standards.

That's AABB's responsibility. The coalition is really open to anybody that is in interested, and we have, as I've alluded to, national organizations on [02:49:00] the blood community side, on the EMS side. We have, uh, vendors who are participating EMS agencies, uh, state regulatory agencies, and interested individuals.

So it really is, uh, uh, we, we now have a little over 450, uh, participating organizations, associations, uh, agencies or individuals. Uh, we have several federal partners, including the office of EMS, including asper, including the, uh, US Fire Administration. And I'm drawing a blank. People will shoot me on the fourth one right now, and I apologize for that.

But it is critical that the federal agencies participate because of their federal responsibilities. They serve in an exofficio capacity. You've heard the indications for blood, uh, use [02:50:00] multiple times today. The coalition is agnostic to any particular blood product. It is agnostic to the cause of hemorrhagic shock.

Obviously this, uh, summit is focused particularly on motor vehicle crashes, but whatever the e the trauma traumatic etiology is medical etiology. We're finding that a lot of patients are being, a lot of GI Bleed patients are being transfused in the field, uh, as are peripartum patients. And it is agnostic to the age, as was alluded to, uh, earlier when we talked about the pediatric discussion, there is still significant concern out in the community that we should not be, uh, transfusing pediatric patients in an hot of hospital setting.

And I think the, some of the information that's been shared with you hopefully dispels that a little bit, uh, but it's still [02:51:00] something that we have to work on. Next slide, please. Just very briefly, the coalition is involved in a lot of activities with all of our partners. We've broken them down into these four pillars of activities, uh, strategic preparedness, both on the federal side from a national homeland security and, and preparedness perspective, but also on the state and civilian side.

We're doing a lot of work, identifying educational resources to help with program development, identifying the appropriate research and helping to catalog that on our website. Coalition will not be doing any primary research, but it's helpful to have that research categori, uh, cataloged that folks can turn to on the website.

Scope of practice was already alluded to, there are currently 45 states in the United States that allow [02:52:00] EMS clinicians at the paramedic or above level, meaning street paramedic, flight paramedic, critical care paramedic to initiate blood transfusions in the field. Two other states are very actively working on that now.

We're, we're, we're working with the other states to figure out mechanisms to do that. We also identified that there were significant disparity in, um, EMS clinicians, documentation of blood transfusions in the field. So working with an ITSA office of EMS with a national EMS information system with EPCR vendors, we have been able to address some of those and are moving toward more consistent documentation in the field.

And, uh, the financial situations have already been alluded to. Uh, it there is expense occurred incurred with EMS agencies that is [02:53:00] generally not reimbursed. Some, most EMS agencies are now taking it out of operational funding activities. The one thing I forgot to mention under scope of practice, um, hopefully it's being posted on the website today, but the coalition, uh, recently approved a clinical practice guideline based on the joint trauma system model in the military.

That will have available as a resource as well. Next slide, please. And actually, you've seen this one already, so we're gonna move on. These are just many of the, the, uh, organizational partners that are participating with us. Next slide to, to highlight a couple of things on the EMS side. And, and I wanted dispel very quickly, one misconception that.

We were faced with early on that I think folks are starting to understand, but there is still a little bit of misconception. We're [02:54:00] not talking about blood component when, when we talk about pre-hospital transfusion programs, we're not talking about whole blood on every ambulance in the country. That just is not sustainable either from a blood supply perspective or realistic from an EMS agency perspective.

So as, uh, many of the programs talked about today, they focus on, uh, supervisor vehicles or quick response vehicles to cover a larger geographic area. Um, this has been alluded to, but we all want a reinforcement. The engagement with the EMS community and the blood community is critical and it needs to start very early on in the process.

Um, we, we have all shared this among ourselves. The, the cultures between the blood community and the EMS community [02:55:00] are totally different. The blood community is regulated much more than the EMS community. Um, but we have learned over time that we can both accommodate each other's needs. Folks have talked about maintaining the nation's blood supply.

It's incumbent upon EMS agencies to commit with their blood supplier to do regular blood drives and increase the donation. Uh, EMS has to accept the associated regulatory requirements and we've actually found, uh, that EMS has been very easy to adopt those. We've talked about whole blood and we've talked about, uh, reimbursement, so I'm not gonna spend a lot of time on that.

