Dr. David Wheeler (00:04):

Hello, and welcome to tod Today we're joined by Dr. Gmerice Hammond from Washington University in St Louis School of Medicine. Dr. Hammond, welcome to the program. And please tell us a little bit about yourself.

Dr. Gmerice Hammond (

looked at had hemorrhagic stroke and other kinds of stroke. And so the mortality outcomes and some of the secondary outcomes really apply to all stroke types, including hemorrhagic stroke patients.

Dr. David Wheeler (02:47):

Right. So your study makes it really clear that for a variety of reasons, outcomes for stroke patients in rural settings are worse than their more urban counterparts. Did your study give us any specific insights into what might be the causes of these worse outcomes?

Dr. Gmerice Hammond (03:04):

This was an administrative study looking at administrative data from hospitals, and so you're not really able to make any conclusions about the causes. However, for the outcome of mortality, as I mentioned, looking at the rates of endovascular therapy and the clot busting intervascular therapy, looking at how different the rates of those therapies were for rural versus urban patients, we feel comfortable saying that the lack of appropriate therapy had a lot to do with the differences in mortality for the rural patients.

Dr. David Wheeler (03:38):

So when you're looking at the differences in care between rural and urban and suburban settings, did you identify any gaps in terms of the availability of technology or other resources that might also have played a role in the differences in outcomes?

Dr. Gmerice Hammond (03:53):

Yeah. So in this particular study, we didn't examine the technological capabilities of the different hospitals.That data is not really available in the way that you might need it to be in order to make some of these conclusions. But we do know from other studies that hospitals in rural settings lack the neuroimaging technology that's important for stroke. So that includes things like having MRI availability, cerebral angiography, CT. And so that visualization of the neurologic deficit is critical to make it the appropriate diagnosis and then getting someone to timely care.

Also, the availability of surgical suites that are important for administering some of these very technical therapies. And then lastly, having access to an intensive care unit. So we know that those kinds of environments, intensive care units, surgical suites that have the kind of technological capabilities. We know that those are less available in rural settings.

Dr. David Wheeler (04:51):

Along the same lines, Dr. Hammond, did your study reveal whether there were differences in outcomes for rural patients who had access to remote neurologic care? So in other words, was the presence or absence of a telestroke system of care in their setting relevant to the outcomes?

Dr. Gmerice Hammond (05:07):

We did not have access to that particular data. However, we do know based on some other data and other studies that have been published, that the density of telehealth and some of the other technological capabilities that I mentioned earlier is much lower in rural areas. So this study was not able to examine that, but we do know that to be true from other work.

Dr. David Wheeler (05:32):

Policy plays a very important role by using financial incentives to guide and direct what hospitals focus on. And so making sure that we are reimbursing for and financially incentivizing the things that we want hospitals to start doing, such as coordinating care and coordinating care delivery.

And I would also say that standardizing intrahospital telehealth, I think is critical. Because if you have the ability to intervene, if you've got a CT scanner and a stroke unit outside of the hospital, that can really help with a rural patient who's many, many, many miles away from a certified stroke center.

Dr. David Wheeler (10:10):

Thank you, Dr. Hammond. Those are really valuable observations, and I'm sure provide some of our listeners with ideas about how to better advocate for their systems of care when speaking with decision makers and our elected officials.

I want to turn our attention back now to the role of telehealth in these systems of care. I mean, clearly this topic has come up several different times and in several different ways. But I wonder if you could share with us some experiences that you may have developed in recent months wherein many of us have adopted and expanded our use of telehealth, and whether in your estimation, this is likely to have a positive impact on rural stroke care in the months and years to come?

Dr. Gmerice Hammond (10:53):

Telehealth is an important way to bridge this inequity gap. We talked about the importance of access to specialists. That is not a short-term solution. So that is going to require many, many years of work to increase the density of neurologists, in a county, for example. However, telehealth is an important sort of stop gap, in my mind, and an important way to bridge that quality gap because we know that it's cost effective. So telehealth is a cost effective way to get access to neurologists and specialists when they're not physically present.

So I think that telehealth is going to play a critical role in reducing some of the inequities that we observed in this paper. Also, it's critical for reducing that delay to diagnosis. And that time to diagnosis is one of the most important factors for improving clinical outcomes. So I think you can't underestimate the importance of telehealth going forward for something like stroke.

Dr. David Wheeler (11:49):

I absolutely agree with that. And I think that our experience during the COVID pandemic pretty clearly

Dr. David Wheeler (13:01):

Absolutely. Turning our attention now to the patients in the charts and outcomes that you're evaluating. I wonder, within your data, were there noticeable or identifiable differences in the populations that were being treated in the rural versus non-rural settings?

Dr. Gmerice Hammond (13:17):

I think that's such an important question. Because as you know, I mean, there are patient level factors, there are hospital level factors, and system level factors that play a role in these inequities. The one thing that I think is striking, that's important for everyone to understand is that when we looked at the clinical comorbidity profile of the rural patients compared to the urban patients, there were not dramatic differences. So the clinical risk factors for stroke, such as hypertension, et cetera, some of the standard most important clinical risk factors for stroke were equally prevalent across patient groups.

Now, the one thing I will say is that obesity and smoking are things that are notoriously inaccurately reported in administrative data. So I cannot be sure that those were as similar as our data suggested. But our data suggests that there aren't dramatic clinical differences in clinical risk factors in terms of the prevalence of those factors. But what was very striking and is what's so important, I think, about these patient populations, is the prevalence of poverty.

So rural patients, or 60% of rural patients who are living with less than $43,000 a year. And that's compared to 30% of urban patients. So nearly twice the rate of really living in economic depravity. And that's critical. And that's a societal level issue. It's a policy level issue. But it definitely impacts this health inequity and all of the health inequities. And then we also found that Medicaid use was higher in that patient population, which just correlates, again, with poverty. But those were the most striking differences that we found in the patient populations.

Dr. David Wheeler (14:59):

Right. And that difference in economic status between rural and less rural settings exists across all territories in the United States, and seems to be playing an important, and probably causative role, in the very significant life expectancy numbers that we see in these settings as well. And I'm betting that things like stroke care play a pretty big role in that as well.

Dr. Gmerice Hammond (15:23):

And I just want to add too, to that point, this economic difference that we are observing this economic inequity, it's also really important to recognize that one of the important ways to reduce inequities in stroke outcomes is to reduce the incidents of stroke. We also know that the incidence of stroke is much higher in the rural setting and the rural populations.

And the incidence of stroke has everything to do with the economic disparities that we just talked about. Access and interaction with primary prevention and primary care. And then the structural and societal level factors that poverty bring to play in a patient's life, have everything to do with those inequities in outcomes.

Dr. David Wheeler (16:05):

For sure. Such as access to healthy foods, other issues like that. Anything else that you'd like to add into that?

Dr. Gmerice Hammond (16:13):

about, but it's relevant to these clinical outcomes. So educational equity, making sure that there are jobs and opportunities for economic advancement in these environments.

And then, advocating for more representation and having a voice and presence in some of these populations, such that individuals who have the lived experience of either being in a rural setting or being a racial minority are present at decision-making tables and participating as engaged stakeholders as these policies are being made. And those are broader, sort of like more far reaching aspirational things, but I think that they're at the core of improving these inequities.

Dr. David Wheeler (20:23):

Dr. Gmerice Hammond, thank you very much for taking the time to share your expert insights with us this morning, as we work together to improve stroke care for patients with hemorrhagic stroke in rural settings. Thank you again.

Dr. Gmerice Hammond (20:36):

You're welcome. Thank you for having me.