

Ruth Adewuya, MD (host):

Hello, you are listening to Stanford Medcast. Stanford CME podcast where we bring you insights from the world's leading physicians and scientists. This podcast is available on Apple Podcast, Amazon Music, Spotify, Google Podcast, and Stitcher. If you're new here, consider subscribing to listen to more free episodes coming your way. I am your host, Dr. Ruth Adewuya. In honor of Women's History Month our hot topics miniseries, a sharing stories of women in medicine. Today I'm chatting with Dr. Carla Pugh. Dr. Pugh is a professor of surgery at Stanford University School of Medicine. She is also the director of the Technology Enabled Clinical Improvement Center. Dr. Pugh obtained her undergraduate degree at UC Berkeley and her medical degree at Howard University. Upon completion of her surgical training at Howard, she obtained a PhD in education at Stanford. Her research involves the use of simulation and advanced engineering technologies to develop new approaches for assessing and defining competency in clinical procedural skills. Her work has received numerous awards from medical and engineering organizations. In 2011, Dr. Pugh received the presidential Early Career Award for scientists and engineers from President Barack Obama at the White House. She's considered to be a lead international expert on the use of sensors and motion tracking technology for performance measurement. Thank you so much for chatting with me, Dr. Pugh.

Carla Pugh, MD (guest speaker):

Thanks for having me.

Ruth Adewuya, MD (host):

I thought a great place to start is to talk about your story and your journey. When did you first consider pursuing medicine and what sparked that interest?

Carla Pugh, MD (guest speaker):

Oh my goodness. I was one of those doctors who decided at age five that I wanted to be a physician like many do, but I stuck with it and what really sparked that interest was storytelling, which is a tradition in my family, and both my mom and dad were born in the South and they have similar family stories in that they had a great aunt who was a midwife. So both my parents were born at home with the assistants of a family member, and that was just the norm of where they lived. And hearing stories on both sides of the family that there was a family member that delivered them at home, but also delivered the babies for the farm animals, cows and pigs and things like that. For me, my interpretation of that was one that they were superwomen and what they did was really cool and I just assumed that they were doctors and I'm like, that is exactly what I want to be when I grew up.

Ruth Adewuya, MD (host):

That's incredible. It sounds like such a well-rounded view of medicine, both taking care of people and animals.

Carla Pugh, MD (guest speaker):

It's a midwife, veterinarian, do all, be all kind of thing and yeah, that sounds really cool. It's interesting, my mom tells a story about one of her friends buying me a toy stethoscope and her delivering multiple apologies to people in the grocery store because I would be listening to their ankles and any body part and I always run a muck with the stethoscope at age five in the grocery store thinking that I was

definitely going to cure somebody or make a diagnosis. And then by ninth grade I decided I wanted to be a cranial facial reconstructive surgeon.

Ruth Adewuya, MD (host):

That's very specific at ninth grade, very specific. How did that come about?

Carla Pugh, MD (guest speaker):

I was taking a advanced science class. It was a small group class, and the instructor took the week and showed us a documentary of a famous plastic surgeon named Paul Tessier, and we watched about 20 minutes a day to get through this documentary and then we had group conversation and I was just blown away the surgery that he performed on a young child. He's a pediatric cranial facial reconstructive surgeon, and it was a mix of art and geometry, which were just two of my favorite topics. And it was just really cool.

Ruth Adewuya, MD (host):

That was it.

Carla Pugh, MD (guest speaker):

That's it. Going to be a cranial facial reconstructive surgeon.

Ruth Adewuya, MD (host):

And so from ninth grade, fast-forward to going into medical school you never wavered from surgery. Or were there moments in time where you're like, maybe surgery is not for me.

Carla Pugh, MD (guest speaker):

Never wavered away from surgery. I was sold since ninth grade and I'm still sold, and I still love what I do. It's just absolutely amazing and even more exciting than I even knew as a ninth grader when I was sitting there watching the videos, dreaming of the possibilities, and I'm now living that dream. I love what I do. I obviously am not a cranial facial reconstructive surgeon because by the time I got to my surgery residency, I realized that I had an unusual passion for human anatomy. And so when I did my rotation on thoracic surgery, I fell in love with the esophagus and the relationship between the aorta and the lungs. And I just thought, 'oh my goodness, I'm going to be a thoracic surgeon'.

