

STROKE ADVISORY COUNCIL MEETING MINUTES

November 2, 2021

Webinar 1 - 2:30 am

Members/Partners

Present: Wally Ainsworth, NC Office of Emergency Management Services (NCOEMS); Michael Aquino, UNC Nash; Sue Ashcraft, Novant Health; Pat Aysse, American Heart Association (AHA); Ashley Blackburn, UNC; Olivia Broomer, Cone Health; Aleasia Brown, DPH Cancer Prevention & Control Branch (DPH CPCB); Anna Bess Brown, Justus-Warren Heart Disease and Stroke Prevention Task Force (JWTF); Jim Burgin, NC Senator; Cheryl Bushnell, Atrium Health Wake Forest Baptist (AWFB); Tory Cairns, WakeMed; Amber Carter, Cone Health; Shannon Chesney, Duke; Michael Clay, Vidant; Arnett Coleman, Old North State Medical Society; Sylvia Coleman, RN; Ron Cromartie, Innovative Healthcare Consulting; Tom Curley, New Hanover Regional Medical Center (NHRMC); Dana Davis, UNC Health; Eric Deshaies, Novant Health; Chelsea Dunston, Atrium Health; Nada El Hussein, Duke Health; Michael Erwin, BELIEVE Stroke Recovery Foundation; Abby Fairbank, AHA; Meg Fenu, WakeMed; Heather Forrest, Duke; Melissa Freeman, Duke; Nick Galvez, NC Office on Rural Health; Emily Gobble, UNC Health; Amy Guzik, AWFB; Lesli Hall, Novant Health; Lindsey Haynes-Maslow, JWTF member, NCSU; Sarah Jacobson, AHA; Steve Jarvis, NC Senator; Ed Jauch, Mission Health; Justine Knight, Triangle Aphasia Project; Karissa LaClair, Cone Health; Diomelia Laues, Cape Fear Valley Medical Center; Erin Lewis, UNC Health; Sarah Lycan, AWFB; Monique Mackey, Area L AHEC; Sandra Maney, Genentech; Ruth Marescalco, NHRMC; Elizabeth Massiah, Alliant Health; Lucinda McLean, Columbus Regional Healthcare; Phil Mendys, Pfizer; Catherine Michael, AWFB; Jamila Minga, Duke; Margaret Murchison, JWTF member; Kathy Nadareski, WakeMed; Darrell Nelson, AWFB; Peg O'Connell, Stroke Advisory Council (SAC) chair; Diane Perkins, Atrium Health; William Pertet, DPH Community and Clinical Connections for Prevention and Health Branch (DPH CCCPH); Joey Propst, JWTF member; Ciara Rukse, DPH CPCB; Birtha Shaw, Diabetic Supply; Denise Spaugh, Minority Women Health Alliance (MWHHA); Anne Spell, Johnson & Johnson (JNJ); Lauren Stevenson, NHRMC; Mannie Szochet, JNJ; Julie Teachey, Vidant; Chuck Tegeler, AWFB, SAC vice chair; Jackie Thompson, UNC Health; Carey Unger, Duke; Jason Walchok, AHA; Marie Welch, RN; Amanda Wilson, JWTF member; Gwendolyn Wise-Blackman, MWHHA

Welcome, Introductions

Chuck Tegeler, Vice Chair

Vice chair Chuck Tegeler welcomed and thanked all for attending this November 2021 Stroke Advisory Council (SAC) meeting. He offered a special welcome to those for whom this is their first meeting. Chuck announced that the Justus-Warren Heart Disease and Stroke Prevention Task force (JWTF) will be voting on new SAC members at their next meeting, and they'll be introduced at our first SAC meeting in 2022. He noted that these meetings are open to all and that we welcome your involvement.

Chuck called for SAC members to approve minutes from the August 19th meeting. The minutes were approved by acclamation.

Coverdell Stroke Program Update

Anna Bess Brown, Executive Director, Justus-Warren Heart Disease and Stroke Prevention Task Force

North Carolina was among 13 states awarded Paul Coverdell National Acute Stroke Program cooperative agreements from the CDC beginning in July and continuing for a 3-year cycle. While we participate in the Coverdell Stroke Program, we will provide regular updates on the work at these meetings.

