



**BBGuy Essentials 062CE:  
Autologous and Directed Donations with Julie Karp  
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**Julie:** Hi, I'm Dr. Julie Karp and this is the Blood Bank Guy Essentials Podcast.

**Joe:** Hello there and welcome to Blood Bank Guy Essentials, the podcast designed to help you learn the essentials of transfusion medicine. This is Episode 062CE, and I'm your host Joe Chaffin. So for the first episode of 2019, I'm really excited to share an interview on autologous and directed blood donation. These types of donation were used really a ton back in the 1980s and 90s and really a lot less ever since. But they really remain controversial. So I'm going to tell you all about my guest, Dr. Julie Karp, in just a moment. But first, some housekeeping:

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Now, the ideas behind autologous blood donation, which basically means donating blood for your own use, and directed blood donation, which again basically means choosing your own blood donor, they just really seem attractive. Back in the days when HIV was something brand new and we had no test for the virus that we now know as hepatitis C, people who were going to receive blood just flocked to have these two types of donation, to give blood for themselves or to get blood from someone they knew. However, now that we're in an age where HIV transmission through blood is just spectacularly rare and blood has really never been safer from viruses, does it still make sense to donate for yourself or to choose your own donor? Well, Dr. Julie Karp wants to share her thoughts on this very issue with us on this interview today.

Julie Karp is the Medical Director of the Blood Bank and Blood Donor Center, and Program Director for the Transfusion Medicine Fellowship at Thomas Jefferson University in Philadelphia, PA. She is an Associate Professor in the [Jefferson] Department of Pathology, Anatomy, and Cell Biology. Dr. Karp has served on numerous national committees, including for AABB and the College of American Pathologists. Julie is very interested in education, both the undergraduate and graduate varieties, and has published on donor safety and health.

So, hey, let's go! Here's my interview with Dr. Julie Karp on autologous and directed blood donation!

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**Joe:** Hey, Julie, welcome to the Blood Bank Guy Essentials Podcast!

**Julie:** Thanks! I'm excited to be here.

**Joe:** One of the great things about doing this podcast is getting the chance to meet, virtually, people that I haven't met before. So, I'm really excited to have this conversation with you today about autologous and directed collections. That's very cool. So, tell me a little bit, Julie, before we really get rolling with this, I'm curious: What got you interested in this topic? What kind of moved you down the line to wanting to talk about autologous and directed donations?

**Julie:** So, I guess it sort of starts with how I got into blood banking in the first place. I always tell people I've been a blood banker since I was about two years old and they get confused and say, "Why?" So, my dad's best friend growing up and he was the best man at my parents wedding was a very severe hemophiliac. And of course, in the 70s and 80s back to the 60s, obviously, there weren't a lot of options for treatment, it was really blood transfusion, variety of different shapes and sizes. And so, I grew up in the early 80s and I'm dating myself, but that's okay, supporting my dad's best friend.

So what my parents would do is a couple times a year, we'd go to a local blood drive (I grew up in the New York area). My parents would donate for my dad's best friend, Barry. So I have pictures of me from two some odd years on up hanging out at pledge drives, drinking tang, eating jelly beans and covered in "I donated blood" stickers. So from a very small age, I knew that donating blood was really important because I knew about Barry.

And so, this is sort of what I grew up with, is this idea that you donate blood, whether it's for somebody you know, in the case of like a directed donation, or more likely in more recent years, people you don't know. So, that's sort of how this topic is always of interest to me, because, you know, that's what I grew up with.

**Joe:** That method of donating to kind of replace what someone else is using, that's something that was a much bigger deal back then. Not necessarily something we do now in the United States. But what's your perspective on that? Is that something that is seen anywhere now?

**Julie:** Yeah, so, in the United States, it's pretty much disappeared. At the time when my parents were donating, so late 70s, early 80s, there was an expectation by the Donor Center, by the Blood Center that if Barry used a certain number of units every year for his care, he was expected to replace those. So they were "replacement donations." And that's where my parents came in. That's sort of fallen by the wayside in the United States, I think for a variety of reasons. Number

one is there some ethics involved, which maybe we'll talk a little bit about, on the directed side.

But also, it's a different world now than it was then. I think a lot of people are often in places that they don't have extensive family and friend networks. A lot of us live in cities without family and friends. And so if you are expected to do something like collect and recruit 25 blood donors every year, that might be hard for you. So I think people understand that. It definitely happens in other developing countries, we know that. Places where the blood supply isn't as stable and a hospital may find themselves in a situation where they have to take care of a patient and they don't have enough blood. So the next obvious thing is to ask the patient's family and friends to support. So it definitely happens in other places. We have literature talking about replacement donation, but it's really not happening in the United States the same way it did 30 years ago.

- Joe:** Right. Okay. I just got a vision of, when you were talking about trying to recruit people in cities where you don't know them, I just had a vision of Julie standing on a corner with a sandwich board saying, "Come and donate blood.!" That might not work so well, I don't know. [laughs]
- Julie:** I'm guessing social media would probably have taken over in some way, but we're not going to go there. [laughs]
- Joe:** Yes, you're right. You're absolutely right about that. Okay. Well, so, we are today though going to talk about directed and autologous blood donation. And I think that considering the folks that listen to this podcast, Julie, and they're often people, they're just kind of getting going in our field, I wonder if we can just start with definitions. So the terms sound pretty simple: Directed and autologous, though, "autologous" is one of those words that people have to think about for a second. Why don't we start first with just kind of definitions. What are we talking about when we say those two things?
- Julie:** So, **"Directed donors" are usually people who are designated by the patient in some way to donate for that patient.** So, sometimes it's the patient's family or friends. So the patient's in a situation where blood usage is anticipated in some way. And they decide, "Hey, I want my mom, dad, brother, sister, neighbor, best friend to donate for me, and I want to use their blood."
- Sometimes it's the opposite. Sometimes the patient doesn't necessarily request, for example, in the case of a child, but people want to donate for that patient. So mom, dad, grandmas, grandpas, aunts, stuff like that. And so, it's this understanding between the patient and the donor that the donor's blood is going to come to that patient or at least try to.
- Joe:** Yes, right.
- Julie:** **"Autologous" is basically I think probably the easier one to wrap your head around. The idea that the patient is expecting blood needs in the not too distant future, and they're going to donate for themselves.** So that blood is

going to be drawn away from that patient, put into a bag, put into a refrigerator and in a few weeks when they have a planned procedure (and it has to be planned, for obvious reasons), that blood's going to come out of the fridge and be transfused back into that same person.

