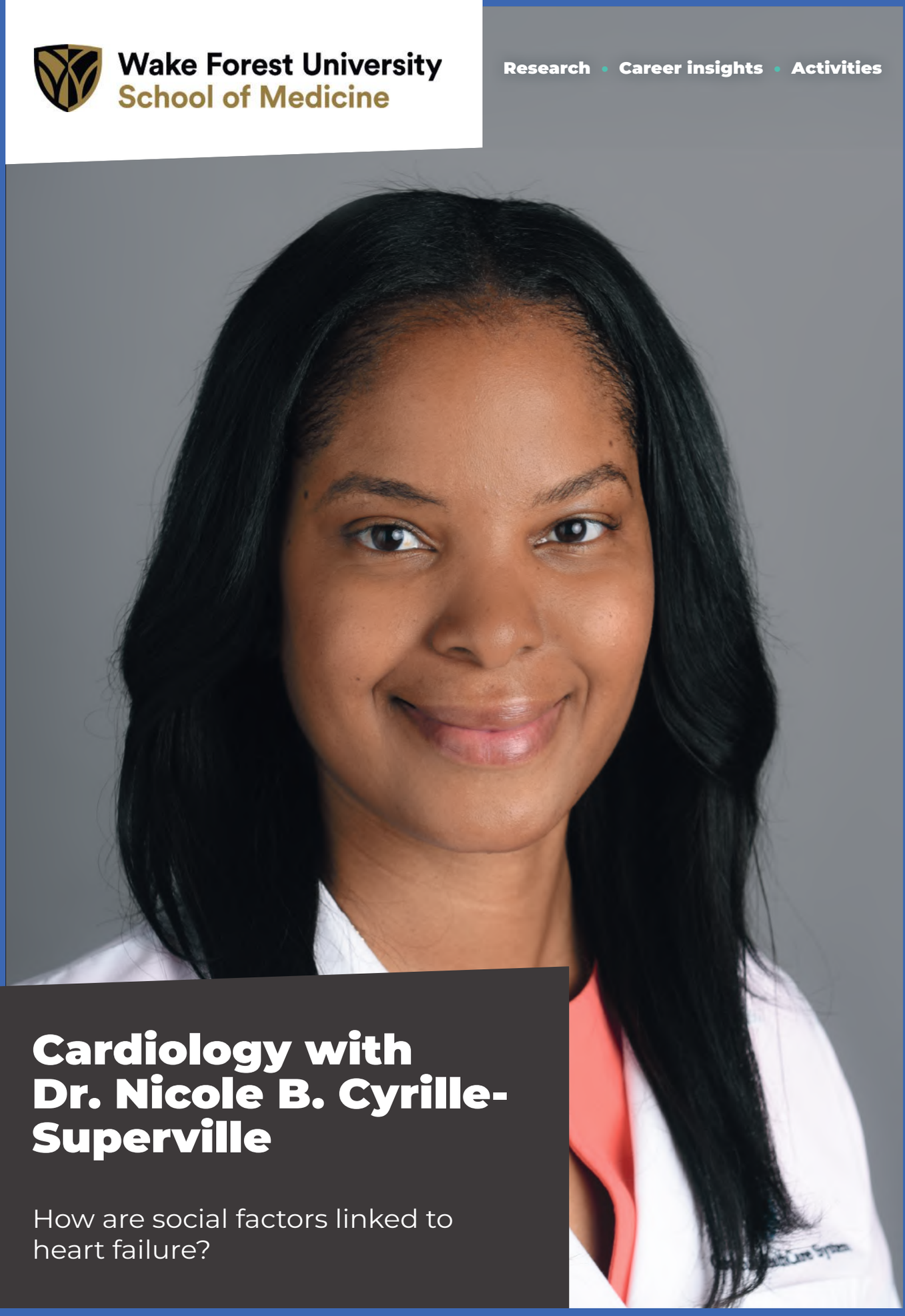
Wake Forest University
School of Medicine

Research • Career insights • Activities



Cardiology with Dr. Nicole B. Cyrille-Superville

How are social factors linked to heart failure?

Nicole B. Cyrille-Superville Brochure.indd 1 20/05/2025 10:00

How are social factors linked to heart failure?

