Carolinas HealthCare System

2016 VALUE REPORT

JAMES HUNTER, MD
Chief Medical Officer

DEAR FRIENDS & COLLEAGUES

We are pleased to share with you our 2016 Value Report, a summary of the high-quality, innovative care delivered across Carolinas HealthCare System in 2015. With an ever-changing healthcare landscape, organizations like ours continue to find ways to enhance our care delivery.

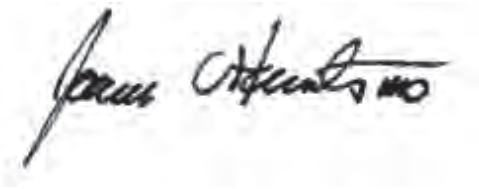
Over the past year, we expanded our communities' access to care through our virtual care services, which are available in our intensive care units, emergency departments and doctors' offices, and in the comfort of patient's homes. This offers our patient population the flexibility to receive care when and where they need it most. The Levine Cancer Institute (LCI) launched several clinical trials, and the Bone Marrow Transplant Unit celebrated two years with the completion of nearly 150 transplants.

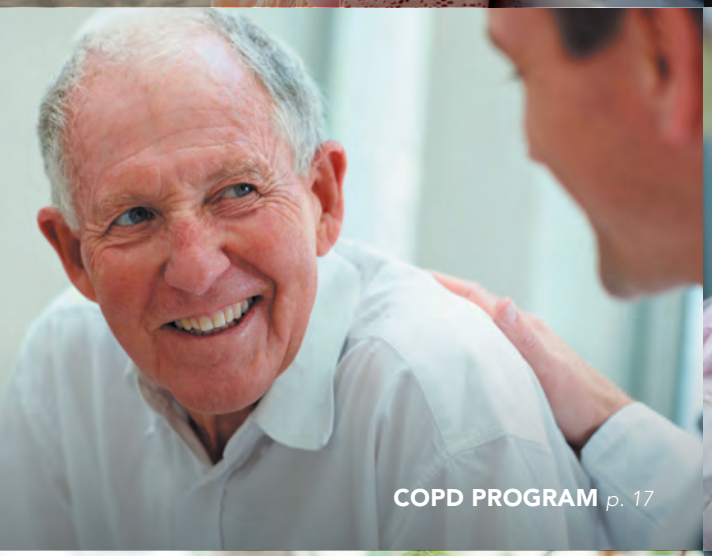
We increased digital access to our patients by enhancing the functionality of our online patient portal, MyCarolinas. This year we were the first in the Carolinas to offer "OpenNotes," which are notes written by a provider during a patient's visit. OpenNotes allows our patients to become more involved in their healthcare, and access their information whether they are in front of a computer or on the go. We continue to innovate and use data and analytics to review statistics across our community related to specific disease states. This unprecedented use of data has allowed us to develop clinical best practices and improve outcomes for our patient population.

In addition, we worked collaboratively with a group of physicians across the Charlotte region to form Carolinas Physician Alliance, the region's first clinically integrated network. Carolinas Physician Alliance will enhance the health of residents in the community by developing and implementing best clinical practices aimed at reducing the overall cost of care, managing chronic illnesses, and providing seamless transitions of care between primary care, specialty, hospital settings, and outpatient services.

At every encounter, both in our facilities and in the community, Carolinas HealthCare System strives to engage patients and their families, helping them become more active participants in their health. We look forward to entering another year of patient care excellence and safety, and to continuing our long-standing commitment to the health of communities near and far.

Sincerely,





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WE HAVE MORE THAN:

62,000 EMPLOYEES

3,100 DOCTORS AND ADVANCED CLINICAL PRACTITIONERS, AND **15,000+** NURSES

7,400 LICENSED PATIENT BEDS

12.5 MILLION PATIENT ENCOUNTERS PER YEAR

1 MILLION PATIENTS IN OUR PRIMARY CARE NETWORK

WHO WE ARE

Integrated System of Care

As one of the largest integrated healthcare networks in the country, Carolinas HealthCare System leverages knowledge, scale and virtual technologies to drive better patient care. We deliver quality care efficiently and conveniently, creating value for our patients, communities and payors.

Patient-Centered Focus

We believe the experiences of patients and their families are crucial components of the healing process. In every interaction, we aim to deliver personalized care and engage patients through tools and resources that make them feel included, informed and inspired.

Transformative Approach to Care

As the healthcare landscape evolves, Carolinas HealthCare System is quickly adapting to the demands of the industry and the needs of our patients and payors. In everything we do, we strive to achieve affordability and deliver access to quality healthcare.

CARE BY THE NUMBERS

Community Health performed **6,000+ Blood Sugar Tests and 4,500+ Diabetes Risk Assessments**

4.2 Million Unique Patient Records in Carolinas HealthCare System CareConnect

269 ICU Beds offer virtual critical care telemonitoring and **18,525 Critical Care Patients** were monitored by a provider

200,000+ Patients enrolled to use our online patient portal, MyCarolinas

6,978 Patients enrolled to use our online virtual visits, and **1,699 Virtual Visits** provided

11,000+ Behavioral Health Consults conducted virtually

BEHAVIORAL HEALTH

FROM OUR PROVIDERS

"We're accomplishing the triple aim. We're impacting the patient's experience of care, improving the clinical effectiveness of care, and decreasing the cost of care, and that's really because of telemedicine. That's what value-based care is all about."

MARTHA WHITECOTTON
Senior Vice President of Behavioral Health Services at Carolinas HealthCare System

According to the Centers for Disease Control and Prevention, suicide is the 10th leading cause of death in this country.

Carolinas HealthCare System is improving individual patient and population health through high-quality, coordinated care, covering a vast range of services.

Every year, one in four Americans will suffer from a mental illness or addiction. With resources for treating mental health limited nationwide, Carolinas HealthCare System is taking the lead in providing our community with the resources and services necessary for timely care.

Telepsychiatry in the Emergency Department

Patients in urban and rural communities often go to the emergency department (ED) with psychiatric care needs – either underlying or as a primary diagnosis – and **can spend 30-45 hours waiting for treatment.** Carolinas HealthCare System's Telepsychiatry program sought a solution to these long wait times through deploying a small strategic team consisting of rotating psychiatrists, nurses, social workers and a bed manager. This team is deployed "virtually" from the behavioral health headquarters, where they can connect with the patient, provide evaluations, enter orders directly in the medical records, and reduce unnecessary wait times for treatment to start.

Last year, the team rounded on patients in 20 emergency departments by monitoring electronic medical records and communicating via phone and video with emergency department staff and patients. This team-based approach to psychiatric care has resulted in a dramatic **50 percent reduction in the average emergency department wait time for treatment – from 44 hours to 22 hours.**

In 2015, the System performed more than 8,600 telepsychiatry consultations.

PRIMARY CARE INTEGRATING MENTAL HEALTH SERVICES

Mental illness not only touches the community at large; it touches each of us personally. Roughly one in four adults suffers with a mental illness.

