00:45 Dr. D’Anne Rudden: In life, few things are black and white, it would certainly be easier if they were.

And yet, as audiologists, we tend to separate many of the issues that people with hearing loss have into very static perspectives.

We like to fit things into neat little boxes. And sometimes we become unable to open that box up to examine the real nuance of the debate.

You see it in our communities and in the world every day.

Society strives to label and categorize. I mean, it’s just the way our brains attempt to make sense of things.

All too often, we see people striving to sit firmly at either end of a continuum, unable to see other perspectives. At best, we might call this worldview narrow-minded. And at worst, it can look like and feel like divisive bullying, especially if you scroll social media for too long.

It’s great to have strong opinions on things, I believe it can be really important, especially when we hear about important issues directly affecting our young professionals at the early stages of their careers, and when it has the potential to impact the lives of our patients.

However, there is a difference between passion for something you believe in and, conversely, a firm reluctance to shift your stance or to see things from another point of view.

I would argue that audiologists need to be more skilled at examining the shades of gray, and we should champion the evidence supported by science, not just the narratives that people are shouting loudly about.

That said, are we capable of sitting with two opposing viewpoints? And is it possible to believe two things at the same time?

Imagine wanting the very best for our patients through high expectations, proper professional boundaries, and evidence-based care. And all of these things could coexist and be cheered at the same time as other professionals providing a base level of hearing care through their unique lens.

Imagine patients being more active in their ability to self-direct and self-actualize their own hearing care, not despite options for professional care, but in conjunction with supportive expertise.

On the podcast this month, we are joined by Dr. Gabrielle Saunders, a legendary audiology researcher who doesn't mind diving into audiology's uncharted waters, if that means we have the ability to care for people with hearing loss and expand those abilities.

Dr. Saunders is a research fellow at the Manchester Centre for Audiology and Deafness and co-directs the hearing device Research Center for the Manchester Biomedical Research Center, both at the University of Manchester and is affiliated with the VA Rehabilitation R&D National Center for Rehabilitative Auditory Research, the NCRAR in
Dr. Gabrielle Saunders: Thank you. That's very generous of you. Thank you!

D'Anne Rudden: Believe me, Dr. Saunders, your name is attached to a wide variety of Audiology articles, and you have contributed to the profession on so many fronts.

Can you give us a brief history of how you found your way to audiology and how your career journey has evolved?

Dr. Gabrielle Saunders: Sure, thank you. I wouldn't say my career journey is similar to many people that have come by randomly. I began way back when Audiology really wasn't an established field. I began as an undergraduate with a degree in what's called Human Biology and Psychology, and I wanted to do a PhD.

There was a PhD advertised that it was looking at people who reportedly have hearing difficulties, and yet had normal hearing. I looked into that and completed that PhD at Nottingham's MRC Institute of Research because I thought, "Oh, yeah, this is psychology." I then realized that it was more towards Audiology.

So, we named that condition at the time obscure auditory dysfunction. Today, it is referred to as CAPD in hearing loss and listening difficulties. It is one of those issues that exists but has yet to be resolved.

I personally think there are different aspects to it, but it took me more towards audiology.

I wanted to do a postdoc. I met Harry Levitt who was long since retired. He was a big name in the digital hearing industry in the 1990s, and joined him. I then went to the City University of New York City, which is a fabulous place to be for singles in the '90s.

I looked at measuring outcomes from a broader perspective than measuring the sentiment of speech scores or looking at the response time. What's interesting was that I looked at cognitive load, as well.

Since there was no academic environment for audiology in the Bay Area at the time, I started working with start-up companies after moving there with my now husband.

I worked at a scientific learning company, which is a program that is still under development. I'm not sure if you've heard of that. Mike Merzenich and I were there to help children who were having trouble learning the language.

After that, I went to Decibel Instruments, a business you may or may not be familiar with because it is run by Don Morgan. He was also from UCLA who had previously collaborated with Dr. Judy Domino, many years ago.

Interestingly, the company attempted to produce hearing aids that were practically sort of OTCs, with the intention of selling them through opticians, drugstores, etc. The issue at the time was when customers had trouble inserting ear tips. Despite being fairly effective, these hearing aids didn't remain in users' ears very well. Since then, we've made some amazing advancements in over-the-counter fit.