Next slide, please. We're gonna now turn over to the panel and, and um, sort of find out the interesting aspects from their [02:56:00] perspective. You know, sort of what the blood community wants EMS to know and what the blood community can offer to EMS that EMS hasn't thought about here too for Diane. Thank you so much, John.

So, nothing that I'm gonna say here is gonna be totally new from what we've heard before today, but as you all know, blood is a perishable, precious commodity that can only come from human donors who are willing to roll up their sleeves and literally give of themselves. And so it's essential that we are good stewards of that product and that we are aware of the issues that are associated with that.

Um, as was mentioned, the need to ensure that we have a safe and reliable blood supply and that we don't infringe upon that by expanding these programs to quickly beyond what can be sustained as essential blood centers are currently

challenged to maintain the three day blood supply that every blood supplier tries to keep on hand.

Most have a one or two day supply. They're already struggling to meet the demands of the blood supply. Add to that, the [02:57:00] fact that we are then looking at one of the most used products, those precious o products, um, and that's an additional strain upon that product. The reality is that 65% of Americans can donate blood, but only about 3% do.

Um, so there are a lot of people that aren't donating blood, and we've seen drops in the overall percentage of donations across the country. So it was about 7% between 2019 and 2021. And that really was just an exacerbation of previous trends. We're also seeing fewer younger donors that are joining the donor base, which is a concern as we look forward into the future of our donor base.

Um, and making sure that we have those future donors. So blood centers are certainly able to meet the needs of patients right now. But making sure that we're looking forward and as we expand these programs, as John was mentioning, is that a number of other people have mentioned their presentations, making sure that the EMS community is working to support the blood [02:58:00] supply and bring in no new donations.

And, you know, I've heard from some suppliers this isn't an ask that's made of other customers, and that is simply not true. Most hospitals support blood drives. Um, this is just a part of using this precious resource. Um, and particularly making sure that we're keeping those products and having a process in place to make sure that they're, they are reducing wastage.

Um, some blood centers simply for geographic reasons, for reasons of not having hospitals that'll take those products, um, have a limited ability to work. And so those creative models that we've heard about through the day are really essential as we move forward. Thank you Diane. Tri. Yeah, so my question, there's not one answer, right?

It's not a one size fits all to set up the program. Um, and a lot of this was alluded to today, but the thing, you know, I think is that the donor centers and [02:59:00] transfusion service, as was stated, are highly regulated and quality is at the top of their list. And so they trust themselves. But now EMS folks are coming.

And so you have to build that trust between whoever your supplier's gonna be. And you know, I think just from remembering to go in with an open mind and

everything starts somewhere. And so start simple. Keep it simple. Keep those communication lines open. I mean, that is. So important to communicate to both parties, um, and meet frequently, you know, schedule those meetings, keep going back and talking about the needs of both parties.

So make sure you're clear upfront, you know, the blood supplier of what those quality items are that you need to be able to supply the EMS, and also to take back that product so that we're not wasting it and [03:00:00] educate each other. As John said, it's two separate communities that now are coming together. So EMS doesn't always understand what the blood supplier's requirements are and why they're saying the things that they're saying, and vice versa.

We don't understand what happens out in the field. So offer up that education and that's gonna help you to build those relationships. And then on the regulations, um, you know, uh, AABB is going to have, um, sort of a toolkit that we're gonna post on the website, hopefully in the next week. And we hope that that's gonna help to bridge some of the, we'll say unknowns, to help the blood suppliers know, you know, these are the regulations and this is how we're meeting it, and also the EMS.

Um, and then, you know, just keep that ultimate goal in mind. The ultimate goal is the patient care, no matter where that patient is. And I [03:01:00] think with that focus and working together in collaboration, we can get these blood products, um, wherever they're needed. And then also from the EMS side, I think, um, you know, letting your blood supplier know that you know about the standards.

You're, you're, you know, looking at those, you're checking your processes and that, you know, accreditation, um, is something in your future and that you will be elevating yourself to that quality that the blood supplier is holding itself to. I think that's gonna make that collaboration better. I wanna follow up on, on one brief comment that, that Tracy made, and, and that's in terms of building trust.

