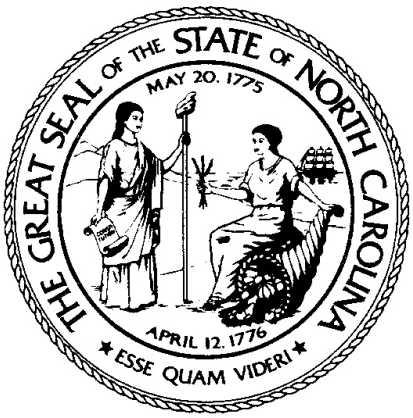
North Carolina Department of Health and Human Services
Division of Public Health

Annual Report to the North Carolina Medical Society

October 2018



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Background

General Statute 130A.33 requires the State Health Director to submit an annual report on public health at the general session of the annual meeting of the North Carolina Medical Society (NCMS) held conjointly with the Commission for Public Health meeting. This report serves this statutory requirement and is structured around the priorities of the Department of Health and Human Services and our state health improvement plan, **Healthy North Carolina 2020**.

NC Department of Health and Human Services' (DHHS) Priorities

DHHS Secretary Mandy Cohen has outlined the following near-term priority areas for DHHS cross division work. DHHS divisions work to integrate existing programs to leverage resources to support these 4 priority areas and to engage non-governmental entities in North Carolina in this work.

Healthy Opportunities

All North Carolinians should have the opportunity for health. That opportunity begins where people live, learn, work and play; it begins with our families, neighborhoods and communities.

Health begins long before we need medical care, but our healthcare system is not designed to address the primary drivers of health. Currently, 90 percent of health care spending in the United States is on medical care. While access to high-quality medical services is crucial to health, research shows that up to 80 percent of a person's overall health is driven by other social and environmental factors and the behavior influenced by them— known as "social determinants of health", or SDOH.

To meet our mission, we must look beyond what is typically thought of as "healthcare" and invest more efficiently and strategically in health. Conditions such as food insecurity, housing instability, unmet transportation needs, and interpersonal violence not only have a deep impact on a person's health, safety and well-being, but also on healthcare utilization and costs.

In North Carolina, people grapple with the impact of unmet health-related social needs every day.

- More than 1.2 million North Carolinians cannot find affordable housing and one in 28 of our state's children under age 6 are homeless.
- North Carolina has the 8th highest rate of food insecurity in the United States, with more than one in five children living in a food insecure household.
- In some North Carolina counties, one in three children live in food insecure households.
- Forty-seven percent of North Carolina women have experienced intimate partner violence.
- Nearly a quarter of North Carolina children have experienced adverse childhood experiences (ACEs), including physical, sexual or emotional abuse or household dysfunction, like living with someone struggling with a substance use disorder.

Strategic interventions and investments in these initial core domains of food, housing, transportation and interpersonal safety, in partnership with local community groups and healthcare providers, will help us meet our mission of improving health, safety and well-being

for all North Carolinians. It will also provide short and long-term cost savings and make our healthcare system more efficient.

DHHS is committed to creating a statewide framework and infrastructure that can support the innovation in our private sector and promote opportunities for health for all North Carolinians through a combination of strategies, including:

- Creating an interactive statewide map of SDOH indicators that can guide community investment and prioritize resources.
- Developing a set of standardized screening questions to identify and assist patients with unmet health-related resource needs.
- Building a statewide resource platform to connect those with an identified need to community resources.
- Incorporating SDOH strategies throughout the Medicaid 1115 wavier.
- Developing public-private pilots that knit together health care and community services, with the goal of incorporating evidence-based interventions into the state Medicaid program that address health factors related to SDOH.
- Building an infrastructure to develop and support a Community Health Worker Initiative**.**
- Examining better ways to streamline cross-enrollment in existing key benefit programs.

Early Childhood Health, Wellbeing, and Learning

The foundation for future learning, health and well-being is built during early childhood. As such, early childhood health, well-being, and learning are one of the top priorities of DHHS, and DHHS has been working on creating the foundation of an Early Childhood Action Plan since October 2017. On August 28, 2018, DHHS was directed in an Executive Order by Governor Roy Cooper to complete a draft of an Early Childhood Action Plan supporting children ages 0 – 8 across NC in collaboration with the Early Childhood Advisory Council by November 1, 2018.

Guiding Principles

- Brain and developmental science serve as the foundation for the Action Plan.
- Children and families are at the center of our work.
- Our Action Plan builds upon existing strengths and partnerships.
- Our goals for North Carolina's young children are ambitious and achievable.
- Our focus is on all of North Carolina's children reaching their full potential, recognizing that we must be intentional in order to eliminate disparities.
- Our Action Plan reflects our values of transparency, good stewardship, and accountability.

