Prehospital Blood Transfusion in Practice — Paying for Your Prehospital Blood Program

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Brian Tegtmeyer: Good afternoon, and thank you to everyone joining us for the fourth installment of our special prehospital blood webinar series.

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Brian Tegtmeyer: I'm Brian Tegtmeyer, coordinator of NHTSA's National 911 Program here at NHTSA's Office of EMS. Gam Wijetunge, the Director of the NHTSA Office of EMS, usually moderates these series, but he's unable to join us today, so I'm moderating in his place.

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Brian Tegtmeyer: Today's session is Paying for Your Prehospital Blood Program.

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Brian Tegtmeyer: We address a number of EMS issues in our long-standing EMS Focus webinar program, including this special series on prehospital blood transfusions. If you've missed any of our first three sessions, including last month's session on working with a blood supplier, the recordings are posted on EMS.gov.

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Brian Tegtmeyer: On the screen, you will see a list of remaining topics addressed by the series. Please scan the QR code on the slide now and register for the upcoming webinars through December.

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Brian Tegtmeyer: You'll have to register for each session separately. We look forward to bringing you a variety of experts across the different agency structures, different geographies, to share information and potentially inspire others to consider a blood program in their community.

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Brian Tegtmeyer: A quick word on this series:

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Brian Tegtmeyer: EMS Focus gives the EMS community a unique opportunity to learn more about the prehospital blood transfusion practices. It brings federal, state, local leaders directly to

you, with time for an audience Q&A in every session and closed captioning available throughout.

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Brian Tegtmeyer: You see here the Office of EMS email address, and you can send us your questions and comments about future topics that you'd like to see addressed in an upcoming webinar.

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Brian Tegtmeyer: Two housekeeping items. You can use the Q&A button on your Zoom control panel to send questions in anytime. We may not get to them until the last 10 minutes of the session, but we'd appreciate you submitting the questions as you have them. Captions are available, just click “Show Captions”.

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00:02:19.320 --> 00:02:44.140
Brian Tegtmeyer: NHTSA's mission is reducing death and disabilities on our roadways. We strive to improve patient outcomes in the prehospital setting, focusing on a systems approach to EMS improvement. This ensures that any patient experiencing a medical emergency, from motor vehicle crash traumas to cardiac arrests in an office, our EMS systems and clinicians are prepared to provide effective clinical care to reduce injury and save lives.

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Brian Tegtmeyer: To support this mission, NHTSA focuses on bringing together data and experts to find the critical issues, providing leadership and coordination to the EMS community, assessing, planning, developing, and promoting comprehensive, evidence-based EMS and 911 systems.

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Brian Tegtmeyer: One way we achieve our mission is by providing resources to support EMS leaders and clinicians. The resource hub on EMS.gov makes it easy to browse, search, and download documents, reports, guidelines from our office,

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Brian Tegtmeyer: from members of the Federal Interagency Committee on Emergency Medical Services (FICEMS) and from partners across the field. You can scan the QR code on this slide, or just go to EMS.gov.

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00:03:31.080 --> 00:03:48.670
Brian Tegtmeyer: So, the minutes after a crash can decide whether someone survives. Research shows prehospital blood transfusions could save up to 37% of trauma patients with severe bleeding, including those injured in motor vehicle crashes. That's why agencies across the country are starting their own programs, and why

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Brian Tegtmeyer: DOT and NHTSA have supported the advancement of post-crash care and roadway safety through funding and research. It's central to our shared mission of reducing death and disabilities on our roadways.

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Brian Tegtmeyer: Today's panel, Paying for Your Prehospital Blood Program, takes on one of the biggest challenges agencies face, funding.

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Brian Tegtmeyer: Talking about funding,

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Brian Tegtmeyer: here at the U.S. Department of Transportation, from 2022 through 2025, DOT's Safe Streets and Roads for All Grant program, or SS4A, has awarded more than $157 million to help EMS, 911, and highway safety partners strengthen post-crash care, including $50 million to date for prehospital blood programs in 2025.

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Brian Tegtmeyer: We are excited

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Brian Tegtmeyer: that we know we will soon be announcing the fiscal year 2026 awardees. You can scan the QR code on the screen to see past awardees, and if you're subscribed to our EMS updates, you will receive notice when the new awards are announced.

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Brian Tegtmeyer: In addition to the grants, we also have an interagency agreement with the Department of War's Uniformed Services University, committing $30 million to expand prehospital blood transfusion programs.

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Brian Tegtmeyer: This partnership will launch at least 25 new programs over 3 years, and study their outcomes, building the evidence for programs nationwide.

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Brian Tegtmeyer: So, now let me welcome our panelists for today, Dr. John Krohmer, Dr. Matthew Levy, and David Long. I'd like each one of you to briefly introduce yourself and share any disclosures or conflicts of interest. Dr. Krohmer, we can start with you.

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00:05:35.140 --> 00:05:51.530
Dr. Jon Krohmer: Great, thank you so much, and I appreciate the opportunity to join you all today. As was mentioned, I'm an EMS physician, retired emergency physician. I'm no longer doing clinical work in the emergency department, but still doing a lot of EMS activities.

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Dr. Jon Krohmer: For the purposes of today, I'm the chair of the Prehospital Blood Transfusion Coalition.

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Dr. Jon Krohmer: I'd also selfishly like to indicate very proudly that I'm a former director of the Office of EMS at NHTSA, and I'm very proud of that experience. In terms of disclosures, I am an EMS consultant

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Dr. Jon Krohmer: and non-executive board member for Velico Medical, but will not be talking about any of those products today.

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00:06:25.480 --> 00:06:26.380
Brian Tegtmeyer: Dr. Levy.

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Dr. Matthew Levy: Great, good afternoon, everybody. What a pleasure to be with you today, and to share the virtual stage with my dear friends and colleagues, John and David, and of course, Brian. Thanks for stepping in for Gam. My name is Matt Levy. I, too, am an emergency medicine physician and EMS physician and medical director, a former paramedic, and I am a faculty member at Johns Hopkins University, which is where I hold my full-time appointment.

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00:06:50.580 --> 00:07:10.360
Dr. Matthew Levy: I'm the EMS Medical Director for Howard County, Maryland, which is just between DC and Baltimore, and I'll be speaking about our experiences. I do have some disclosures. Much like my colleague already mentioned, I won't be directly referencing any products I've got a conflict of interest with specifically, but I am a consultant with Cresilon,

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Dr. Matthew Levy: Abbott Labs, and as well as Stryker and GMR. I'm also the Medical Director of Training Services for the American Red Cross, but no relevant things there to talk about today, so thank you.