You know, we, we had presentations today on very successful programs. What they didn't talk about were the meetings and the meetings and the meetings and the meetings that they had between the EMS agency and the blood supplier to work out [03:02:00] to, to build that trust and work out the logistics and the compliance issues.

So it, it does take time. Um, Courtney, so, hi, uh, first thank you for including vital in this very important conversation. We are a nationwide blood operator. We are actively serving in the pre-hospital space. We distribute O red cells,

liquid, a plasma, and low titer O whole blood to EMS agencies across multiple states.

When selecting blood products, the top priorities are clinical efficacy, sustainability, and of course minimizing waste. Especially with a limited resource like our low titer O whole blood. It's also important to remember whole blood is not yet proven superior to plasma and the pre-hospital setting. So when selecting the right product, it really should be a tailored decision based on your agency's logistics, geography, product availability by your local blood provider, and [03:03:00] partnerships with hospitals that are willing to support your inventory rotation.

Like we've heard on the prior talks to Estimate True Need, we recommend performing a retrospective chart review and ask yourself how many patients would've met transfusion criteria under your current protocol. This data-driven insight can help prevent overstocking and reduce unnecessary product waste.

Also start small. Begin with the lowest sustainable inventory and scale up only as your data supports. Use heat maps of fatal crashes to identify high yield locations where products like whole blood is most likely to be used efficiently and consider logistics. Whole blood and red cells require a partner for inventory rotation, which may not be feasible for every EMS agency.

Liquid par plasma, on the other hand, is more widely available and does not require rotation, so it may make it a more practical option, especially for [03:04:00] systems with lower transfusion volumes, importantly, build flexibility into your transfusion protocols. They should allow for substitution between products, for example, using component therapy in space of whole blood during inventory shortages.

Likewise ensure that any grant or funding support allows for this. This flexibility helps ensure that care can continue even when supply is tight. And ultimately, this is about partnership. Working closely with our community hospitals, blood operators, the EMS agencies to make sure we have the right product and right strategy that will deliver the most benefit to the most patients in your community with the least amount of wastage.

Thank you. Thank you, Courtney. Humpy.

Um, so thank you, uh, for, uh, letting the American Red Cross participate. I wanna start off by saying that the American Red Cross has really, uh, drunk the Kool-Aid. Uh, we, [03:05:00] uh, very much, uh, embrace the fundamental

problem that's being discussed here is that we have an opportunity to save a lot of lives. Um, and, uh, so we, you know, this is, this aligns really well with the Red Cross mission to improve, uh, save lives and, and reduce the human suffering.

And so our approach to this is to really serve as partners to our EMS programs. Um, as EMS programs, uh, approach us, uh, we wanna understand what their needs are. We, uh, heard from three very successful EMS programs, but there are a wide variety of programs out there, some of whom need a lot more support.

And so one of, uh, you know, the, our, our working model is to, to have that discussion and build that trust, you know, so we're creating a [03:06:00] set of videos, uh, that are as basic as, you know, what does a blood bank look like? How do you pack a cooler? How do you, uh, spike a blood bag to more complex discussions that our physicians provide, which is what is the right product?

So there's all of this support that, you know, we hope to bring to, uh, the EMS programs and in return. How can the EMS program support us? Uh, I think you heard from Diane and Courtney that, you know, we need more donors. How can you educate people to learn what their blood type is? Because we need specifically group O donors and, you know, how can you, you know, help and help us by, you know, scheduling blood drives, making sure that you are advocating for blood donation and advocating for, uh, the public to, uh, learn what their blood type is.[03:07:00]

Um, but another point that is often not discussed is that, uh, availability of a particularly low titer or whole blood rest in part in getting more donors. But in part by improving the re you know, changing the regulatory requirements on how that product is manufactured right now to manufacture, um, uh, lca reduced slow IDE or whole blood, you have to collect and manufacture that within eight hours of donation.

And what that means is that there's, uh, hundreds and thousands of group O donors from whom you can't manufacture low tide or whole blood because you simply can't get it back to the manufacturing site quickly enough. So we're working with the FDA and the industry to change that to something like 12 hours or 24 hours, which would dramatically, [03:08:00] uh, increase the availability of lca, reduced whole blood.