Vision

All North Carolina children get a healthy start and develop to their full potential in safe and nurturing families, schools and communities. By 2025, all North Carolina young children from birth to age eight will be:

- ***Healthy***: Children are healthy at birth and thrive in environments that support their optimal health and well-being
- ***Safe and Nurtured***: Children grow confident, resilient and independent in safe, stable and nurturing families, schools and communities
- ***Learning and Ready to Succeed***: Children experience the conditions they need to build strong brain architecture and school readiness skills that support their success in school and life

Early Childhood Action Plan 2025 Goals

Healthy: Children are healthy at birth and thrive in environments that support their optimal health and well-being

Goal #1: Infant Mortality

By 2025, decrease the statewide infant mortality rate from 7.2 to 5.9 deaths per 1,000 live births. Priority populations are Black or African-American, non-Hispanic women, American Indian, non-Hispanic women, Women in Perinatal Health Region V (Southeastern region) and VI (Eastern region)

Goal #2: Healthy Birth Weight

By 2025, decrease the percentage of North Carolina infants born at a low birth weight from 9.2% to 8.2%. Priority populations are Black or African-American, non-Hispanic women, American Indian, non-Hispanic women, Women in Perinatal Health Region V (Southeastern region)

Goal #3: Access to Preventive Health Services

By 2025, increase the annual percentage of North Carolina's young children enrolled in Medicaid who receive regular well-child visits

- For children ages 0 – 15 months, increase from 61.9% to 68.7%.
- For children ages 3 – 6 years, increase from 69.3% to 78.5%

Goal #4: Food Insecurity

By 2025, decrease the percentage of children living across North Carolina in food insecure homes from 20.9% to 17.5%

Safe and Nurtured: Children grow confident, resilient and independent in safe, stable and nurturing families, schools and communities

Goal #5: Child Abuse and Neglect

By 2025, decrease the rate of children in North Carolina who are victims of maltreatment

- For children ages 0 – 3, reduce from 20.12 to 18.11 per 1,000 children
- For children ages 0 – 5, reduce from 18.23 to 16.41 per 1,000 children

Goal #6: Time to Permanency for Children in Foster Care

Part 1 - By 2025, decrease by 10% the number of days it takes for children in the foster care system to be either reunified with their family, placed under guardianship, or another adult is given custody

- For children aged 0 – 3, decrease the median number of days from 371 to 334
- For children aged 0 – 5, decrease the median number of days from 372 days to 335 days

Part 2 - By 2025, decrease by 10% the number of days it takes for a child in the foster care system to be placed into adoption

- For children aged 0 – 3, decrease the median number of days from 822 to 740
- For children aged 0 – 5, decrease the median number of days from 853 to 768

Goal #7: Social Emotional Well-Being and Resilience

*By 2025, increase measures of social and emotional well-being and resilience of young children by ____%**

*In Data Development: DHHS is seeking recommendations on reliable and accurate data sources available to track progress toward this goal, and additional ongoing metrics.

Learning and Ready to Succeed: Children experience the conditions they need to build strong brain architecture and school readiness skills that support their success in school and life

Goal #8: Early Development
By 2025, increase the percentage of children across North Carolina who demonstrate on track developmental skills*

Goal #9: Kindergarten Readiness
By 2025, increase the percentage of children across North Carolina who enter kindergarten developmentally on track, according to the Kindergarten Entry Assessment*

Goal #10: Third Grade Reading Proficiency
By 2025, increase the percentage of children achieving reading proficiency across the state from 58% to 64% according to NC DPI Performance Data on third grade reading EOGs, and from 39% to 43% according to the fourth grade National Assessment of Education Progress. Priority populations are Black or African-American, non-Hispanic children, American Indian, non-Hispanic children, Hispanic children

Medicaid Transformation

DHHS is dedicated to improving the health and well-being of all North Carolinians. In support of this goal, the Medicaid and NC Health Choice programs will transition to Medicaid Managed Care in 2019, as directed by the North Carolina General Assembly, with state and federal approvals. This is the most significant change to the NC Medicaid program in over 40 years.

Vision for North Carolina's Medicaid Managed Care Program

- North Carolina is transitioning its Medicaid and NC Health Choice programs' care delivery system for most beneficiaries and services from a predominately Medicaid Fee-for-Service model to a Medicaid Managed Care model, as directed by the North Carolina General Assembly. Through Medicaid Managed Care, the Department seeks to advance integrated and high-value care, improve population health, engage and support providers, and establish a sustainable program with more predictable costs.
- The Department's goal is to improve the health of all North Carolinians through an innovative, whole-person centered, and well-coordinated system of care, which purchases health while addressing both medical and non-medical drivers of health.

Background and Timeline on North Carolina's Medicaid Transformation

- In September 2015, the North Carolina General Assembly (General Assembly) enacted North Carolina Session Law 2015-245, directing the transition of North Carolina's Medicaid program from a predominantly Fee-for-Service model to a predominantly Medicaid Managed Care model. North Carolina State law requires DHHS, through the Division of Health Benefits (DHB), to implement a Medicaid Managed Care program.
- As directed by the General Assembly, the Department will delegate direct management of physical health, behavioral health and pharmacy services, and financial risks to Prepaid Health Plans (PHPs). PHPs will receive a monthly, actuarially sound, capitated payment and will contract with providers to deliver health services to their Members. The Department will monitor and oversee the administrative, operational, clinical, and financial function of the PHPs to ensure adherence to the PHP's contract and the Department's expectations.