When that company unfolded, I had the chance to relocate to Portland, Oregon, where I worked as the Junior Investigator at the NCRAR, the National Center for Rehabilitative Auditory Research, for almost 20 years. I also
took part in a few administrative tasks. Years later, I was the associate director when I departed. We conducted a wide range of fascinating studies on veteran rehabilitation.

After spending a year and a half at the Erickson Research Center, I finally arrived in Manchester just in time for COVID lockdown, where I have remained and have always planned to be.

08:28 Dr. D'Anne Rudden: Your name has been connected to a lot of studies, a lot of science, and a lot of papers over the course of your career, many of which I have read myself. People who are listening to this have probably known your name for a long time, but they might not be aware of your path or how it relates to the work we perform as clinicians on a daily basis.

What I found super interesting, is that you provided three articles to the most recent Hearing Journal. I want to hear some of your unique perspectives, but I'll start with the one that really drew my attention. The article was called "Hearing Aid Use Reduces Dementia, or Is It Dementia Reduces Hearing Aid Use? It's Both!"

Talk about why you and your colleagues asked that question and why does it feel revolutionary and potentially controversial at the same time.

09:39 Dr. Gabrielle Saunders: It’s not exactly revolutionary, in my opinion. Everyone is focusing their attention on it. We examined it, and I do believe we have a rare opportunity to do so, while I was still in Portland, Oregon, at the NCRAR. Graham Nayla, my current coworker on this project, was a visiting scientist and cardiologist, and AD students were also a part of this group. Graham and I were examining the newly made available clinical data at the VA.

As a result, we were lucky to be granted access to extract the electronic health records of 730,000 veterans, all of whom had gotten hearing aids from the VA. We were permitted to retrieve and obtain demographic and hearing data. All diagnostic and procedure codes for the 730,000 veterans who experienced a hearing aid issue within a year and a half of the 10-year timeframe.

We began looking at all sorts of things in the data set because we wanted to examine the factors that are associated with the use of hearing aid. These people are veterans in a clinical record, so it wasn’t as simple as it might appear. They’re not monitored on whether or not they’re using the hearing aid on a daily basis.

Our initial task with this data set, which was also an interesting exercise, was to consider what we could use as a substitute for evaluating continuing hearing aid use. The VA offers complimentary hearing aid batteries to all veterans who purchase hearing aids from them. So, we then considered the six-monthly orders for hearing aid batteries, and are given a six-month extension for their hearing aids. We utilize that in place of continuing hearing aids to determine whether or not veterans are still using hearing aids.

We have a diagnosis of dementia, we know whether they are wearing hearing aids, and we are interested in the associations between dementia and hearing loss.

Think of a technique to examine whether or not this collection of facts contributes in any way to the image that is gradually emerging. So, that’s how we started this work. We did some further research, and describe those that are bit of specifics.

12:26 Dr. D'Anne Rudden: That would be amazing.
Dr. Gabrielle Saunders: Okay. Let's consider two groups of people. Veterans who we know initially have healthy cognitive function and who have no recorded dementia diagnoses. To find out if they had dementia, we may travel back seven years in time. We divided them based on whether or not they continued using system hearing aids for a period of two years. The data set we presented had a limit of two years, so we used that as our basis. However, the most important finding was that those individuals who were persistent hearing aid users had a reduction in the odds of receiving a dementia diagnosis 3.5-5 years later by about 27%. So, that's a huge difference in the likelihood of getting dementia relative to those who were not system hearing aid users.

But then, we can also say we have data that we can split in another way. We can look at people who already have a dementia diagnosis and compare them with those who don't have a dementia diagnosis and look at whether or not having a diagnosis of dementia impacts the odds of continuing to use your hearing aids.

We found that, as you may predict, people that have dementia diagnosis or 54% less likely to be persistent hearing aid users than people who did not have a diagnosis of dementia. So, in other words, what we showed was basically that using hearing aids regularly seems to be associated with a decreased likelihood of dementia down the line. But, if you have dementia up front, you were likely to use your hearing aids less over time.

Dr. D'Ann Rudden: I will say clinicians like myself are trying to help guide people to treatment sooner rather than later to reduce potential cognitive decline, but how do we help people understand the risk factors without making them feel like we're using fear as a sale tactic?

Dr. Gabrielle Saunders: Absolutely! According to our findings, hearing loss and dementia both develop extremely gradually. What we don't know about our folks who later had dementia and stopped using their hearing aids as frequently. It is possible that they already had early-onset dementia, which is why they stopped using them in the first place. Actually, we don't even know.