So there's multiple, um, dynamics at play that are really important in this discussion. Thanks py. Bill. Yeah. Hi. Thanks. Thanks, uh, John and, uh, the rest

of my, um, associates up here. Um, I'm gonna come at it more from the, uh, disaster preparedness standpoint. Um, as you know, A ABB has an inner organizational disaster task force that we all represent, um, and sit on.

So in the event of a disaster, uh, we can marshal government entities and resources very quickly to support whatever the disaster is. But the other thing that I wanted to talk about when it comes to disaster preparedness is really what are we doing ahead of that to better prepare the industry? So we work in three components.

One is cybersecurity. You guys have probably seen a couple of our big blood centers have been hit. Um, we want to get them operational more [03:09:00] quickly. We have, um, also ways to mitigate risk with some of the devices that are used to collect, uh, blood. And in the automated, uh, standpoint, there are monitoring, um, companies out there that can monitor those so that it, for instance, 95% of the independent blood centers collect on one machine if, and it's networked.

So if that goes down, you've got a problem collecting that particular product, right? So, uh, then the other thing that we look at is supply chain reliability and resilience. That's a critical component. I'll give you one example that affects slow titer row. There's one manufacturer of the popular bag that that's collected in, they happen to manufactured in Japan.

Um, they happen to have a limited capacity, so. We've gotta increase that capacity somehow. They have other manufacturing operations, but it doesn't happen overnight. So right now that's a limitation. If we collect in that bag, there are workarounds. [03:10:00] The other, the ability is to collect in a whole blood bag.

Well, that particular manufacturer manufactures in Puerto Rico today. That's the only place that they manufacture. We do have under emergency license another manufacturing operation in Europe where we can, um, continue to pick up manufacturing. So that mitigates some of the risks. But Puerto Rico is not a good place to put a manufacturing facility if you're worried about hurricanes.

And, um, we are, and we've had 'em head and the supply chain, um, can really be disrupted there. So we have to increase inventory levels and do things like that. The third area, and Diane touched on this, is donor sustainability. So we have a real challenge right now because in the last 10 years, um, we've lost over 30%, 37% to be exact, to decline in our, uh, 30 and under donors.

Well, the good news is the over 50 donors, that means age 50 and, and [03:11:00] over have kind of come to the rescue. And essentially that's who we're relying on. But you can see sustainability, it's not a good long-term picture. So we're really focused, and this is why a partnership with our EMS community is so important.

We heard it today. Um, they've done such a great job where we've partnered on bringing in new donors. We have to have new donors to, to supply the blood we need. This is a new product, uh, essentially for outpatient, you know, we already are supplying to the hospital, so we don't want to jeopardize. Our hospital customers, uh, we want to get that incremental blood.

So that's kind of how we approach it. We could go into lots of detail, but um, in the time allotted, that's kind of, I wanted to, you know, just tell you about the three critical areas. But thank you John. Thank you. Thank you all. Just very quickly too, final slides, if you could move forward to the next one.

Oh, I'm sorry. Yep. There we go. [03:12:00] This'll just give you a, a graphic and, and this is supported by, uh, blood Centers of America and the coalition. This will show you where currently existing 9 1 1 ground, 9 1 1. Ground transporting agencies or non transporting agencies have transfusion programs. We currently have just over 250 in the country.

Um, but that's picking up, we've had three more come online in the last three days this week. And the next slide we made reference to scope of practice. This will just give you a graphic. Oh, one more please. We'll give you a graphic of the, the states in red. Haha. Any idea why we picked red are those that allow, uh, EMS, clinicians, paramedics are above to initiate transfusions in the field.

Um, Arizona, it's limited to critical care [03:13:00] paramedics, California has a pilot study in six states now, six sites now, but it's only limited to six. Illinois and Michigan are currently working on waivers. Actually, Michigan last week approved, uh, its first blood program and the other states are actively working on some type of mechanism to be able to do that.

But that's where we are currently clear back to you for questions, comments. We're done. Thank you.

Okay, that opens up the time for public comment. Are there any questions in the audience that need to be addressed? Please Do you plan to come to the mic so the one line they can hear you please. Thank you. [03:14:00] Do you plan to circulate, uh, all the speaker's contact info so we can follow up?