**Joe:** Now that we've kind of established our definitions, why don't we...Hey, let's roll. Let's go into directed blood donation first, and do you have a case example that could kind of take us through how this scenario might work?

**Julie:** I oversee, obviously, you know where I work... So I deal a lot with our Blood Donor Center here at Jefferson in Philadelphia. So we had a case not so many years ago, it was an elderly lady. She was at our hospital in South Philly. We often have very elderly patients down there. It's a very old neighborhood. Came in, she wasn't doing well, I think she was in her 90s, as they often are. Her hemoglobin was something like 4.8, mid 4s, very low. A blood transfusion was ordered by the clinician. But then we discovered that the patient's daughter who happened to be her medical decision maker because she was so elderly, refused. She said, "No, the only blood my mother is getting is coming from me!" And we all went, "Oh, okay. Well, we can make that happen for you, but it's a little complicated."

So long story short, the daughter did come to our donor center. She was screened and she was able to donate. The daughter happened to know her ABO type and she knew (and she was correct), that she was ABO-compatible with her mom. And, long story short, she successfully donated a unit of blood and that was transfused to her mom. After that, I don't really know what happened to be honest with you. But I think everybody was happy at least that, you know, she didn't receive anyone else's blood and mom got the blood. But it didn't really solve mom's problem because now her hemoglobin is probably now 5 and change, so we haven't really solved the problem. But, hey, we honored mom's wishes and daughter's wishes.

You have to realize where people are coming from, what they know, what they think they know. So this woman, the daughter, if her mom's 90, she's probably in her 70s maybe, somewhere in that range. So this is somebody who lived through the HIV epidemic of the early 80s and 90s. She remembers a time very vividly when blood transfusion was really scary and really dangerous. And so, she probably thinks to some level that that's still true. And so, when we tell her that her mom needs a blood transfusion, she's transported back to the mid 80s and her first response is, "Uh-uh, no! No way! It's coming from me."

The only other thing I can add is that one of the things about this case that was really complicated was also managing the expectations of the clinical team. And we'll talk about what the limitations on directed donation are, but I think both the patient's daughter and the clinical team have this anticipation that, "Oh, the daughter's going to donate all of these units of blood and we're going to make mom whole." But the reality is, she can donate the same as any other volunteer donor. So she's donating once every 56 days at a maximum.

So, one unit is probably not going to change much for this particular patient. I think managing the expectations of the patient's family, of the patient and of the clinical team is also really important so that everybody's sort of on the same page about why we're doing the donation and also what to expect afterwards.

**Joe:** Those are great points and we will get to some of those logistical difficulties as we talk through it. I think you make an excellent point there though, Julie, about where we've come from with this. And if you lived through that time, the early 80s, when things were just awful and we didn't know what was going on, and HIV was a massive, massive deal, I guess you can kind of understand the perspective a little bit more of why people would feel that way. Just for completeness sake, again, I know most people know this, Julie, but I mean, how have things changed since the early 80s? I mean, I'm not looking for specific numbers, but from your perspective, where do we sit now with safety of the blood supply versus way back then?

**Julie:** I mean, I think what we all usually say is that the blood supply right now is probably the safest it's ever been. I think it's challenging from a public relations perspective to convince people of that. I think most blood bankers know that. But I don't think the general public necessarily knows that. I think that's always a challenge for us to say, "No, no, really, it's safe!"

**Joe:** If we can, why don't we talk a little bit about the pros and cons. I think that's a really good place to start with this, because, I will tell you, at my blood center in Southern California, I still get requests for directed blood donation, and I try not to say "dumb" out loud, but I still get requests, and I still deal with this on a fairly regular basis. It's certainly not as often as I used to. But I think it's important for people to understand these are situations that are still being, that are still coming up, people are still asking to designate their donors. So what are the pros and cons? Why don't we start with the arguments FOR directed donation. Let's be positive! What are the arguments in favor of doing this, Julie?

**Julie:** There are a few **arguments for directed donation**. So the way that I usually spin it when I talk to people about this, it's the "warm fuzzies." Directed blood donation makes people feel good. They feel like they're doing something productive to help someone that they care about. I know when my parents donated for my dad's friend Barry, they really felt like they were doing something for him. They're really helping someone that they care about.

So, whether it's increased emotional well-being of the patient, the patient feels loved, the patient feels supported, the patient knows that people are helping and rooting for them to get better. Rallying the community around someone, it's not stupid, it's not dumb, it's important. And that's something that obviously you don't get if it's nameless, faceless, volunteer, non-remunerated blood donors that you'll never know and you're not supposed to know. So there is a community sort of warm fuzzy element to this that I can't deny.

In some contexts, people talk about the idea that you could "convert" a directed donor into a community volunteer donor. And to be fair, my parents did actually do

that. So they donated for Barry all those years. Unfortunately, and to go back to our previous discussion, Barry contracted HIV from his many transfusions and he passed away in 1984, as many people in the hemophilia community did. And after Barry passed away, guess what my parents did: They kept donating blood in Barry's memory really.

