



Center for Health System Sciences (CHASSIS) | 2023 Annual Report

TRANSFORMING CARE with REAL-WORLD EVIDENCE



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HISTORY:

CHASSIS was formed in 2023 through the successful combination of the former Center for Outcomes Research and Evaluation (CORE) and its rich track record in health system-focused research in Atrium Health’s Charlotte market with the nationally and internationally recognized academic portfolio of the Wake Forest University School of Medicine. CHASSIS is driving the growth of our next generation Academic Learning Health System (aLHS) by providing an enterprise-wide, multidisciplinary methodologic home for aLHS-focused research. CHASSIS’s focus is to support pragmatic research studies aimed at improving care delivery and advancing healthcare equity. The center partners with faculty across the Advocate Health Enterprise and supports health system-funded projects that have been mutually reviewed and approved by the health system and School of Medicine leadership to further our collective goal of becoming a preeminent aLHS.

MISSION:

To improve health care delivery for all through iterative care transformation, evidence generation, and continuous learning.

VISION:

CHASSIS will enable research that transforms healthcare delivery.

Bridging the Gap in Research Operations and Academia, Launch and Development of the center over the past year

Dear Colleagues,



Yhenneko Taylor, PhD

We are pleased to share this 2023 annual report for the Center for Health System Sciences (CHASSIS). During this inaugural year, we had a dual focus on launching CHASSIS as a new translational research center that bridges research and health system operations, and building a research portfolio that advances health system science. Our team has worked tirelessly to advance our mission, “to improve health care delivery *for all* through iterative care transformation, evidence generation, and continuous learning,” in partnership with our growing membership, and leaders across Wake Forest University School of Medicine and the broader Advocate Health Enterprise.