*In Data Development: DHHS is seeking recommendations on reliable and accurate data sources available to track progress toward this goal, and additional ongoing metrics. *In Data Development: Kindergarten Entry Assessment (KEA) data is collected statewide by the Department of Public Instruction (DPI). The assessment process includes five domains for child

development: approaches to learning, language development and communication, cognitive development, emotional and social development, and health and physical development. DPI is in the process of developing state and county level reporting on this assessment.

- On June 1, 2016, the original Section 1115 demonstration waiver was submitted to the Centers for Medicare & Medicaid Services (CMS). On Nov. 20, 2017, DHHS submitted an amendment to the Section 1115 demonstration waiver application to CMS. The amended waiver was the result of collaboration among DHHS, beneficiaries and their families, advocates, health care providers, health plans and associations, lawmakers and other stakeholders throughout North Carolina.
- On August 9, 2018, a Request for Proposals was released. Through this Request for Proposal (RFP), the DHHS seeks experienced Medicaid Managed Care partners in the form of PHPs to support the goals of Medicaid Managed Care. Those goals are:
  - Delivering **whole-person care** through the coordination of health, behavioral health, addressing unmet health-related resource needs and intellectual/developmental disabilities care models with the goal of improved health outcomes and more efficient and effective use of resources;
  - Utilizing cost-effective resources and uniting communities and health care systems to **address the full set of factors that impact health;**
  - Performing **localized care management** at the site of care, in the home or in the community where face-to-face interaction is possible to build on the strengths of North Carolina's care management infrastructure;
  - Streamlining the Medicaid Managed Care **Member experience** with a simple, timely, and user-friendly eligibility and enrollment process focused on Member service and education;
  - Maintaining broad **provider participation** by removing or mitigating provider administrative burden from the system; and
  - Supporting the Department's overall vision of creating a **healthier North Carolina**.
- Beginning with the launch of Medicaid Managed Care, most North Carolina Medicaid and NC Health Choice populations will be mandatorily enrolled in PHPs. There will be limited exceptions to mandatory enrollment for certain populations that may be better served outside of Medicaid Managed Care. There will be a phased in approach with Phase 1 of Medicaid Managed Care scheduled to begin on November 1, 2019 and Phase 2 scheduled to begin on February 1, 2020.

More detailed information on Medicaid Transformation is available at https://www.ncdhhs.gov/medicaid-transformation

Opioid Epidemic

A ***North Carolina Opioid Action Plan*** targets specific, tangible, achievable steps in seven strategic areas that will have the greatest impact on reducing the burden of death from the state's opioid epidemic. Highlights of work under the Action Plan this year to address the opioid epidemic include:

- The Controlled Substances Reporting System is interoperable with 15 states including all neighboring states.
- A Payers Council was established to convene all health plans operating in NC to coordinate opioid safety strategies.
- Medicaid opioid prescriptions decreased 25%.

- The NC Industrial Commission Opioid Task Force established rules that went into effect May 1, 2018 that follow CDC's opioid prescribing guidelines.
- Two media campaigns on opioid safety were launched state-wide in digital and TV markets.
- 40,000 Naloxone Kits were distributed for take home use by EMS and other partners.
- More than 5,700 patients were provided Substance Use Disorder treatment or recovery supports in the first year of the DHHS NC CURES grant.
- Six hospitals were awarded Emergency Department Peer Support grants by the NC Healthcare Association.
- Twelve community groups were awarded funding to support strategies under the Action Plan.
- The NC Opioid Dashboard (**https://injuryfreenc.shinyapps.io/OpioidActionPlan**) was launched to track key indicators under the Action Plan across the state and in each county.
- DHHS staff and academic researchers from universities across the state met to establish an opioid research agenda.

Healthy North Carolina 2020: The State's Health Improvement Plan

According to the 2017 edition of *America's Health Rankings*, North Carolina ranked No. 33 in the nation.[1]

Based on the latest *America's Health Rankings* report (2017), North Carolina's challenges are a high infant mortality rate, high percentage of uninsured population, and high incidence of chlamydia. Our state's high immunization coverage among children, low occupational fatality rate, and low prevalence of excessive drinking are noted as strengths.[2]

The burden of premature morbidity and mortality reflected in our ranking highlights the need for improvements in population health. More than two-thirds of all deaths annually in North Carolina are attributed to chronic diseases and injuries.[3] The North Carolina State Center for Health Statistics has listed the top five causes of death in 2016 as cancer, heart disease, chronic lung disease, stroke and Alzheimer's disease.[4]

The burden of diseases related to modifiable behaviors in our state has been high.