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Dr. Matthew Levy: David?

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00:07:24.790 --> 00:07:46.520
David Long: Well, I echo, you know, from my colleagues, as far as I just humbly appreciate the invite and the opportunity to share some information with you all. Mine will obviously be a lot more simple in the fact that I have no disclosures, so, excited about that, but,

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David Long: I'm retired from the fire service and a paramedic for nearly 40 years, and I currently serve as the executive director of the Tidewater EMS Council.

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David Long: We are a regional EMS council in the Commonwealth of Virginia for Region 7 specifically, that covers 26 jurisdictions and 91 EMS agencies. So, we've been running our blood program since October of

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David Long: 2022, and this past weekend, we just surpassed 700 transfusions since we started our regional program. Happy to be with you.

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Brian Tegtmeyer: Alright, great.

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Brian Tegtmeyer: Well, as we move on, we've got all of your logos here from the organizations you represent. And next up, we'll be looking at where we stand today with prehospital blood programs.

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Brian Tegtmeyer: Then…

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Dr. Jon Krohmer: We can move on to the next slide, please.

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Brian Tegtmeyer: Next slide, yeah.

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Dr. Jon Krohmer: There we go, thank you. We wanted to just share this very briefly with you. This

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Dr. Jon Krohmer: visualization of the ground prehospital programs is available on the prehospital blood transfusion website. You can get to the link

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Dr. Jon Krohmer: with the QR code there. We currently have just over 480 ground EMS agencies that we know about, and I want to be very deliberate

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Dr. Jon Krohmer: about indicating that, because the programs are starting very, very quickly, and we're dependent on you all to let us know about your programs. The next slide

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Dr. Jon Krohmer: will demonstrate a QR code that you can use to either get new information or updated information to us

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Dr. Jon Krohmer: that is then regularly used to update the map. So, if you're looking at the map right now and don't see your program, please make sure that your information has been entered into our database, and we will get you on the map.

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00:09:54.940 --> 00:10:09.370
Dr. Jon Krohmer: We're very excited. I've made a personal prediction that by the end of the year we'll have just over 530 ground programs. There are some folks that think that's a little bit aggressive, but we'll see what we do.

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Brian Tegtmeyer: Alright, great. Well, we'll go ahead and start with our first questions as well. And,

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Brian Tegtmeyer: Dr. Krohmer, we'll start with you. This is meant to be an informal conversation, so I invite all of our panelists to jump in and help each other out and add to the conversation. So, first of all, you know, when we talk about Prehospital blood, what does a Prehospital blood program really cost?

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Dr. Jon Krohmer: That's a dynamite question, because when we think about the programs, typically folks think about it in terms of the blood component itself

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Dr. Jon Krohmer: and the peripherals, the transfusion sets and things that are used, the disposables that are used during each blood transfusion. And nationally, that runs around $1,000 to $1,200 per transfusion.

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Dr. Jon Krohmer: I think it's important for folks to understand that there is a very significant infrastructure that needs to be developed

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Dr. Jon Krohmer: during the process of starting a blood program and maintaining it throughout. So, you know, it really starts with

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Dr. Jon Krohmer: the agencies or a region doing an initial needs assessment to determine if their clinical volume of patients in hemorrhagic shock is sufficient to support a program.

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Dr. Jon Krohmer: Then you've got to start working very quickly with the state Office of EMS, the blood supplier, or hospital blood bank in your area to establish that dialogue.

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Dr. Jon Krohmer: The infrastructure then includes a lot of hardware, software, and program activities that are needed to develop and run the program.

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Dr. Jon Krohmer: So, you've got to get the hardware that's required to maintain the cold chain storage requirements. You have to have the hardware that allows for transfusions, temperature monitoring, software programs that help facilitate temperature monitoring.

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Dr. Jon Krohmer: There are refrigerators, in some cases, that are needed, certainly coolers in the vehicles. There's a large training component, obviously, that needs to occur

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Dr. Jon Krohmer: initially to get the program going, and then very significantly, continuing education throughout. Obviously, the development of the policies, procedures, and protocols

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Dr. Jon Krohmer: under which the program will operate. Establishing and maintaining appropriate medical oversight and quality assurance activities. So,

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Dr. Jon Krohmer: the infrastructure

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Dr. Jon Krohmer: is honestly a much larger part of the program that needs to be addressed than simply getting the blood component from your blood supplier and transfusing the blood.

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Dr. Jon Krohmer: Around the country, we're finding that it typically costs an agency, an individual agency, in a range of $20,000 to $25,000 to establish that infrastructure initially,

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Dr. Jon Krohmer: and then probably at least half of that cost to maintain it on a continuing basis. So, certainly the blood components and the administration

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Dr. Jon Krohmer: components.

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Dr. Jon Krohmer: Products are critical to the individual transfusion, but there's a much larger infrastructure that needs to be established to successfully start and continue the program.

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Brian Tegtmeyer: Great, thank you. So, Dr. Levy, what did Howard County need to have in place before that first unit was transfused?

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Brian Tegtmeyer: You know, anything on there that Dr. Krohmer missed, or what was the package you guys started with?

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Dr. Matthew Levy: Great question, Brian. Dr. Krohmer covered it very comprehensively already, and I don't want to repeat everything he just said. I would agree with everything he just said.

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Dr. Matthew Levy: One of the things I would echo and amplify is the fact that

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Dr. Matthew Levy: there's a lot of stuff to do.

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Dr. Matthew Levy: But, I like to use what's called the four S's approach when I build programs, and that's stuff, space, staff, and systems. And I think about it in those buckets. That way, I can keep it all straight in my mind.

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Dr. Matthew Levy: I would say that the stuff is the materials, pieces are

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Dr. Matthew Levy: at the fundamental core of the ability to deliver transfusions safely and to maintain cold storage chain, and all the things that likely everybody already knows.

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Dr. Matthew Levy: But I can't emphasize enough the importance of having the right team and building the right team in your organization. This cannot happen without an active and an engaged medical director.

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Dr. Matthew Levy: You can't be a rubber-stamped medical director and run a prehospital transfusion program, so let's clear that air right now. You must be engaged in these programs. That's number one. Number two, you need a strong team.

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Dr. Matthew Levy: I'm very blessed and fortunate in Howard County to work with some of the most amazing prehospital clinicians. Yes, I'm phenomenally biased, but I've had the privilege of working with them. But they, and the leadership team that have made this a priority.

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Dr. Matthew Levy: And that really has been the magic behind this happening. Has it gone smoothly all the time? No, of course not. But having that right project team is really important.