There are many physical factors that can impact our health, such as age, genetics, and physical mobility. However, social, educational, and economic factors can also play a part. **Dr. Nicole B. Cyrille-Superville** of **Atrium Health Sanger Heart & Vascular Institute Kenilworth** and **Wake Forest University School of Medicine,** in the US, has dedicated her career to improving our understanding of how all these factors can affect health outcomes for patients with heart failure. Nicole blends clinical practice with research to learn more about the social determinants of health and the treatment, rehabilitation, and support options that can make a difference to patients' lives.

Dr. Nicole B. Cyrille-Superville

Assistant Professor, Internal Medicine, Cardiovascular Medicine, Atrium Health Sanger Heart & Vascular Institute Kenilworth and Wake Forest University School of Medicine, USA

PROFILE

Fields of research
Heart failure, cardiovascular disease

Research projects
Studying heart failure with preserved ejection fraction (HFpEF) and social determinants of health

Funders
US National Institutes of Health (NIH), Wake Forest University School of Medicine Cardiovascular Sciences Center

Talk like a ...

cardiologist

Biorepository — a facility that stores and collates biological material and data

Cardiogenic shock — a life-threatening condition resulting from the heart's inability to pump enough blood to the body's organs

Health literacy — the ability to access, understand, and use health information to support adoption of good health choices and behaviors

Heart failure with preserved ejection fraction (HFpEF) — a type of heart failure where the heart pumps less blood than the body needs

Pathophysiology — the study of changes in body function that are the cause or consequence of disease or injury

Phenotype — the observable characteristics of an organism

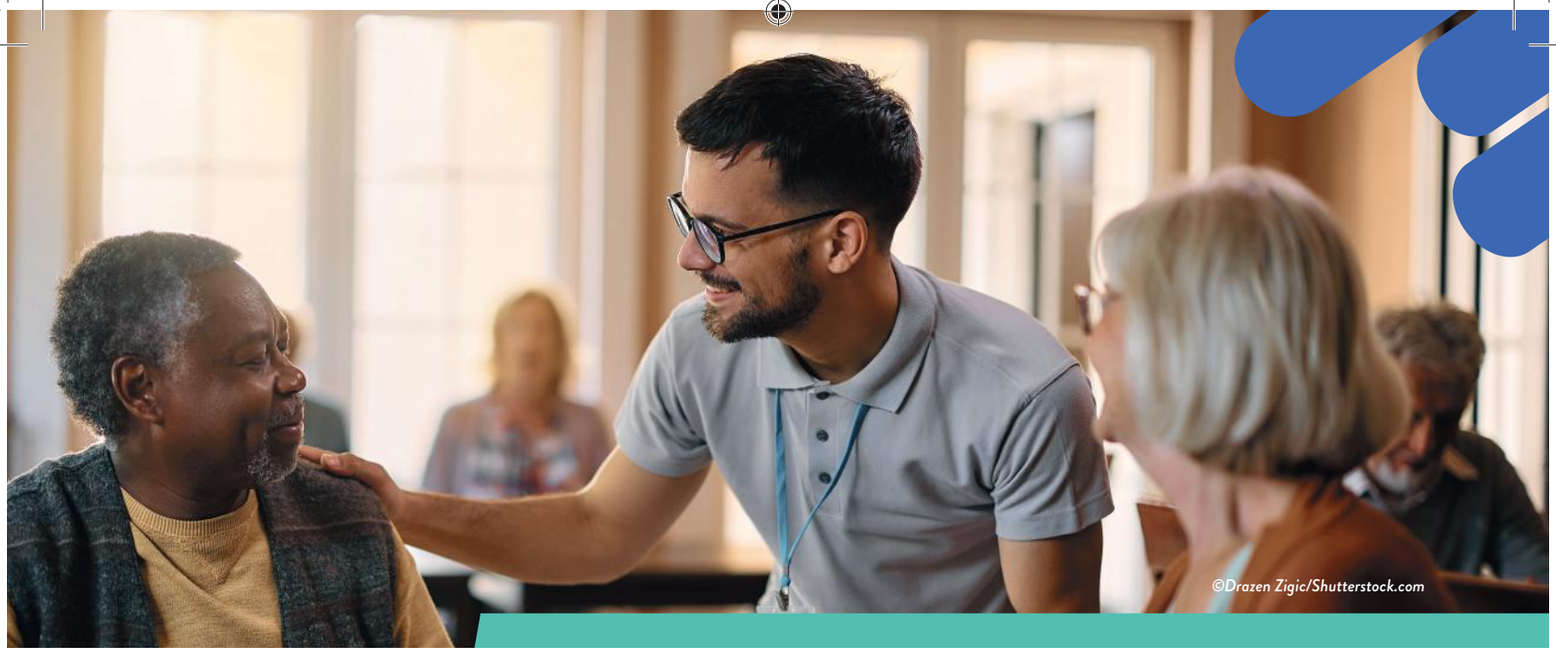
Social determinants of health — the non-medical factors that influence a person's health by impacting their lifestyle choices and access to healthcare, such as education, housing, social support, social and economic status, and local environment