- According to estimates from the Institute for Health Metrics and Evaluation, North Carolinians lost 364,227 years of healthy life (disability adjusted life years) due to dietary risk factors in 2016; 84,267 of those lost years were attributable to low fruit consumption; and 54,080 were attributable to low vegetable consumption. North Carolinians lost 47,349 years of healthy life in 2016 due to low physical activity. [5]
- North Carolina's estimated annual costs from smoking are $8.05 billion. This includes direct medical costs from smoking at $3.81 billion each year (of which $931 million are Medicaid costs) and $4.24 billion in lost productivity.[6,7]

- In 2016, stroke accounted for $1.3 billion of inpatient hospitalization charges, with an average charge per case of $44,485. In 2017, North Carolina Medicaid had $383 million in total charges where the principal diagnosis was stroke. (Source: The Burden of Cardiovascular Disease in North Carolina (April 2018)

A practical approach to address North Carolina's health care challenges has been to attempt to prevent these problems from occurring in the first place. This statewide focus on prevention has been reflected in work by North Carolina's public health leaders, who began in 2008 to develop a vision and roadmap for focusing and improving public health efforts. Investing in prevention has been determined to save lives, reduce disability, and, in some cases, reduce health care costs as stated in the ***Prevention Action Plan for North Carolina***.[8]

The ***Prevention Action Plan for North Carolina*** **(2009)** also recognized evidence-based strategies as an important mechanism to improve population health. North Carolina used this prevention framework to establish our state's **Healthy North Carolina 2020 (Healthy NC 2020)** objectives, the most recent iteration of decennial health objectives our state has set beginning in 1990. The primary aim of this objective-setting process is to mobilize the state to achieve a common set of health objectives. Healthy People 2020 (www.healthypeople.gov) is a federal initiative with science-based, 10-year national objectives for improving the health of all Americans. **Healthy NC 2020** is this state's health improvement plan, which contains state-specific and measurable objectives that were developed with the best available data and evidence. North Carolina's objectives are well aligned with federal objectives, though they were developed separately. They also support each of the department's chief priorities.

Healthy North Carolina 2020: A Better State of Health **(2011)** identified 40 objectives necessary to improve population health by 2020 and recommended the use of evidence-based strategies.[9] **Healthy NC 2020** was designed to address and improve our state's most pressing health priorities. These objectives provided a common set of health indicators that organizations and individuals across the state can work together to improve, knowing their efforts are designed to lead to a healthier population. Each **Healthy NC 2020** objective included a discrete, quantifiable target that has enabled us to monitor progress toward achieving our goals. Appendix A provides a list of the 40 objectives, our state's baseline, targets and most current measures, as well as national measures for comparison (when available and applicable).

Steps Taken by State and Non-State Entities to Meet Healthy NC 2020 Goals

The mission of the North Carolina Department of Health and Human Services is to promote and contribute to the highest possible level of health for all North Carolinians. North Carolina's public health system is an integrated network of partnerships among DPH and the state's 84 local health departments, as well as other divisions in DHHS, other state agencies, universities and non-governmental entities. DPH programs and services touch citizens' lives in all 100 counties. Improving the health of our citizens requires a coordinated approach with ownership by and

accountability from governmental and non-governmental entities as well as individuals themselves.

Local health departments and their community health partners complete health assessments every three or four years and develop local community health improvement plans to address the health needs of their citizens. Review of the most current community health assessments and improvement plans for local health departments indicated a core of **Healthy NC 2020** objectives has been selected by most local health departments as their most pressing health problems.

All DPH's programs and services have supported improvements in health as measured by the 40 **Healthy NC 2020** objectives. The following is a representative, though not exhaustive, summary of programs and services addressing some of the **Healthy NC 2020** objectives most frequently selected by local communities as their most pressing health issues. Appendix B provides disaggregated data by county, when available, for selected **Healthy NC 2020** objectives.

Tobacco Use
Healthy NC 2020 Objectives

- *Decrease the percentage of adults who are current smokers*
- *Decrease the percentage of high school students reporting current use of any tobacco product*
- *Decrease the percentage of people exposed to secondhand smoke in the workplace in the past seven days*

Tobacco use remains the number one preventable cause of early death and disease (480,000 deaths each year, or one in five deaths) in the United States.[10] The 2014 Surgeon General's Report documents that for each death, there are 30 more people who are sick or disabled because of tobacco use. The Centers for Disease Control and Prevention (CDC) indicates that while U.S. adult cigarette smoking has declined, the use of emerging tobacco products (such as electronic cigarettes, hookahs and flavored little cigars) has increased.[11]

Tobacco use among North Carolina's youth has remained a major concern. North Carolina's high school smoking rate decreased from 27.3 percent in 2003 to 8.9 percent in 2017.[12] However, progress has been confounded by the growing popularity of new and emerging tobacco products such as electronic cigarettes, flavored cigars and hookahs. While tobacco use among middle and high school students was declining since 2003, we have seen that trend reversed, largely due to these new and emerging tobacco products.