And then two months later I was on neurology and we were still doing more open surgeries than minimally invasive, but I fell in love with the kidney and the retroperitoneum and I'm like, 'oh my goodness, I'm going to be a neurologist'. And those were still in the days where many of the specialists still did five years of general surgery before you then went on to your specialty. But what I realized in my parting of ways with my dream of being a cranial facial reconstructive surgeon is that was super specialization. You did general surgery, you did plastics, and then you did a fellowship in cranial facial surgery that there would be a rare occasion that I would ever enter the abdomen again in my life. I said, I can't do it.

Ruth Adewuya, MD (host):

Oh gosh.

Carla Pugh, MD (guest speaker):

I would miss the intestines. I would miss the liver and all the intra abdominal organs. So it was really a hard realization, but I survived.

Ruth Adewuya, MD (host):

You survived. Clearly this is the path you were meant to be on with incredible work that you've been doing. And in preparation for this interview, just looking through some of the research that you're doing in education, we'll talk more about it later, but from the outside looking in, it seems like this is where you were meant to end up. I think that part of your story has to do with the fact that you are a rarity in surgery as an African American woman. And so I feel like it would be remiss of me if I didn't talk to you about it and get your thoughts around how you navigated your career and your journey. And I wanted to bring up some data that I saw where in 2019, the AAMC showed that only 3.6% of full-time faculty in 2018 were black or African American. And then actually an article that you co-wrote also highlighted the fact that only point .79% of black or African American women surgeons in US medical school, surgical faculty, and only point .54% being tenured faculty. And I'm curious to hear from you with that being your environment, how did you stay true to your course? And part of that is mentorship. How did you find mentors to support you through pursuing this dream, pursuing this passion, but also in a field that's male dominated and also being a minority in that field?

Carla Pugh, MD (guest speaker):

I love that question and I just have to pause with respect to that paper. That was a collaborative paper with a society of black academic surgeons. And we didn't know the statistics prior to taking a deep dive. And when we did, we were shocked.

Ruth Adewuya, MD (host):

Yeah.

Carla Pugh, MD (guest speaker):

Just to sit in that space and realize that you're one of 10 in the entire US. It was not a celebration, it was pure shock. And then this immense sense of responsibility to help change that statistic because it shouldn't be. So when you think about the mentorship, putting myself in the path of mentorship and it really being a natural human thing, you look for people who believe in you and people who support you. And so obviously it starts with your family. My goodness. And my mom, I watched her start her own company. She started to keypunch operating service of all women.

And I thought that was normal, that women could just do things. And she told me that it was normal. So I believed it and I'm like, 'okay, great'. Just as a kid, piecing these things together. So it starts at home with the family telling you that you can do anything and then showing you that it's possible. And then I went to UC, Berkeley for pre-med and undergrad, and it was tough. It was just extremely competitive. What was a very clear tipping point for me in understanding the difference between mentorship, sponsorship, and full support in your dreams and the plans in your life. I kid you not, I had an epiphany during one of my interviews from medical school, and you think about a life experience that you're supposed to be on your best game, you're nervous and you have your best representative there in the room.

I had an interview at Howard University and the first person I met was Dr. Samuel Rosser, who was the first African American to become board certified in pediatric surgery. I knew none of this when I first met him during the interview, all I knew is that I was nervous and I wanted to get into medical school.

And he looked at my CV and he said to me, 'I know where you've come from and I can see on your CV what you have been fighting for and I can support your dream'.

Ruth Adewuya, MD (host):

Wow.

Carla Pugh, MD (guest speaker):

And never had anybody in my academic pursuits ever tell me that.

Ruth Adewuya, MD (host):

Wow.

Carla Pugh, MD (guest speaker):

And so it was one of those chilling moments where this is where you're supposed to be. I went through all my other interviews, but I was going to be mentored by Dr. Samuel Rosser. It did not matter what all those other schools said. Location, I had never lived in DC before. I wanted to stay in California. I interviewed a number of different places, but to have someone acknowledge your path, right?

Ruth Adewuya, MD (host):

Yeah.

Carla Pugh, MD (guest speaker):

Your life lived in your journey, respect that and say that they're going to partner with you to get you to where you want to go.

Ruth Adewuya, MD (host):

That's life changing.

Carla Pugh, MD (guest speaker):

Real mentor number one. Mentor, sponsor, all put together.

Ruth Adewuya, MD (host):

Yeah.