Early in her cardiology training, Dr. Nicole B. Cyrille-Superville helped save the life of a new mother. "One of my most memorable experiences was caring for a 28-year-old who went into cardiogenic shock 48 hours after giving birth," says Nicole. "What was meant to be a joyful time turned into one of the most terrifying, and she required multiple cardiac support devices to allow her heart to recover." Already keen to work in cardiology, this experience motivated Nicole to specialize in heart failure. "I was completely fascinated by the dynamic and cutting-edge nature of the field," she says. "Now established in my career, I fully appreciate the entire spectrum of heart failure, from patients who respond to medical therapy to those who may need a heart transplant."

Previously, Nicole had spent time as a phlebotomist, taking blood samples from patients, which was where her initial passion for clinical work began. "I enjoyed that patient connection, the appreciation for their stories and symptoms, instead of just looking at a lab result behind the scenes."

What are social determinants of health?

Nicole works as a co-investigator for REHAB–HFpEF, a clinical trial looking at the impact of a novel physical rehabilitation program on outcomes in patients hospitalized with a form of heart failure called



decompensated heart failure with preserved ejection fraction, or HFpEF (pronounced 'hef pef') for short. In addition to medical data, Nicole collects data about her patients' social determinants of health, particularly health literacy and social support. This helps her to develop a clearer understanding of what impacts the outcomes for HFpEF patients in an effort to enable more effective interventions.

HFpEF is still poorly understood from a pathophysiological perspective and is thought to have different subtypes. Hence, the goal of another pivotal project, HeartShare, a deep phenotyping study analyzing the phenotypes, or traits, of HFpEF patients. The project aims to build a large biorepository to explore pathophysiology and future therapeutic targets. "HFpEF predominantly affects older patients, women, and representative groups," explains Nicole. "As a heart failure cardiologist, I see the disparities that exist firsthand and recognize that there are many factors that impact patients' outcomes besides medication. Identifying social, environmental, financial, and interpersonal elements that impact care is essential for patient well-being."

Nicole is interested in less studied social determinants of health. "I try to think about elements that may be more relevant to specific populations so I can be more targeted in my approach," she explains. "In older populations, for example, social support and health literacy are crucial. Social support networks have been shown to decrease as patients get older and, here in the US for instance, a third of patients over the age of 65 are below the health literacy level needed to take care of their daily needs."

How can patients be supported?

"Outside of direct caregivers such as a spouse or child, or informal caregivers such as a friend or relative, support may come from community members and healthcare providers," says Nicole. Examples of this include community healthcare workers who support an individual when they return home after a hospital stay. "Community healthcare workers are trusted laypeople from the local community who can be hired and trained by healthcare organizations to provide informal social support, coach patients in improved health behaviors, and help them navigate complex health system requirements. Interventions by these workers have been shown to be effective for certain health conditions, particularly when partnering with low-income, underserved, and racial and ethnic minority communities."

Other options for social support include telemedicine, where individuals have contact with medical professionals over the telephone or internet (in addition to face to face appointments), and paramedicine teams who can arrange home visits.

Nicole is eager for better resources to be developed to support heart failure patients. "Few heart failure resources have a level of understanding and readability suitable for people with low health literacy," she says. Meeting the needs of these people means producing accessible resources which a 10-year-old would understand. Older people often experience declining vision and hearing, which further impacts their ability to read and understand information, so, to be effective, resources need to be produced with these patients' needs in mind. "Future studies are needed to investigate the most effective formats of educational resources, written and visual, for older, hospitalized heart failure patients," says Nicole.

What other projects is Nicole working on?

With patient care at the forefront of her mind, Nicole's work is varied and can involve a few different research projects at any one time. In addition to REHAB-HFpEF and HeartShare, Nicole is currently involved in two other projects. The MET-PEF trial studies the effects of an anti-diabetes medicine called Metformin on older patients with heart failure, particularly how it affects physical function, inflammation, and quality of life. Nicole also recently received a grant to be a Champion for HeartShare, playing a leading role in increasing the enrollment of representative participants.