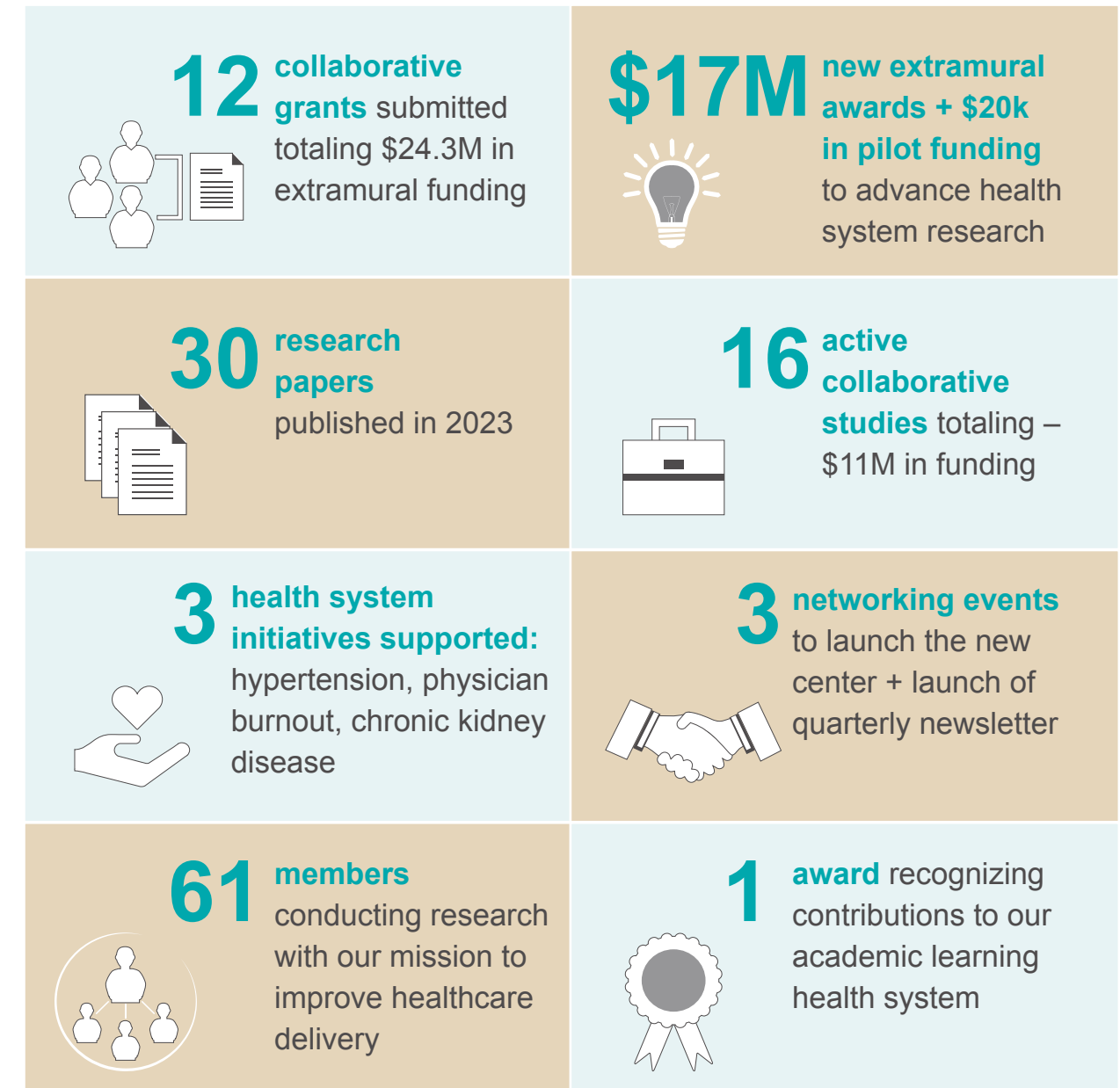
Nicholas Pajewski, PhD

We made significant strides in our research, collaborations, and outreach efforts and are proud of our progress. Notably, we exceeded our goals for membership with over fifty members, more than \$17 million dollars in new extramural funding, and ongoing collaborative research studies that impact critical health system topics like provider wellbeing, health equity, telemedicine, home-based care, and healthcare-associated infections. We are excited about our accomplishments during this foundational year and invite you to review the full report to learn more.

Thank you for your continued support of our center as we partner to realize the potential of our academic learning health system.

Yhenneko and Nick

What We Accomplished In 2023



EXPANDING ACCESS TO HOME-BASED CARE: LESSONS FROM REACH-IT

Realizing Equitable and Accessible Care through Hospital at Home Implementation and Testing (REACH-IT) led by Marc Kowalkowski, PhD, Stephanie Murphy, DO, and Timothy Hetherington, MS, began in July 2021 as a collaboration between Atrium Health and Wake Forest Baptist Health in response to the ongoing COVID-19 pandemic. The goal was to evaluate best practices for expanding both programs into a standard of care across the Atrium Health enterprise, while ensuring equitable access for all. Both programs utilized various implementation and maintenance strategies like Nurse Navigator-driven patient recruitment, provider education, administrative buy-in, electronic health record data and dashboard-driven feedback processes, an electronic algorithm for patient identification, and rapid Plan-Do-Study-Act cycles to improve effectiveness, volumes, and efficiencies of the programs. The results — saving staff hours, while identifying clinically-eligible patients and reducing patient refusals. This is critical to prioritizing staff time, satisfaction, and productivity for increased sustainability. The success of the project underscores the potential of home-based care models to enhance healthcare delivery and reduce disparities. The team has been featured in various articles from the American Medical Association and pursuing publication in 2024.

“They felt almost like family”
—Mr. C.

“It was the best treatment that I’ve ever had in my life”
—Ms. A.

“I couldn’t ask for better people, it seemed like we’d become friends overnight.”
—Ms. L.

- RURAL AREAS**
Charlotte: **33%**
Winston-Salem: **51%**
- SOCIOECONOMICALLY DISADVANTAGED NEIGHBORHOODS**
Charlotte: **23%**
Winston-Salem: **46%**
- Black patients:** **30%**
- 608** patients received care through Atrium Health’s program
5,910 were discharged early to Wake Forest Baptist Health’s initiative

FROM DATA TO ACTION: MECKLENBURG BIRTHING CONNECTIONS

The Perinatal Access to Care Campaign (PACC), led by Yhenneko Taylor, PhD and Pamela Cobb, MD aims to mitigate racial/ethnic disparities in infant mortality in Mecklenburg County, NC, by providing information on culturally competent perinatal care and resources for pregnant Black women and women with low incomes. Informed by state-level data and the Bridges for Infants study, the project focuses on improving access to quality care to enhance health outcomes. The project team began this work in 2022 by identifying target communities and in 2023 focused on developing a marketing strategy, conducting focus groups, engaging a multi-sector community stakeholder group of 44, curating content and launching the live website “Mecklenburg Birthing Connections.”