Sure. Ga, ga said sure. Shaking his head no, but sure. I'll have to confirm with them that that's okay if I share. Yeah, love to have all the speakers contact info. So we go back. Questions, we can clap. And at least for the folks on the panel, if you email, uh, chair@prehospitaltransfusion.org, I can put you in touch with all of them, can't I?

Yeah.

I've got one question that's pertaining to State highway safety offices. So Rick and will ask you and um, Allie, to come up and maybe answer this one. How do you garner interest from EMS agencies in participating in the pre-hospital [03:15:00] blood programs? I don't believe the EMS agencies in our state are very familiar with that type of program, so maybe it's just as simple as reaching out and showing them how the impact, what kind of impact it can have on outcomes.

So Rick is not here. Uh, Rick had to hop onto a different call. Um, so I'm gonna answer this the best that I can, but I'll defer back to him too if there's further questions. I think a lot of what I have heard is that they're not as familiar, like I said, like Rick mentioned. And like I said, um, within the highway safety offices there aren't really subject matter experts when it comes to Whole Blood or EMS as a whole.

So when you talk about post crash care, I think a lot of people think of, you know, immediately following a crash. You're talking about, you know, law enforcement response and EMS response. Um, a lot of highway safety offices already have ALS established, which are our law enforcement liaisons. So I think that's kind of where it stops in terms of, you know, their subject [03:16:00] matter expertise.

Um, or what we think kind of stops that a lot of highway safety offices are interested in learning more about, you know, the whole blood programs and how we can support them. Um, I'm not gonna go too much into, you know, funding conversations. I know those have been kind of, there's been a lot of conversations surrounding funding and funding availability for whole blood programs and how much highway safety offices can really support those.

Um, and just EMS systems as a whole. So, um, I think that will be definitely a further conversation within the next couple of months too. Next couple of years. I don't know if that really fully answered that question, but um, like I said, if there's further questions then I can put them in touch with Rick too.

Yeah, we'll be sending you the questions that are directed to you, um, via email and Perfect. Getting a response and then posting response. Rose response is on ems.gov. Cool. Let's see. So how are you following? And this one's not directed at [03:17:00] anyone, but so anyone who's qualified can answer, how are you following up with transfusion services at the hospital to ensure that they have information they need about transfusions?

I'm looking at John, maybe? Yeah, I'll, I'll say on the EMS side and, and then have, um, folks who in the, the blood community where EMS is required to, uh, maintain the continuity of the blood. So when it's transfused in the field, it's delivered to, uh, the receiving hospital with appropriate documentation that addresses, uh, the patient's activities.

If, fortunately, not many of the EMS programs yet have experienced transfusion reactions, even even early transfusion reactions. But if something happens while it's in EMS care, stop the transfusion, immediately the [03:18:00] protocols address how they treat the transfusion reaction. Um, and then all of the subsequent documentation is provided to the receiving hospital receive.

Yeah, I was just gonna add that the new pre-hospital emergency standards, excuse me, require the EMS agency to turn over documentation, but also the blood bag. Any segments, any specimens, if they were collected, that's all now required to be turned over to the receiving hospital.

And I believe that's where we're gonna have to conclude public comment. So, to close out our program today, I'd like to introduce our final speakers. Now they're gonna talk about the next step for our expanding access to pre-hospital blood. So welcome back Gam Wijetunge, director of the office of EMS at NHTSA, and Dr.

Freeman from the National Center for Disaster Medicine and Public Health. I believe [03:19:00] Dr. Freeman stepped out to take a call, so you'll have to, he'll be back in a minute, I'm sure. Uh. Dr. Friedman serves as the Director of the Special and Special Assistant to the President for the US National Center for Disaster Medicine and Public Health, or NCDMPH.

He leads the National Joint Research and Education Program, disaster Medicine coordinating efforts across federal agencies and talk top epidemic institutions to strengthen the nation's medical and public health preparedness. With the background in spanning and ECDC, Johns Hopkins and MIT Lincoln LA Laboratory is a large scale scientific response to public health's crises, including COVID to 19 Ebola and EM o.

In addition to his federal leadership, Dr. Freeman serves as a associate professor at the Uniform University Uniform Services University, where he focuses on training and human performance in complex environments. Please join me in [03:20:00] welcoming Gam back and Dr. Freeman. I.