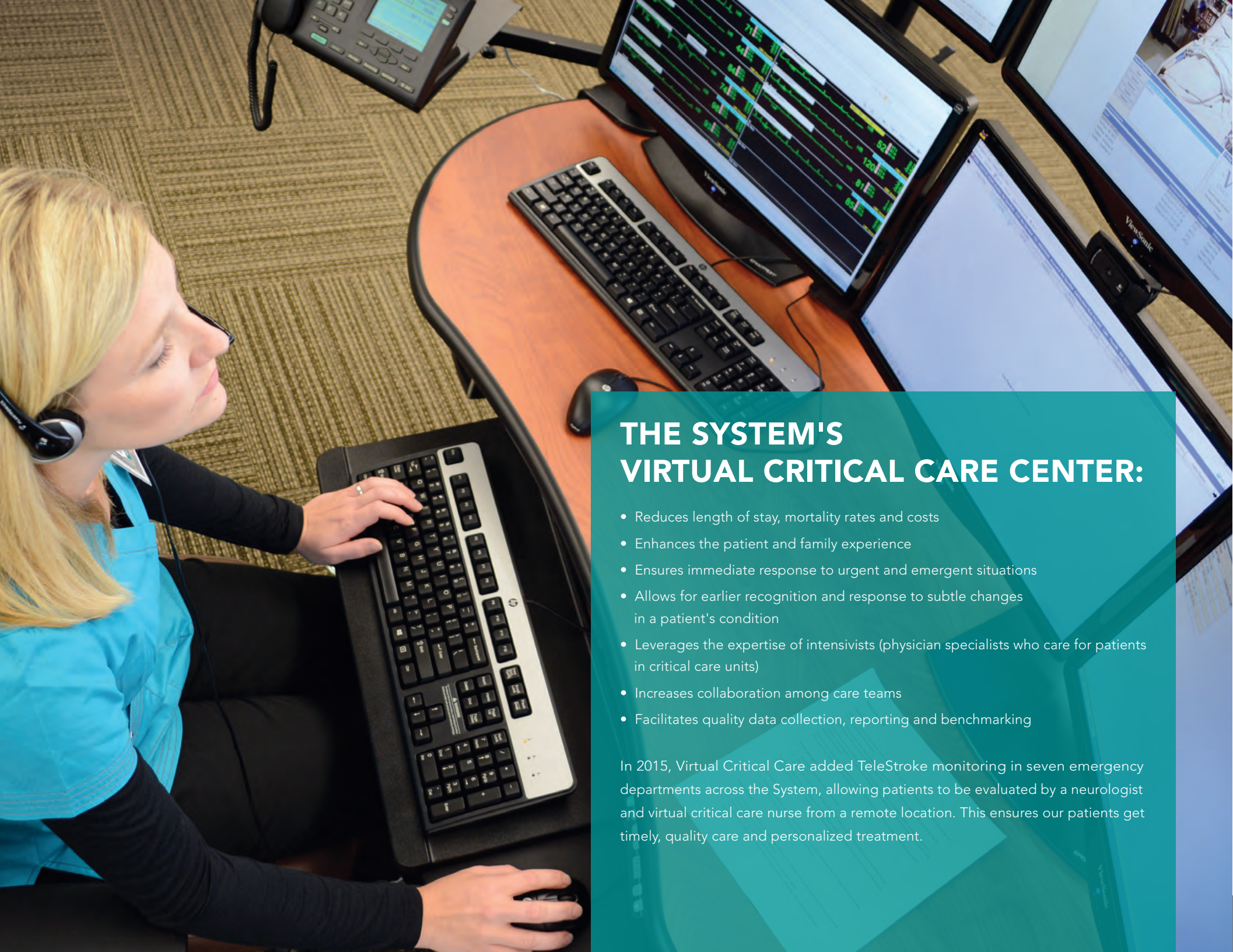
Carolinas HealthCare System has connected its large primary care network with behavioral health providers via virtual technology, offering patients quick, convenient access to mental health services while they are in the doctor's office. To date, more than 3,500 patients have received support.

THESE SERVICES INCLUDE:

- Access to the PHQ-9 Depression Screen and a brief mental health assessment
- Real-time counseling and support in a provider's office via virtual technology
- Treatment recommendations
- Access to a care team of behavioral health specialists, including psychiatrist, psychiatric nurse practitioner, PharmD, licensed clinicians and Health Coaches. This team works collaboratively with the primary care team to reduce the patient's chances of readmission through follow-up in order to help patients reach treatment goals.

The System also is engaging our employees, providers, patient population and community members through health initiatives such as Mental Health First Aid training. The goal of the eight-hour session is to help people recognize when someone is suffering from a mental health or substance abuse disorder, and to encourage intervention. **To date, the System has trained more than 1,786 employees and community members in Mental Health First Aid.**

Carolinas HealthCare System is promoting strong mental health in our community by helping our patients closer to home and earlier in the course of illness, and by investing in the infrastructure they need. As a System, we can help prevent mental health tragedies through early interventions, education, and continuing to provide seamless access to treatment.

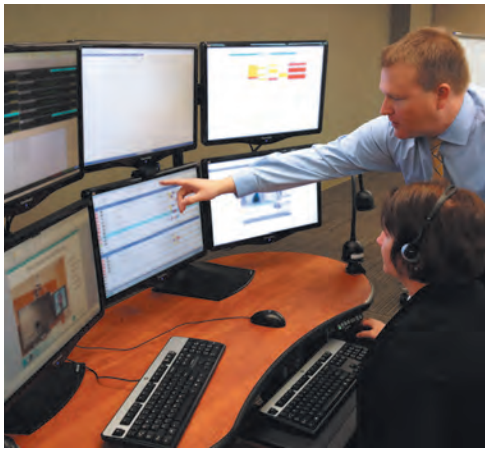


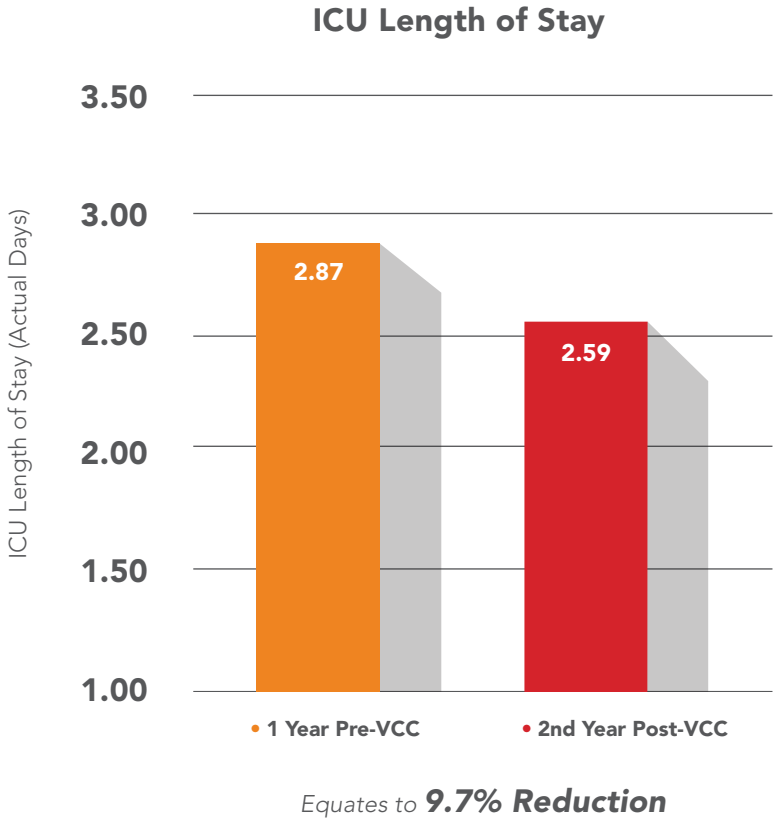
THE SYSTEM'S VIRTUAL CRITICAL CARE CENTER:

- Reduces length of stay, mortality rates and costs
- Enhances the patient and family experience
- Ensures immediate response to urgent and emergent situations
- Allows for earlier recognition and response to subtle changes in a patient's condition
- Leverages the expertise of intensivists (physician specialists who care for patients in critical care units)
- Increases collaboration among care teams
- Facilitates quality data collection, reporting and benchmarking

In 2015, Virtual Critical Care added TeleStroke monitoring in seven emergency departments across the System, allowing patients to be evaluated by a neurologist and virtual critical care nurse from a remote location. This ensures our patients get timely, quality care and personalized treatment.