But that idea that you could convert a donor, a director donor into a volunteer donor, it's probably not a real thing. It probably doesn't happen very often, particularly in this day and age. But it's not a horrible idea. If you've done it once and you had that large bore metal needle shoved into your arm one time, you're probably more likely to do it again because you survived [laughs]. So you've convince somebody of something. So that's something to think about.

**Joe:** Anything else that you would use as an argument for directed donation, Julie?

**Julie:** in theory, if the person, the patient is someone "special "as far as Transfusion Medicine goes; they've got a very rare blood type, they have alloantibodies to a high frequency antigen, and family members may be the right people to look at to find another donor. There was just a recent news example I believe it was a young child with Anti-Indian antibody, I think in Florida, actually. They were looking at people in the community, they were looking at family members, because sometimes that's the right place to look from a serological perspective.

That would be a situation where I would want a directed a donor because going out to a blood drive in the community is probably not going to yield what you need for that particular patient. That's a situation where I think directed blood donation is reasonable and there's a good case for it.

**Joe:** Okay. Well, so the cynical part of me is raising its ugly head, Julie. And now we're going to talk a little bit about the arguments against directed donation, which, again, I'm on record as saying that I think there's a lot of them, but I'm going to be open-minded here. But let's hear your thoughts for some of the arguments potentially saying that this might not be the greatest idea. Because I will acknowledge this, I will stipulate this, Your Honor, I will stipulate this: That directed donation superficially sounds like a great idea. Who wouldn't want to be able to choose their own donors, right? I sounds like such a great idea. But I want to hear what you think about some of the reasons why it might not be such a great idea.

**Julie:** So first of all, I'm a doctor, not a lawyer, just want to remind you [laughs]

**Joe:** [Laughs] Okay, sorry. I got carried away there for a second.

**Julie:** Not a court, it's okay. I think there's a lot of **reasons why directed blood donation is probably not the greatest idea in the world**. The first one is I think the biggest issue, which is that when you know who the recipient is, when you're not just donating to be a good person or to get the warm, fuzzy feeling like you're participating in some sort of greater good, you get maybe a little less thoughtful about answering the questions. That's not to say that people are lying. That's not to say that people are bad people, they're obviously trying to do a good thing.

People have this false sense of beneficence that I'm doing something so good that I might forget or I might not want to talk about things that I've done that would disqualify me as a blood donor, whether it's travel or medications or anything else.

And so, we know that when we ask people all those questions to donate blood, we expect them to be truthful, we hope for them to "bare their soul" to us so that we can decide whether they're the right person to donate. But if the person who's on the other side of the balance is your child or your loved one or somebody you really truly care about, you want that blood to go to them. And so you might answer those questions just a little differently. Maybe not on purpose, but maybe just a little differently. That's sort of the best version of that.

There could be outright coercion. There could be pressure from the patient, from the patient's family to the directed blood donor to say, "We need you to donate blood today, you have to do this!" And that person may not be in a position for a variety of reasons to say no. And then they really are going to maybe outright lie on that donor questionnaire. And that's not what we're aiming for. We want people to be truthful, we want people to answer those question honestly. And so that's my number one concern is: Do we really know that this person is telling us the truth, whether intentionally or unintentionally. And that's my number one concern.

**Joe:** The illustration I always use with that Julie is, when I'm teaching residents, is, you know, Uncle John is donating for little nephew, Timmy, and Uncle John is so excited to do this and then he gets to the "prostitute question," he's like, "Uhhhhh! Wait a second!" Again, I will once again say that blood donors in general are pretty much the best people in the world. However, this may be a situation where someone who's not accustomed to that scenario feels the pressure of, "Oh boy, if I say 'no' to this, Timmy's not going to get his blood."

**Julie:** I usually use the same example and of course I incriminate myself saying that I'm doing all sorts of things on street corners. And that usually gets a good chuckle out of my trainees. But it's a reality. If you're asked a question in that donor room, you might not want to share why you know that you're not a good donor, because you don't want Uncle Bob or Little Timmy finding out what you do in your spare time and who you do it with. And that's another reason why I think this is, it's not just the pressure, it's that concern about confidentiality, that's a real problem.

When you're a volunteer donor, you walk into that room, and you know that whatever is said behind closed doors, hypothetically, stays there. And it's really only shared with people that would need to be shared with, usually public health authorities if necessary, if it comes to that. But other than that, it's usually not shared with anybody outside the confines of that room.

But if you walk into that room and say, "Yes, I do something that disqualifies me as a donor," whether it's taking a medication or some sort of social risk factor, when you go back to Little Timmy's room and you say, "I wasn't able to donate blood," the first question that the assembly, your family, your friends are going to ask you is, "WHY?"

**Joe:** "Why?" Yes, of course [laughs]

**Julie:** I'm an informed consumer, I would say, "My hemoglobin is not good enough." But these people are not board-certified blood bankers. These are the people in the lay community. And so they might not know what to say. And so, most logical thing to say is, "Well, because I'm a prostitute!" But you don't want to tell Little Timmy's father that or mother that or your aunt or your uncle. And so, there's this real sense of, "Oh my gosh, if I tell someone something, they might find out!"

**Joe:** Okay. So Julie, I totally agree with that. That is a barrier and I think it is something that most blood bankers are really well aware of. Another thing that I deal with from time to time is something you mentioned when you were talking about your case, where you mentioned that this particular donor was ABO and Rh compatible with her mom. So, what about logistical things like that, not only compatibility but any other logistical stuff that can stand in the way and be an argument against directed donation?

**Julie:** Yeah, there's a lot of logistics. I often say, you know, I don't use "stupid," I try not to say stupid. But "complicated," I think is a fair statement. This is not easy. This is hard. It's a little easier here at Jefferson because we have our own donor center. And so, we can send family members downstairs to donate and only bring the blood upstairs. So it's not that hard. Especially if you're in a place where you're dealing with a blood supplier...So in other words, the family member would have to go to an American Red Cross or something like that to donate. And then you have to somehow logistically get that unit back to your institution in a timely fashion to give to the patient. That can be a lot of phone calls, and a lot of emails and a lot of just touching bases. It's hard, it's not as easy as people think it is.

