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An Interview with Mrs. Erika Cummings (PA) from the Duke Neurology Department on Clinical Neuroscience

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1. INTRODUCTION

On Tuesday, March 25th, Mrs. Erika Cummings from the Duke Neurology Department visited the NCSSM Morganton Campus. During her visit, she spoke with authors of the Morganton Scientific. Both Adrija Sarkar and Leyla Urmanova conducted original research to better understand therapies for Parkinson's Disease; their articles are included in the 2nd Edition of the Morganton Scientific. Additionally, Leyla Urmanova and Navya Bansal wrote literature reviews evaluating topics important to clinical psychology and neuroscience. Laura Lee, one of the chief editors of the Morganton Scientific, and Mr. Christopher Collins, a member of the science faculty at NCSSM Morganton, assisted during the interview. A great thanks goes to Mr. Collins for helping set up the interview and reaching out to Mrs. Cummings.

Mrs. Erika Cummings is a Physicians Associate (PA) practicing on the inpatient General Neurology team. She is also involved in PA training. She graduated with a Master of Medical Science degree from Wake Forest University and graduated from Duke's APP residency program.

2. INTERVIEW

2.1. [Laura]: What does your typical day in the hospital look like?

[Mrs. Cummings]: We see people with anything from disorders of consciousness or alertness, changes in their behavior or personality, dramatic injuries, brain bleeds, people with strokes, people with seizures, severe migraines and headaches, tremors, trouble walking, trouble swallowing, weakness, numbness that's unexplained. They come to us and we try to figure it out. We also take care of patients who have brain tumors and tumors in the spinal cord .

I work seven days on and seven days off usually, alternating with a colleague. So one of us is there providing continuity to the rest of the big academic team that only be there for a week or so, they're kind of rotating more quickly and there's a lot of learners, and so part of our role, as the PAs is to give that continuity to the the new people coming on and kind of let them know what happened last week, when they weren't there.

A big group of us will round in the morning, and what that looks like is we show up at seven and we get the sign out from the night team. That tells us about any new patients that came in and then if there were any problems that our old patients might have had overnight.

Then we'll go see all of our patients, one by one, kind of stand outside the room, talk about what happened the night before, what their plan is for the day, what their medications are on or should be on. Additionally, we talk about questions such as:

How close are they to leaving the hospital? How can we help get out of the hospital? And then who needs to be involved in the patient's care?

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Figure 1. *Adrija Sarkar, Navya Bansal, Mrs. Erika Cummings, Leyla Urmanova, and Laira Lee (from left to right) on March 25th.*

So that's the medical providers, we would be consulting the rest of the interdisciplinary team, asking them to come in and weigh in. That could be physical therapists, occupational therapists, speech therapists, respiratory therapists, and social workers.

And so we'll keep going. And we'll see maybe 20 patients on average in a morning, so that probably takes us till around noon. Then we will write notes on all these patients documenting our plans. Then the afternoons are kind of free flowing.

When new patients come in, we're ready to go see them and make a plan for them, or we might be educating some of the learners on the team, taking some time for teaching. Then at 7 PM, we sign off to the night team. And that's the flow of our day, so sometimes it can be really busy, sometimes it has a lot more free time, but it's always with a lot of people.

There's always a lot of signing out and communicating the right information to whoever you're talking to. You have to be able to change your communication style based on who you are talking to, including the patient.

2.2. [Laira]: What is one disease, whether the symptoms or treatments, that you wish neuroscience researchers focused more on?

[Mrs. Cummings]: Yes. So ALS has a lot of research dedicated to it, right?

Do you remember the ice bucket challenge from a couple years ago?

That was to raise awareness for Lou Gehrig's disease or amyotrophic lateral sclerosis (ALS) and ALS research. So, after that, a lot of more money went into ALS research, but we need more research into, not just new treatments, but also, alternative treatments, because it's such a devastating disease that usually leads to death within a couple of years, people will try anything.

They will try whatever the Internet tells them might work, and so I think we need more research into definitively proving that those things may or may not help someone so that they don't waste their time and their money when they don't have a lot of time left.

2.3. [Leyla]: What is the most urgent ethical, systemic challenge there is in healthcare, specifically in the care of neurodegenerative diseases? And how do you think we should go about addressing that challenge?

[Mrs. Cummings]: There's a lot of new ideas, new technology, new therapeutics, for example, for Alzheimer's, we have a new treatment for Alzheimer's as of last year. A treatment that we're still learning about in the long term, how well it works.

That's the first big breakthrough treatment we've had in decades.

But a lot of people who have Alzheimer's can't get the treatment for various reasons.

Just access to centers where the stuff is being offered. Access to clinical trials is limited by where people live and how much money they have sometimes to get to somewhere where these innovations and new treatments are being offered.

So, I think to increase equity in healthcare research, we have to find ways to involve people who don't have the means to physically get to or afford the things that are being offered.

2.4. [Mr. Collins]: Do you come across issues where individuals that do not have any immediate family members and it is difficult to get consent, where you are left wondering whether or not they fully understand what you are asking?