VIRTUAL CRITICAL CARE





*Equates to **9.7% Reduction***

Hospital stays involving intensive care unit (ICU) services are 2.5 times more costly than other hospital stays.

Carolinas HealthCare System continues to offer Virtual Critical Care to provide an added level of clinical expertise for critically ill or injured patients. The program provides real-time, 24/7 monitoring and two-way audio and video connectivity, to ensure safe, high-quality patient care at all times.

Virtual Critical Care is now available in **269 beds across 11 System care locations** – in small and large hospitals – allowing patients to stay as close to home as possible. Since it began, the program has helped **decrease patients' length of stay in the ICU by 9.7 percent and the hospital mortality rate has been declining, from 8.4 percent in the first year to 7.4 percent in the third year.**

Since Virtual Critical Care's inception, and in collaboration with other ICU initiatives targeted at reducing length of stay, **the System was able to eliminate a total of 3,200 ICU days for more than 16,800 patients. At an average variable cost per day of $1,359 for each patient, this equates to an estimated cost avoidance of nearly $4.35 million** attributed to ICU length of stay reduction.*

**Please note these cost avoidance estimates do not account for increasing ICU patient acuity, which has also been observed since the program's inception.*

COMMUNITY CANCER CARE

We are changing the course of cancer care by removing the barriers that separate patients from access to world-class research, breakthrough treatments, and quality cancer care, so where patients live doesn't determine how they fight cancer.

Carolinas HealthCare System's Levine Cancer Institute is focused on eliminating geographic barriers to provide world-class care to patients closer to home. As part of the pursuit of that mission, the region's first and only adult blood and marrow transplant program was established in 2014. Staffed by nationally renowned clinicians who subspecialize in providing high-quality care for patients with blood cancer or other hematologic malignancies, the unit serves patients across a broad geography that previously had limited access to care.

The state-of-the-art Blood and Marrow Transplant Unit consists of a specially trained team that uses a multidisciplinary approach to provide comprehensive and supportive care to all recipients and donors, and their families and caregivers. **The Blood and Marrow Transplant Unit began performing transplants in March 2014, and since its inception has experienced tremendous growth, with the completion of 141 bone and marrow transplants.**

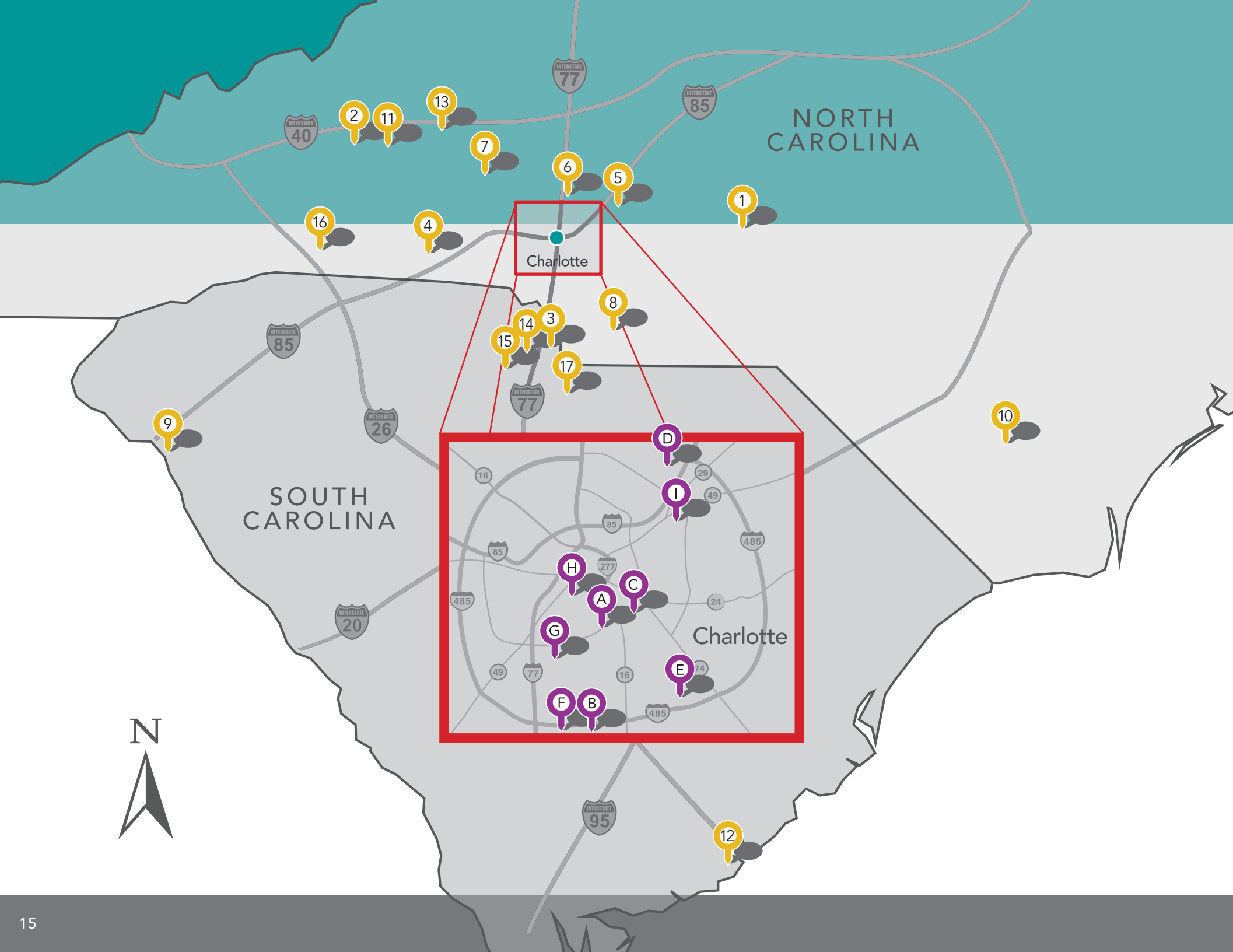
Having access to the Blood and Marrow Transplant Unit has eliminated the need for our patients and community to travel to receive specialty cancer care, allowing them to spend those precious moments with family and friends during their cancer treatment.

ROBERT PUGH, *Cancer Survivor*

FROM OUR PATIENTS

Robert knew he could not face cancer without a team behind him.

Robert was a middle distance runner and preparing for his next race when he received the news. He went in for his annual physical exam and his white blood cell test results concerned his doctor. Robert's doctor referred him to a hematologist to review the findings and have further testing. The journey started the moment Robert pulled into the parking lot and read the words on the building: "Cancer Center." His new hematology oncologist ran a few tests, and completed a bone scan and a bone marrow test before confirming Robert's diagnosis of multiple myeloma. Once they reviewed Robert's results together, his hematology oncologist thought a bone marrow transplant would be the next logical step and referred him to Saad Z. Usmani, MD, at Levine Cancer Institute. Robert didn't know what questions to ask when he met with Dr. Usmani, but he felt immediately at ease when Dr. Usmani filled in the blanks. Robert successfully had a bone marrow transplant, thanks to Dr. Usmani and the team at Levine Cancer Institute. Robert is now cancer-free and ready to take on his 60th birthday with a "Live-a-holic" approach, where he is living his life out loud.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CANCER CARE ACCESS

Using an integrated model that extends across states and leverages cancer experts and resources across Carolinas HealthCare System, **Levine Cancer Institute offers world-class cancer care in more than 25 facilities throughout the Carolinas.**

Nationally and internationally renowned physicians and specialists collaborate daily to develop standard treatment protocols that accelerate efficient, effective therapy and improve patient access to clinical research. The Institute offers robust patient survivorship support programs like patient navigation, integrative medicine and fertility preservation. It also pilots programs to reduce disparities and increase access to care.