- E-cigarette use among high school students has increased by 894 percent, from 1.7 percent (2011) to 16.9 percent (2017).[12]
- Use of any new tobacco product among high school students, including electronic cigarettes, hookah, and flavored little cigars, rose 31 percent between 2011 and 2017.[12]

Electronic cigarettes such as JUULs and similar vape pens with their high nicotine content, attractive flavorings and high-tech designs are becoming increasingly common in high schools and middle schools across the state and the nation. The use of e-cigarettes by young people is very concerning. Nicotine exposure during adolescence and young adulthood can lead to nicotine addiction and it harms brain development. Increasingly, young people who start using e-cigarettes also use combustible tobacco products. The 2017 NC Youth Tobacco Survey results show:

- E-cigarettes have been the tobacco product most frequently used by North Carolina middle and high school students since 2015.[12]
- 23.3 percent of high school students said they were considering using the products in the coming year.[12]
- For Health Advisories and other information about the risk of e-cigarettes, go to the Tobacco Prevention and Control Branch webpage on e-cigarettes.[13]
- The Department of Public Instruction and the Division of Public Health have been working together to educate school personnel about how to address the problem of e-cigarette use among middle and high school students.[14]

The 2014 Surgeon General's Report "The Health Consequences of Smoking: 50 Years of Progress" has provided continued strong evidence for the health risks associated with exposure to tobacco smoke, including its causal association with cancer and heart disease as well as new evidence that secondhand smoke is causative for stroke. Secondhand smoke causes premature death and disease in children and adults who do not smoke, and there is no risk-free level of exposure to secondhand smoke.[15]

Workers in N.C. restaurants and bars have been protected by a state smoke-free law since 2010, and many government workers have been protected from secondhand smoke under local action. Private worksites are not smoke-free by law; and according to Current Population Survey data for 2014-15, 81.21% of North Carolinians work in a smoke-free workplace, which is up from 68.57% in 2006-7. Those who work in blue collar jobs with lower incomes and are African Americans are more likely to have been exposed to secondhand smoke.[16,17]

The **DPH Tobacco Prevention and Control Branch** works with organizations and communities to build support for evidence-based policies and programs.

- **QuitlineNC** is an evidence-based integrated telephone tobacco treatment program at 1-800-QUIT-NOW (1-800-784-8669). According to the latest 2017 report by University of North Carolina's Tobacco Prevention and Evaluation Program, there were 22,984 registered callers to QuitlineNC, coming from every county in NC. While most callers accessed QuitlineNC as a direct call, a substantial number were connected by a fax referral from a health care provider from 263 healthcare facilities statewide, including at least 12 behavioral health facilities. QuitlineNC callers in FY 16 achieved a 30-day conventional tobacco quit rate between 17.9% and 36%, with the lower percentage assuming that those

who did not respond to a 6-month follow-up telephone survey continue to smoke.[18] In FY18-19, two quit rates will be tracked: one for "conventional tobacco use" (e.g. cigarettes, cigars, pipes and smokeless tobacco) and one for those who quit all tobacco products – both conventional tobacco products and e-cigarette use.

- **Smoke-free and tobacco-free places, including places free of e-cigarette aerosol** have become increasingly the norm. Local smoke-free and tobacco-free places are a public health priority in NC. They have a triple health impact, as they: 1) eliminate exposure to secondhand smoke; 2) help tobacco users quit and stay quit; and 3) keep young people from starting to use tobacco products by setting a healthy social norm. In addition, they eliminate litter in communities, parks and beaches.
    - **Local governments** have the authority to ban smoking and tobacco use, including e-cigarettes, in government buildings, on government grounds and indoor public places. An interactive map of such regulations in North Carolina can be found at the NC Tobacco Prevention and Control Branch website.[19]
    - **Colleges and Community Colleges** have increasingly gone 100 percent tobacco-free. The Tobacco Prevention and Control Branch maintains updated lists of tobacco-free colleges on the Tobacco Free Colleges NC website.[20]

♦ **North Carolina's multi-unit housing properties** have increasingly gone smoke-free to protect health and property and save money.

- North Carolina became the second state in the nation to require smoke-free policies for multi-unit housing properties receiving tax credit funding.
    - The U.S. Department of Housing and Urban Development's rule for smoke-free public housing went into effect July 30, 2018; this rule requires all public housing to be smoke-free indoors and within 25 feet of the building, including balconies and patios.[21]
    - The **Greater Charlotte Apartment Association** launched a Smoke-Free Apartment Certification Program in April 2017. As of August 2018, 48 apartment complexes are members, stating "Clean Air is an Amenity to Brag About". A summary along with the link to the Application can be found at www.greatercaa.org/?page=38.
    - If clinicians and their patients need assistance for smoke-free multi-unit housing, they can go to: www.smokefreehousingnc.com.

♦ The **N.C. DHHS** and **partners** have sponsored **Breathe Easy NC Coalition**, a statewide initiative to reduce tobacco use among behavioral health consumers and staff. Information about the Coalition can be found at http://breatheeasync.org.

♦ **DPH's Children and Youth Branch Maternal, Infant and Early Childhood Home Visiting (MIECHV) Program** has made progress on the Healthy NC 2020 objectives for tobacco use by implementing federally-funded, evidence-based home visiting **(Nurse-**

Family Partnership and Healthy Families America) in 13 counties in North Carolina: Buncombe, Burke, Columbus, Durham, Edgecombe, Gaston, Halifax, Hertford, Mitchell, Nash, Northampton, Robeson and Yancey. Data for the most recent reporting period (FY 2016-2017) indicate that 55 percent of pregnant women using tobacco at program enrollment reduced their use of tobacco during pregnancy.[22]

- The **Children and Youth Branch School Health Nursing Program** has reported that **school nurses** have provided educational programs on tobacco and substance abuse health counseling, which includes tobacco and electronic cigarette use. In addition, school nurses have served on the **School Health Advisory Committees** of their school districts and have provided support for keeping schools smoke and tobacco free.