Thank you, Clarie. Uh, and, uh, Dr. Freeman, thank you for, for joining us. Um, very excited that you could, uh, make it here. Um, uh, as you know, uh, chief Council Simshauser was here, uh, this morning announcing, uh, the, the, and mentioned the major entry into agreement that we've, we've executed with the National Center for Disaster Medicine and Public Health.

Um, so we're, we're very excited about the, the number of different projects that we'll be working on in the coming years, including the demonstration projects, uh, around the country to support this initiative. Um, I'll just, um, you, you know, in a minute reflect, uh, uh, back on some of the things that I've been hearing, uh, throughout the day.

I, I learn something new every time. I, I talk to [03:21:00] folks who are involved in this space. Um, but I, I do want to, um, uh, before I forget, actually, I know this is Blood Advocacy Week on the hill, and, uh, there, uh, there is a, I think there's a blood drive on the hill in the Rayburn building, uh, tomorrow, right?

There is in fact a blood drive on the hill in the Rayburn building, um, in the Rayburn Foyer from 9:00 AM to 1:30 PM Great. Um, I will, uh, if, if my boss lets me outta the building, I will roll up my sleeve and walk down the, the street. Um. Uh, so, uh, one thing that, um, I, I did, uh, wanna, wanna talk about just, just briefly is, you know, we've been having a lot of discussions with our colleagues at, at DOD and really this pre-hospital blood transfusion is something that has come out of the, uh, as a lesson learned come out of the [03:22:00] conflicts, uh, that armed forces have been fighting over the past few decades.

And, uh, you know, one of the, the discussions that we've had is the, really the, that, that Jeff and I have had is the need for greater, uh, integration, uh, between the military and civilian health systems and how there's really, I think, starting with blood opportunities for even more lessons learned. And, um, uh, Jeff folks might not be familiar with things like the Walker Dip and, and, and where, where we're headed in the future.

But maybe if you could just talk about that for a minute. Yeah, sure. So, so first of all, thank you for, you know, for having us here and, um, uh, and certainly for

the partnership on, uh, pre-hospital, um, blood transfusion. I, I think, um, you know, there are a few reasons why we are so interested in, uh, being participants in this effort.

Uh, I, I think maybe it'd be helpful, you know, to to say a little bit about, um, our, our organization or our component of, of DOD, [03:23:00] why we exist, um, why we would support this particular project, and why it is, uh, as much a priority for, for us as, as it is for, for NHTSA and Department of Transportation. So, uh, for anybody not fully familiar with our center, uh, you know, we are, uh, uh, yes, we are a component, uh, of DOD component of the Uniform Services University, the, the Nation's Military Health Academy.

Uh, but we're also a federal interagency organization, uh, and we are governed as a collaboration across the departments of defense, uh, health and Human Services, uh, Homeland Security, transportation, uh, and Veterans Affairs. Uh, and while our mandate requires us to be, uh, you know, the quote, the, the Nation Center of Excellence in Disaster Medicine and public health, um, you know, the, the, the simple truth is there are a lot of centers of excellence right in the military, outside the military, uh, inside and outside of government, in academia and industry.

Uh, and so for us, our, we see our job [03:24:00] and our role as trying to bring expertise wherever it might reside in government outside of it, uh, bring that expertise to bear on, on priorities and, and critical challenges, uh, for both military and uh, uh, civilian health. Um, and so for those reasons, because Department of Transportation is in fact one of.

Uh, the entities that govern our center. Um, and given the support role that we play, um, we thought it was absolutely appropriate that we would support this sort of nationwide, uh, initiative. Uh, and in fact, trying to stay true to this idea of leveraging excellence wherever it exists, as opposed to trying to recapitulate it or, or build it anew.

Uh, at the federal level, um, we have established a, a sort of national, uh, joint, uh, ecosystem, which includes some of the leading, uh, medical, uh, and, and as well as public health for that matter. Uh, and both academic and non-academic, uh, uh, and, and research entities. Uh, I think there's somewhere [03:25:00] north of about 60 different institutions around the country, um, that are a part of that ecosystem, many of whom, uh, were added, um, specifically to support this specific, uh, initiative.