What are Nicole's next steps?

There has been a lot of success in enrolling patients into the trials she is involved with, and Nicole is confident these trials will make a real difference to patients. "For example, we hope that our social determinants of health in REHAB-HFpEF project will help determine whether social support and health literacy should be considered as targets for clinical or public policy interventions that are designed to mitigate the morbidity, mortality, and costs of heart failure," she says. Nicole is also hoping that her Champion role will help to provide a blueprint for improving representative participants enrollment in future cardiovascular studies.

About *cardiology*

Working in cardiology can lead to a rewarding and varied career, with cardiologists specializing in understanding conditions which affect the heart and blood vessels. A cardiologist may specialize as a clinician, working directly with patients to diagnose and treat conditions. As Nicole's story has shown, clinicians will often take time to understand both the physical factors and the social determinants of health impacting their patients, to be able to support them in the best ways possible. Cardiologists may also work in research, in the laboratory, or as educators and mentors, and some cardiologists do a combination of these.

Nicole enjoys the varied and multidisciplinary nature of cardiology. From pharmaceutical treatments to mechanical devices which support the heart in pumping blood, to transplant surgery for patients with more advanced heart failure, there are many different approaches cardiologists can take to help their patients. Nicole says, "There is so much more to be explored in this dynamic field. This includes treatments and technologies, as well as areas in which we can impact health policy."

Cardiology can be a challenging field to work in because heart failure is serious and complex. However, cardiologists can make a huge difference in the lives of the individuals they work with, and to their loved ones and wider communities. For Nicole, one of the most important and rewarding parts of her role is carrying out research to support the patients she works with. "It truly gives me a chance to connect with patients and the community on a deeper level. I do a lot of outreach work with churches and at community events that allows me to build a better understanding of the challenges that my patients face, as well as the things they are eager to embrace and be a part of."

Pathway from school to *cardiology*

Subjects such as biology, chemistry, and physics are required to study medicine and to form a solid foundation for understanding cardiology.

"I encourage you to explore areas that may allow you to integrate your other interests with patient care in unique ways," says Nicole. "I had peers who studied literature, and there was a course called narrative medicine which involved bringing art and storytelling to patients. Another friend studied architecture and did a project focused on how the layout of the intensive care unit affected patients' mental health. You never know where your passions and interest could take you – and how they might help patients."

Explore careers in *cardiology*

The best way to explore careers in cardiology is to see experts in action. "I encourage you to gain experience through shadowing a professional and volunteering outside of your classroom studies," says Nicole. She highlights the summer internship programs and observation opportunities offered by her employer, Atrium Health: **teammates.atriumhealth.org/careers/career-development-center/student-placement**

The American College of Cardiology has a wealth of information about different careers in cardiology and the opportunities the field offers: **acc.org/Tools-and-Practice-Support/Cardiology-as-a-Career-Path**

The websites of the American Heart Association (**heart.org**) and the American College of Cardiology (**acc.org**) are full of information, resources, and volunteering opportunities. You can also become a Student Member, giving you access to meetings, conferences, and networking opportunities.

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Meet *Nicole*

Neither of my parents completed high school, and my mom always stressed the importance of education above all else. I get a lot of my work ethic from my parents, especially my mom. I think a lot about how much she had to overcome being orphaned at 12 years old and becoming a mom at 17, and how, despite these challenges, she ensured that we always had what we needed. My parents sacrificed a lot and missed out on so many opportunities given the circumstances they were born into, so I knew I had to succeed. I strongly believe in seeing things through to the end and always putting your best foot forward, leaving no room for regret.

I think being a caretaker comes naturally to me. As a child, I loved animals, and when one of my cats passed away after giving birth to a litter of six kittens, I got up early every morning to feed them milk with a syringe before school.

I yearned for more opportunities for myself and my family, so I took advantage of a chance to go to college in the US. It was a culture shock moving from Dominica to Texas and living on my own for the first time. I had to learn to balance work and study, budgeting, and paying bills. I worked hard, getting numerous scholarships, and was fortunate to meet a lot of good people who helped me along the way. The kindness I received cemented in me the need to pay it forward.