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Dr. Matthew Levy: The systems is another piece of this, and I'll get into this later on, Brian, but I would just argue… I would just say that… that when we think about cost,

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Dr. Matthew Levy: everybody thinks about dollars and cents.

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Dr. Matthew Levy: Okay? But there's a whole other piece to cost, and that whole other piece is time and value. And all of this stuff that you're doing to build a prehospital transfusion program, which is obviously very important,

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00:16:24.410 --> 00:16:41.770
Dr. Matthew Levy: comes at the expense of time from other things. So, if you're a program tuning in who wants to develop and implement a prehospital transfusion program, but let's say your QAQI program isn't where you want it to be, or let's say you're having some other outcomes troubles—

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Dr. Matthew Levy: don't wait for someone to show up at your door with blood to go use. Use this as an opportunity to optimize your other things first, and then you will realize and be much more efficient with both cost and time expenditure. So that's kind of my answer, Brian. I'll turn it back to you.

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Brian Tegtmeyer: Oh, that's great. I mean, were there any surprises along the way? Something that cost more than you expected or even was less expensive?

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Dr. Matthew Levy: Well, you know, one of the things I would say is we

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Dr. Matthew Levy: were one of the earliest ground-based… we were actually the earliest ground-based system in Maryland to implement a transfusion program, so there was

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Dr. Matthew Levy: a bit of figuring out as we went, but we weren't the first in the country, we weren't even the 100th. We were, like, the 160th, or whatever it was. And so, this very, very incredible network of people that Dr. Krohmer and the team from the Coalition has assembled

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Dr. Matthew Levy: has been really helpful in cataloging those lessons learned and being resources to help along the way.

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Dr. Matthew Levy: I would also, if I may, put a plug out for some of the publications that we've written on behalf of the Coalition, the Prehospital Transfusion Coalition's clinical practice guidelines, as well as the coordinator guidelines and the educational guidelines to help systems, which are really best practice guidelines for what you need to be looking at doing. I don't know if we could put those in the chat, or if we could share those with everybody. We've made them open access.

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Dr. Matthew Levy: John, you look like you're about to say something, so I'll,

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Dr. Jon Krohmer: I…

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Dr. Matthew Levy: I'll give it to you.

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Dr. Jon Krohmer: You pointed out one thing, Matt, that I think is critically important, and you've got to have a good team at the agency or the region that's working on the program, but bringing in the appropriate stakeholders very early on is also

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Dr. Jon Krohmer: critical to get buy-in. We talk about hospital blood banks, but hospital administration needs to be involved. On the EMS side, the other agencies that you may be providing mutual aid with, the first responder agencies

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Dr. Jon Krohmer: working with the surgeons, particularly the surgeons, because they're very supportive of prehospital blood transfusion programs right now. But, you know, even some of the OBGYN and maternal-fetal medicine

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Dr. Jon Krohmer: consultants that we'll be depending on. So the… the stakeholder community is really much larger than we typically in EMS think about.

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Dr. Matthew Levy: Couldn't agree more. This is a whole village approach, and you know, I think when you look at discussable programs, and I look down the road to my colleague David in Tidewater, and this amazing regional approach, David, that you built, which I think we're going to hear from next,

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Dr. Matthew Levy: and you have to treat it like a regional asset, and that's kind of what we're doing now in Maryland, which is kind of interesting. It started locally, and it's grown, and it continues to grow, but John, you're exactly right. You know,

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00:19:44.560 --> 00:19:55.870
Dr. Matthew Levy: if you think about it from vein to vein, which is the way that our blood banker colleagues and our blood supplier colleagues have to think about it, it's all the stuff that has to happen to get that blood from one person's vein to another.

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Brian Tegtmeyer: That's great. So…

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Brian Tegtmeyer: You know, I think, David, the next question's really for you, and it's… we talked about the program cost, but when we get into it, what is the actual blood cost? You know, these costs can vary based on what kind they are, but can you talk about that and the decisions that agencies need to make when they look at this?

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David Long: Sure, and I think, you know, I would probably start with saying, you know, just,

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David Long: with a comment that Dr. Krohmer made when he talked about

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David Long: how agencies get to that decision point, you have to start, you know, again, with that needs assessment. I think the very first thing that is

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David Long: sometimes understated I think people see these programs being launched across the country. People are now becoming aware of the science and the research that's being published about the impact of these programs, and I think they're excited to move in that direction, to get started, and etc. So sometimes we get the cart in front of the horse.

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David Long: So if you slow that down just a bit, I think that, again, that needs assessment piece is extremely important.

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David Long: Using the transfusion criteria that pretty much has been universally accepted across the country is a great place to start for you to go back and do. You know, we recommend a 3-year retrospective; look at your data to tell you what number of cases would have met transfusion criteria, so that's going to kind of give you that look into how much blood would I need,

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David Long: and then that's going to impact things like cost. But then that also leads into, you know, the stakeholder conversation. Who are you bringing into these conversations? And it's understanding programs that are

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David Long: now in that realm of 5 years old that are now starting to experience things that nobody else has experienced.

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David Long: And that's understanding the impact of organizations like the FDA, the AABB, and etc., that approve the devices that we're using in the field that are certified or validated, if you will, for 5 years. Because once you reach that 5-year point, they have to either go through revalidation, or they have to be replaced with a newly validated unit. And then now you talk about

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David Long: program costs, etc., and those have an impact. But I think when you get into the blood cost, the thing that you hear most people coalesce around is just talking about number of transfusions that would occur in a time frame. And I think what gets lost in that conversation is the fact that

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David Long: most blood products have a 21-day shelf life and by the time you actually receive it from a blood supplier, you're lucky if you've got it for 19 days then at that point. And some of the blood you'll carry and not transfuse, and there is a cost associated with carrying blood that you do not transfuse.

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David Long: Just like there's a cost for blood that you actually transfuse. So, it's important that you budget for inventory, not for usage.

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David Long: Because if you're going to say that, ‘hey, my data suggests that I would do 30 transfusions a year’ and you tried to build a budget on 30 transfusions, you underestimated how much you're actually going to need to carry over the course of that year when you do it. And then there's the aspect of

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David Long: how things are evolving. There's going to be places in the country that aren't going to have access to blood suppliers or healthcare systems that are going to be willing to take blood products back.

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David Long: Which means you're either wasting the product or you are essentially, again, absorbing the full cost.

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David Long: So a rotation strategy may not be an option. If you're lucky or fortunate to have a rotation option, certainly you can limit the cost to the blood you actually transfuse.

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David Long: Or you may have some kind of, like, restock fee, is what we're seeing and hearing.