Anna Bess shared that the goals of the Coverdell Stroke Program with this round of funding are to strengthen the Stroke System of Care (SSC) and to identify and address disparities. One of the first

requirements of the Coverdell program is to create a Stroke Registry. We are working with the Health Information Exchange (HIE), also known as NC HealthConnex, and SAS analysts to develop the registry within the HIE. The Stroke Registry Work Group meets weekly to define the patient population and identify the indicators we want to see captured in the registry.

Request for Applications: We have issued an RFA (Request for Applications) to fund hospitals, EMS agencies, and community organizations to strengthen their stroke systems of care. Applications are due November 15, 2021. Private organizations can apply. Blood pressure cuffs and gas cards are not allowed. Please send any questions to Anna Bess. Up to five contracts will be awarded through the current RFA, and funding for additional projects will come again in years two and three of the program. Applicants may use the first period of funding (April 1 to June 30, 2022) for planning to work toward implementation in years 2 and 3. Applicants are encouraged to use a team-based approach to enhance quality of care and link their community resources and clinical services. You may apply to fund a QI project, strengthen partnerships in your community, or build your patient navigator and community health worker programs to help stroke patients or to help those at risk for stroke. We look forward to learning more about what your ideas are, what you want to do, and what you need to accomplish the work.

We are recruiting a Program Coordinator and Evaluator to coordinate this work, report to the CDC, and evaluate this work. Please share the postings with your communities, colleges and universities, and those you feel would be well qualified.

Stroke Certification List Update: Important reminder

It is time for all stroke-certified hospitals to update to their stroke certification records on the state website. Send your updates and questions to Susan.Rogers@dhhs.nc.gov. Please include the name and contact information for the person responsible for updating your hospital's certification records. Updates should also include the name of the accrediting organization, certification date, renewal date, and level of certification. Updates need to be completed by December 31, 2021.

Stroke Systems of Care Update

New State Stroke EMS Triage & Destination Plan and Regional Updates

Dr. Ed Jauch, Mission Health

Dr. Jauch shared the revised **Stroke and LVO Stroke EMS Triage and Destination Plan** (see slides) and walked attendees through the details of the Plan. Numerous professionals reviewed current triage protocols and added criteria for deeper levels of triage in the pre-hospital setting. Newer guidelines and newer therapies- in particular the endovascular therapy capabilities for patients who are now eligible for out to 24 hours based on penumbral imaging- are now included. The team looked at the latest EMS protocols for identifying patients in the field and triaging them to reflect these additional therapeutic options depending on the region in North Carolina. This update is a result of the large collaborative effort of the multi-stakeholder group including representatives from the legislature. The protocol retains many of the underlying principles: the importance of calling 9-1-1; use of a pre-hospital screening tool to identify, in a dichotomous fashion, whether there is a stroke or not; and then further screening to detect a large vessel occlusion (LVO) which may be amenable to mechanical thrombectomy.

The decision now is no longer stroke/no stroke but more of a refinement of stroke: what is your time window, and what is your eligibility for reperfusion options such as fibrinolytics or going to the cath lab depending on the potential of the presence of an LVO and various time windows for reperfusion? This algorithm gives insights and recommendations for where EMS should consider taking the patient. The protocol is not prescriptive but meant to be a scaffold on which regional stroke systems of care, having a better appreciation of their regional resources and their geographic distributions, consider this framework and apply it to better

suit the needs of the patients in their regions and reflect the distances between the resources and various levels of stroke center certification.

Now we need to get this protocol out to regional systems of care and socialize this with EMS /EMS directors, answer questions for them, and identify region specifics shown by the X's in the graphic. The X's are meant to be starting points of discussion for the various regions. We are not mandating that there is a certain threshold or a certain tool you would use for large vessel occlusions, nor is there a mandate on how far you need to consider taking a patient for mechanical thrombectomy when they may not be eligible for any other types of reperfusion; they are meant to be starting points. As the protocol is implemented, we will want to measure how well the systems perform, both in aggregate from first medical contact to when they get to the hospital; first medical contact when they get IV thrombolysis; and first medical contact when they go to the cath lab. These are the real patient-centric time metrics that are important in terms of predicting who will do well after reperfusion. The group is very interested in knowing how this algorithm performs. Analyzing the data collected at the various time points of when the patient calls, when we first see them, the facility transfer times, and also the results of these various assessments will inform us about how well our regional systems of care perform and where there are opportunities for improvement.