LEVINE CANCER INSTITUTE: Charlotte Locations

A. **Research and Administrative Headquarters**
Carolinas Medical Center Radiation Therapy Center
B. **Ballantyne**
C. **Carolinas Medical Center – Mercy**
D. **Mallard Creek**
E. **Matthews**
F. **Pineville:** Carolinas HealthCare System Pineville, Pineville Radiation Therapy Center
G. **Southpark**
H. **Tryon**
I. **University:** Carolinas HealthCare System University, University Radiation Therapy Center

LEVINE CANCER INSTITUTE LOCATIONS

1. **Albemarle:** Carolinas HealthCare System Stanly
2. **Carolinas HealthCare System Blue Ridge**
3. **Carolina Lakes**
4. **Shelby:** Carolinas HealthCare System Cleveland
5. **Concord:** Carolinas HealthCare System NorthEast Batte Cancer Center, Carolinas HealthCare System NorthEast Radiation Oncology
6. **Cornelius**
7. **Lincolnton:** Carolinas HealthCare System Lincoln
8. **Monroe:** Carolinas HealthCare System Union, Edwards Cancer Center, Carolinas HealthCare System Union Radiation Oncology
9. **AnMed Health Medical Center**
10. **Columbus Regional Healthcare System**
11. **Carolinas HealthCare System Blue Ridge – Morganton**
12. **Charleston:** Roper St. Francis
13. **Carolinas HealthCare System Blue Ridge – Valdese**
14. **Rock Hill**
15. **Rock Hill Radiation Therapy Center**
16. **Rutherford Internal Medicine Associates**
17. **Lancaster Radiation Therapy Center**

FROM OUR PATIENTS

"My treatments for COPD have kept me from getting any worse. Carolinas HealthCare System has worked with me and helped me do anything I can do to try to keep my breath going. I've lost two brothers to the same thing, so it means the world to me." **– EARL SPRINGS**, *Carolinas HealthCare System COPD Patient*

COPD PROGRAM

Carolinas HealthCare System has more than 52,000 patients diagnosed with COPD, or chronic obstructive lung disease. We recognized the need for better, coordinated care for our patients with respiratory disorders. In 2015, the System launched an initiative to collaborate across the continuum of care, bringing together pulmonology, health advocacy, advanced illness management, and primary care to address COPD.

WE ARE GETTING THEM THE HELP THEY NEED, INCLUDING:

- Access for providers treating COPD patients, to an evidence-based standardized order set based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD).

- Access to Pulmonary Rehabilitation that can improve patients' functional lung capacity and increase their activity level through a combination of health education and exercise therapies. Treatment plans include exercise therapy, health education, breathing retraining, and behavior modification services for nutrition and stress management.

- Access to Advanced Illness Management (AIM) that can help patients with co-morbidities manage their diseases through education and guidance by partners in the community and across healthcare channels. AIM helps patients that have three or more chronic health conditions, take more than seven medications, and have had four or more healthcare visits in the last year, with two visits being within the last six months.

In 2015, the System's collaborative efforts have helped to decrease readmissions and cost per COPD patient. **Providers using the evidence-based order set saw a 15.2 percent reduction in readmissions rates in the acute care setting, and a reduction in cost per COPD patient of 43.8 percent.** In addition, **the AIM team saw a reduction in readmissions of 41 percent, and a reduction in emergency department visits of 45 percent,** through intensive care management of their COPD patients.

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of morbidity and mortality throughout the world. According to the Center for Disease Control and Prevention, more than **15 MILLION AMERICANS** report being diagnosed with COPD.

QUALITY AND SAFETY OPERATIONS

Carolinas HealthCare System's Quality and Safety Operations Council (QSOC™) helps drive the integration of quality care and patient safety across the System.

THE COUNCIL'S 25 TEAMS MEET ON A REGULAR BASIS TO PROVIDE A VEHICLE FOR DEVELOPMENT AND RAPID REPLICATION OF BEST PRACTICES.

They build on the clinical experiences and achievements of care teams across the continuum, and are managed by quality and clinical leaders, chief medical officers and other medical staff.

Goal-Oriented Team

Informational Team

Networking Team


LEFT
ARM

PATIENT SAFETY ORGANIZATIONS

CAROLINAS HEALTHCARE SYSTEM'S PSO MEMBERSHIP INCLUDES:

33 HOSPITALS

4 SKILLED NURSING FACILITIES

5 HOSPICE PROGRAMS

400+ PROVIDER PRACTICES

12 HOMECARE PROGRAMS (HEALTHY@HOME)

17 SYSTEM-WIDE PSO QUALITY COMMITTEES

One of the first healthcare systems in the nation to form its own Patient Safety Organization (PSO), Carolinas HealthCare System uses the benefits of the federal PSO designation to share information across the System. Providers collaborate in a coordinated harm prevention program driving toward measurable, lasting improvement.