In the coming months, the PACC team will be presenting at the Association of Maternal and Child Health Program Conference and the Accelerating Health Equity Conference. Next steps involve launching the dissemination campaign and ramping up community engagement targeting both local and national audiences. In 2024, the team will host a community forum to celebrate the official launch of the online resource with members of the community.

The Perinatal Access to Care Campaign is a tangible example of how health systems like ours can partner with community members to bridge the gaps, in perinatal care access and empower marginalized communities towards healthier beginnings for mothers and infants.

Learn more at
AtriumHealth.org/MeckBirth



BEYOND WORDS: THE IMPACT OF DAX COPILOT

DAX Copilot utilizes a platform called the Dragon Medical One (DMO) by Nuance, a company owned by Microsoft, that allows providers to create visit notes in Epic by speaking into a smartphone during a visit with a patient. DAX Copilot aims to evaluate provider satisfaction, patience experience, and provider efficiency of using DAX Copilot, compared to those without the technology. This study is being piloted with 238 clinicians in Atrium Health Charlotte, Winston Salem and Georgia markets. Clinician satisfaction surveys revealed that 45% of providers think DAX is beneficial, while another 45% have not perceived time-saving benefit or improved experience with the electronic health record (EHR). Analyses of EHR metrics and financial metrics showed that high DAX users had statistically significant decreased hours in notes compared to the control group, but not on any other metrics. Qualitative results showed that some participants felt DAX eased their burden and saved time on documentation, so they have more personal time, and also that DAX is not suitable for everyone. Overall, our study showed that DAX may not benefit all clinicians equally, but does have a positive impact on a sub-group of clinicians with certain characteristics.

“I would estimate that DAX has saved me 4 to 5 hours weekly... more time on my bike, or time spent with my wife and our boys. The psychological value of NOT having a few hours of work on my desktop “hanging over my head” has really made my weekends feel more free-more like weekends.” —Participant 1

“...I think that what it [DAX Copilot] has done is help free up me emotionally and mentally to have that energy to give others without it taking from me.” —Participant 2

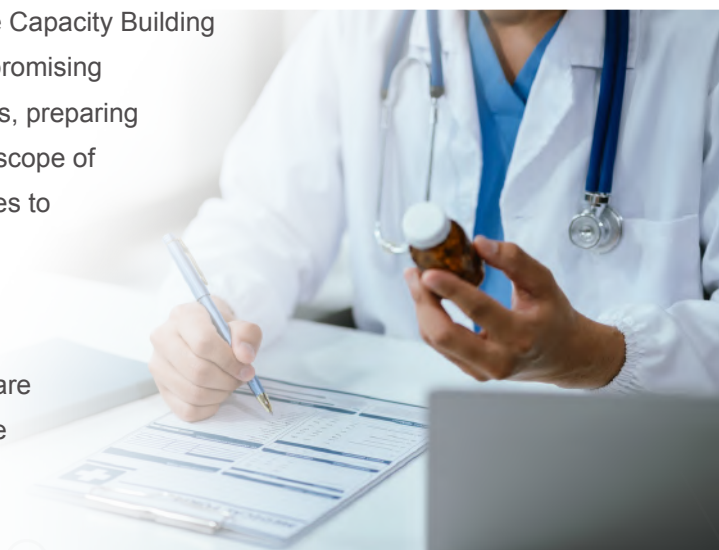
“I think every provider there feels that we have too many patients scheduled in any given half day. So, we’re all constantly on the edge of some level of burnout and I think DAX hasn’t ended that because that’s still the case. But what it does do is it has made me feel a little bit less burned out. Let’s put it that way, if I’m gonna be blunt about it.” —Participant 3