- The **S**FY2018-19 state budget included $300,000 in recurring funding to **DHHS' Division of Mental Health, Developmental Disabilities and Substance Abuse Services (DMH/DD/SAS)** for education and enforcement efforts (to help ensure retailer education and compliance regarding youth access to tobacco products) in coordination with the **N.C. Alcohol Law Enforcement (ALE) Branch**.

What Medical Providers Can Do

- Advise all tobacco users to quit in clear, personalized terms. Provide **standard-of-care tobacco treatment**. For adult tobacco users that are not pregnant, this includes at least 4 counseling sessions and either varenicline or combination nicotine replacement therapy (nicotine patch + immediate release nicotine) for at least 12 weeks.
- To learn more about how to integrate standard of care tobacco treatment for your health system, attend the **Duke-UNC Certified Tobacco Treatment Training** or invite this training into your community/health care system by recruiting about 50 licensed health care providers who want to incorporate evidence-based tobacco treatment into your clinic protocols.
- Promote clinical referrals to **QuitlineNC** (1-800-QuitNow or 1-800-784-8669) through fax referral, secured email or an electronic health records system for tobacco users who want to quit.

- Educate patients and the public about the known health risks of secondhand and thirdhand smoke and promote tobacco-free communities, workplaces and home settings. Speak to your local Board of Health/City Council/County Commissioners about the benefits of smoke-free/tobacco free communities for your patients.
- Educate young people, parents, patients and the public about the known health risks for electronic cigarettes and secondhand aerosol. Health Provider Conversation Cards and Parent Tip Sheets are available on the Surgeon General's website at: https://e-cigarettes.surgeongeneral.gov/resources.html.

Physical Activity and Nutrition Healthy NC 2020 Objectives

- *Increase the percentage of high school students who are neither overweight nor obese*
- *Increase the percentage of adults meeting CDC Aerobic Recommendations*

- The **DPH Community and Clinical Connections for Prevention and Health Branch's (CCCPH)** programs have helped to make communities, worksites and schools healthier places to live, earn and learn. These services have encouraged changes to policies and environments to help community members eat smart, move more and achieve a healthy weight. The following are examples of efforts undertaken in our state.
  - Walking has been increased in select communities through the support of wayfinding signage that directs pedestrians to points of interest and community service.
  - Partners across North Carolina have worked with small food store owners to make healthy food more accessible to all residents. Supportive nutrition environments and quality physical education and physical activity in schools have been created.
  - Workplace policies to encourage employees to be more active and to eat healthy have been created.
- DPH has undertaken these activities with many state and local public health partners including the **N.C. Departments of Natural and Cultural Resources, Transportation, Commerce, Agriculture and Public Instruction**; **Extension at N.C. State University**; universities; local school districts and nonprofit organizations.
- To integrate the health needs of youth and adults with disabilities, the **N.C. Office on Disability and Health** in the **DPH's Children and Youth Branch** has worked with state and local public health partners to increase the accessibility of farmers' markets, open space and other health promotion environments.
- Through the **School Nursing Program** of the **Children and Youth Branch**, school nurses have provided health educational programs on physical activity and nutrition, including bone health, weight control and eating disorders. School nurses have created

individualized health plans of care for students needing nursing interventions for eating disorders or obesity. These plans have been created in consultation with physicians, parents, students and school staff and provide specific interventions that are carried out with individual students during the school year.

- **School nurses** have provided health counseling for students with nutrition-based issues (more than 673 nutrition health counseling sessions were provided to individual students in school year 2016–2017). In addition, school nurses have provided nursing case management for students with weight issues and, as a result, during school year 2016–2017, 58 percent of students participating in case management had an improvement in their BMI, 61 percent improved their grades, 92 percent demonstrated improved knowledge of nutrition and 86 percent increased daily physical activity.[23]

What Medical Providers Can Do

- Promote healthy eating to all patients and stress the importance of consistent exercise and daily physical activity.

Injury and Violence
Healthy NC 2020 Objectives

- *Reduce the unintentional poisoning mortality rate (per 100,000 population)*
- *Reduce the unintentional falls mortality rate (per 100,000 population)*

Injury and violence are the leading causes of death for those aged 1–64 years old and remain leading causes of preventable death in the United States.[24] If aggregated together, injury and violence would rank as the third-leading cause of death for North Carolinians in 2015.[24] Unintentional poisoning (which includes opioid overdose) became the leading cause of injury death in North Carolina during 2015 followed by unintentional motor vehicle crashes, fall injuries, firearm suicide and firearm assaults.

- The **DPH Injury and Violence Prevention Branch** held a class of the **Injury Free NC Academy** on shared risk and protective factors to prevent intentional injuries. The academy was funded through a five-year collaborative agreement by CDC's Core State Violence and Injury Prevention Program.