This is not a final project but a great start. Stroke Systems of Care and EMS regions are encouraged to employ this tool and provide feedback for continued improvement. Please share and discuss this with your regional stakeholders.

Statewide Stroke Scale

Dr. Jauch noted that Stroke Scales have been around for 25 years. Since 2015, we have used stroke scores which quantify the severity of a patient's deficits and are predictive of whether or not there is the likelihood of a large vessel occlusion. Various scales are used across the state and have similar performance. Some are simple; others are more detailed. South Carolina uses the RACE score. Using the scales and scores helps avoid missing stroke patients and also helps reduce overwhelming hospital systems with over-triage. Collectively, how well do we apply use of the tools based on their sensitivity, reliability, difficulty to learn, and challenge of application? We have more work to do, but by studying how well these are performed in the North Carolina database that Jason will talk about, we will know if we have picked the best one or need to refine one further.

The AHA provided a nice summary of the tools where one can see that, depending upon your threshold of care, you can get a sensitivity in 70-80% and the specificity in the same area. Providers in a very rural area may want to have a different threshold than in downtown Charlotte.

Looking at the same data CDC looked at, what policies are impactful when it comes to actual patient outcomes? We can look at the stroke systems of care and what elements of the systems of care have been shown to be beneficial. EMS Triage, Prehospital Notification, and Stroke Center Certification all have very strong predictors of being clinically meaningful to patients. There is promising data regarding both the screening tools and the stroke score tools. Across the United States a variety of tools is being used. Should they be standardized? That would certainly simplify things across regions. A review of the pros and cons of standardization needs to happen. These tools are primarily used in the EMS stage of the stroke system of care and can apply over multiple regions.

Get with the Guidelines Stroke EMS Tab

Jason Walchok, Senior Manager, Healthcare Informatics, American Heart Association/American Stroke Association

Prehospital Data Collection and Metrics

Jason Walchok presented updated information about the Prehospital Data Collection and Metrics in the EMS

layer of the AHA Get with the Guidelines-Stroke tool. (See slides.)

AHA's broader umbrella for their quality system of care/quality improvement initiatives for stroke is **Mission: Lifeline Stroke**. For 3 years AHA has focused on dovetailing the recognition of EMS in the system of care by providing reports within the tool that are more complete with EMS collected data. The purpose of the Get With The Guidelines tool is twofold. Number one, provide quality improvement data for the hospitals in support of their quality improvement work; and number two is to provide data to the national data set for research to advance the guidelines. All the data and all of the metrics always reflect published Guidelines at the time the data is collected and entered. The 2019 Guidelines for the early management of patients with acute ischemic stroke provided more clarity for EMS assessment and management. In 2021 Drs. Jauch, Schwamm, Panagos, et al. put out a joint statement with the National Association of EMS Officials, National Association EMS, and Society of Vascular Interventional Neurology to state the destination recommendations or guidelines for transport of LVO patients; it also incorporated very specific recommendations surrounding EMS. The 2019 updated Guidelines and joint statement share a coordinated QI theme that all participating prehospital agencies should be engaged in QI programs coordinated with the SSC as a whole with an emphasis on dispatch, response, triage, and the transitions of care. Dr. Jauch and group from the consensus conference put out 12 prehospital stroke metrics that they feel all EMS agencies, hospitals, and systems should be focusing on when it relates to either transfer or their EMS agencies as a whole. Most of the 12 are already available within Get with the Guidelines-Stroke through our collaboration with CDC. Many are also Coverdell performance measures for EMS.

In 2018 AHA made a push across the country to have hospitals using GWTG start turning on this EMS layer and have access to all of the tools within. Since then, the performance measures have improved. Hospitals that are working with their EMS agencies one-on-one with a QI capacity have really driven quality. Jason shared the growth of GWTG-Stroke EMS layer use and provided a walkthrough of the EMS layer and the many features it affords providers and the regional SSC.

See Jason's full presentation on the website for more detail of the value of the data collected, alignment with the NEMSIS data standards and built-in feedback forms and a time tracker.