Carla Pugh, MD (guest speaker):

And there were more of those inspiring people at Howard. And I ended up going to medical school there because it was new for me, I was born and raised in California. I grew up in the melting pot. And we didn't talk about race at my house when I was a kid. My mom's, that's a whole nother story and I could just keep talking and telling you-

Ruth Adewuya, MD (host):

No, keep talking.

Carla Pugh, MD (guest speaker):

My mom's best friend and they were best friends before I was born. So just picture this scene, I'm in junior high school sitting on the couch in our living room. We've got a big, big window that faces our street. And one of my friends from school goes walking by and I'm like, 'what?' And he's like, [inaudible 00:11:36] minute what's he doing here. So I go out to say hi, and I go out and I'm talking to him. I'm like, 'what you doing?' He's like, 'yeah, I'm going down the street to go visit so and so'. I'm like, 'Oh'. Because he didn't live in our neighborhood, so it was shocking to see him on a weekend. And he turned around and he looked at me and he looked like he had fear in his eyes. And he said, 'what are you doing with a white woman on your couch?' And I looked at him, because he was saying it like it was so serious, I'm like what is he talking about. Because I had my back to the window and I'm facing him and he's facing the window. So I turned around and I stood, I'm like, 'what are you are you talking about?' And I'm standing next to him and he said her. And I literally said, 'that's not a white woman. That's Kathy'.

Ruth Adewuya, MD (host):

Oh my goodness.

Carla Pugh, MD (guest speaker):

Well, it was time for a conversation with my mom and Kathy. I was like, 'why y'all didn't tell me Kathy was white?' I'm totally serious. I didn't know anything about race obviously until there were spurts of things that made it clear as I grew up from junior high through UC, Berkeley, that it was a real thing.

Ruth Adewuya, MD (host):

Yeah.

Carla Pugh, MD (guest speaker):

A real thing. Unconscious bias, and I had been experiencing it, but I didn't understand it.

Ruth Adewuya, MD (host):

That was going to be my next question. I'm wondering how growing up that way, not that it wasn't talked about, but it sounds like when you brought it up then you engaged in a conversation with your family and all of that. How did that play into your career? How did your upbringing impact how you showed up in these spaces?

Carla Pugh, MD (guest speaker):

You hit the nail on the head. When I started speaking more about it, my support, my upbringing, that was my epiphany that I felt comfortable and entitled to have a diverse mentorship pool.

Ruth Adewuya, MD (host):

Sitting with that and how powerful that is.

Carla Pugh, MD (guest speaker):

It's huge.

Ruth Adewuya, MD (host):

I'm trying to gather the words, but just the reality. That's not how most minorities feel probably.

Carla Pugh, MD (guest speaker):

When you think about it. I can tell you years later, and again, it's only after you talk more and more about it openly. I was invited to give the Martin Luther King lecturer at the Medical College of Wisconsin. I was a surgery faculty at University of Wisconsin in Madison at that time. And I knew a number of people there. In preparation for that talk, I had a number of humbling, grounding realizations. And one of them relates to that story I told you about my friend who asked me why did I have a white woman sitting on my couch? And it was an emotional moment when I had that reflection and realization. His family and his workflow, he didn't have what I had.

Ruth Adewuya, MD (host):

Yeah.

Carla Pugh, MD (guest speaker):

And if you grow up with access and trust to only one demographic with respect to race and ethnicity, you were going to be set back. Especially those who are underrepresented. You're going to be set back naturally because of trust. You are automatically going to assume that those in power will not help you, let alone see you. And that you are not entitled to anything. And even if they offered to help you, you wouldn't trust them because you never had it before and you don't believe it. And you see what's on TV. It works both ways. That was a painful moment to realize that there's no question of a significant part of my success was due to lack of fear.

Ruth Adewuya, MD (host):

I have a similar experience. I'm Nigerian, my parents moved to the Philippines when I was a year old. There's a lived experience for African-American people in the United States that I didn't have. But then it impacted how I had conversations, the opportunities I pursued. And even in my own space of trying to find belonging in the black community in the United States. Because I grew up only knowing one black family in the Philippines. I was privileged enough to grow up in an environment where yes, there were racial issues, but it wasn't with the lens of fear towards other demographics. It was normal for me to be the minority because I grew up in the Philippines and I was always the only black person.

Carla Pugh, MD (guest speaker):

Right. But you also had your formative social capital awareness and upbringing in that space to understand the value you could have in a space where people don't look like you.