My proudest career achievements include being one of the top graduates in my class at Midwestern University and receiving the President Excellency Award for perfect grades. I was the first university graduate on my mom's side of the family, and it gave me the confidence and determination to push further. I found my voice during my time at the Columbia College of Physicians and Surgeons, where I started my medical career, and have achieved numerous grants and accolades, including the Top Principal Investigator award by the Heart Failure Collaboratory in association with the American Heart Association in 2024.

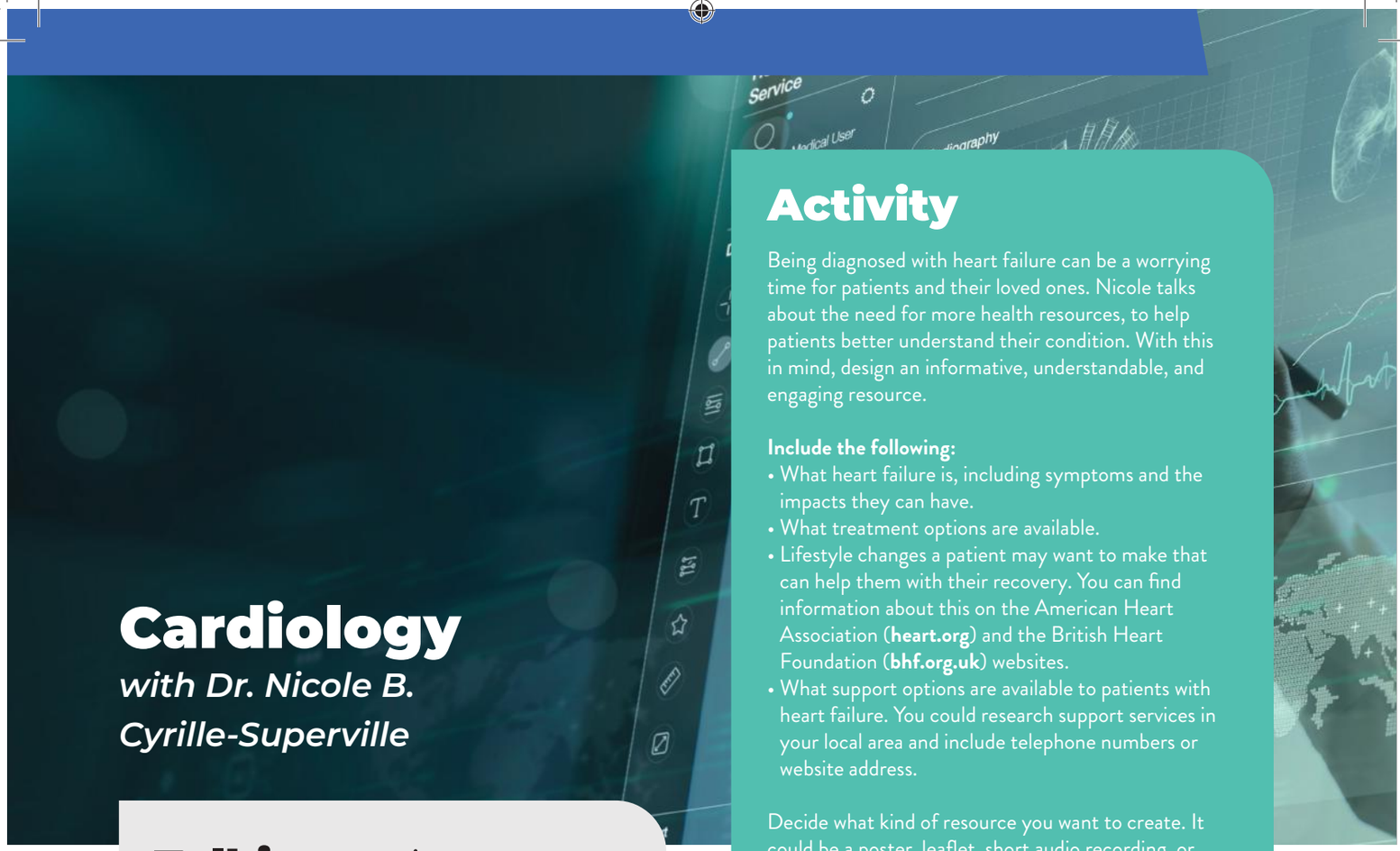
Career-wise, I am always striving to find the right balance between my clinical and research time to serve patients in the best way possible. Mentoring and community outreach is my way of giving back, and I want to continue to expand on that.