Unintentional Poisoning

According to the CDC, more people died from drug overdoses in 2016 than in any other year and in 2016 the number of opioid overdose deaths was 5 times higher than in 1999.[25] In 2016, for every unintentional poisoning death among North Carolinians,[26] there were over 4 hospitalizations[27] and 15 emergency department visits.[28] Unintentional medication and drug

poisoning deaths increased 36 percent from 2015 to 2016 among North Carolina residents,[29] and unintentional opioid-related deaths have increased over 130 percent from 2006 to 2016.[30]

The **Injury and Violence Prevention Branch** has worked with various organizations and communities to build support for and implement evidence-based policies and programs to prevent drug poisonings including opioid overdose.

- The Branch has supported the adoption and implementation of, and clarifications to, the **N.C. 911 Good Samaritan/Naloxone Access Laws** that provide limited immunity from prosecution for reporting drug and alcohol overdoses and provide increased access to naloxone—an antidote for opioid overdose. Increasing community access to naloxone enables those most likely to witness an overdose access to the tools and skills to potentially save a life in the event of an opioid overdose.
    - The Branch has advocated for and has facilitated passage of legislation enabling the State Health Director to sign a statewide standing order for naloxone, which has increased the public's ability to access naloxone through pharmacies. Since the law was passed in June 2016, 1,688 **pharmacies** have signed on to dispense naloxone under the State Health Director's standing order. A resource website (www.naloxonesaves.org) was launched in collaboration with the **UNC Injury Prevention Research Center** to provide resource information for pharmacies and the public on naloxone and where to find a pharmacy selling naloxone.
    - Currently 247 **law enforcement agencies** covering 90 counties in North Carolina carry naloxone and have been trained to respond, reporting over 1,304 overdose reversals.
    - **Community** education, training and distribution of naloxone has been supported by the Branch. Since August 2013, this effort has resulted in over 11,000 overdose reversals being reported.
- The Branch has a contract with the **N.C. Healthcare Association** to convene health system leaders to establish health system practices on appropriate opioid prescribing, including efforts to: ensure clinical education and oversight of appropriate prescribing practices; promote CDC and the **N.C. Medical Board's** safer prescribing guidelines; assess health system **Prescription Drug Monitoring Program** registration and use policies; establish a voluntary **Opioid Stewardship Program;** identify barriers to implementing health system safe opioid practices and policies; and assist with communication to reduce overdoses.
- The **N.C. Opioid and Prescription Drug Abuse Advisory Committee (OPDAAC)** is the legislatively mandated group to coordinate the state response to the opioid epidemic. OPDAAC meets quarterly and has participation from representatives from public health, mental health, healthcare systems, law enforcement, regulatory boards, professional societies, local health departments, community coalitions and others. Through OPDAAC, partners plan, implement and evaluate comprehensive strategies to prevent drug overdose

and treat opioid use disorders. Over 450 agencies, organizations and individuals participate in OPDAAC work.

- **Syringe exchanges** were legalized in North Carolina in July 2016. Highlights from the first annual report of the first year of the Safe Syringe Initiative include: 3,983 participants, 1,154,420 syringes distributed, 5,682 naloxone kits distributed, 2,187 overdose reversals reported, 3,787 referrals to treatment, and 2,599 HIV tests administered. Resources on the Safe Syringe Initiative and the annual report are posted at www.ncdhhs.gov/divisions/public-health/north-carolina-safer-syringe-initiative). There are currently 30 exchanges in the state operating in 34 counties.

What Medical Providers Can Do

- Adhere to N.C. Board of Medicine and CDC prescribing guidelines for opioid prescribing and the treatment of chronic pain.
- Register and actively use the N.C. Controlled Substances Reporting System.
- Educate patients on the risks and benefits of analgesic opioids and on the availability of non-medication treatment alternatives when appropriate.
- Consider co-prescribing naloxone when prescribing high dose (>90 morphine milligram equivalents, or MME) analgesics.
- Clinicians should avoid prescribing opioid pain medication and benzodiazepines concurrently whenever possible.
- When starting opioid therapy for chronic pain, clinicians should prescribe immediate-release opioids instead of extended-release/long-acting (ER/LA) opioids.
- Clinicians should consider opioid therapy only if expected benefits for both pain and function are anticipated to outweigh risks to the patient. If opioids are used, they should be combined with nonpharmacologic therapy and nonopioid pharmacologic therapy, as appropriate.
- Before starting opioid therapy for chronic pain, clinicians should establish treatment goals with all patients, including realistic goals for pain and function, and should consider how opioid therapy will be discontinued if benefits do not outweigh risks. Clinicians should continue opioid therapy only if there is clinically meaningful improvement in pain and function that outweighs risks to patient safety.
- Educate patients and family members about the statewide standing order for naloxone.
- Screen pregnant women for substance abuse utilizing evidence-based screening questions and refer for services as appropriate. For treatment information for pregnant and parenting women, contact the NC Perinatal Substance Use Specialist at 1-800-688-4232.
- Screen patients' risk of addiction and refer to addiction treatment services when needed.