I think people have this idea that they're just going to pull up a chair next to their loved one, roll up their sleeves, donate some blood and it's going to go right into their loved one, and it just doesn't work like that right. ABO concerns, obviously, we'll talk probably more about this, but directed donors have to fulfill all the same requirements that a volunteer donor does. So we are asking them all these personal and invasive questions. We're also doing a full medical exam.

So, you know, concerns about hemoglobin and probably in particular, you know, for the case I gave, the daughter's in her 70s, she may have medications that she's on that may be a problem, medical conditions that may be concerning. Her hemoglobin may not be good enough because she's an elderly person herself. If she wasn't ABO-compatible or she didn't know her ABO type. Obviously, if mom's an O and daughter's an A, I'm not giving daughter's A blood to mom. I don't care how much you love her, hemolysis doesn't care! ABO unfortunately trumps love! And so, there's lots of logistics.

Once the unit is successfully collected, there's even more logistics. We have to do donor testing. So, we have to wait for those transfusion-transmitted disease testing results to come back, obviously they have to be negative. And then we can transfuse the blood. Transfusing the blood may be a challenge as far as getting



the unit back from whoever collected it out of quarantine to the place where the patient is and then actually transfuse the unit.

In this particular case, I remember we are able to get the daughter to donate, from the time she donated to the time the mom got the blood was I think about four days which I told the clinical team, "That's pretty much about as fast as I can make that happen!" And they were surprised by that because of course they expected it to happen instantaneously [laughs].

**Joe:** Yeah. I hear you. That is a common misperception among clinicians about how quickly we can turn stuff around. Are there any other logistical difficulties before we get into a couple of other things?

**Julie:** Yeah, the only other thing that we have to think about is who the donor is to the patient, and if that's problematic, and there are a couple of specific scenarios that you need to think about. One actually came up recently in my own practice was, one is mother and child, that's not what came up...So if the child is the patient and the mom is the donor, there are concerns about TRALI. In the age of TRALI mitigation, that's probably not as big a concern, but something at least to think about. If it's not absolutely necessary that mom donates, that's something to at least mull over. Obviously, mom may have developed HLA, antibodies against baby when baby was in utero. That's something at least to consider, because certainly directed donation is great, sort of, but you certainly don't want to do it and then get TRALI from it. That's not optimal.

Women as the recipient, so a female patient with a male partner, if they have intentions of possibly having children together down the line, again, same sort of idea. The woman is getting exposed to male partner's white cells, HLA antibodies, red cell antibodies, if it's a red cell unit, and that may become a problem down the line whether it's for "NAIT," so neonatal alloimmune thrombocytopenia, or "HDFN," hemolytic disease of the fetus and newborn, you're sort of giving mom a preview of father's or dad's genetic material and makeup, and so that may become a problem down the line.

The one that came up recently was, we have a patient who's very refractory to platelet transfusions. She's a stem cell transplant candidate at this point. And she has two brothers, she's a young woman, she has two young, you know, 30 something year old brothers. And there was discussion about getting them to donate a directed platelet unit to the patient. And the first question I asked was, "Are they being considered as stem cell donors?" And the answer was, "Yes, they are." And I said, "Ooo, I wouldn't do that either!"

So same idea. If those brothers donate platelets to the patient, and the patient develops HLA antibodies against the brothers, which frankly, she probably already has, that's why she needs the platelets in the first place. But again, same idea, if the patient develops antibodies to that donor, that platelet donation was great, but this is now a larger problem for them down the line when they need a stem cell donation. And that's a problem.

So any time the patient and the donor may sort of "see each other," immunologically, past or present, that's something you at least want to consider as a reason to not do a directed blood donation.

**Joe:** So all these things that you've said, I'm in total agreement with. I think we should maybe try and put some, put some numbers on to put some statistics and some data onto these concerns. So let's start with just simply do we have data to suggest relative safety of directed donations versus regular donations?

**Julie:** We do. There have been a couple of really good studies in the last couple of years that have been really, really interesting. And if it's okay, I'll talk a little bit about at least one or two of them.

**Joe:** Please.

**Julie:** So the one that came out in 2013 was an article that came out of the American Red Cross [NOTE: See article by Dorsey et al linked at [BBGuy.org/062](http://BBGuy.org/062)]. And the American Red Cross collects a large percentage, I think, 40 some odd percent of the US blood supply. So they're a really good source for sort of large big picture things. And they did really neat study where they were looking at their directed blood donors. They looked at how often people are donating directed units, which we can talk about separately, but they also looked at how safe those directed donors really were. What they basically found was that there are in fact, higher viral marker rates in directed blood donations than in volunteer blood donations.

And in previous research literature that came out before this, that was kind of fuzzy. Some people said yes, some people said no. I think there were a couple issues with previous literature. Number one is that they're old, so they're not using current testing methods. And number two is, when we talk about people testing positive for various viral markers, that's a pretty rare event, all things considered. And so, you actually need to have somewhat incredible amount of data in order to be able to find these people that are actually positive. And so, if you do a small scale study, my donor center collects 2500 units of whole blood every year, that's not going to be enough. You need a much bigger number, an "n," to find those people and really say something of substance about directed donors versus volunteer donors.

And so, this study was really helpful because it really gave us that power to do that. And basically, what they showed was that it really was a concern in directed donations, that directed donations were more likely to be positive for some transfusion-transmitted infection markers and volunteer donations, it was I think significant for pretty much everything except HIV. But HIV was approaching significance too. And that was a really interesting paper to me because it sort of supported what we already know, which is that directed donors aren't like volunteers. They are different, and there are reasons to worry that they may not be as forthcoming with their risk factors as volunteer donors are.