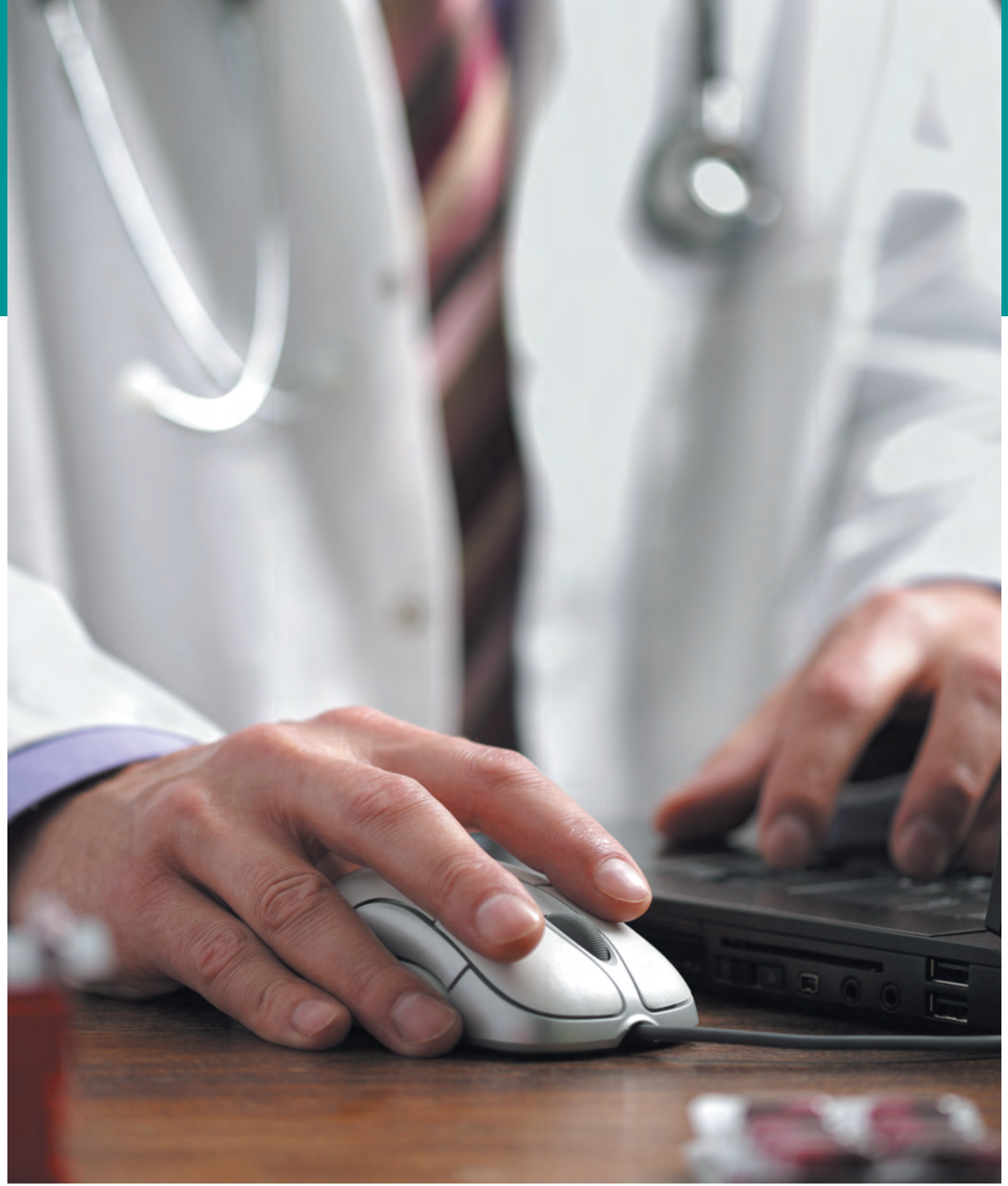
The System's patient safety programming features Cause Analysis teams led by physicians which include front line staff. The teams are passionate about identifying ways to prevent patient harm. These teams are typically only found in acute hospitals, but at Carolinas HealthCare System, the model applies to our full continuum of care. Participation by physician offices, home health, rehab and skilled nursing facilities demonstrates a commitment to patient safety that goes far beyond industry standards and regulatory requirements. The Carolinas HealthCare System PSO prevents harm by identifying trends and opportunities for improvement.

Patient Safety Organizations – EQUADR℠

In addition to the System's internally focused PSO, Carolinas HealthCare System has a rehabilitation-focused PSO created by Carolinas Rehabilitation, named EQUADR (Exchanged Quality Data for Rehabilitation).

EQUADR has evolved from an informal group of four rehab hospitals sharing data to an accredited PSO with more than 30 inpatient rehabilitation facilities across the nation, submitting standardized data sets and conducting regular web conferences to share best practices in rehab quality and safety.

As the only agency for healthcare research and quality-designated patient safety organization targeted specifically to inpatient rehabilitation, EQUADR strives to foster a collaborative community where members can learn from one another. By providing a foundation of rehabilitation benchmarking data and a forum for rehab quality professionals to share best practices, EQUADR equips facilities to rapidly drive quality improvement efforts in their own institutions.



EQUADR has had a positive impact on quality and patient safety in our Carolinas Rehabilitation facilities, as well as our EQUADR members' facilities across the country. A few key results include:

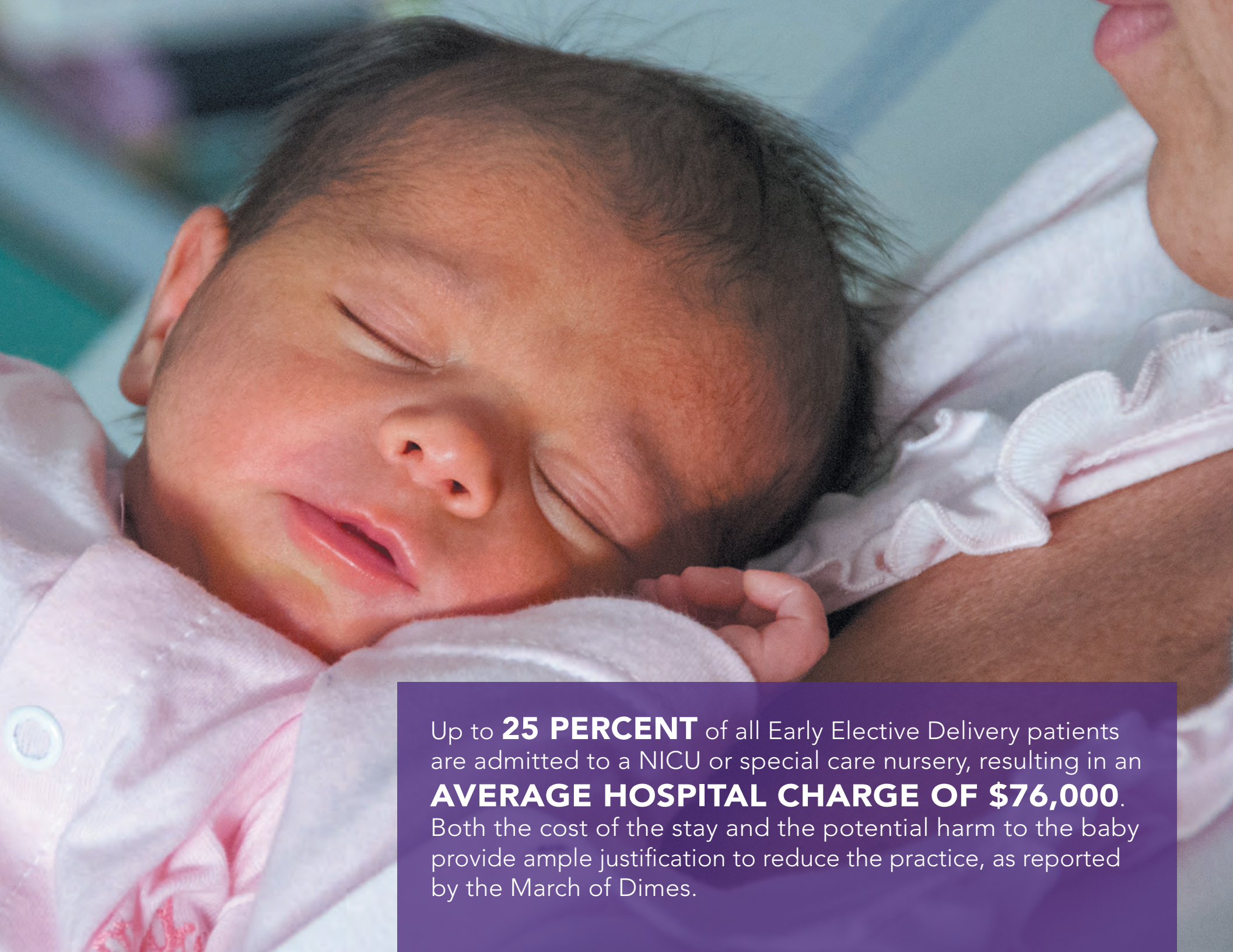
- 40.6 percent decrease in Restraint Utilization from 2010 to 2015
- 30.9 percent decrease in Healthcare-Associated Pressure Ulcers from 2010 to 2015
- 25.9 percent decrease in Healthcare-Associated Venous Thromboembolism from 2010 to 2015
- 56.8 percent decrease in Healthcare-Associated Methicillin-Resistant Staphylococcus Aureus (MRSA) Infections from 2010 to 2013
    - *In 2014 the measure was updated to include Blood Specimens only. The rate has improved 11.5 percent from 2014 to 2015.*
- 70.0 percent decrease in Healthcare-Associated Catheter-Associated Urinary Tract Infections (CAUTI) from 2010 to 2015
- 41.7 percent decrease in Urinary Catheter Utilization from 2011 to 2015
- 18.6 percent decrease in Unassisted Falls from 2010 to 2015

HEALTHY BABIES ARE WORTH THE WAIT

Early elective deliveries (EED), when a woman delivers a baby prior to 39 weeks without a confirmed medical necessity to do so, have become increasingly popular. Some women live far away from a hospital and worry about arriving in time, or they may want to ensure that a spouse or partner can be present for the birth. These EED births are leading to more complications and higher costs.