From a personal standpoint, my aims for the future are to be a great wife and mom. I switch off from work by spending time traveling with my family and creating new experiences for my kids. I think there is so much to navigate as a teenager, especially in the age of social media, so instilling good values and a strong work ethic is essential to help young people find their way in life. My children's success and happiness are truly how I measure my own success.

Let us know what you think of this educational and career resource. To provide input, simply scan the QR code or use this link: **redcap.link/dh5j1nes**

Nicole's *top tips*

1. Be intentional. Once you have decided on what you wish to pursue or become an active participant in, figure out how to get there and know that sometimes the journey comes with sacrifices.
2. Embrace what makes you unique. It is okay to be different or unconventional. Our varied experiences and backgrounds bring so much more to the field of medicine and the ways in which we care for and impact patients.
3. Don't get discouraged by failure. What matters the most is being humble enough to learn from failure and doing better the next time.



Cardiology

with Dr. Nicole B. Cyrille-Superville

Talking *points*

Knowledge & Comprehension

1. What is heart failure with preserved ejection fraction (HFpEF)?
2. What are social determinants of health, and why do you think they are important in cardiology?
3. What are the methods and aims of the HeartShare project?
4. Nicole blends her clinical work with her research. How does she do this, and what are the advantages?

Application

5. Nicole visits churches and community centers to get a better understanding of the challenges and motivations of her patients. Why do you think this is helpful for her role as a cardiologist? Where else could you visit to better understand different groups of people in your local community?
6. What areas of cardiology interest you most, and why? What steps could you take now if you wanted to pursue a career in cardiology?

Analysis

7. Why is health literacy important? How can it help a patient with heart failure? What are the challenges in providing suitable health resources for patients?

Evaluation

8. Nicole wants to ensure that representative groups are enrolling in medical trials. Why do you think this is important? What challenges might there be in achieving this?

Activity

Being diagnosed with heart failure can be a worrying time for patients and their loved ones. Nicole talks about the need for more health resources, to help patients better understand their condition. With this in mind, design an informative, understandable, and engaging resource.

Include the following:

- What heart failure is, including symptoms and the impacts they can have.
- What treatment options are available.
- Lifestyle changes a patient may want to make that can help them with their recovery. You can find information about this on the American Heart Association (**heart.org**) and the British Heart Foundation (**bhf.org.uk**) websites.
- What support options are available to patients with heart failure. You could research support services in your local area and include telephone numbers or website address.

Decide what kind of resource you want to create. It could be a poster, leaflet, short audio recording, or short video. Think about the factors that Nicole said were important in a health resource; it will need to be understandable for someone with the health literacy of a 10-year-old, and you may want to take into consideration that the patient could have declining vision or hearing. Think about how your resource could appeal to the likely audience – Nicole said that heart failure most often affects older people, women, and underrepresented minority groups.

Finally, think about how you can make your resource interesting and engaging, while also bearing in mind how a heart failure patient may be feeling and being sensitive to the worries they may have.

Share your research with your fellow students and have a look at theirs. What do you think you have done well? How clear do you think the information is? What would you do differently in the future?

More *resources*

- Visit Nicole's Futurum webpage to read her article in Spanish and to find an animation, podcast and PowerPoint about her work: **futurumcareers.com/cardiology-with-dr-nicole-b-cyrille-superville**
- This TED talk explores how social determinants of health impact healthcare: **ted.com/talks/veronica_scott_fulton_how_social_determinants_impact_healthcare?language=en**
- The Heart podcast (**heart.bmj.com/pages/heart-podcast**) and the Cardionerds podcast (**cardionerds.com/episodes**) both contain interviews with cardiologists and cover a wide range of topics.

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Photo *montage*

Top: *Dr. Nicole Cyrille-Superville with her mom, Patricia Bruney, and her dad, Norman Cyrille, at her graduation from Columbia University College of Physicians and Surgeons.*

Middle row: ***Left:*** *Nicole performing cardiac auscultation on HeartShare participant, Diane Holmes.*

Center: *Nicole with members of the Atrium Health Research team.*

Right: *Nicole with her mentee, Naomi Kemp, enjoying a day of shadowing in the heart failure clinic.*

Bottom: *Nicole with her husband (Marvin), son (Jaden), and daughter (Nailah).*

+44 117 909 9150
info@futurumcareers.com
www.futurumcareers.com

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