Utilizing clinical chart records is intriguing because you are not pre-testing individuals and monitoring them over time. You are looking at their records’ diagnosis. We are unsure if these individuals just never had the opportunity to seek mental health treatment and receive a diagnosis. Since there is only a disassociation, I don't think we should in any way indicate that there is a cause and effect in this case. There is still much to learn.

As you mentioned on the fear tactics. Yes. We must first clearly state that demonstrating a relationship in a sizable population sample does not correspond to prediction at the individual level. We’re not allowed to comment on that, right? We are interested in the population relationship alone and the relationships that exist among a sizable population of people. We shouldn't use these kinds of facts to draw conclusions about an individual or make predictions about them because there are so many personal risk factors within an individual and so many aspects of life. Therefore, their linkages are not caused by them.

Yes, I agree. We should be taking the emphasis away from dementia and the fear-mongering idea. I'd like to see more research on the advantages of effective communication, social integration, potential reduction of isolation, and well-being improvements with hearing aids. I'd also like to see an end to the notion that getting a hearing aid will prevent dementia because we don't have compelling evidence to support that on an individual basis.

Having said that, I do believe our work has a few key takeaways for society. One of them is for the market for hearing aids. Hearing aid manufacturers must be aware that hearing aids must be easily accessible to persons who are having difficulty. They are difficult to use, which is a particular issue in care facilities.

I'd like to believe that we should perhaps adopt a different strategy by examining individual devices. Do you recall
the amusing throne that a certain monarch had to use? It had sharp pieces incorporated into the chair. Obviously, we've advanced much further than that, but should we be seriously considering smart furniture for nursing homes? Whereby mechanisms within a space somehow or rather allow you to commit. I'm not an engineer, therefore I'm not sure.

My mother is in a care home, and when I see what those cast-offs I'm dealing with on an ongoing basis, it gives me new insights as to why they haven't got the time to learn how to use hearing aids and manage each individual's hearing aids because they are managing so many other things at the same time that we need to get creative with what we do with a particular people in care homes and dementia.

But, on the other hand, for audiologists, I think it's a matter of saying okay, maybe my next patient will have dementia, maybe they'll have a mild cognitive impairment, maybe they'll just be the average elderly person who struggles, maybe there'll be cognitively intact. But nonetheless, I should make what I do and what I say accessible to them. I'm happy to expand on that afterward. Bear in mind that there are ways in terms of the time that is put aside for an appointment. Make sure people have the time to learn from you. Give short yet simple instructions.

There are many things about clinical care that people don't necessarily do like using simple instructions, demonstrating with examples, using plain language, and giving out videos.

The obvious one that will help you and your patients is to explain something to the patient, and then check whether they understood it or not by saying, "Did you get that?" and by saying, "Okay. Now paraphrase or show me what I explained to you." That way, you'll know whether or not they understood it. You'll be able to correct them if they didn't understand it, and by practicing it, there'll be practicing it and learning it along the way.

That is the message the audiologist should know. We all know that everything that they learned in an audiology appointment, especially the first time around, assumes that everybody needs extra help and support. Just use some of these straightforward teaching techniques to improve recall because that is where I would go.

20:47 Dr. D'Anne Rudden: I believe the message to be wise. I believe that we constantly hear how important it is to make things straightforward and how, from our own caregiving experiences, we expect our caregivers to act in a similarly straightforward manner. So, a fantastic takeaway is to model that for our patients.

I can't thank you enough for being not only a visionary because you're considering novel approaches to making things simpler and more approachable for people, but also for putting your money where your mouth is and conducting the necessary research to back it up.

Thank you so much for participating in The Hearing Journal Podcast, Dr. Gabrielle Saunders, but please stay put because we'll be back in the Aftershow. We're going to delve a little further and perhaps discuss some topics that our listeners may not be anticipating from you. I appreciate you being a part of this so much.

21:45 Dr. Gabrielle Saunders: Okay, thank you.

AFTERSHOW

00:44 Dr. D'Anne Rudden: We're back on The Hearing Journal Podcast Aftershow with Dr. Gabrielle Saunders.

We have been talking a lot about cognition, hearing, the research that you have done with some of your
colleagues, how cognitive decline can impact hearing loss, how hearing loss can impact cognitive decline, and the interrelationship between those two things.