Due to the increasing popularity of EEDs, the System focused on education and awareness with providers, patients and the surrounding community about the risks associated with delivering a baby earlier than 39 weeks. The System focused on engaging all obstetrical providers in the decision-making process, and began reviewing and evaluating all early elective delivery cases. Thanks to these efforts, Carolinas HealthCare System reduced EED deliveries from **28.72 percent in 2010, with 1,477 patients having an early elective delivery, to an EED rate of 0.58 percent in 2015, with only 19 early elective deliveries taking place.**

These education and awareness efforts prevented **918 potential early elective deliveries, saving the system at least $2.2 million in additional costs.**



Up to **25 PERCENT** of all Early Elective Delivery patients are admitted to a NICU or special care nursery, resulting in an **AVERAGE HOSPITAL CHARGE OF $76,000**. Both the cost of the stay and the potential harm to the baby provide ample justification to reduce the practice, as reported by the March of Dimes.

ANTIMICROBIAL SUPPORT NETWORK

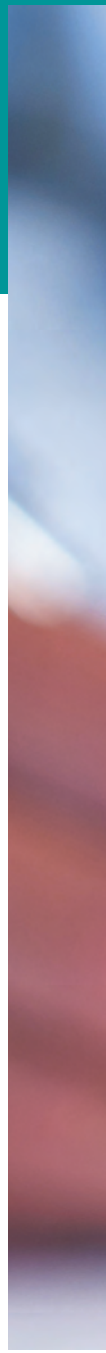
Each year in the United States, **AT LEAST 2 MILLION PEOPLE** become infected with bacteria that are resistant to antibiotics, and **AT LEAST 23,000 PEOPLE** die as a direct result of these infections.

Antibiotics are amazing medicines, and when used properly can save lives. However, when not used appropriately, antibiotics can lose effectiveness and contribute to the emergence of multidrug-resistant infections. The inappropriate use of antibiotics is the single most important factor leading to antibiotic resistance around the world.

With the goal of providing the best possible clinical outcomes to patients while minimizing adverse events and antimicrobial resistance, Carolinas HealthCare System established the Antimicrobial Support Network (ASN) in 2013. This network improves patient outcomes and reduces rates of hospital-acquired and other infections. In addition, it decreases patient length of stay and rates of antimicrobial use.

The ASN has 11 full-time pharmacists that review inpatient antibiotic orders across 13 hospitals and facilities to determine whether those orders are appropriate based on the patient's clinical status and work-up of infection. If a change in antimicrobials would be appropriate, those recommendations are discussed with an Infectious Disease physician, and the ASN team then contacts the patient's clinician to make a recommended intervention. In **2015 they reviewed more than 11,612 orders and recommended interventions** that can include stopping a patient's antibiotics based on culture results or clinical findings, selecting an appropriate duration of a patient's antibiotic course based on indication, decreasing the number of antibiotics a patient is prescribed, switching a patient to a more targeted or effective antimicrobial, or expanding the patient's antimicrobial coverage to cover potentially multidrug-resistant organisms.

In addition to the System-wide efforts, Carolinas HealthCare System was honored to be one of six organizations invited to the discussions at the White House Antimicrobial Forum in June 2015 to provide insight on hospital efforts and the need to move forward with an antimicrobial stewardship commitment. As part of the Hospital Engagement Network (HEN), CHS is one of nine hospital systems in the country who have selected stewardship as a System-wide HEN goal. Through our HEN collaborative, the ASN will be working with stewardship programs from all of our regional facilities to improve and implement best practices from across the System.



Carolinas HealthCare System continues seeing patient outcomes and cost improvements from more diligent use of antibiotics. In 2015, some of the notable outcomes consisted of, but were not limited to:

A decrease in antimicrobial days of therapy by **9.5 PERCENT**

A decrease in antimicrobial expenditures by **11 PERCENT**

An intervention acceptance rate of **87 PERCENT**

HIGH-RISK MEDICATIONS IN THE ELDERLY

According to the National Center for Health Statistics, almost 40 percent of adults 65 and older reported being on five or more medications.

The use of multiple prescriptions in the elderly (65 years and older) can often result in adverse drug events that contribute to hospitalization, increased duration of illness, nursing home placement, falls and fractures. Adverse drug events are a significant issue, with an estimated 177,700 visits to Emergency Departments each year, according to the American Geriatrics Society.

At Carolinas HealthCare System, reducing the use of high-risk medications among our population age 66 and older is a top priority. We encourage providers to communicate with their patients about high-risk medications and, when appropriate, change to a safer alternative.

In 2015, Carolinas HealthCare System led a coordinated effort to decrease the use of high-risk medications in the elderly by implementing several interventions including shared decision-making tools, alerts in patients' electronic medical records, and the development of high-risk drug fact sheets for patient and provider education.

USE OF HIGH-RISK MEDICATIONS IN THE ELDERLY

Providers and patients use the tools to evaluate the risks of continuing these high-risk medications and facilitate discussions of options, including:

- Decreasing high-risk medication dosage
- Stopping the high-risk medication completely
- Prescribing an alternative, safer medication

Since the implementation of the alerts and fact sheets and the shared-decision making tool, Carolinas HealthCare System's Medical Group Division has seen a **change in prescription 30 percent of the time** and an improvement **in the percentage of elderly patients taking a high-risk medication, with a decrease from 12.5 percent to 10.2 percent.**

Every day, physicians are faced with making medical decisions based on limited information. A study by the Commonwealth Fund concluded that

30 PERCENT OF THE TIME,

physicians could not find previously recorded information in the patient's paper chart.

SKILLED NURSING FACILITY COLLABORATIVE

According to a study from the Agency for Healthcare Research and Quality, out of all hospitalized patients 65 or older, 21 percent are discharged to a long-term care facility or other institution.

Carolinas HealthCare System provides care to patients of all ages and at various stages of their healthcare needs in our community. This includes when patients are transitioned into a Skilled Nursing Facility (SNF). A key factor in successfully transferring a patient from a hospital care setting to an SNF is communication. Poor communication during transitions from one care setting to another can lead to confusion about the patient's condition and appropriate care, duplicative tests, inconsistent patient monitoring, medication errors, delays in diagnosis, and lack of follow-through on referrals.

Carolinas HealthCare System proactively developed a Skilled Nursing Collaborative in 2012. **The collaborative brings together approximately 60 Skilled Nursing Facilities.** The goal of this collaborative is to bring providers and partners in patient care together to develop best clinical practices and ensure that all patients receive access to high-quality, personalized care. Two primary focus areas for the collaborative are readmissions and antibiotic stewardships.