SCALING UP: ATRIUM HEALTH’S INITIATIVE TO IMPLEMENT EVIDENCE-BASED RESEARCH

The Health System Implementation Initiative (HSII) is a multi-year initiative funded by the Patient-Centered Outcomes Research Institute to advance the uptake of evidence-based comparative effectiveness research into real-world healthcare settings. Drs. Nicholas Pajewski and Yheneko Taylor are supporting the informatics and evaluation components of the initial phase of this project. The Capacity Building Project aims to improve Atrium Health’s ability to implement promising research findings at scale by setting up governance structures, preparing leaders and staff for future initiatives, and collating a diverse scope of health system data to efficiently and effectively target initiatives to appropriate care settings.

What’s next?

While efforts for the Capacity Building phase of this initiative are ongoing through 2024, work has begun to apply for one of the first implementation initiatives which is focused on antibiotic stewardship in children.



“Our collaboration with CHASSIS is helping us make smarter decisions about how we implement new technology like DAX across our enterprise to achieve better outcomes for our patients and teammates.” —Andy Crowder, SVP, Chief Information Officer Southeast Region, Advocate Health and Enterprise Chief Digital Officer at Advocate Health



PERSONALIZED CLINICAL DECISION SUPPORT TO IMPROVE PARTICIPATION IN HOSPITAL AT HOME



Inpatient hospitalization is costly and associated with adverse effects (e.g., physical debility). Hospital at Home (HaH) has emerged as a safe and cost-effective hospital-level care delivery model, but patient participation in HaH is limited by challenges in identifying appropriate candidates and gaps in understanding the risks and benefits of HaH. Led by Drs. Marc Kowalkowski and Andrew McWilliams, Atrium Health investigators iteratively designed and tested a web-based app, called 4PACS (Partnering Patients and Providers for Personalized Acute Care Selection), to inform the complex decisions patients and providers make when considering HaH. Between 2021-2023, the study team engaged end users (patients, caregivers, providers) in developing the content and functionality for 4PACS — initially focused on supporting patients hospitalized with pneumonia. The final version of 4PACS incorporated findings from interviews describing users’ needs, co-design sessions with key stakeholders, and multiple rounds of usability testing. During final feasibility testing conducted on 4PACS, 16 of 20 patients agreed to use 4PACS (80%) and 12 of 16 (75%) users were transferred to HaH. Patients reported excellent usability and were highly likely to recommend 4PACS. Patients described 4PACS as accessible and informative, and HaH providers indicated 4PACS improved workflow efficiency.

What’s next?

4PACS is a first-of-its-kind web-based decision aid that is feasible to implement, highly useful to patients and providers, and addresses a gap in patient-centered decision support for HaH. Future work is needed to extend study findings to assess the efficacy of the 4PACS app intervention to improve hospital-level care decisions and health outcomes on a larger scale and in diverse contexts and settings.



FRAMING THE FUTURE: FAIR MODELS FOR HEALTH SYSTEMS

In December 2023, The Duke Endowment awarded funding for the Framework for Appropriate Implementation and Review of Models (FAIR Models) project led by Dr. Andrew McWilliams and Dr. Brian Wells. FAIR Models aims to create a framework for health systems to evaluate and implement predictive models and AI tools, focusing on clinical utility, fairness, model transparency and patient perceptions. This project is a collaboration between key leaders and teammates at Atrium Health and Wake Forest will work to conduct qualitative interviews, operationalize the framework within Atrium Health, and disseminate it broadly throughout the Advocate Health enterprise. In addition to developing the framework itself, this group will host a design symposium with stakeholders to guide the creation of the initial framework. Intended outcomes include reviewing models using the framework, measuring provider satisfaction, assessing implementation costs, and educating about AI ethics. The project will use mixed methods evaluations and document lessons learned for future research.