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David Long: And then that's further impacted by the fact that there's no way to truly be reimbursed for what we do, right?

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David Long: Dr. Krohmer is much more versed in talking about the, you know, the billing element or aspect, and how slow that progress is moving. The ALS2 feature,

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David Long: while we understand it and we appreciate the effort of CMS to address, the end result at the end of the day is it has negligible effect for most EMS agencies just because of other procedures that they were already doing that qualified for the ALS2 billing.

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David Long: So, it, again, goes to what kind of system you built. So, Dr. Krohmer threw out a figure a little bit ago. In our system, we plan on $25,000 per stage unit per year.

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David Long: And that essentially allows us to factor in essentially carrying 52 units of blood. So essentially, a unit of blood per week.

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David Long: And given our usage and our stack resupply, things of that nature, that has averaged out for us over the past 2 years.

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David Long: And what's really,

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David Long: What's really important about that is that it's also consistent with these averages. When you start talking about

129
00:25:38.290 --> 00:25:49.960

David Long: the blood product itself, you talk about the disposable administration equipment, and if you amortize the cost of your equipment, just to factor in that there might be a future need to replace, and etc.

130
00:25:49.960 --> 00:26:04.929
David Long: For our program, we're averaging $718.94 a transfusion. So when you do the math on what we're averaging, it puts us right back into that $25,000 figure.

131
00:26:05.240 --> 00:26:10.000
David Long: So, there's only one other thing that I would add real quickly, and it's just that…

132
00:26:10.140 --> 00:26:24.319
David Long: One of the ways that you could keep your costs down is through a regional program versus a singular agency program. So, I know when Dr. Levy mentioned he started up his program, he was doing everything and absorbed all of those costs.

133
00:26:24.320 --> 00:26:33.750
David Long: We're spread across 7 agencies currently, and I'll have another 4 online before March of 2027. That'll put us at 11.

134
00:26:33.750 --> 00:26:38.649
David Long: But because we have become that blood distributor in region, and we have one

135
00:26:38.650 --> 00:26:53.269
David Long: hub, we are able to order in volume that further gives us pricing tier discounts. We've been able to keep costs on the disposable equipment and supplies, as well as the blood product at a low.

136
00:26:54.170 --> 00:27:12.180
Dr. Matthew Levy: David, you just mentioned something I wanted to add, that, you know, as our program grew and more colleagues and more sister agencies joined in, we were able to minimize costs. Believe it or not, one of the costs that was getting very high were courier costs to move the blood back and forth throughout the region. And we had one of our health systems step up and say,

137
00:27:12.180 --> 00:27:20.599

Dr. Matthew Levy: ‘We want to help’. And they became the hub for the supply chain for the blood to come from the blood supplier

138
00:27:20.600 --> 00:27:36.519
Dr. Matthew Levy: to the hospital, who would then be the point of distribution to the region. And we were able to save thousands of dollars in courier charges each year. So you bring up a great point. The other point that I think is worthy of mentioning is that we're—for those joining in,

139
00:27:36.520 --> 00:27:50.189
Dr. Matthew Levy: Dr. Krohmer, myself, and David—we're being very conscious of the fact that we're using the term blood to mean any number of different blood products, okay? This isn't about whole blood.

140
00:27:50.700 --> 00:28:06.599
Dr. Matthew Levy: Many of our systems are using whole blood, and they're, you know… that's a separate webinar for a separate day, but what I would say is that it's about getting what you can get, and using what you can use. And so, the cost does vary depending upon the blood product. If you're using whole blood versus

141
00:28:06.620 --> 00:28:16.770
Dr. Matthew Levy: PRBCs, versus just plasma. So just know that there's that piece of this as well, that I think that you have to put in there. But Dave, you mentioned something really important a minute ago about

142
00:28:16.850 --> 00:28:27.129
Dr. Matthew Levy: looking backward, because you've got to be able to forecast what your rate of utilization is going to be to budget this stuff out. And when we started in Howard County, we

143
00:28:27.230 --> 00:28:51.219
Dr. Matthew Levy: didn't really… we didn't know how much we were going to use, so we looked backwards at our high-priority patients who met the vital signs criteria that ended up in a trauma center, and that gave us kind of a benchmark. And obviously that number was actually higher than what we ended up using in the first year, but we'd rather it be higher than lower for budgeting purposes, and that's how we started off. That was, I think, the only other piece

144
00:28:51.220 --> 00:28:54.190
Dr. Matthew Levy: I would add that Dr. Krohmer didn't mention earlier.

145
00:28:54.190 --> 00:28:58.670
Dr. Matthew Levy: But yeah, it's a lot of pieces.

146
00:28:58.670 --> 00:29:10.059
David Long: So the thing that I would add is I just counseled an agency about the startup of a program, and what was shocking to me is that they have a healthcare system that's willing to give them the blood product.

147
00:29:10.060 --> 00:29:21.789
David Long: But the question and the concern was over this: that the healthcare system didn't have access to whole blood yet, and they had been working through an 8-month window of trying to figure it out. And I'm like,

148
00:29:21.880 --> 00:29:28.850
David Long: then if they're willing to give you what they have, and they have packed cells, and they have X, go ahead, then go. Go, go, go.

149
00:29:28.850 --> 00:29:30.169
Dr. Matthew Levy: Well go, yeah, absolutely.

150
00:29:30.170 --> 00:29:33.440
David Long: So those are other things that I think

151
00:29:33.560 --> 00:29:40.640
David Long: people have heard; I guess, the whole blood moniker for so long. It's really getting back to blood products and what's available.

152
00:29:40.640 --> 00:29:54.959
Dr. Matthew Levy: You know, Dave, you bring up such an interesting point, right? Which is the fact that that discussion even occurred… I mean, I see John smiling ear to ear, right? The fact that that discussion even occurred means we've come so far.

153
00:29:54.960 --> 00:29:55.540
David Long: Sure.

154
00:29:55.540 --> 00:30:11.069
Dr. Matthew Levy: Because 5, 7, 10 years ago, that would have been unheard of. So we've come so far that hospitals are saying, ‘listen, this is what we can do, will you take it?’ You know, that's… wow, mind-blown. That's really awesome.

155
00:30:11.070 --> 00:30:11.700
David Long: Yeah..

156
00:30:12.750 --> 00:30:14.159
Dr. Matthew Levy: Oh, you're muted there, John.

157
00:30:17.080 --> 00:30:28.010
Dr. Jon Krohmer: Sorry about that. This is a little bit of a tangent, but it's directly related to the expenses of a blood program. You know, whole blood is the most expensive component.