So again, I'm just stress that, that our, we see our role and our job as needing to support priorities. And, uh, and this is of course, uh, a very top priority for, for NHTSA. That doesn't necessarily explain why DOD cares. Right. And I, and I would say there are a few things there. I I, you know, Gam was absolutely right that, that, you know, pre-hospital blood is, is not the first, uh, and it's certainly not the last, uh, sort of innovation that maybe came from, uh, you know, an origin on the, on the battlefield, battlefield, uh, battlefield medicine, combat casualty care, and other sorts of, uh, uh, areas that are distinctly military stop.

The bleed actually is another good, good example. And in fact, one where it had DOD and uh, DOT, uh, collaboration. Um, but we think there, there is just [03:26:00] a really critical need to enhance the degree of partnership, uh, and translation across military and civilian communities. Um, whether that's translating something like pre-hospital blood transfusion, um, or translating things coming from the civilian communities, or even the evidence that an entity like NHTSA can provide that dwarf FICEMS anything that we have been able to secure over the last 20 years in, uh, the military health system.

Right. A national level program, um, you know, that's looking at and evaluating and learning and understanding how this practice is, is done and done well, or how it is perhaps, uh, uh, not done well. And where it can improve is essential data and information, um, not just to the civilian EMS communities, but uh, to the military health system.

And so we, we care deeply that we're able to sort of establish a much more robust partnership between the military and the civilian communities where [03:27:00] there, there truly is a two-way, uh, translation, right? There is immense innovation, uh, in, in the civilian health sector as well. And I think the military would benefit from that as well, whether it's something as complex as like ambient AI and what we're seeing being deployed in hospitals at Hopkins and Stanford and others, um, or something much simpler.

But these, these sorts of partnerships are critical, and they're especially critical right now, the threat landscape that our nation, that our, that our world has right now. You can't have this many flash points occurring around the world and expect that not one of them won't unravel that make it such that, you know, should more severe instances occur, whether it's a future conflict or a future pandemic.

The, the need for partnership in the military and the civilian medical communities is fundamental. Uh, and these types of, uh, partnerships are one that really force military and civilian, uh, collaboration and coordination and

[03:28:00] integration in ways that that few others do. So for all those reasons, we just feel really fortunate and really lucky to be a part of this.

And that, just the very last thing I'll say is, you know, I want to be clear again that our, our role here is support, right? This is NHTSA's vision, right? And this is Gam and his team and all of the partners, the, the coalition and others that have driven this forward. We are just here to support that vision, see that we can do our part to help execute it.

But, but this is, um, you know, this is not us. We are here to support. And I think that's an important thing to, to say. Great. Thanks Jeff. Now, um, and just, uh, and, and I'll keep looking at clarity for when the, the hook, uh, comes.

Um, I, I do wanna, um, highlight a few things that I've heard throughout the day and, you know, and, you know, I've heard a, a lot. Um, I get, [03:29:00] uh, I, I'll just say on a personal level, every time I see those case reports of those severely injured patients, um, it is, there's just remarkable recoveries and I, I know, uh, uh, most of us in the room have clinical experience and you see those, those patients described, and you can't imagine that they are, uh, uh, living to, to discharge.

So it is just incredible to hear every single time. Um, it, it, it doesn't get old. Um, and, and I, I do wanna highlight, you know, we heard, uh, about, uh, uh, a few, uh, pediatric cases, uh, today, um, and. You know, certainly when I go back and report to my bosses, the number of children dying on a roadways gets very, uh, specific attention within our agency, obviously within every community.

And, um, I do wanna, you know, there, I I have heard that there have been challenges with, um, uh, getting agencies comfortable with doing pre-hospital blood [03:30:00] transfusion among, uh, among children. Uh, you know, I would encourage you everyone, you know, listening in to continue to push in this area. And I, I do wanna highlight, uh, an important resource that is available, uh, really throughout the country.

My, my colleague t Morrison Canata from the EMS for Children program is here today. And, um, one thing that, uh, EMSC at HRSA has been supporting for several years is pediatric emergency care coordinators at a state, regional and local level. And there are a number of EMS agencies that now have PS as well.

And we know from evidence that when you have someone in that role, that, uh, outcomes for, uh, for kids improves. And I think that's a unique opportunity to,

uh, get, uh, pediatric emergency care coordinators involved in the process of advancing pre-hospital blood transfusion and obviously important to everything that we all do.