How do I better understand the patient that’s sitting in front of me that may have cognitive issues? Do I talk about it? Do I try to test for something that feels like it gives the right to have a conversation? Do I drop it in their laps and say good luck with that? Am I providing them a path forward to get proper diagnosis and treatment by a professional that is their specialty? We know all of these things are interrelated. What is your view on how clinicians can have an understanding that can best help their patients? Do you think we need to be doing this testing?

02:16 Dr. Gabrielle Saunders: Good question. Because there are those who support screening and those who do not, and this is one of those issues that genuinely split the audiological world. For a number of reasons, I am not persuaded that the audiologist should perform complicated examinations. Does it fall under the view of audiology practice? That, in my opinion, is the root point of why it’s being discussed.

When you look at the Gerontological Society of America’s recommendations, which encourage non-physicians screening at a specific location, you must be taught to use the test and not just read about how to do it online. Without the right training, you risk getting a false positive or false negative. In order to conduct that kind of testing, you must understand how to secure the proper consent. You must have a set strategy in place for referring people with low scores for an accurate examination.

The critical step is by knowing how to handle if somebody fails their cognitive screening. How are you going to tell them? How are you going to support them in your clinic? It’s not the kind of news that is easy to break and to give support. So, I’m not really convinced that this is the world of audiologists.

One component of it was covered before when we discussed some of the methods you may employ in your clinic to make things simpler. The patient’s ability to receive information and how you wish to conduct that talk with them are the other aspects. You might just ask the patient a straightforward, open-ended question or inquire about your own cognitive management. Ask them if anything is coming up if they are using communication partners throughout their sessions.

In other words, you can have a lengthy discussion about the interrelationships between hearing, memory, and cognition without ever mentioning a test result. Everyone should have this dialogue, even if their cognitive screening was negative. Isn’t everything about this a linear process? I doubt that A or B will discuss that with everyone, especially a young person. Personally, I don’t believe it has to be connected to a screening test score.

04:56 Dr. D’Anne Rudden: Oftentimes, it begins with helping people to understand the relationship by saying that sometimes slower is better than louder because your brain needs more time to take in auditory information that when someone is speaking rapidly, it overwhms you which happens to people that don’t have cognitive decline. It happens to me, as well.

As a clinician, the challenge is when you see people that are obviously having some symptoms of cognitive decline, even if it’s not diagnosed, and they’re in denial or they are not willing to have that conversation, how do you potentially reach out to their other medical professionals or caregivers to help the patient that’s in front of you?

It’s such a big issue, and we have a potential role to play, but how much? I am not convinced like yourself that we need to become dementia experts. I think we need to have knowledge.
Dr. Gabrielle Saunders: Absolutely! We must be knowledgeable in terms of referrals. There are system-specific issues, of course, but if you notice a condition and wish to write a letter to the patient’s GP or give the patient a letter to take to their GP with whatever you think they should be following up with, you can do so. You can write a letter and advise someone to see the ENT if you notice something is wrong by stating, “Take this to your GP, and go see the ENT.” By doing this, you are expressing your professional judgment and acting ethically. If you conduct a quick, extremely crude content hearing screening but still believe they have a problem, would it be appropriate?

Nobody’s going to say these tests because it takes a long time. But nonetheless, I just feel it’s a diversion from what the role of an audiologist does which is to focus on hearing health. It describes interaction with cognitive health, but I don’t know that going down the testing route is displayed.

Dr. D’Anne Rudden: We’re much more comfortable in that diagnostic seat, and getting comfortable with taking a step away from the test results is not a bad thing for us. I think it’s about explaining the audiogram and how I feel super compelled to go through that graph. Maybe it’s my own way of legitimizing what I just put them through or that I have to explain to them in hyper detail with all the little symbols mean in their test results indicated in the data like any other medical professional probably would.

Dr. Gabrielle Saunders: I find it interesting, don’t you? We recently completed the study we conducted with a few nearby audiologists working for the NHS. We obtained four volunteer audiologists who all consented to let us videotape their debriefing of the audiogram in accordance with what we called their standard of care. Following the analysis of those videos, we called the patients within a week of their debriefing to ask them about their impressions of the audiologist—what they liked, what they didn’t like, etc.—as well as other information.

The audiologist was then taught how to use the hearing-explain tool. The hearing-explain tool seeks to avoid using graphs in its approach. More specifically, and at a very high level, it discusses how your hearing loss affects your listening effort. It also discusses the brain system. It discusses a variety of topics, like the cozy, your challenges, etc.