158
00:30:28.440 --> 00:30:46.059
Dr. Jon Krohmer: Packed cells, or red cells are somewhere in between. Liquid plasma is relatively cheap and in great abundance with most blood suppliers. So, you know, if it ends up being purely a financial issue

159
00:30:46.140 --> 00:31:05.380
Dr. Jon Krohmer: for a program, look at using liquid plasma. It's got all the coagulation factors, it helps provide the intravascular volume, it will hopefully help stop the bleeding and diminish the need for subsequent transfusions, and it's

160
00:31:05.380 --> 00:31:06.340
David Long: You know…

161
00:31:06.340 --> 00:31:11.259
Dr. Jon Krohmer: 20% or better the cost of the other components.

162
00:31:11.710 --> 00:31:15.240
Dr. Matthew Levy: And you can still build out your cold chain, right? You can still build…

163
00:31:15.240 --> 00:31:16.710
Dr. Jon Krohmer: Sure, it still requires it.

164
00:31:16.710 --> 00:31:27.860
Dr. Matthew Levy: And you can still do all those pieces, so that as product becomes available, it's a pivot. In fact, one of the things that I think we—having been at the AABB meeting earlier last week—

165
00:31:27.860 --> 00:31:44.029
Dr. Matthew Levy: that we all kind of feel very strongly about is don't build your program around a single blood product, because all indicators are that it's going to change over time, due to supply, due to availability, due to science and evidence. So build it around the process, not the product.

166
00:31:45.330 --> 00:31:59.339
David Long: Well, and the last comment I would add on that, Doc, and I think it's extremely important, is sometimes you don't see the numbers and that would result in somebody standing up a program,

167
00:31:59.730 --> 00:32:12.440
David Long: especially in our rural communities. However, I'm sensitive to creating disparities of care. That you get this kind of care if you live in a super urban center, but you don't get this kind of care if you live in a rural community. But

168
00:32:12.440 --> 00:32:24.630
David Long: plasma… liquid plasma over crystalloid solution all day long, every day. We know how people like Dr. Holcomb and Dr. Jenkins and others feel about crystalloids.

169
00:32:24.730 --> 00:32:40.149
David Long: But it also, again, from a price break standpoint, especially in rural communities that may not be as well resourced et cetera, it is absolutely a solution, and that's one of our targets as we expand in Region 7 and our rural communities, is the liquid plasma solution.

170
00:32:41.780 --> 00:32:42.440
Dr. Matthew Levy: Absolutely.

171
00:32:43.110 --> 00:32:44.120
Brian Tegtmeyer: Good discussion.

172
00:32:44.130 --> 00:32:59.890
Brian Tegtmeyer: So, let's talk about how, specifically, the Howard County and Tidewater programs are funded. I mean, was this a budget line item? Did either of you receive any grants or partnerships? Obviously, Tidewater's got a regional approach, but

173
00:32:59.890 --> 00:33:06.860
Brian Tegtmeyer: how did you start the process of budgeting, so that you could implement and sustain these programs?

174
00:33:07.620 --> 00:33:16.560
Dr. Matthew Levy: So, in Howard, we started small, and I think that's the first thing I would say, it's okay to start small.

175
00:33:16.600 --> 00:33:28.430
Dr. Matthew Levy: We wanted to bolster our regional preparedness for mass casualty response and our regional ability to move patients through the system and keep them alive while we did that.

176
00:33:28.430 --> 00:33:38.520
Dr. Matthew Levy: And we have. We're very blessed and fortunate to have really great emergency management colleagues, and we were able to use some grant and preparedness funds

177
00:33:38.560 --> 00:33:44.640
Dr. Matthew Levy: that had to be re-verified for this purpose, but we were able to do that early on. Those funds—this is…

178
00:33:44.980 --> 00:34:03.710
Dr. Matthew Levy: arguably 4 or 5 years ago now—those funds don't exist anymore, but that was one thing that we were able to do. But, to your point, we then had to build that into our budget. So right now, it's part of our operating budget line, just like our medication resupply, just like our controlled substances, just like our monitor replacement and our cot replacement, all that other stuff.

179
00:34:03.710 --> 00:34:05.549
Dr. Matthew Levy: Dave, I don't know if you guys did something similar?

180
00:34:06.120 --> 00:34:19.229
David Long: So, for us, the Regional EMS Council is a non-profit, so as a non-profit, we actually supplied the initial funding for the first two years to essentially,

181
00:34:19.330 --> 00:34:43.059
David Long: I guess, validate starting up a blood program in the region. And we started small, so in the same context Dr. Levy spoke, we chose a single EMS agency and a single EMS supervisor to be the platform that carried the blood. They carried it for 6 months, and we expanded into another jurisdiction with another EMS supervisor, and within a year

182
00:34:43.060 --> 00:34:51.590
David Long: that expanded across 2 more jurisdictions, and then shortly after that, we expanded to the full 7 that we're at now.

183
00:34:51.590 --> 00:35:05.010
David Long: So funding started with the nonprofit, it shifted then to the agencies, providing the primary source of funding, but we've continued to look for funding opportunities.

184
00:35:05.010 --> 00:35:12.930
David Long: So, fortunately, again, these relationships, Dr. Levy explained to me about

185
00:35:12.930 --> 00:35:26.450
David Long: a Homeland Security grant that they were successful in securing. We were able to take that and we just received an Urban Area Security Initiatives grant for $190,000 that is expanding our program, so now that

186
00:35:26.450 --> 00:35:33.410
David Long: we finally have that money, our orders have been placed, and that's what's going to double the size of our program

187
00:35:33.510 --> 00:35:35.339

David Long: in the coming months.

188
00:35:35.340 --> 00:36:00.330
David Long: But then we also had a hidden gem within the Commonwealth that I was unfamiliar with, and it was actually my blood supplier who gave me that information. So, we used Blood Connection out of South Carolina. They informed us about the Commonwealth Transfusion Foundation that existed before the American Red Cross really came into the state and kind of became that principal blood supplier. And so we received a $150,000

189
00:36:00.330 --> 00:36:06.190
David Long: grant from the Commonwealth Transfusion Foundation to expand the program. And so

190
00:36:06.580 --> 00:36:22.530
David Long: as we've demonstrated success to the state, now the state Office of EMS is providing us special project funding to support several of the regions across the Commonwealth to support the blood programs.

191
00:36:22.530 --> 00:36:27.209
David Long: So it's a multifaceted thing. But one of the things that

192
00:36:27.210 --> 00:36:51.730
David Long: we're also investigating is looking at the model that Florida set, the model that Texas set. I've had an opportunity to meet with one of our delegates and start a conversation about a Virginia initiative to create a program and funding stream to support it moving forward in the same fashion, so…

193
00:36:52.450 --> 00:36:52.980
David Long: I'm good.