**Joe:** We certainly know in the general population of blood donors that first-time donors are more likely to be positive for infectious diseases. So, let me be more specific with that: That first time donors are more likely to have a positive infectious disease test on their unit than someone who's already been screened and is a multiple time donor. So, with this paper, did the Red Cross address that? The differences with first time and non-first times?

**Julie:** They did. So directed donors were much, much more likely to be a first time donor than a volunteer. I believe the numbers were something like, in volunteers, first time donors represented like 18% of the volunteers, whereas first time donors represented something like 43% of directeds.

**Joe:** Oh, hello!

**Julie:** Yeah, it's a big difference. These are again, these are people that are being plucked off the street by loved ones and said "Today, you are a blood donor!" The first time donor bit is a lot of why directed donation is troublesome, concerning. And then also there's that level of, that lack of anonymity that really lends an extra, I think that's really the wild card. We just never know where people are coming from when they sign up to do a directed blood donation.

I think the second article that I wanted to talk about if I can maybe talked about that a little bit more, that sort of, we don't know. The article, it was more recent, it was in 2017, it came out of DC Children's [NOTE: See article by Jacquot et al linked at [BBGuy.org/062](http://BBGuy.org/062)], where they were looking at parents versus not parents. So they have their own donor center and they did something really interesting, which was to say whether the director donor was a parent, a mom or a dad, or a non-parent. And they didn't really specify who the non parent was, but basically saying, "I'm a family member, I'm a friend, but I'm not the parent."

What they found, and they do collect a fair number of units, it's not huge, but it was enough to really show a good difference, was that among the parental donors, moms and dads, the rate of positive infectious disease was astronomically higher than community donors or non parental donors.

**Joe:** Wait, wait, wait, wait, what?!

**Julie:** Yeah.

**Joe:** That's crazy.

**Julie:** It is kind of crazy.

**Joe:** That seems completely counterintuitive.

**Julie:** I know. Because you would think, you know, oh, I'm a mom, I got two small daughters. If my children needed blood, well, gosh, I would be as honest as anything, because I don't want anything to harm these kiddos. But in fact, parents, not to say that they're lying, but they're too invested, they're too close. They can't

really be that objective blood donor that you're hoping for. The rate that they gave for first-time parent donors was 8.66% had a, it was a median rate of positive infectious disease testing. Non-parent first time donors was 1.09%, and community donors, the median rate was 2.95%. So we're talking a difference of 2 or 1% versus almost 9%. It was mind boggling when I read this. I just went "Oh my Lord, that's insane!"

**Joe:** I think that speaks to something that we know from other studies, not specifically studies about directed donations, Julie, but I think we've learned with donors, a lot of donors when they're answering these questions on the questionnaires, they're answering through the filter of: "My blood is safe." And that's their overriding thought and it may lead them to answer things in ways that aren't necessarily grounded in reality. You can see how it would happen I guess.

Before we leave these two studies, I meant to ask you about on either one of these studies, did they show in either paper a statistical trend in terms of the amount of directed donor blood that they were collecting?

**Julie:** Yeah. So the Red Cross one, the 2013 one, Dorsey, that one was the one that showed probably the most interesting piece of data on that from the papers at least. So in 1995, according to the paper, the Red Cross, the directed donors accounted for 1.6% of all allogeneic donation. So even in 1995, which is a lot closer to HIV epidemic time, it was still a pretty low amount of units collected for the Red Cross overall. 1.6% of all the units the Red Cross collected.

**Joe:** Of all the units.

**Julie:** All the units, only 1.6% were directed, in 1995. Flash forward to 2005, it's down to 0.26%.

**Joe:** Wow!

**Julie:** Then we move forward a little bit more in time to 2010, and it's now 0.12%.

**Joe:** Holy cow.

**Julie:** So it just keeps going down and down and down.

**Joe:** So before we leave this, Julie, and move on to autologous, there's one thing that I think we definitely need to cover for the learners out there. And that's specifically the usefulness of directed donor blood for other patients other than the ones that they are intended. So that kind of goes to how we screen them. I wonder if you just take us through that real quickly.

**Julie:** Sure. So, as we sort of mentioned, directed blood donors are treated exactly the same as any volunteer non-remunerated community whole blood donor. We ask them all the same questions, the same donor history questionnaire is administered. We have all the same requirements as far as hemoglobin, medical history, medications: No exceptions made. If you're a directed blood donor, you

fulfill to the letter of the law everything that a volunteer blood donor does. We do all the same donor testing on the back end, all these required infectious disease testing, whatever it is at the time, needs to be performed.

As such, the directed blood donation is kind of interesting in that if it's not used for the person it was designated for, for whatever reason, so the patient expires or the ABO is incompatible, so if in my example, the daughter is an A and the mom's an O, obviously, we're not going to give that unit to that patient. But because we ask directed blood donors to live up to every expectation that we set for volunteer donors, we are allowed to take the directed blood donation and move it into the general inventory, to give it to someone else.

Most hospitals have policies and procedures on how to do that, when it's okay to do that, and when it's not. But those are up to the facility how you want to handle it. But as long as those policies and procedures are in place, you can do that.

**Joe:** So we need to move on to autologous because we have waxed eloquent on directed, because it's fascinating. As I said, it's a topic that engenders a lot of conversations among blood bankers. But we need to talk about autologous, and that's something that really also has changed over the years in terms of how people have looked at it. So again, do you have a case example for autologous blood donation that might illustrate how these things pop up?

**Julie:** Sure. Again, I work at a major academic hospital so we do this with some regularity, not as often as we used to, which we'll talk about. So, a case would be a 60 something year old woman anticipating a planned spinal fusion in a few weeks. Her surgeon, obviously in the process of getting consent for that procedure informs the patient that a blood transfusion may be necessary as part of the procedure, MAY be necessary, just, you know, part of a good informed consent.