Ruth Adewuya, MD (host):

Absolutely. You said it so well.

Carla Pugh, MD (guest speaker):

So you know that you have value outside of your own community. You know that you developed real friends and friendships and spent the night at people's houses and ate food and had open conversations and they valued what you brought to the table and had curiosity and you felt comfortable sharing. There's something to that for those who are underrepresented, to break that veil of not being acceptant, being judged harshly and assumed unintelligent because the color of your skin.

Ruth Adewuya, MD (host):

I want to circle back to the article and the moment that your group had realizing that data and what you mentioned was what needs to be done. And so that article came out three years ago. What are some of the steps that have been taken?

Carla Pugh, MD (guest speaker):

So there has been a small shift and we've looked at the numbers. And last I looked because that was a AAMC I believe from 2018. And there were 11 black female surgeons with tenure. The number had gotten up to 15. I think the numbers higher because when I looked at it in 2022, it was likely the 2021 data.

Ruth Adewuya, MD (host):

Okay.

Carla Pugh, MD (guest speaker):

So now there's real 2022 data and I know that there are more. And there's difference between tenure and that's another, you have to look at those who have reached the level of professor. Because some schools don't offer tenure anymore. But the numbers are still below 20. The first thing is to publish the data because then that enables a conversation. And then that enables people to realize there is something real here at play. And if you can look next to you and you know that you in your lifetime has met an intelligent, capable black female, then you have to figure out there's something wrong.

And then it's the intersectionality, right? So then you have to apply all of the data for women in surgery, which the numbers and the trends are equally daunting, higher numbers, but the trend is still there in terms of low numbers of the leadership roles and looking at number of female chairs, looking at number of female deans, CEOs of health systems. It's still a daunting statistic. And so then you add race on top of gender and then we start to really see black women have the lowest demographic numbers in terms of professorships and leadership. We recently just published a paper that noted, was in 2021, that there had never been a black female president of any major surgical organization in the country except for society of black academic surgeons. So when you exclude the identity based organization, there had never been a black female and now there will be two.

Ruth Adewuya, MD (host):

Oh.

Carla Pugh, MD (guest speaker):

So Pat Sylla, she is a black female from Senegal and she will be the first black female president of a non [inaudible 00:19:24] based organization. And it's the Society of American and Gastro endoscopic surgeons.

Ruth Adewuya, MD (host):

That's exciting.

Carla Pugh, MD (guest speaker):

She's been president-elect since last year. And this week Callisia Clarke, a black female surgeon, was dismay president-elect of the Association for Academic Surgeons.

Ruth Adewuya, MD (host):

I want to continue the story of your career. You are the first surgeon in the United States to get a PhD in education, again wow. I'm curious now that you reached your passion of being a surgeon, what led you to pursue a PhD in education?

Carla Pugh, MD (guest speaker):

By the time I was a second year medical student, I knew that I wasn't going to have a straightforward career in healthcare. There were just a number of experiences with my colleagues, a number of experiences with knowledge attainment that I had this strong passion. And again, it came from this belief that I could do anything and this fearlessness. And one of my friends told me, another famous surgeon, a female surgeon who's just said, you know what really makes you special and which is funny, he says what really makes you special Carla Pugh, is that you have this unusual package of courage and freedom and then you have the respect to do it. And [inaudible 00:20:42] you in the room that you're going to ask those courageous questions and they're refreshing every single time. And your brain just has this freedom in that space to do things differently, it's a huge contribution. And I've never had anyone say that to me before.

And so in those formative years in medical school, a lot of those questions came to mind and one of them was really that their textbook, I knew that I wanted to be a surgeon when I was in medical school and I hated our textbooks. How are you supposed to learn anatomy? How do you learn surgery with 2D and no video? But that was before YouTube videos and Google and searches and everything. But that was a real pain point in my quest for knowledge, is the accessibility and a variety of different media form factors, modalities. And the textbook just wasn't the end all for me. I wanted video, I wanted 3D rotating animations, and I was dreaming of that when I was in medical school before they existed. So it was just I knew that I couldn't be happy with my continued education in this profession if I didn't have more until I figured I would learn how to do it and make it happen. And that same thing with that same resolve as a five-year-old and then the ninth grader in terms of what you're going to be when you grow up. I'm like, yep, I'm going to make a contribution and change how we're educated. I'm still working on it and it's been fun and I've learned a lot, but that was the spark.