[Mrs. Cummings]: Here's a good tie in with neurology, so patients who have aphasia for various reasons, maybe from most commonly a stroke affecting the speech center of the brain.

One type of aphasia is broken speech, but they can fully understand everything that's going on.

They are not different from someone who has trouble speaking for a structural reason, like their muscles aren't working, right?

Or there's another type where they have no trouble producing words and they just have this word salad and they just say a bunch of random words in a string it doesn't make sense and they can't understand what you're saying, even though they might be nodding, they can't actually follow commands.

But I have seen, even recently, a patient who had a brain tumor in her speech center and she was being asked big picture questions about her goals of care. For example, did she want a feeding tube?

Did she want to live at home or in a facility?

And the initial evaluation of her capacity for decision making did not account for her aphasia.

And so our team stepped in and was like, oh, she knows what we're saying.

Like, if you give her the time and the repetition, and a little bit of patience, she understands what you're asking her, but just needs a different way to communicate.

We, the medical community, have great understanding of aphasia, but I think, others like patients and their families need a better understanding of aphasia and strategies to communicate their wishes. And so yeah, this issue of capacity, capacity to make difficult medical decisions for yourself, we run into it in patients with aphasia or patients with dementia.

Yeah, so if grandma said that she never ever wanted to be in a nursing home, ever, but now there's no one to take care of her. Family members can't get off work, and she doesn't have an otherwise safe place to be, and she's falling all the time at home and hurting herself.

What is the ethical thing to do in that situation?

2.5. [Adrija]: What drew you to neuroscience, specifically hospital neurology? What part do you find the most rewarding?

[Mrs. Cummings]: Yeah, just that the hospital setting it's fast pace, it's interesting.

If you order a test, you get it back right away, some of that instant gratification. Getting to see people from day to day how they're doing instead of seeing them in a clinic and then seeing them again in three months. Everything in the hospital happens quickly. Also, the people that come in are scared, you know, if you suddenly can't walk or talk or are having trouble breathing, these things are scary, and so you can be there for people during these moments.

It's very difficult for them. You can help them know what to expect.

Also, hospital neurology is just like a team sport. You're working with big teams, everyone has a really important role and is so much more efficient when we're working together as a team than if we're in our own silo roles. And to see that come together every day is very satisfying. So, yeah, those are the things that make me like my job.

2.6. [Navya]: So neurology is obviously really complex. It comes with the job, and sometimes it can be really, high stakes, like you're literally grappling life and death in your hands. So, how exactly do you approach your difficult cases or your uncertain clinical situations?

[Mrs. Cummings]: Well, so again, not alone, I've never dealt with anything alone.

I always have a team that I can bounce ideas off of.

We can work together. That's important.

We can also support each other emotionally when a case might affect one of us more than more than it would another person for, you know, whatever personal connection we might have to that condition. I think something I try to live by is that some of my patients

really do have devastating conditions, and I might not be able to make their whole life better.

It's pretty unrealistic, but I could make their day better, pretty reliably, I could find some way to make someone's stay better.

So, that helps me, kind of stay grounded in my goals to try to help them.

I can make their day better and I can help them understand their disease better, which will help them in their long term recovery even after they're not under my care anymore.

2.7. [Leyla]: I was wondering what specific technologies you typically use for treating neurological conditions? I've been reading that deep brain stimulations (DBS) are very prevalent, but are there any modifications or advancements that you're making to that technology, like closed loop DBS, I've heard is becoming more popular, and like there's this thing transcranial ultrasound stimulation also becoming popular.

[Mrs. Cummings]: Yeah, at least in my career, eight years, I have seen these technologies become more prevalent.

I've seen it increase quite a bit. I remember the first patient I saw who had a DBS early on in my career, was in the ICU because they got an infection from the treatment.

And that made a big impact on me like, wow, there's a lot of dangers to these things.

I think that it is still possible to get an infection from a deep brain stimulator, but in the last decade, our understanding of the surgical process and how to use them for different conditions has advanced significantly.

It is really effective for Parkinson's tremors. If you can find a video, it's crazy. Like an on and off switch, where the tremor stabilizes. It's so cool.

So that's more of an outpatient thing, like movement disorders specialists would be working with the surgeons, to get that placed, but then following up at the clinic to fine tune it.

And in the hospital in terms of technology, we use electroencephalograms (EEGs), to look at brain waves and try to make a spell characterization, if a patient is admitted because they have some kind of shaking spell.

We use an EEG to answer questions such as is it an epileptic seizure or are the brain waves abnormal? Or is it something else like a heart problem? We use EEGs every day in the hospital.

And obviously imaging.

I mean, functional MRIs is something you might have read about, so, we're not using that so much for clinic patients, but in research, that's exploded in recent years. Using functional MRI to see in real time what's happening in the brain. Instead of just looking at the structure.

2.8. [Leyla]: Do you see those procedures becoming more noninvasive, too?

[Mrs. Cummings]: That's always the goal. That is what biomedical engineers and researchers are looking for is how can it be the least invasive, but most effective as possible, because surgeries are not without risk.

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