At that point, the patient becomes adamant, adamant that she wants to donate blood for herself! And at that point, the surgeon will probably give my donor center a call and say, "Can this happen?" We'll say, "Yep, no problem!" And so the person will come to the blood donor center, and we can talk about what happens, the logistics of it, because there's always logistics. But she can donate a unit of autologous blood for herself, it winds up in our blood bank in the fridge. And during the surgery or post-operatively, the patient may or may not receive her own unit back.

**Joe:** Let's kind of take this pros and cons to an extent. I'm wondering, when we talk about this particular process...which, we should be clear to everyone, Julie, this is one particular type of autologous blood donation and there are some other types that we may get to, may not get to, but this is specifically preoperative autologous blood donation. Someone donates for themselves for a specific procedure coming up. Like we did with directed, are there pros to this, are there good things about donating blood for yourself in that way?

**Julie:** I think there are a few pros if you can call them that. The first is sort of, again, the warm fuzzies, patient empowerment, let's talk about that. This is a person who's going into a situation, they're scared, they're losing control of the situation, they're going to undergo anesthesia and have something really scary happen to them, necessary, presumably, but scary.

And so this is one of those ways that the patient can feel like they're doing something. In the same way that a directed donor feels like they're doing something for their loved one, an autologous donor says, "Hey, I can help myself. I can take control of the situation and make something good of this." And so that's something that, you know, when a patient is adamant that they want to donate blood for themselves, it's not something I usually tell them within reason to discourage. If it's something that they can do safely and it makes them feel better, yeah, we can do that, no problem, it'll make them feel better.

In theory, if it's something where you're worried about donor exposures, which is something that's sort of a "Boogeyman" to talk about, yes, it would decrease donor exposures. Again, this autologous process really harkens back to that HIV era when people were nervous about getting other people's blood. And so, it's the same idea that if you're scared about getting someone else's blood, your own blood sounds like a great idea. And so, yeah, that's a pro. You don't need someone else's blood.

**Joe:** To be clear, I'm right there with you on autologous in that when people ask for it, it's not something that I say, I don't use the word "dumb." And to be fair, I shouldn't make myself sound like an incredibly awful person. I don't say dumb to patients in the directed scenario either way. But with autologous, again, if people want to do it, I'm okay, we'll support it as best we can. And I actually live in a state in California where it's law that patients have to be presented with this option as a potential...prior to them undergoing surgery. Anyway, all that to be said, what are some of the things though that would make you, Julie, say, "Well, consider this, this might not necessarily be the best idea?"

**Julie:** Yeah, there's a couple, **probably more cons than pros** if you have to write them down. The first is obviously logistics. This has to be a planned procedure, it can't be something that's happening tomorrow morning. Donors have to donate more than 72 hours out from the procedure, which really isn't that much time, honestly. It should probably be more than that in real life but that's the rule.

The logistics of it are complicated. They have to donate, they have to be planning for this, they have to come in. We have to do all this sort of back end work in the computers to make sure everything's all teed up. So it's a lot of work to make sure that this can happen. That's probably the smallest con in the list of cons.

The second one, which is probably the biggest in my opinion, is that most of these people are usually not the best blood donors, even for themselves. It's the same needle, it's the same bag in the sense, well, maybe not the same bag, but that's another story. It's the same process. It's a very large bore needle, it's a large

amount of volume that's being removed from you in a very brisk fashion. Often, in my experience, these patients are usually more elderly, it's not infrequently, done at least at my institution, for orthopedic procedures, for a variety of reasons we can get into, some of which I don't really understand. Mostly because these are usually planned procedures as far as I can tell.

But usually, these people are not people that normally donate blood. These are older people with medical issues who may not be the best person to remove upwards of 500 cc's of blood in 15 minutes. And you want to make sure that the person is safe. You don't want to make them "a patient" sooner than they were otherwise going to become.

**Joe:** I think you hit that right on the head, Julie. What about the additional concern of, there's a lot of discussion now about preoperative anemia. How do you feel about this, that if someone's donating autologous blood, if they're given a bunch of blood of their own before surgery, doesn't that put them at a greater risk of going into the surgery anemic?

**Julie:** It does in my experience. Again, the requirement for autologous donors and the minimum hemoglobin is 11 g/dL. So we lower the bar for these donors. So the idea that somebody who has a hemoglobin of 11, which is ANEMIC by anyone's measure, and then you're removing a unit of blood from this person, well now they're REALLY anemic and they could be going to the OR 72-ish hours later. Well, that's kind of insane when you think about it. You're really hitting these people when they're down. So, I think that's to me one of the other really big concerns is you're sending the person into surgery, potentially facing a long rehabilitation, particularly for orthopedic surgeries, and you're sending them into that situation where they're not at their best, they're not in fighting form.

The other issue that I think is really concerning about the sort of anemia question is that when you do an autologous donation you're bringing that person's hemoglobin down. But in my experience here at Jefferson, and I think most people would agree with me on this, a lot of these units don't get transfused back. Usually with modern surgical techniques, arthroscopic surgeries, robotic surgeries and so on and so forth or just better techniques, these surgeries that they're doing are just not as bloody as they used to be. If an orthopedic surgery that maybe used to require several units of blood today, if they get 100 cc blood loss, it's a bad day in the OR. That should have been 10, 20, 30 cc.

And so, most of the time, these surgeons are realizing, "Hey, this person doesn't need blood." So that unit of blood that you just took out from that person a week and a half ago, that's staying in the fridge. It's not going anywhere. And so that person loses that blood in vivo, to help them with their recovery, with their rehab. And so, you're really not helping them. You're just creating another bag of blood and we'll talk about why that's not going to help anyone else.