Ruth Adewuya, MD (host):

Looking back at your work in this area in education, what's one notable thing that stands out for you as an accomplishment in this education part of your world?

Carla Pugh, MD (guest speaker):

That it was really risky and it was very scary and is very isolating and now it's very rewarding. It changes because once you get something then you're on for the next one, once you get on another platform. So the first high reward that was super exciting was getting my first multimillion dollar grant from the National Institutes of Health, so my first RO1. And then within two years of that, getting the presidential early career award for scientists and engineers from President Obama. And then I got another huge grant from the Department of Defense. And that just took me to this next level of sensor technology and really, and that moment, it's a confirmation that you're not a one hit wonder and that I made good on this major detour. And in that moment, that's when you feel entitled to explore more and that you do good on your explorations, you made good of it and you could be a return on investment to your school and your colleagues that support you. And then I was inducted into the National Academy of Medicine, in terms of it being a peer reviewed process and people acknowledging you for a major contribution to science.



Ruth Adewuya, MD (host):

How do you balance all of the balls and continue to be excellent and achieve surgery, which is so intense, notorious for extended hours. Then on top of that, you're pursuing this field of medical education and also doing a lot there.

Carla Pugh, MD (guest speaker):

It's a great question and it's come up a number of times and the first thing I'm really glad is that now there are papers starting to be written about it and it is not just women in surgery, but women executives and that we all have two jobs. We take care of the household things, the kids and many times the bills and everything. And then we also do our daytime job and there's articles now written in mainstream journals and media, and so just putting more and more awareness there. For me personally, I have great family support. It's still a lot and I've learned how to say no, and I've learned how to be strategic and when to say no and how to say no and when to say yes and to be more focused and more efficient, and it's a constant balance. And I have rules of engagement.

So when I'm acute care surgeon and when I am on service, my patients are my priority and my research team understand that. It took a while for the engineers to understand that a surgeon may not answer an email in two hours, let alone two days. And explain to people upfront, this is my workflow and I'm on service this week, and then have people help manage your community of expectations. Then it's less stressful and the timing, and I learned how to say for the honorific lectures, 'oh wow, next month I have a grant to submit and that things are really busy. I'd love to do it next year'. I took the executive leadership for academic medicine. That was very, very helpful in terms of the coaching aspect and understanding how to really, really hone in and focus on things that you enjoy doing because when it's super exciting, then it doesn't feel like work.

And I think now that wellness is even a topic, becoming more and more of a mainstream topic, I think that we're on a path where there's opportunities for more communication for women leaders and executives and more respect for that. And women communities that then set things up for your backup to your backup for daycare, for your backup to your backup for finding a nanny or a maid or a house manager, all of the above. Those are no longer sort of private conversations that you have to figure out on your own in isolation.

Ruth Adewuya, MD (host):

What I'm hearing from you is that it boils down to this community that you set around yourself, whether it's family, whether it's professional, whether it's around professional development for yourself. It's building this network of support around yourself to be able to navigate all of that. I just wanted to touch on one thing that you said about being able to say no. I'm wondering if, especially for minorities, where there's a level of, because you're being offered this little opportunity and you're like, oh my gosh, I don't know if they're ever going to offer it to me, and you put your professional value within all of the things that are coming to you that sometimes it's hard to say no. So you have to know what your own worth is, your own self worth to be able to then say, it's okay if I say no. It doesn't mean that I'm less than, but I think you almost have to get there in your mind first, right?

Carla Pugh, MD (guest speaker):

You have to get there in your mind and you can't put that extra pressure on yourself, and there will be other opportunities always.

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Ruth Adewuya, MD (host):

What is your advice for upcoming clinicians early career or even student doctors who are minorities in their field? Maybe it's the young girl who's dreaming of being a cranial facial plastic surgery at five years old.

Carla Pugh, MD (guest speaker):

I think I have to go back to that first major point. A diverse mentorship pool is required. We live in a diverse society, and if you are not comfortable with certain demographics and building that into your community, you have to figure it out. It goes both ways, and so you have got to step out on faith and get a diverse mentorship pool.

Ruth Adewuya, MD (host):

Thank you so much for having this conversation and sharing a little bit of insight into your story and your journey.

Carla Pugh, MD (guest speaker):

Oh, thanks for having me. This is great.

Ruth Adewuya, MD (host):

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