Despite our diligent preparation, we regrettably chose to self-train on that particular day for a variety of reasons. Not the least of these was the Queen’s funeral, which fell on a holiday in this nation. As a result, we were unable to conduct the training, but they did it nonetheless. They substitute that for the audiogram when treating the following 10 patients. We talked to patients and recorded everything.

We have learned some interesting things. When we looked at the audiologist’s language when they weren’t using the audiogram, they spoke into shorter, simpler sentences when we put it through this flesh, Kincaid reading. The sentence was shorter and less sophisticated. There was a higher proportion of patient interaction and as the patient spoke more when describing the audiogram, there were more open-ended questions asked by the audiologist.

And when they were using the audiogram, the patient’s responses to questions like "Do you see that? Do you understand that? Does that make sense?" were essentially their only opportunity to speak, with the exception of the occasional "Yes. No." However, with the help of the audiogram, we encouraged open-ended questions that allowed the patient to express themselves more. It was pretty interesting.

We also looked at the jargon that was used in the two conditions. We found that although the audiologists use the same number of different jargon terms, whether they were using guided tours standard capsule, they were 60% more likely to explain what the jargon word they were using meant. So again, it was much more accessible to
When we talk to the patients, it was a mixed bag. There were some patients that felt that either approach was too simplistic, but there were also a lot of patients that said, "You know what, I was shown this graph with triangles and circles and colors, and I didn't understand it. It was particularly hard because I was tired after having done all the testing. It didn't mean very much to me. I would have liked a written summary; I didn't want to graph." So, that was a mix, but on balance, it was quite surprising. The change in the audiologist's language was simpler, but what we feel is that it once again, emphasizes one size doesn't fit all in many ways. I think the audiologists need to be aware of the patients who really will appreciate that in-depth discretion based on the audiogram. The patients that would actually prefer a much higher-level general description of what is found. I think that's where we would go.

12:32 Dr. D'Anne Rudden: It all comes down to listening to your patient, and maybe asking that question. I'm putting that to use Monday morning.

12:40 Dr. Gabrielle Saunders: I was going to say if every time somebody comes and wants me to explain the graph or asks me what it means, I wonder what the proportion of people would say, "I want to explain graph." I'm guessing it might be quite low, but I have no idea.

12:54 Dr. D'Anne Rudden: It's probably because I imagine myself asking an optometrist or a pharmacist, "Can you explain to me how it was ground together and made into a pill?" My eyes would glaze over, I wouldn't care, and I'd probably just ask, "Tell me how I'm going to fix whatever this is," because that's all I would be interested in as a patient. I will definitely put that to use on Monday morning.

13:22 Dr. Gabrielle Saunders: I would have to catch up with you and find out what proportion that graph describes.

13:28 Dr. D'Anne Rudden: I'm sure you already know the answer to that. I'm just I'm catching up. In fact, I might even keep a note of that. I would simply conduct a quick internal analysis to see what I can obtain. Is there a certain patient group—say, your engineers or someone else—who could really, truly benefit from seeing such data? And where might there be other individuals where the data truly creates a barrier between them and their ability to comprehend what has just happened and how they will recover?

14:01 Dr. Gabrielle Saunders: It makes sense that the audiogram is—I'm not saying it doesn't measure an audiogram because obviously, that's really important for the hearing aid, but nonetheless, it doesn't need that in-depth explanation, probably. All they did was test the quietest sound a patient could hear. I thought he wouldn't notice, and that leap is not obvious to them.

14:29 Dr. D'Anne Rudden: Yes. We hang our hats on that a lot. Whereas, I think the bigger conversation is definitely all the stuff that comes after.

14:37 Dr. Gabrielle Saunders: Right. The applications of it for listening.

14:42 Dr. D'Anne Rudden: I'm going to switch gears on you really quick since we have a limited amount of time.

In the Hearing Journal this month, you contributed three articles. I want to make sure that I give you some time to talk about some other topics that you are interested in, such as the connection between visual status and audiology, which goes beyond hearing.

One of the things that I loved about the article that you had on vision was this distinction that you and your co-
authors made about how "visual status is defined based on "best-corrected" vision in the better eye as opposed to how better hearing acuity we typically pitted against some notion of perfection...or at least what someone's memory of better hearing was like from years ago.

Is there a kinder, more accurate definition that Audiology could start to wrap its head around? Cause I feel like "normal hearing" is so completely arbitrary and often leans into the subjective.