**Joe:** And we will definitely get to that. So, let me, with all that being considered, could you describe for me, Julie, if there is such a thing as a "perfect" autologous donor

for preoperative autologous donation? Is there such an animal? Is there someone that if they were going to do it, if they were dead set on doing it, who would be kind of the perfect group of people that we'd be looking at?

**Julie:** Yeah, I can think of at least a person or two. So, I would think of a patient who's heavily alloimmunized, for whom compatible blood would be really difficult or almost impossible to find. So, somebody who has really difficult blood, even for a planned surgery, that might not be enough time. Two weeks sometimes isn't enough time to find blood that will meet really specific requirements, whether it's a high frequency antibody or just multiple common alloantibodies, that would be a person for whom I would say, "You know what, it might be easier if we just bank your blood and then give it back to you." So that would be a really good Transfusion Medicine reason to do this.

If you're going for a surgery where transfusion is likely, I feel at least a little bit better about it, to say, okay, you're going to donate this unit of blood and I'm reasonably sure, pretty sure, 100% sure that that blood's going to come back to you. The only thing with that that I would say is just sort of a caveat is you're only going to be able to donate a unit or two at the most. And so, the reality is, if you're going in for a really bloody surgery, whatever you donate isn't going to be enough. We're going to need to give you somebody else's blood at some point. And that's something that I would counsel the clinician to advise the patient, that donating your own blood is not negating the need for the blood bank. The patient should be aware of that so that they're not upset when they realize, "Oh my God, I got my blood and somebody else's blood!"

**Joe:** Yes.

**Julie:** The other thing I would say is, you know, make sure it's somebody who has enough time to replace the hemoglobin that they've lost to phlebotomy. If it's somebody whose surgery is three and a half days from now, I really don't want that person to donate. But if it's somebody who has a procedure four weeks from now, I'm interested, because there is time potentially to replace that gram or so of hemoglobin that they lose, and so they might actually sort of come out ahead when all the accounting is done.

And I think the other thing is to realize that autologous donation shouldn't be "it," that shouldn't be the only thing the person is doing to prepare for this procedure. There should be discussions about other preoperative measures that can be performed or done whether pre or inter-op to optimize the blood management of this person, this patient, whether it's an iron clinic to discuss iron supplementation or other pharmacologic strategies. The thing that I always am sad about when I get these auto patients is that that's the only thing anybody talked to them about. And we have so many other tools in the toolbox at this point that that shouldn't be it. We should be talking about other things.

**Joe:** Right. Boy, you're so, so right on that. We don't have a lot of time to talk about those but I would refer everyone to a couple of podcasts that I've done, one on



bloodless medicine with Steve Frank, that was Episode 48, [BBGuy.org/048](http://BBGuy.org/048). And one on preoperative anemia with Aryeh Shander, that's [BBGuy.org/052](http://BBGuy.org/052). Sorry for that commercial break there, Julie. But since we don't have a ton of time to do that, I want to make sure people understand that there are other resources for that.

**Julie:** Absolutely.

**Joe:** Let's talk about logistics of the donation itself. What are the requirements? What are the things that people have to do and how do we evaluate autologous donors when they come in?

**Julie:** Okay. So first you need a prescription from the patient's physician. The patient's physician has to be on board that this is not a horrible idea. To be fair, in my experience, most of these autologous donations at this point are patient-driven. So, the physician's usually not the one driving the boat here or the bus. They're the ones saying, "Oh, okay, Mrs. Smith, you want to donate blood. Well, okay, fine, here's my prescription." But we do need that prescription so that the physician at least has thought about, this isn't a horrible idea.

They need a minimum hemoglobin of 11 g/dL. Again, lower than what we expect for our volunteer donors or even our directed donors with the understanding that it's going to them and also that these are patients, these are people who may not be in the best of health. But more importantly, that these units aren't going to anyone else but that person, so there's that. Again, it has to be collected at least 72 hours before the anticipated surgery or transfusion, which I think is very generous. I think it should probably be more than 72 hours. But I don't make the rules. I just live by them.

One of the things that we really assess for his concerns about bacteremia. So we ask lots of questions about wounds, infections, coughs, colds, anything that we worry about that could be circulating in that patient's system and would wind up in that blood bag, because the way that I explain it to me those if you have a horrible, gaping, infected, disgusting wound, and you come in and donate your own blood for surgery two weeks from now, and then let's say you don't know it, but you're septic from that wound, that bacteria now lives, cooks, grows in your blood bag in the refrigerator, potentially, in our blood bank for some period of time. And when I transfuse that back to you, guess what: That's still bacteria. The fact that it was your bacteria doesn't make it any safer. And that's called "transfusion transmitted sepsis!"

We have to label the unit as "autologous use only" because we are asking not all the questions that we usually ask our volunteer donors. So we have to be really thoughtful and different hospitals do it differently, different collection organizations do it differently. It has to be designated in some way, physically, visually, that this is for this patient and this patient alone.

**Joe:** We talked about kind of the "perfect donor." Before we leave this, I think we need to just talk about maybe the imperfect donor in terms of when they come into the

Blood Center, you already mentioned we asked them questions about, you know, to protect them against bacteremia and getting a bag of infected blood. Are there other rules or local rules regarding medical conditions, for example, that they shouldn't have when they're trying to donate autologous blood?

**Julie:** Yeah. So, contraindications to autologous blood donation is really local, it's defined by the blood center. Things that people conventionally will be worried about are things usually cardiac or pulmonary related, so unstable angina, recent myocardial infarction or stroke, any sort of significant cardiac or lung disease that has ongoing symptoms, aortic stenosis, things like that, where again, removing a large amount of volume in a very short period of time could be really, really problematic.