He noted the EMS layer of Get with the Guidelines-Stroke is a powerful tool and offers feedback/reports for a variety of providers. Reach out to your local AHA Quality Manager or email GWTGSupport@heart.org with questions.

Primary Stroke Prevention: HTN, Atrial Disease, and Stroke

Phil Mendys: The Atrial Fibrillation (AFib) Paradox – Connecting Hypertension to Atrial Disease and Stroke

Dr. Mendys shared data on Stroke and African Americans. African Americans are 50% more likely to have a stroke, African American men are 60% more likely to die from stroke, and African American women are twice as likely to experience stroke than their white counterparts. While there have been marked reductions in stroke mortality, there has been very little success in reducing racial disparity in stroke mortality when comparing black individuals to their white counterparts. Although hypertension is a risk factor for stroke, heart disease (or the development of AFib) is a central theme and a very important preventive biomarker when we think about stroke prevention.

Stroke mortality is more prominent in younger ages (45-54) which calls for more aggressive management. Black individuals get these risk factors more prominently at younger ages. Dr. Mendys shared the impact of risk factors over time in the development of AFib. The risk of having a stroke with only AFib as a risk factor is relatively low. Individuals with AFib probably have poorly controlled or unrecognized risk factors.

Individuals aged 18 to 30 were entered into the CARDIA study and evaluated over a 30-year period. A graph, representing the study, showed an increase in the incidence of stroke much earlier in life for blacks, and, at the end of the 30 years, nearly a fourfold increase in the incidence of stroke in black individuals compared to their white counterparts.

Hypertension is a leading population-based risk factor for the development of AFib. However, there may be other risk factors before we get to AFib. Atrial cardiomyopathy and AFib occur in the atrium as one component of the whole cardiac system and can be deranged over time by the influence of high blood pressure. If AFib is the end stage of atrial disease, there are cut points along the way to help us better identify atrial cardiomyopathy. Is it a disease entity itself which represents higher risk for stroke before AFib presents which is generally well recognized as a high-risk stroke environment?

The SPRINT study, an aggressive blood pressure management study, showed a lower incidence of AFib which suggests that individuals treated with aggressive BP management may lessen the progression of atrial disease to full-blown AFib.

Stroke and Cardiovascular Risk Summary Points

The accumulation of risk factors predisposes individuals to stroke and the development of AFib. Exposure to risk factors increases the burden of disease overtime. Risk factors- and particularly hypertension- may play a unique role for the risk of stroke in black individuals.

The Atrial Fibrillation (AFib) paradox, a double paradox for black individuals

Earlier in life, black individuals have more traditional risk factors that present earlier in life and have more strokes yet lower rates of AFib. Black individuals tend to have smaller atria. There may be a biological reason AFib doesn't fully develop in certain individuals. AFib doesn't always present itself at the time of stroke. The early stages of AFib can be very hard to detect.

In 2019, an assessment of 3200 ischemic strokes in black and white individuals found that not only was there a difference in atrial structure of black individuals compared to white individuals, there was also a distinct difference in the biomarker known as the P Wave Terminal force in lead one. This biomarker has been shown to be associated with an increased risk of stroke.

Leading research in the area of electrocardiograms and left ventricular hypertrophy notes this abnormal P wave terminal force is a marker of atrial abnormality- not necessarily of AFib itself. Perhaps we need to reevaluate our definition of stroke relative to atrial disease and not just AFib itself.

This is more than just a clinical issue. It is an issue of social determinants of health. A study published this year gave a summary of the issues of health literacy, rurality, and others that help determine the risk of AFib. Understanding the clinical relationship between high blood pressure and stroke, as well as high blood pressure, in the development of AFib and evaluating the social determinants of health may strengthen our ability to identify patients who may be at risk of stroke regardless of their AFib diagnosis.

Health literacy is not necessarily the same as traditional literacy. Some patients may need additional assistance understanding the decisions they need to make along with their care providers.

Phil shared a summary of recommendations from his recently published paper. Earlier recognition and risk factor management-particularly of hypertension and diabetes as serious contributors to the risk of thromboembolic events- should be standard of practice especially for black individuals at an earlier age. Not all individuals will develop this end stage of atrial disease that we refer to as AFib. More research in P wave

abnormalities and the relationship between these EKG changes, atrial disease, and the risk of stroke is needed. A review of the preventive strategies we currently use in the presence of AFib may translate to atrial disease. More research to understand the impact of social determinants of health is needed.