Um, some of [03:31:00] the, the case reports, we also, uh, heard about the critical role that, uh, EMD, that emergency medical dispatch. Played both in having that dispatcher be able to talk and instruct bystanders, but also locate that call quickly. Time is of the essence with these critical patients. So, you know, certainly, uh, continue to encourage people to involve your state and local 9 1 1 leadership.

Uh, 'cause they're really that first touchpoint in the chain of survival. Um, and also, you know, one, uh, I, I, I guess it was the Cobb County, uh, uh, uh, patient, that one of the Cobb County patients that received tourniquet application by law enforcement. Um, and again, uh, using a lesson learned out of, out of conflict, um, you know, law enforcement in a great, uh, uh, portion of the country, [03:32:00] and probably in most cases in most serious crashes is law enforcement.

That is first on the scene. And having those, uh, those police officers, uh, be confident with the care that they can provide is also really important. And yeah, I, I think needless to say, if you, if you need a tourniquet, you're gonna need blood too. So there's a, there's an important connection there too. And the, the law enforcement community really plays a critical role here.

Um, and, uh, just another, uh, uh, let me look at the, make sure the hook isn't coming yet. Um, another thing I wanna highlight and that I, I've learned through discussions with, uh, with the blood bank partners here is, um, I, I certainly seen a lot of EMS agencies starting to get engaged in supporting blood drives.

I think they are, you know, uh, at a local level really uniquely suited to for that, that role, [03:33:00] given their community connection. But, you know, I was, uh, I think it was a conversation with Bill a few weeks ago, you know, I was astonished to learn about the, the 37% decline in donors 30 and, and under, um, so a, a big challenge that we're, we're all facing now.

And I think another, another thing where we can engage the EMS community and the public safety community at large in helping with recruit those, those, uh, young donors ensure up the, uh, ensure up the supply. So, um, uh, and then just lastly, uh, just lastly, uh, you know, I, uh, it, different cultures involved honestly, throughout that chain of survival, um, both with blood banks and, and EMS and trauma care and public safety 9 1 1.

And everyone, we all have different cultures and we, you know, we have to learn how to talk each other's languages. Um, but, you know, I would say [03:34:00] that the, the one advantage that we do have in, in overcoming that is clearly a, a shared mission. Um, I'd venture to say that everyone here, online and in the room got in this line of work to, to save lives.

And, uh, we have a unique opportunity and I think that will help, um, move things, uh, ahead. Um. And then just finally, uh, the, uh, yeah, I, I've also, um, and Jeff, this is why I'm glad you heard it had had some, you know, conversations with colleagues in, in the military about also a big opportunity as we advance blood programs throughout the country to engage, um, our, our military colleagues, uh, whether they're active duty reserves or in the guard, they, uh, they are in virtually every community in, in the country.

And particularly there are, uh, so many medical providers in the [03:35:00] military that are out throughout the country, including rural areas. And I think another unique opportunity to, to pull them into this effort and ultimately, you know, get, get blood into the veins of the, the patients who, who need it. So, um, looking forward to continuing this conversation as we, uh, as we move forward.

But I, I, I will, uh, uh, Jeff, maybe if you had any, anything else you'd like to add and No, I'll, I'll just say again, I, you know, I, I think this is really important. I think it's really, I, I, I would say this, you know, I'm a risk scientist by training, right? And I can tell you it should my, my wife or myself, um, or our children be so unfortunate as to require this service.

I will be forever indebted to everyone in this room if it is available, right? And effectively delivered. Um, and that's just a, an incredible thing, um, to be a part of. So, again, [03:36:00] just, you know, thank you to all of you for having done the great work that brought, you know, everybody here today, you know, together and today and, and to sort of see the, the future come so great.

On that note, we have covered quite a bit of ground. The day of pre-hospital blood transfusions and post crash care. Uh, everybody in the audience at home and here in the room has found our presentations and our discussions valuable. A very special thanks to all our speakers and our panelists for sharing their thoughts and expertise and insight.

Um, your contributions are essential to make this work. Uh, we look forward to continuing this important work in the days to come. A recording of the today's summit is gonna be available, um, on [ems.gov](https://www.ems.gov), the fi on the FICEMS page. Um,

we'll be sure to post that and announce it whenever it's available. So that concludes day's summit.

Thank you for your time.