194
00:36:52.980 --> 00:36:54.199
Dr. Jon Krohmer: I'm glad you mentioned…

195
00:36:54.380 --> 00:37:11.640

Dr. Jon Krohmer: I'm glad you mentioned those two models, David, because Texas and Florida have been both very successful in achieving state funds. There are a lot of programs also that have reached out to local and regional

196
00:37:11.640 --> 00:37:28.720
Dr. Jon Krohmer: foundations and philanthropic organizations, and have been able to, for their programs, get fairly substantial amounts of money as well. So, you've got to be creative, you've got to know the potential sources and be aggressive about reaching out to them.

197
00:37:29.690 --> 00:37:54.509
Brian Tegtmeyer: I think you guys have mentioned this a little bit, but let's make sure we don't have anything we don't want to forget. But, you know, working through the implementation, there's regional, multi-agency programs, and then even times you have to factor in mutual aid. What are the benefits of that? And how do you build those partnerships and agreements, and specifically, David, Tidewater,

198
00:37:54.510 --> 00:37:58.420
Brian Tegtmeyer: what you guys do? Let's talk about that regional approach.

199
00:38:00.930 --> 00:38:18.850
David Long: So for us, that was one of the things that was extremely important to us, because as we kind of added agency by agency, we were somewhat strategic in where those were placed, because they were placed along our interstate corridors that made it easy for people to get up on interstates and move

200
00:38:18.850 --> 00:38:21.250
David Long: across the different cities.

201
00:38:21.250 --> 00:38:22.340
David Long: So

202
00:38:22.340 --> 00:38:36.669
David Long: then working through the 911 centers and making sure that it was understood that these resources are available and can be requested to come next door, we have had multiple cases of mutual aid cases where you've had shootings with multiple patients.

203

00:38:36.670 --> 00:38:48.730
David Long: You'll call into your mutual aid partner who will bring units of blood over and either stay and treat or hand off the blood product.

204
00:38:49.870 --> 00:39:00.870
David Long: And that has proven to be hugely successful. We also established an intercept model. Our intercept model, particularly in our rural communities that aren't currently carrying, is how they can start

205
00:39:00.870 --> 00:39:18.140
David Long: their movement towards designated trauma centers at intercept with blood medics in these cities and/or counties that they'd be driving through to have them hop on board to continue providing that high-level care as they move forward.

206
00:39:18.140 --> 00:39:33.199
David Long: One of the things that we've established in this region… and this may not necessarily reflect across the country, but because of the strength of our mutual aid agreements, those agreements essentially eliminate the

207
00:39:33.250 --> 00:39:47.730
David Long: ‘I gave a unit of blood, and it cost X amount of dollars, and I'm looking for X amount of money back’, so it's just, essentially, you provided a service, when needed, and everybody owns their share of that contribution, so…

208
00:39:47.950 --> 00:40:00.869
Dr. Jon Krohmer: Yeah, Brian, we're noticing that a lot in Michigan as well. We currently have 5 programs throughout the state, and as those programs have

209
00:40:01.400 --> 00:40:15.680
Dr. Jon Krohmer: developed more experience and are now online, they're receiving mutual aid requests from surrounding agencies and surrounding counties. So we're noticing that that's sort of a natural evolution

210
00:40:15.780 --> 00:40:18.060
Dr. Jon Krohmer: of the process as well.

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00:40:18.250 --> 00:40:32.559
David Long: And the last thing that I would add to that, Brian, and I think it's extremely important. What makes that successful for us is the standardization of the program. Everybody uses the same equipment. Everybody has essentially the same protocols.

212
00:40:32.560 --> 00:40:56.529
David Long: All the medical directors meet regularly and they converse, we're able to meet with our designated trauma centers, etc. So you've got all the critical and key stakeholders in the same rooms having the same conversations, shaking their heads up and down, so you don't have to worry about those pass-offs. Even to the point that we've been working with one of our healthcare systems,

213
00:40:56.660 --> 00:41:05.100
David Long: Sentara Healthcare, we've tried to convince them of the importance of using the same equipment that we use in the prehospital space

214
00:41:05.100 --> 00:41:21.219
David Long: just to improve the handoff of patients that are under care, receiving blood products, etc. And they actually have implemented a trial. We're working on that trial right now and we're getting great feedback from what that interaction is looking like.

215
00:41:21.730 --> 00:41:46.359
Brian Tegtmeyer: Oh, that's great. And, you know, David, you said something that is a lot more in my day-to-day, which is working with your 911 centers on the mutual aid part. And I would say, and I know you all agree, don't forget your 911 partner, both in identifying which calls are appropriate to alert prehospital blood where available and also where you can partner and work with your mutual aid and regional partners as well, because 911 has a role in that.

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00:41:46.360 --> 00:41:56.100
Brian Tegtmeyer: And we're working to educate the 911 community on their role in prehospital blood, just as you're working to advocate for the EMS communities and adoptions.

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00:41:56.100 --> 00:42:00.249
Brian Tegtmeyer: So, keeping it moving here, I mean, you mentioned rural communities and

218
00:42:00.250 --> 00:42:15.570

Brian Tegtmeyer: the handoff along the way. I mean, what other considerations or models should we be looking at to serve those rural communities, recognizing that they may only have a need for blood utilization a couple times a year?

219
00:42:19.520 --> 00:42:27.900
Dr. Jon Krohmer: Well, I think one of the things that we're hearing from a number of areas around the country, and I sort of alluded to it earlier,

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00:42:28.030 --> 00:42:41.269
Dr. Jon Krohmer: because of the limited supply of whole blood, there's a natural tendency to be conservative on the part of the blood community and supplying those to EMS.

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00:42:41.490 --> 00:42:58.800
Dr. Jon Krohmer: Most rural hospitals have a few units of packed cells and a few units of plasma, if that, in-house. So, particularly in rural areas, I think if you can focus on the plasma aspect of it

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00:42:59.120 --> 00:43:09.840
Dr. Jon Krohmer: it'll be easier to get that supply and it'll be easier to establish, exchange programs or supply programs with rural hospitals.

223
00:43:10.310 --> 00:43:28.240
Dr. Jon Krohmer: I'm gonna do a little bit of a tangent here, because I want to make sure that when we're talking about the finances we don't lose sight of the fact that this is an important issue for healthcare systems in general.