Secondary Stroke Prevention and PLACER Trial

Cheryl Bushnell: Achieving BP Goals after Stroke

Dr. Bushnell presented on the public health problem of hypertension and its relationship to stroke, information on the new secondary prevention guidelines, and the goals of PCORI funding for **Telehealth-Enhanced Assessment and Management after Stroke – BP (TEAMS-BP)** and scaling the new solutions for blood pressure management to other health systems.

The former Surgeon General Jerome Adams published a paper in JAMA in 2020 on hypertension being a major public health problem. The call to action was to first make hypertension control a national priority, to ensure that communities support hypertension control, and to optimize patient care for hypertension control. This paper supported our proposal to PCORI.

Hypertension is one of the strongest risk factors for stroke and is one of the key modifiable risk factors for stroke. The prevalence of hypertension in patients with stroke is extremely common at ranges from 70% to 82%. It is also associated with major adverse cardiovascular events including recurrent stroke, MI, and cardiovascular death. Many trials of blood pressure lowering have focused mostly on primary prevention, and even trials focused on secondary prevention have focused mostly on stroke survivors with mild deficits. Based on lowering blood pressure by 10 millimeters of mercury systolic or five millimeters diastolic, we could probably prevent at least 230,000 strokes every year.

Dr. Bushnell presented the impact of hypertension and stroke on vulnerable populations. African Americans are more adversely affected by poorly controlled blood pressure. Patients with physical or cognitive deficits and those over age 75 experience poor outcomes, and the social determinants of health impact blood pressure management. The PCORI trial focuses on these populations.

The COMPASS (a pragmatic trial of transitional care) experience provided evidence for better blood pressure management. We saw that controlling blood pressure was important because you need to know what your numbers are. You need to have the ability to manage your medications and adhere to them. You need to be physically active, and you need to have a healthy diet, and most of those diets emphasize low salt and high potassium; these are the four pillars of blood pressure control.

Systematic reviews and other studies that looked at blood pressure self-monitoring alone indicate the need for combined intervention. BP self-monitoring, combined with systematic medication titration or lifestyle coaching, has been associated with a 6-millimeter reduction in systolic blood pressure which has a significant impact on stroke risk. This outcome helped drive how we were approaching our trial.

Parts of the new secondary prevention Guidelines that were published in May from the American Heart Association outline office BP goals, individualized drug regimens and hypertension monitoring in post-stroke patients, and the importance of antihypertensive medication for stroke patients who were not previously diagnosed with hypertension. More research is needed to address knowledge gaps for optimal timing to begin BP lowering after acute stroke, on BP targets, and on the optimal BP target for the very elderly or for those with diabetes.

Dr. Bushnell shared lessons learned from the COMPASS trial which was scaled across diverse health systems across North Carolina. The main takeaways from the published COMPASS intervention study show that only

35% of patients actually received the intervention which shows that there were some very high performing hospitals and some that were very low performing. Hospital patients that received the COMPASS intervention had an improved 90-day functional status outcome across multiple areas. See slides for Lessons Learned.

The TEAMS-BP blood pressure-focused trial includes medical management, BP monitoring & medication adjustment, and self-management education & support that will lead to positive lifestyle changes and improved patient activation to lower BP. Hard outcomes are reduced risk of stroke, MI and death; reduced disability; improved physical and cognitive function; and satisfaction with care. CMS has developed; yet, there has been poor uptake.

Such challenges are motivation for our **Phased Large Award for Comparative Effectiveness Research (PLACER)** which was funded by PCORI that will compare intensive tailored telehealth with intensive clinic management. See the slide presentation for the outline of the COMPASS care plan (CP), a sample of the dashboard and navigation tools, and the details within for each patient as well as the informatics platform modules and details. INTERVENT is a lifestyle coaching company and that has played an important role in developing guidelines for treating specific types of strokes and will be the coaching partner for this study.

We will compare interventions and determine which is most effective in these sub-groups: African Americans; patients with physical or cognitive disability; and those over the age of 75. There will be an 18 - month feasibility stage; and, given feedback, we'll refine. The main trial will measure BP at 6 months, at mean change, and patient activation. All participants use EPIC. This takes COMPASS to the next level, is implementable, and is potentially scalable.