16:02 Dr. Gabrielle Saunders: Well, I have to say normal vision is arbitrarily defined as something you can see. Can you see relatively? I wish I knew what the exact definition is.

16:18 Dr. D'Anne Rudden: That's okay.

16:18 Dr. Gabrielle Saunders: However, it's still an arbitrary definition. Age-related norms are what bothers me the most when discussing definitions of hearing loss and normal hearing. It's the notion that we convey when we tell someone their hearing is typical for their age. I can see why you'd think your hearing is normal for your age if someone said, "Oh, my gosh, there's something really wrong with me," since that would suggest they don't have anything abnormal or pathological going on that requires treatment. That ignores the fact that hearing is something you need whether you're 30 or 70. The world doesn't alter in any way, right? We have to sort of leave from there.

All normative values and everything are arbitrary values that are used to determine what is considered normal, but definitely with vision. The key is to convey to others that while your hearing is normal for your age, even if you are 70, it would be great to hear as if you were thirty.

17:40 Dr. D'Anne Rudden: It's strange because, according to my impression, I don't hear audiologists responding, "Oh, that's normal for your age," but rather other professionals, such as the primary care doctors I would name saying, "Oh hearing is normal for your age, you don't have to worry about it."

18:03 Dr. Gabrielle Saunders: I think they would probably say that to others—I don't know about other conditions, too, right? I'm guessing, "Oh, yeah. You know, you can give cognition. Yeah, slow down. You're old? I don't know." But yes, we know that that goes on.

I was recalling research we conducted in which we examined the age-related norms of a number of cognitive tests. We had a large number of individuals who fit the age-related norms, but this does not imply that their performance on a variety of tasks was even close to that of the younger individuals. We, therefore, apply the same concept of audiological study to link events to age-related standards. Although I have the same issue that they do for their age, it does not follow that performance will be the same.

It might be said to be cognition-related. We are aware that this is a result of practical, cognitive aging in the brain. As a result, from the standpoint of dementia, we don't worry about it, but it still affects how you handle noise and manage speech, etc.

In my opinion, the most important thing to consider is what is considered typical for your age, regardless of whether it pertains to hearing, vision, or cognition. It's all fine and well, but the patient can't manage it in the real world with it. There are people who are age 30 and they are functioning, even they are normal than your age.

19:42 Dr. D'Anne Rudden: Since you live in a world where research and clinical practice go hand in hand, let's put your visionary hat on for a second. What direction do you envision the future of audiology taking? Do you believe
that we are moving in a direction that we are unable to comprehend? How do you see audiology in the coming years?

20:12 Dr. Gabrielle Saunders: That's a good question. I anticipated that. In my opinion, everything moves quite slowly in the short term. We know this because it typically takes 17 years from the moment a new discovery is discovered until it is applied in clinical practice. Most likely, not much will substantially alter. The biggest shift, in my opinion, will be the use of data by hearing aids. However, all consumer products related to hearing are also collecting data and will be able to manipulate signals towards the end of the year in fairly complex ways.

I'm speculating, but it seems like not much has changed over the years. I mean, sure, things have improved, but there's only so much that can be done with the basic signal processing that comes out of a hearing aid. Therefore, I believe we'll need to transition to somehow advanced adaptations. I have no idea what they will be, but given that we have hearing aids and all of our other senses, wouldn't it be wonderful if a hearing aid could determine what we wanted to listen to?

Additionally, research is being done on how you can modify what you're listening to based on how your head motion and eye gazing may be related. Whether you like it or not, hearing aid firms are permitted to collect this vast amount of data. Because hearing aids are incorporating so many senses, I believe they are using them for good and will be able to comprehend far more than we can at the moment. It'd be great to understand this intent.

22:09 Dr. D'Anne Rudden: I hope that's true.

22:12 Dr. Gabrielle Saunders: Yeah, I don't know why, but I think that's where a lot of the energy is going down. I'm not a technology person, but I am beginning to see the value of huge data sets that you could learn from.

22:26 Dr. D'Anne Rudden: Yes. Well, I'm glad we have people like you sorting through large sets of data for our benefit. I appreciate you doing it. We appreciate everything you have given to the profession and everything you do as part of your job in the field to improve us all.

It was a pleasure to meet and speak with you, Dr. Gabrielle Saunders and I hope our paths will cross again soon.

22:53 Dr. Gabrielle Saunders: Well, thank you so much. I really enjoyed doing this.

22:56 END