I know I had a patient that came in, I don't know, year or two ago. He came in, I think it was his wife's idea, to donate autologous blood. He was not a fan of needles. And then when my staff did their questionnaire of him as an autologous donor, it became really obvious that he had a very significant cardiac history. Nothing recent, nothing that immediately I was worried about in that moment. But it sounded to me like he probably wouldn't be a great person to draw upwards of 500 cc's of whole blood off of. He also was sweating profusely. He looked terrified. I went down there and I said to him, "You know, I just want to make sure you understand, you don't have to do this. It's okay if you just want to get up and leave." And he basically looked at me, he said, "I want to get up and leave." I said, "Okay, great. Bye! So have a great surgery." [laughs]

So it's really important that you weigh the risks and the benefits here. We can do this collection but is it worth the risks, whether it's you're terrified of the needle or you might have a heart attack, or you might be bacteremic. We don't have to do this, we've got a whole room full of blood upstairs ready to go if you need it. I think that's the key here is that a lot of these people don't need it. A lot of these people, in my experience, a lot of the autologous blood, and I think everyone would agree with me who deals with auto donors, a lot of this blood goes to waste because the patients just don't need it. And so, if it's not needed, if it's not definitely needed, I would always err on the side of just not collecting it in the first place.

**Joe:** Have you seen any trends with autologous blood donations in terms of how many you're seeing over the last few years?

**Julie:** Yeah, it's gone down dramatically. So, I did some research on our numbers. So in fiscal year 17, we did about 37 autologous blood donations over the year. Fiscal year 18, it was 15, and fiscal year 19, through about September or so we've only done five. Going back, I've been at Jefferson since 2010, we were doing upwards of 150, sometimes closer to 200 a year at that point. So we've gone from 150 to 200 to 5 in a relatively short period of time.

I think there's a couple of reasons for that, which if I can briefly, I think number one is the surgeons are sort of "aging out." Surgeons that were much more in love with this concept, particularly those who again lived through that HIV era are now retiring. And so, we've got a younger, more chipper, youthful generation of

surgeons who know that they've got all these fancy techniques and robots, also know that the blood supply is safe. And so, they're just not that excited about autologous donation.

I think the patients are also becoming more savvy. They know that the blood supply is safe, they know that these surgeries aren't going to be that bloody. And so they're not that excited about having a large needle shoved in their arm before they have to go undergo a big surgery. So it's just becoming less and less-

**Joe:** When you put it that way...When you put it that way, it doesn't sound fun at all!  
[laughs]

**Julie:** [Laughs] Not at all! Not at all. So I think that's one of the reasons at least at my institution, I know that we've seen a big decrease. We had one surgeon in particular who was very excited about autologous blood donation and he's not operating anymore. As soon as he stopped operating, our numbers went down pretty fast.

**Joe:** Well, so that leads us kind of to our last question, which is, what do we know about where this is going at least nationally. Do we have any reports on if your experience is being mirrored in the national data?

**Julie:** We do, and it is. So I got to go to AABB 2018 in Boston. One of the presentations was the 2017 National Blood Collection and Utilization Survey, which is "NBCUS," for those of you who like acronyms. What they were reporting on was lots of numbers, but they included autologous collections in their numbers. They compared 2015 numbers that they collected at that time to 2017 numbers. And what they said about autos was that from 2015 to 2017, the number of autos collected in the United States by their measure decreased by 61.9%, which is a lot.

**Joe:** Huge.

**Julie:** Which, honestly, almost mirrors what we're looking at at my institution. It's at least half. The number that was really interesting though was that the number of autologous units transfused from 2015 to 2017 actually went up 35.5%, which I kind of, when I sat in that room in Boston, I went, "Well, what does that mean, that's interesting, I wasn't expecting a positive number."

I think what it means is that we're "right-sizing" our autologous donors. In other words, we're collecting a lot less autos. But when we do, we're much more likely to transfuse them. In other words, that the patient needs them. And so that's at least comforting to me that we're making good decisions about when we're using autologous donations. We're using them when it's appropriate and not just because we feel like collecting.

But I think it's important for everyone to know what these are, you know, the scenarios where it's good to use them, the scenarios where you probably don't want to use them. And I also think it's really interesting to sort of learn about them

because it really gets you to start to crawl into a blood donor's head for a minute and see what makes people donate, what drives people to make the decisions that they do about donating blood, whether it's the patient in the bed who's their loved one or their fear of the blood supply, or just their need to control the situation. It's just such an interesting little sociology experiment.

**Joe:** Absolutely. It really is. I think you have done a remarkable job in helping us understand this, Julie. So thank you so very much for hanging out with me and helping us understand directed and autologous donations.

**Julie:** My pleasure. Thanks so much for having me.

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**Joe:** So my thanks once again to Dr. Julie Karp for joining me today. You know, both of these types of blood donation tend to have lots of emotion tied to them, but I think it's really important for us to be armed with facts to help patients make their best decisions.

Remember, you can go to [wileyhealthlearning.com/transfusionnews](http://wileyhealthlearning.com/transfusionnews) and get your hour of totally free continuing education credit for both doctors and laboratorians. Also, you can go to the show page, which is [BBGuy.org/062](http://BBGuy.org/062) to find the transcript for this episode.

So 2019 is shaping up to be a stellar year for this podcast. I have a interview scheduled with terrific guests like the legend himself, Dr. Ron Strauss, who's going to talk to us about granulocyte donation, as well as a really cool interview with my friend Dr. Connie Westhoff, who will return to the podcast to discuss what we need to know about the interference and blood bank testing from anti-CD47 cancer treatment. And a quick hint: If you thought anti-CD38 or "DARA" was bad, you just get ready!

So please [go to Apple Podcasts](#) or wherever you get your podcasts and SUBSCRIBE so you don't miss any of it! While you're there, please give this podcast a review; that really helps get it in front of other people. But until we meet again, as always, I hope that you smile, and have fun, and above all, never, EVER stop learning. Thank you so much for being here. We'll see you next time on the Blood Bank Guy Essentials Podcast.