E-HEALTH EMPOWERMENT: GAPS IN RURAL DIABETES MANAGEMENT

Rural Area Pharmacist Intervention for Diabetes - Management using eHealth (RAPID-ME) focuses on developing and evaluating a telehealth-based clinical pharmacy intervention for type 2 diabetes



patients in rural areas, aiming to address the disease’s high burden and poor management. Led by Dr. Rohan Mahabaleshwarkar and a multidisciplinary team from Atrium Health and Atrium Health Wake Forest Baptist, the project leverages existing telehealth infrastructure and draws on relevant research. Using a pilot randomized trial, the project will compare outcomes of patients receiving the intervention to those receiving usual care over a 3-month period. The intervention includes medication review, follow-up calls, and diabetes education, with outcomes measured including feasibility, acceptability, and preliminary effectiveness. Findings will be disseminated to stakeholders and audiences to inform future interventions. RAPID-ME is funded by the Duke Endowment and is being conducted in collaboration with the Atrium Health Pharmacy Division.

EMPOWERING FUTURE LEADERS: CHASSIS SUMMER 2023 INTERNSHIP

CHASSIS took on three high achieving interns for the summer 2023 program; Payton Davenport, MPH candidate at the University of North Carolina, Charlotte, Ana Ramirez MA, PhD Candidate, UNC Chapel Hill, Sociocultural Anthropology and Chelse Spinner, MPH, CPH, PhD Candidate, UNC Charlotte, Public Health Sciences. These interns contributed to various projects with CHASSIS that enhanced their skills in health literacy graphics and web design, data analysis, study coordination, stakeholder engagement, survey building and database management. CHASSIS hosted final presentations and a celebration to honor their contributions at the end of the program in August.

“ I felt that the Atrium/CHASSIS team did a great job of making us feel included and truly a part of the team. I enjoyed the opportunity to network and get to know others on the team. I felt that everyone was welcoming and willing to share their journeys in how they arrived at Atrium/CHASSIS. As an early career professional, that type of interaction is essential and helpful as I navigate potential career paths. I also appreciated the ability to work both independently and with a team on my summer research project. —Ana Ramirez

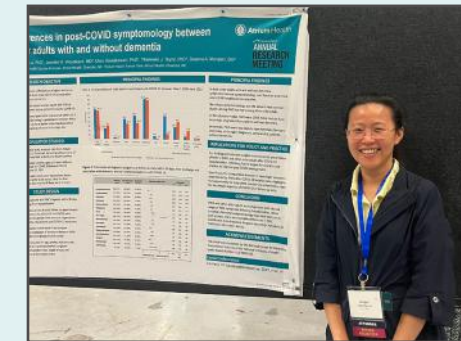


“ Overall, I'm incredibly grateful for the experience. I appreciated getting to know several team members very well and Casey was a phenomenal intern supervisor. I especially appreciated her advice on dividing our internship by time for our project work, networking, and professional development. Knowing that helped me better structure my time and make time each week to connect one-on-one with different team members. —Chelse Spinner



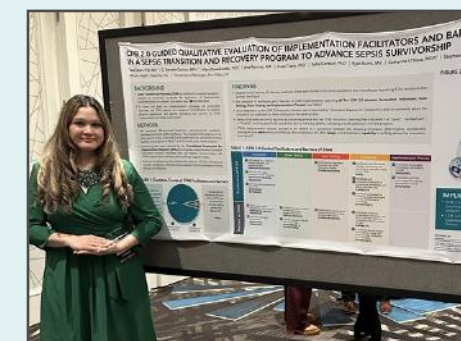
CONFERENCES AND PRESENTATIONS

CHASSIS teammates disseminated their research in several national venues during 2023. Teammates visited Seattle, Washington in June for AcademyHealth where they presented four posters ‘Differences in post-COVID Symptomology between older adults with and without Dementia,’ ‘Rapid Design of a Clinical Decision Support Tool for Hospital at Home Admissions,’ ‘Somebody walking with you’ Patient and provider perspectives on a virtual psychiatric transition to care program’ and ‘Assessing health equity infrastructure at an academic learning health system.’



In November at the American Public Health Association Conference, Hieu Ngyuen, MS hosted a round table ‘Predicting sustained, controlled hypertension and hypertension crisis using her data’ and Henry Bundy, PhD led an oral presentation ‘Please don’t fuss at our staff: Moral economies of volunteerism in South Carolina safety net clinics.’