224
00:43:28.350 --> 00:43:36.100
Dr. Jon Krohmer: I mean, what we're finding with prehospital transfusion programs is that patients arrive more stable

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00:43:36.130 --> 00:43:54.230
Dr. Jon Krohmer: in the hospital, in the emergency department or the trauma center, whether it's a rural hospital and then they have to be transferred out, or even in urban areas. They're more stable, they require less subsequent transfusions while in-house.

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00:43:54.300 --> 00:44:02.770

Dr. Jon Krohmer: Oftentimes, they require less critical care and ICU days, and less hospital stay days.

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00:44:02.860 --> 00:44:09.209
Dr. Jon Krohmer: All of those things save healthcare system dollars.

228
00:44:09.660 --> 00:44:15.899
Dr. Jon Krohmer: So, the healthcare system is really reaping financial benefits

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00:44:15.990 --> 00:44:33.579
Dr. Jon Krohmer: from prehospital transfusion programs. I mean, the University of Texas San Antonio demonstrated at University Hospital that after they implemented their prehospital transfusion program, their in-hospital blood bank costs

230
00:44:33.820 --> 00:44:38.239
Dr. Jon Krohmer: were almost a million dollars less annually.

231
00:44:38.360 --> 00:44:51.489
Dr. Jon Krohmer: So, there is a significant financial impact to healthcare institutions that we need to continue to remind them about and use to, to our benefit, to get their support.

232
00:44:52.480 --> 00:45:06.200
Brian Tegtmeyer: Yeah, I mean, I think that's kind of what you talked about in the beginning, all of you, about building the stakeholders and the support group. If you can prove that while there's startup costs, it can save money in the long run, that's a good way to get buy-in and support. So, great point.

233
00:45:06.200 --> 00:45:16.320
David Long: And if I can, real quick, so there's just 3 quick things that I would add there, right? I think the way that you did this, particularly for rural communities, one is that

234
00:45:16.350 --> 00:45:27.029
David Long: frequency is the wrong test. It's, and as Dr. Krohmer just said, it's the time to definitive care, so as long as we make sure that we're paying attention to that, I think that that helps

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00:45:27.030 --> 00:45:41.190
David Long: for low volume. The model that works best, obviously, is the unit that never expires, and that's why the relationships with those rural hospital systems,

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00:45:41.190 --> 00:45:54.540
David Long: filling the gap there is so critically important, and particularly in the line of liquid plasma, this makes the most sense there. And I think

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00:45:54.540 --> 00:46:02.939
David Long: that then leads to the scope issue because one of the challenges many of the rural EMS agencies have is their staffing levels.

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00:46:02.940 --> 00:46:25.730
David Long: There aren't as many paramedics in those rural spaces, which means you have advanced EMTs. So one of the things that we recently started a discussion with our medical direction committee in Virginia is a conversation of whether advanced EMTs would fit the role of transfusing liquid plasma in our patients that need it.

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00:46:25.730 --> 00:46:36.190
David Long: So that's started a whole new conversation that may influence what that care looks like in our rural communities moving forward, but there's a lot of work to be done there, right?

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00:46:38.050 --> 00:46:45.600
Dr. Jon Krohmer: And again, don't focus on just the trauma population. I mean, they're an extremely

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00:46:45.600 --> 00:46:58.750
Dr. Jon Krohmer: important aspect, both blunt and penetrating, and obviously, DOT has the focus on motor vehicle crashes, but there are a large number of geriatric patients who experience hemorrhagic shock

242
00:46:59.090 --> 00:47:07.940
Dr. Jon Krohmer: episodes, or OB patients, and it's not limited to adults. We've got to consider pediatrics as well.

243

00:47:09.250 --> 00:47:10.330
Brian Tegtmeyer: Great point.

244
00:47:11.480 --> 00:47:23.520
Brian Tegtmeyer: Well, we're running to the top of the hour here, so I want to move on to our next slide and talk about an American Journal of Surgery Statistics on costs.

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00:47:23.650 --> 00:47:32.509
Brian Tegtmeyer: Dr. Levy, I think you were going to be able to start off the discussion on this slide.

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00:47:32.700 --> 00:47:37.649
Dr. Matthew Levy: Yeah, absolutely. And in the interest of time, I'll try to be as concise as possible.

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00:47:37.770 --> 00:47:53.099
Dr. Matthew Levy: I think you've already heard from everybody on today's webinar that prehospital blood programs work best when they're thought of as a regional effort, not an isolated EMS or hospital program, and that we all know that these programs have been shown to not only improve

248
00:47:53.240 --> 00:48:01.659
Dr. Matthew Levy: outcomes, and to really save time in hemorrhagic shock, as David said, but there was a financial implication there as well.

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00:48:01.950 --> 00:48:12.189
Dr. Matthew Levy: This manuscript looked at things through a financial lens, and it really, really supports the value proposition very nicely of prehospital transfusion

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00:48:12.190 --> 00:48:22.420
Dr. Matthew Levy: because what it talks about is the fact that prehospital blood was associated with fewer subsequent in-hospital transfusions, improved clinical and shock physiology,

251
00:48:22.520 --> 00:48:29.949
Dr. Matthew Levy: and resulted in an estimated cost of approximately $15,000 per

252
00:48:30.060 --> 00:48:33.409
Dr. Matthew Levy: unexpected survivor. What does that even mean?

253
00:48:33.750 --> 00:48:43.130
Dr. Matthew Levy: Well, what they're showing here is that the cost here per patient; that this is the cost

254
00:48:43.130 --> 00:48:48.379
Dr. Matthew Levy: for EMS to have one person survive who wouldn't have been expected to survive.

255
00:48:48.380 --> 00:49:04.370
Dr. Matthew Levy: Per patient, you're looking at about $925. We use this kind of number needed to treat, which is a number we use throughout medicine and healthcare and science to talk about how many times we have to do a certain procedure to save one life.

256
00:49:04.850 --> 00:49:07.699
Dr. Matthew Levy: And the number needed to treat of 17,

257
00:49:08.060 --> 00:49:23.250
Dr. Matthew Levy: you gotta give blood to 17 patients in shock to save one life. That number is really fascinating, and it's actually very low. It's one of the lower numbers we see in terms of other things that we do for other life-saving interventions. So this study really opened our eyes. This is our single-system retrospective review.

258
00:49:23.250 --> 00:49:28.910
Dr. Matthew Levy: But what it shows us is exactly what my colleagues have already mentioned, which is that

259
00:49:28.910 --> 00:49:34.179
Dr. Matthew Levy: giving that blood sooner, restoring normal physiology earlier, saves

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00:49:34.760 --> 00:49:46.789
Dr. Matthew Levy: higher acuity resources in hospitals, and ultimately higher acuity resources cost more money. So really an interesting thing, and I think that's my takeaway from this study.