This Collaborative has implemented several best practices, including:

- Encouraged facility providers to see patients within 48-72 hours of admission. North Carolina state regulations only require providers to see their patients within 14 days of admission. However, the earlier the providers can see the patients, the sooner they can create a clinical care plan of action and evaluate their risk for readmission. **Currently, 30 percent of providers are seeing patients within 48-72 hours, and 50 percent of providers are seeing patients within the first seven days of their admission to the SNF.**

- Reduced overall readmissions collectively for all facilities. At inception, the overall readmission rate was above the expected rate. The establishment of expectations around readmission reduction and best practices has reduced the overall readmission rate. I**n 2015, there was an overall improvement in readmission rates of 11.2 percent.**

- Worked with Collaborative members to increase education and awareness around Advanced Directives, specifically the Medical Orders Scope of Treatment (MOST) form. By using CareConnect, members can receive patient medical information in real time to help drive timely, efficient, and patient-centered care.

- Encouraged Collaborative members to participate in the Carolinas HealthCare System CareConnect Health Information Exchange (HIE). By using CareConnect, members can receive patient medical information in real time to help drive timely, efficient, and patient-centered care.

MYCAROLINAS PATIENT PORTAL – OPENNOTES

FROM OUR PROVIDERS

"Reading a physician's notes and comments after an appointment – sometimes days or weeks later – can help reaffirm what a doctor has said. It can help patients participate in their own care."

AL HUDSON, MD
Charlotte Medical Clinic

More than 250,000 encounter notes are made available to patients each month.

In 2015, Carolinas HealthCare System began offering OpenNotes through MyCarolinas, an online patient portal, to foster communication between patients and their healthcare providers.

OpenNotes offers patients access to healthcare notes that their providers, nurses and other clinicians take during and after their appointment or hospital stay. **In 2015, more than 14,000 OpenNotes were viewed by patients each month.**

With OpenNotes access, patients can review their notes, get a better understanding of their health and medical condition, and print copies for their health records. Since implementation, patients have reported feeling more in control of their healthcare, being able to recall treatment instructions, and finding it easier to take medications as prescribed.

PATIENT BENEFITS WITH OpenNotes:

- Summary of what the patient told the doctor, often referred to as a history
- Findings from a physical exam, such as a patient's blood pressure
- Lab, radiology or other results that help the provider assess a patient's condition
- Provider's assessment of diagnosis
- The treatment plan the provider recommends
- Next steps, such as additional tests, follow-up appointments or referrals to a specialist

BIG DATA & PATIENT CARE

Data is a critical component to understanding disease, identifying trends, and making more informed care decisions to improve the quality of care we deliver to our patients.

Carolinas HealthCare System is using big data and predictive analytics to keep our community healthy. In 2011, the System began incorporating clinical and financial data across its continuum of care. Through data collection and analytic modeling efforts, a readmissions risk model was created based on information culled from more than 200,000 patient discharges.

This model helps predict a patient's 30-day readmission risk with nearly 80 percent statistical accuracy. Forty different patient variables deemed highly predictive of unplanned readmission are pulled daily from electronic medical records, and are analyzed and delivered in real time to healthcare providers who then can prioritize high-risk patients and customize their care. This model has been applied to more than 100,000 patients, making it possible for our providers to use evidence-based care and review actual factors tied into each patient's risk of readmission.

Carolinas HealthCare System is pioneering the use of patient data, with the understanding that the future of healthcare is being fundamentally changed by data and technology, and sustainability of quality care is dependent upon the ability to understand and use data in a meaningful way. Through partnerships, we are continuing to create protocols for interventions to continually improve utilization, reduce costs and keep our communities healthy.

CAROLINAS HEALTHCARE SYSTEM
TRANSITION SERVICES

FROM OUR PROVIDERS

"We are taking healthcare to the patient with our paramedicine and virtual services, breaking down the walls of communication, and supporting our patients and their families with our pharmacist, social worker and nursing support. We are changing healthcare and the way it is delivered."

STEPHANIE MURPHY, DO
Medical Director, CHS Transition Services

In 2015, Carolinas HealthCare System Transition Services has helped more than 69 patients and prevented more than 65 unplanned patient readmissions.

Through the use of Dickson Advanced Analytics' Readmission Risk Model, Carolinas HealthCare System established the need for transition services to support chronically ill patients who are at high risk for unnecessary emergency department visits and hospital readmissions.

Transition Services is a team of clinical navigators who intensively manage chronic complex medical patients during the first 30 days after hospitalization. They offer patients access to hospital medicine specialists 24 hours a day, seven days a week, and help patients understand their health issues, while assisting them with obtaining services they may need after hospitalization. The weekly appointments provide an opportunity for family members or caregivers to discuss any issues they may have discovered since being home, while also providing them with a point person to ensure continuity of care.

Their work is focused on caring for patients' subacute clinical needs through paramedicine and virtual visits, uncovering issues that lead to failed outpatient management such as access to medications or medication side effects, and empowering patients to self-manage their health problems through continued care management and education.

PATIENT SUCCESS

Transition Services successfully helped one patient, who lives 75 miles away from Carolinas Medical Center, avoid another unplanned hospital readmission. Paramedicine professionals visited the patient's home and provided 13 interventions in nine days, including delivery of medical equipment, decreasing medication dosages through a virtual visit, and medication reconciliation, which found more affordable alternatives. In addition, a virtual behavioral health screening resulted in a consultation when it found the patient to be at risk for depression.

CAROLINAS HEALTHCARE SYSTEM
HEALTHY@HOME

Continued Care in the Comfort of Home

In 2015, Healthy@Home maintained an average daily census in excess of 10,000 patients served.

Carolinas HealthCare System is committed to delivering world-class care to patients in the comfort of their homes. The team of experts at Healthy@Home provides compassionate care and advanced services, with the goals of helping patients improve function and live with greater independence. By leveraging the System-wide electronic medical record platform and virtual telehealth services, Healthy@Home seamlessly integrates needed services. Patient outcomes are improved through direct coordination of care, medication management and reconciliation. This effective coordination of services creates a positive acute care impact, resulting in reductions in hospitalization lengths of stay, readmissions and emergency department utilization.

An integral component of post-acute care services, Healthy@Home works with physicians to develop personalized plans of care for patients of all ages. Healthy@Home services include but are not limited to:

- Home-based skilled nursing care
- Physical, occupational and speech therapy
- Chronic disease management
- Oxygen, respiratory and medical equipment supplies
- IV medications
- Nutritional support

Healthy@Home places an emphasis on quality of care, and consistently achieves high marks in the Center for Medicare and Medicaid Services Home Health Compare 5-star rating system, ranking well above the North Carolina average of three stars.

Carolinas HealthCare System
Healthy@Home

PATIENT EXPERIENCE

Healthy@Home provides help to patients of all ages at all times. On a Sunday evening around 10 p.m., a mother realized she might have to take her toddler to the emergency department. Her two-year-old daughter with cerebral palsy had been sick for five days, and wasn't able to keep any of her meals down through her feeding tube. Her mom dreaded the trip to the emergency department at such a late hour, and instead contacted Healthy@Home. She was connected to a registered Dietitian, who was able to consult with the gastrointestinal physician on-call to get a prescription for anti-nausea medications, and instructions to run nutritional supplements through a pump overnight. The mother needed the pump delivered quickly while she picked up the prescription. The courier service typically took up to four hours, but Healthy@Home registered Dietitian Kristy Klug ensured the pump would be delivered quickly, by taking it to the patient's home herself.

TEAMMATE EXPERIENCE

"I could never grasp the full weight of what it must be like to be a parent caring for a medically fragile child dependent on a feeding tube. When presented with an opportunity to jump in and assist, I did what I could to help. This is why I became a healthcare professional: to help care for patients and their family members facing medical conditions they were never meant to bear alone. To alleviate some of this burden is not only my responsibility but also my privilege," says Klug.