Tara Eaton, PhD and Danielle Connor, MPH closed out December at Science of Dissemination and Implementation Conference presenting a poster titled “CFIR 2.0-guided qualitative evaluation of implementation facilitators and barriers in a sepsis transition and recovery program to advance sepsis survivorship.” CHASSIS will continue their efforts to present at conferences and share the great work happening in 2024.



AWARDS AND RECOGNITIONS



Yhenneko Taylor, PhD
2023 Research Awards Day
Academic Learning Health
System (aLHS) Award
Adjunct Associate Professor
Department of Social Sciences
and Health Policy



Nick Pajewski, PhD and Tara Eaton, PhD
CTSI Translational Science Leadership Academy
Wake Forest University School of Medicine
Graduated July 2023



Jessica Palakshappa, MD, MS
2023 Research Awards Day
Early-Career Investigator in
Clinical/Population Science
Award Associate Professor
Department of Internal Medicine,
Section on Pulmonary, Critical
Care, Allergy, and Immunologic
Disease



Marc Kowalkowski, PhD
CTSI Mentor Academy
Wake Forest University School of
Medicine Graduated June 2023

Grants Awarded In 2023:

- Health System Implementation Initiative (HSII) Capacity Building, Kevin High, MD and Kristie Foley, PhD; PCORI, \$500,000
- Effective Primary Care Practices that enhance Recovery Trajectories after Pneumonia (EXPERT), Marc Kowalkowski, PhD, Theodore Iwashyna, MD, PhD, Catherine Hough, MD, MSc, Stephanie Taylor, MD, MS; NHLBI, \$3,994,166
- Atrium Health Emergency Medicine Service Line Pain and Addiction Care Improvement, Christopher Griggs, MD; SAMHSA, \$312,733
- Development of a vision screening and care pathway in frail older adults at risk of falls, Atalie Thompson, MD; Duke Endowment, \$300,000
- A Pilot Study of a Telehealth-based Clinical Pharmacy Intervention in Patients with Type 2 Diabetes in Rural Areas (RAPID-ME), Rohan Mahabaleshwarkar, PhD; Duke Endowment, \$325,000
- Diagnostic Safety and Quality Optimization in Sepsis (DISQOS), Marc Kowalkowski, PhD, Stephanie Taylor, MD, Sarah Birken, PhD; AHRQ, \$2,000,000
- Remote Hypertension, Tracking, Help and Management to Reduce Disparities in Black Patients (RHYTHM-B), Yhenneko Taylor, PhD, William Applegate, MD; PCORI, \$9,909,268
- Framework for Appropriate Implementation and Review of Models, Andrew McWilliams, MD, MPH and Brian Wells, MD; Duke Endowment, \$240,000

MEMBER ENGAGEMENT

As a new center we prioritized engaging with the academic learning health system community in both Charlotte and Winston-Salem markets in addition to curating keystones for engagement. We hosted two in-person meetings and launched a variety of communication and membership tools such as a quarterly newsletter and an automated membership survey. We surpassed our goal for membership and look forward to continue building on these efforts to engage and develop a strong research network in 2024.



MEET AND GREET



NOVEMBER MEMBER MEETING



SERVING OUR COMMUNITY

CHASSIS members have always made it a priority to serve the community we live and work in. We are committed to supporting our ‘for all’ mission by helping our neighbors and giving back however we can, big or small. During 2023, we participated in three service opportunities. In April we participated in ‘Sort-O-Rama’ packing boxes with goods to feed 8000 families in two hours for Second Harvest Food Bank of Metrolina with 250 other Atrium Health Teammates. In October, CHASSIS teammates supported ‘Loaves and Fishes.’ Volunteers packed 234 boxes of canned food and dried pasta and nuts for a total of over 4900 meals in two hours. During the Holiday season, CHASSIS participated in two different volunteer opportunities, donating 26 turkeys to the Charlotte Rescue Mission and \$125 in donations for the Youth Learning Center. We are proud to support our community and look forward to every opportunity we get to engage with the greater enterprise community.



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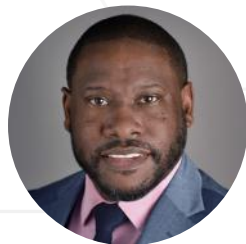
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