Chuck Tegeler thanked all the presenters, complimented their amazing work, and noted the potential to move the needle toward preventing secondary stroke.

QUESTIONS

Question for Jason from Eric Deshaies: is this software currently available for our stroke programs to download and share with our local EMS?

Jason: The EMS layer is available to activate in the Get with The Guidelines account at your hospital. Reach out to us for activation. As you start adding prehospital data to the patient form, you will abstract your inpatient data; and all of the tools in the section will be available to you.

To clarify, the EMS layer is in the GWTG tool; it is just a matter of turning it on. Accounts with "Super Users" can activate the layer, and access is then available to all downstream providers.

Question for Phil from Gwendolyn Wise-Blackman: how is intensive blood pressure lowering defined?

Phil: Generally, it's trying to reach a target of 120/80.

Question for Phil from Arnett Coleman: has there been found any difference in the atrial appendage in African Americans?

Phil: What we've observed in the hypertension and AFib paradox world is that blacks tend to have smaller atria. We believe this may be partially the rationale that blacks don't develop AFib to the same extent, although the differences are small. While atrial enlargement serves as a marker and predictor of risk of developing AFib, the physiology of plaque tends to be different and may mask. This is different from the actual appendage question which may be related to a surgical technique used to manage AFib.

Question for Jason from Jackie Thompson: are there initiatives to upload EMS data in to Get with the

Guidelines for us?

Jason: We have been working with all of the major EPCR vendors, the electronic patient care EMS systems, across the country. At this time, we do have data connections with *IMAGETREND* and *FIRSTWATCH*. If your EMS agency uses those products, you will find this enhanced ability. For example, log in to *IMAGETREND* through a hospital hub to access patient records where you will find a GWTG button. Click that button and enter the patient ID. When you enter GWTG again, that Patient ID data will be there for you. This eliminates the manual abstraction piece. This is a new integration project, and outreach to EPCR vendors continues.

Question for Phil from Margaret Murchison: what major studies have been done with black Americans to explain this information on strokes and stroke prevention?

Phil: One of the most comprehensive studies that's been done is the REGARDS study which is a regional and racial observational study on variation in strokes. The other study I referenced is from the Northern Kentucky-Cincinnati stroke registry which has been fairly informative about the differences between black individuals' and white individuals' stroke risk. There are other ongoing studies looking at the issue of stroke of unknown origin also called cryptogenic stroke. We believe that a number of strokes of unknown origin may actually be related to atrial disease which isn't fully defined as AFib.

Question for Dr. Bushnell: when and how will hospitals be recruited for TEAMS-BP?

Cheryl: We've already recruited our hospitals as the names with letters of support were submitted with our application. If your hospital is interested in this model, we could have a backup list of hospitals in case some have to drop out. Send email Cheryl Bushnell and Pam Duncan to learn more about it.

Question from Margaret Murchison: would you say that diet is one of the key reasons for obesity and hypertension in black Americans?

Phil M: If you look at the REGARDS study, diet comes up quite frequently; and the southern diet is referenced as one of the risk factors for developing high blood pressure and stroke risk. Diet is important.

Cheryl: Diets have been tested to reduce the risk of stroke and also leads to weight loss. Diet is one of the factors that can be modified for improved health overall.

Anna Bess: Please look out for an email from the webinar organizer with a short survey of questions about today's meeting. We take your feedback and apply it to future meetings. We need your suggestions for what topics you want to see covered and your recommendations for speakers. Thank you, SAC Meeting Planning work group, for your work all year to plan these meetings and keep everybody engaged.

Dr. Tegeler recalled the history of stroke and the study of AFib and hypertension in NC and noted how far we have come. It is exciting to see these opportunities to advance our work further.

Reminders:

Remember the deadline for those RFA's is November 15.

Please fill out your surveys so we know when you want to meet in addition to the topics and recommended speakers.

See the chat for information on MedinsteadofMeds.com and eatSMARTmoveMoreenc.com which are amazing resources for recipes and tips for evidence-based messaging to share with your patients.

Peg: Peg thanked all the presenters and said, "What you're doing is just remarkable."