5-2-1-0 provides research-based recommendations for daily healthy behaviors that can help maintain a healthy weight.

- **5** Eat at least **5** servings of fruits and vegetables every day.
- **2** Limit recreational screen time, including television, video game and smartphone viewing, to less than **2** hours per day.
- **1** Be physically active for at least **1** hour per day.
- **0** Avoid sugary drinks, and instead aim for water or low-fat milk.

The goal is to have families throughout the community take the pledge and join the 5210 League so we can harness the power of the 5210 lifestyle and show the importance of eating right and exercising regularly, while reducing the number of obese children in the community.

HEALTHY TOGETHER 5210 LEAGUE

North Carolina's childhood obesity rates are among the worst in the country, with 34 percent of the state's children between 2 and 18 categorized as overweight or obese. Children who are overweight or obese are at greater risk for a number of health conditions, including heart disease, stroke, diabetes and certain types of cancer.

In an effort to combat childhood obesity, Carolinas HealthCare System partnered with Charlotte-Mecklenburg Schools (CMS), the Mecklenburg County Health Department, and other community partners to combine efforts under the Healthy Weight Healthy Child coalition.

As part of this partnership, the 'Healthy Together' initiative was developed, focusing on identifying and implementing interventions across school, childcare, clinical and community settings, and on raising awareness and education about physical activity and nutrition. The program encourages families to engage in healthy behaviors by pledging to join the 5210 League.

The 5210 League is a superhero-themed program led by Doctor Fit and Action Ace, modeled after Carolina Panthers quarterback Cam Newton, who is the spokesperson for the initiative. It promotes the power of wellness by teaching families the keys to leading healthy and active lives.

In 2015, Carolinas HealthCare System's Healthy Together initiative provided education to more than 4,226 individuals at 63 community events that included more than 1,246 screenings, and over 1,855 community members pledging to join the 5210 League.

In 2015, Carolinas HealthCare System transitioned more than 50,000 health plan members to one consumer-directed health plan (CDHP) with a Health Savings Account (HSA). Consumer-directed health plans are designed to allow health plan members to make decisions about how to get the most value from their desired healthcare services. The System's LiveWELL Health Plan encourages teammates to utilize information about the cost and quality of various healthcare options to guide decision-making. In addition, teammates partner with their providers to decide what medications and courses of treatment are right for them. The LiveWELL Health Plan deductible is $1,850 for an individual and $3,700 for a family. To support teammates in meeting their deductible, Carolinas HealthCare System provides significant HSA support through a start-up contribution, a match and the LiveWELL Incentive. In addition, teammates have a variety of opportunities to contribute pre-tax funds into their HSA through programs such as PTO Cash-In and the System's Performance Plus Incentive.

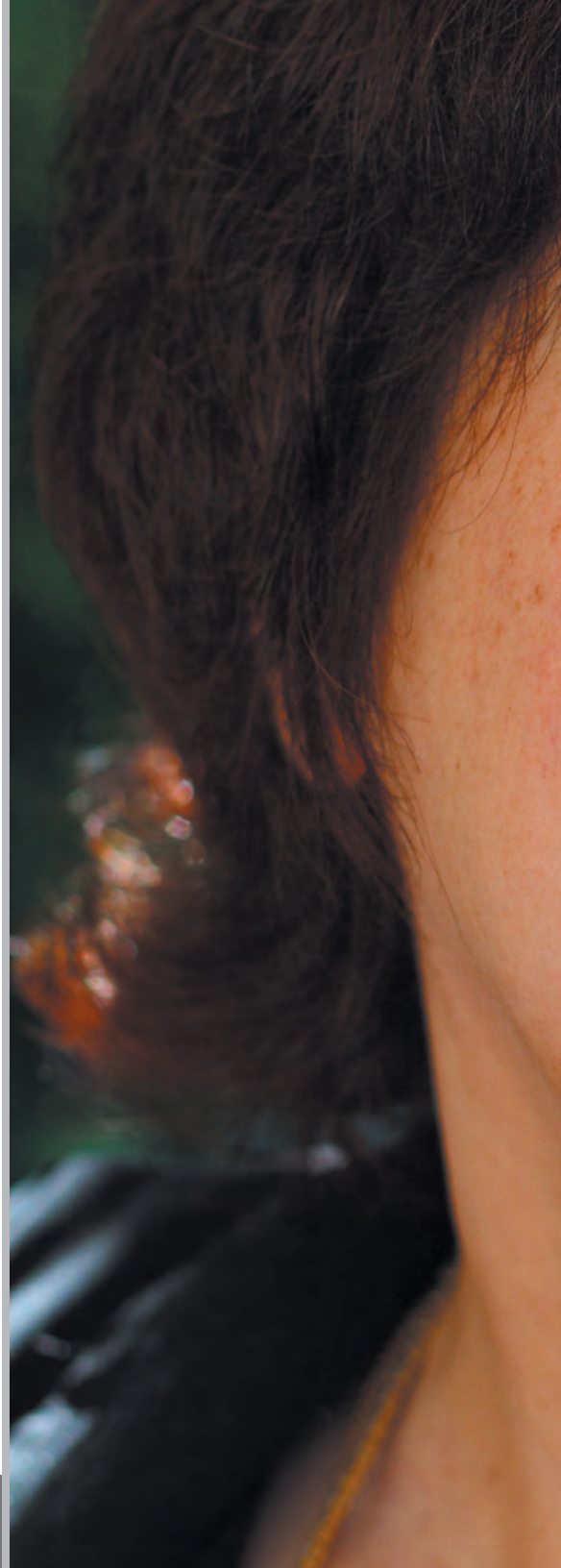
To support teammates enrolled in the LiveWELL Health Plan, the One-on-One Rx program was developed by CarolinaCARE, the System's home delivery pharmacy provider. One-on-One Rx provides medication therapy management to help teammates manage the cost of their prescriptions. Teammates have the option to meet with a pharmacist in person, virtually or by phone. The pharmacist works directly with the providers to help improve care of teammates who have one or more chronic conditions or who are taking a variety of medications are the primary audience for this program.

To date, the CarolinaCARE team has conducted 413 One-on-One Rx sessions, which resulted in 1,400 medication changes. The financial impact to the participants was a savings of $250,000.

FROM OUR PATIENTS

Carolinas HealthCare System clinical psychologist **JOHN MAGEE**, PhD, describes his One-on-One Rx consultation with a CarolinaCARE pharmacist as "remarkable."

"In addition to being friendly, personable and knowledgeable, the pharmacist went over and above," said Magee. "I was pleased with the interaction, both how easy it was and how helpful and responsive the pharmacist was."



PHARMACY – ONE-ON-ONE Rx

PROVIDED BY CarolinaCARE

In 2015, 32 percent of employers planned to offer a consumer-directed health plan as their only health insurance plan option, compared with 22 percent in 2014.

AWARDS & RECOGNITIONS

In 2015, Carolinas HealthCare System was recognized locally and nationally for our commitment to delivering world-class healthcare across all care locations. Year after year, we are recognized by many top third-party rating organizations in the industry, including *U.S. News & World Report*, Truven and the National Research Corporation.

Our System continues to be in the spotlight for delivering high levels of patient safety and quality care across all categories, ranging from best children's hospital to excellent patient experience. From System-wide HIMSS and Stage 7 status to facility-specific Magnet and Truven recognitions, care teams across our 900+ care locations are recognized for their achievements and contributions to the advancement of medicine and healthcare.

LEARN MORE ABOUT OUR MANY EARNED RECOGNITIONS:

CarolinasHealthCare.org/Awards-and-Accolades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