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00:49:48.010 --> 00:49:48.620
Brian Tegtmeyer: Right.

262
00:49:48.970 --> 00:49:50.600
Brian Tegtmeyer: Okay,

263
00:49:51.490 --> 00:50:05.170
Brian Tegtmeyer: And that's what we covered there. So, you know, I think just some quick tips here. There's a lot of information on how to get started in these programs. You've just heard about paying for the programs and opportunities and considerations.

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00:50:05.170 --> 00:50:12.470
Brian Tegtmeyer: I want to wrap up with just talking a little bit more about what we're doing at the United States Department of Transportation and NHTSA.

265
00:50:12.470 --> 00:50:36.019
Brian Tegtmeyer: The National Roadway Safety Strategy was republished this year by Secretary Duffy's office and it highlights prehospital blood, it highlights the inclusion of 911 call-taking protocols, and they're both named as priorities within the National Roadway Safety Strategy, and I think that's an important step forward from a policy level of our

266
00:50:36.020 --> 00:50:44.099
Brian Tegtmeyer: our agencies. And for us, 911 and EMS working together is a priority because 911 is that first link in post-crash care.

267
00:50:44.100 --> 00:50:50.509
Brian Tegtmeyer: The faster we identify and locate a patient who's bleeding, the faster blood can reach them and impact their outcome.

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00:50:50.680 --> 00:51:04.530
Brian Tegtmeyer: So we think that that's great. Here at NHTSA, prehospital blood is one of our Pathways to Safer Streets, eight federal priorities with the administrator's action plan, and for us

269
00:51:04.530 --> 00:51:12.040

Brian Tegtmeyer: that comes with new tools and resources to strengthen our work with our partners at the State Highway Safety Offices.

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00:51:12.040 --> 00:51:25.619
Brian Tegtmeyer: Because getting blood to patients in the field is a highway safety issue as much as a clinical one, and so we're working to continue to identify and support opportunities to increase that advancement and the systems that are needed.

271
00:51:26.620 --> 00:51:37.390
Brian Tegtmeyer: So, how are we doing that? We're increasing national visibility of prehospital blood transfusions with public safety, highway safety offices and elected officials.

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00:51:37.390 --> 00:51:58.830
Brian Tegtmeyer: We're advancing education, collaboration, and best practice sharing across EMS and 911. We're partnering with our national and regional stakeholders across the care continuum, and we're releasing resources, infographics, informational videos, use cases, and communicating impact and best practices. All of this while trying to provide federal funding to support scalable programs.

273
00:51:59.930 --> 00:52:06.550
Brian Tegtmeyer: Our aim is to accelerate adoption nationwide to advance one of the most transformative EMS interventions in a generation.

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00:52:07.830 --> 00:52:25.639
Brian Tegtmeyer: You can access our resources by scanning the QR code here to access post-crash care and prehospital blood resources at EMS.gov, and you can learn how 911 and public safety are improving highway safety and enhancing post-crash care, and explore ways these efforts are helping save lives. So when you're building your

275
00:52:25.640 --> 00:52:30.410
Brian Tegtmeyer: outreach to your stakeholder communities, know that these are all available for your use.

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00:52:31.640 --> 00:52:47.249
Brian Tegtmeyer: So, we're moving to our Q&A. It looks like we kind of took care of the ones that were submitted. We've been able to answer those, and I don't see any additional questions for this group, so I think…

277
00:52:47.250 --> 00:52:47.920
Dr. Jon Krohmer: Brian?

278
00:52:48.060 --> 00:52:57.620
Dr. Jon Krohmer: Brian, I'm sorry to interrupt. If I could expand just a little bit on Ashlie's question, because it's a very good question about

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00:52:57.620 --> 00:53:10.160
Dr. Jon Krohmer: states who are limiting their funds to whole blood versus other components. It's a great question. It's unfortunate that they're doing that. I think that really is

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00:53:10.160 --> 00:53:15.540
Dr. Jon Krohmer: based on initial work that we did with

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00:53:16.050 --> 00:53:33.230
Dr. Jon Krohmer: EMS transfusion programs. There was such a large focus on whole blood initially that that's sort of the rabbit hole that folks have continued to go down. I think we need to do a better job of educating folks, both at the national

282
00:53:33.230 --> 00:53:48.039
Dr. Jon Krohmer: and state and regional levels, that whole blood, if you can get it, is nice, but it's not the end-all, be-all, and it's not the answer to all situations. If a state's going to fund blood program

283
00:53:48.070 --> 00:53:59.729
Dr. Jon Krohmer: development in their state, they really should allow for any FDA-approved blood component to fall into that grant program.

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00:54:00.440 --> 00:54:00.990
David Long: That's true.

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00:54:00.990 --> 00:54:03.029
Brian Tegtmeyer: Great, great follow-up, thank you.

286
00:54:03.180 --> 00:54:25.630
Brian Tegtmeyer: And you know, again, I'm substituting for Gam on this session, but I will say, since our office has started focusing on prehospital blood almost 2 years ago, in the last 18 months, I've tried to do my part, which I encourage everyone to do, is that if you're in this business and if you want to advance your prehospital blood programs, you also need to be

287
00:54:25.630 --> 00:54:50.459
Brian Tegtmeyer: advocating for the donation of blood. And I think it's very fascinating, especially with David and Dr. Levy on the call. I donate here in the D.C. metropolitan area and I've seen my 8 donations in the last 18 months go north of Baltimore and all the way down to Virginia Beach, and it's kind of neat to see where those donations go and the lives that they can impact. And I'm hoping that at least one of those donations has got into a prehospital

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00:54:50.460 --> 00:55:07.919
Brian Tegtmeyer: blood scenario or situation, but, you know, I think it's important to continue donating blood, and we gotta pick up for what we lost a couple years ago with COVID and get those donations back up to the levels they used to be at. So with that, I'd like to thank Dr. Krohmer, Dr. Levy, and David for your insights.

289
00:55:07.920 --> 00:55:25.809
Brian Tegtmeyer: And all of the support for our EMS-focused webinars on prehospital blood transfusion in practice. You can send feedback or questions to the email address on the screen. And with that, we will wrap it up. Thank you all.

290
00:55:26.470 --> 00:55:26.940
Dr. Jon Krohmer: Thank you.

291
00:55:26.940 --> 00:55:27.800
David Long: Thank you.

292
00:55:27.800 --> 00:55:28.460
Dr. Matthew Levy: Thank you.