Unintentional Falls

In 2016, North Carolinians age 65 and older experienced 1,054 deaths, 26,719 hospitalizations and 75,836 Emergency Department visits due to unintentional falls.[31] More than one out of four senior citizens fall every year, and adults who fall once are two times more likely to fall again, thereby increasing their risk of injury and death.[32]

The **DPH Injury and Violence Prevention Branch** has participated in and supports initiatives to prevent the incidence of fall injuries. Such efforts have included:

- Staffed the **North Carolina Falls Prevention Coalition**, a collaboration that supports the dissemination and implementation of evidence-based programming to support healthy aging and prevent falls across North Carolina.
- Helped maintain the **Falls Prevention Hub** (http://healthyagingnc.com), a centralized point of entry online for falls and falls-risk activities and programs.

What Medical Providers Can Do

- Screen patients for fall risk and history.
- Review patients' medications for increased risk of falling.
- Encourage strength and balance training and physical activity to increase stability and endurance.
- Evaluate patients' vision and make referrals as necessary.
- Educate patients on strategies and resources to make home environments safer and reduce fall hazards.

Maternal and Infant Health
Healthy NC 2020 Objectives

- *Reduce the infant mortality racial disparity between whites and African Americans*
- *Reduce the infant mortality rate (per 1,000 live births)*
- *Reduce the percentage of women who smoke during pregnancy*

DHHS released its collaborative **North Carolina Perinatal Health Strategic Plan** in March 2016 following a cooperative process to develop the plan in 2014 and 2015. This process used to develop this plan included statewide private and public partners who were focused on addressing the health of families of reproductive age. The **Perinatal Health Strategic Plan Team** continues to meet bi-monthly to assess gaps and move forward the plans implementation.

The following are **DPH programs** that have addressed maternal health, infant mortality or infant and child health.

- The **North Carolina Child Fatality Task Force,** a legislative study commission with a director and some members who are affiliated with DPH, has continued its work to promote a package of programs that support healthy birth outcomes and promote wellness in the first year of life. Efforts in 2018 have included advancing legislation that added three conditions to the state's newborn screening panel, requiring a statewide study of maternal and neonatal risk-appropriate care, and advancing funding for a birth certificate project. The Task Force has also supporting funding for perinatal tobacco use prevention and cessation programs. Tobacco use during pregnancy is associated with increased risk of low birth weight, preterm birth and infant mortality,[33] and nearly one in 10 babies in North Carolina are born to women reporting cigarette use during pregnancy.[34]
- A **Child Fatality Prevention System Summit**, planned and executed by a team that included DPH staff as well as other agency and nonprofit leaders, was held in Raleigh on April 9-10, 2018. This event brought together over 200 professionals from across the state who have a relationship to the statewide Child Fatality Prevention System that is designed to prevent child fatalities and child maltreatment. With two-thirds of all child deaths occurring in infants, a major focus of this Summit included the prevention of infant deaths and the promotion of healthy birth outcomes. National experts provided training that specifically addressed reviews of infant deaths and infant fatality prevention efforts.
- **Community Focused Infant Mortality** has provided services for women and their children up to age 2 with a specific focus on African American, American Indian and Hispanic families. Services have included outreach; case management; health education before, during and after pregnancy to improve the chances of a healthy birth; and supportive services for women and their children after delivery. These programs have included **Healthy Start**, **Baby Love Plus** and **Healthy Beginnings** and have been housed in **local health departments** and **community-based organizations** across the state. Additional partners have included **The University of North Carolina at Greensboro** and **The University of North Carolina at Chapel Hill.**
- **Improving Community Outcomes for Maternal and Child Health (ICO4MCH)** has provided services for women and men of childbearing age and children ages birth to 5 with a comprehensive, multi-level initiative to address three aims: 1) improving birth outcomes; 2) reducing infant mortality and 3) improving the health status of children, ages birth to 5. Fourteen counties in North Carolina (Alleghany, Ashe, Avery, Columbus, Cumberland, Durham, Hoke, Mecklenburg, Montgomery, Richmond, Robeson, Union, Watauga and Wilkes) are utilizing evidence-based strategies to address these aims. Evidence-based strategies have included: **Reproductive life planning, Long-Acting Reversible Contraception (LARC), Tobacco Cessation and Counseling, Ten Steps for Successful Breastfeeding, Triple P (Positive Parenting Program), Family Connects**

Newborn Home Visiting Program and **Clinical Efforts to Address Secondhand Smoke Exposure (CEASE).**

- **Maternal Health Services** are provided by local health departments to encourage low-income pregnant women to begin early prenatal care and follow recommended perinatal care guidelines before and after giving birth. State and local public health partners in this effort have included **DHHS' Division of Medical Assistance, East Carolina University, The University of North Carolina at Chapel Hill, private universities** and **hospitals.**
- The **DHHS Division of Public Health**, in partnership with the **Division of Medical Assistance** and **Community Care of North Carolina (CCNC)**, implements the **Pregnancy Medical Home** initiative, inclusive of **Pregnancy Care Management (OBCM)** services. The goal of the Pregnancy Medical Home (PMH) model is to improve the quality of maternity care, improve birth outcomes and reduce costs. A preterm birth prevention initiative, the PMH program seeks to reduce costs because of more babies being born at term or closer to full term, thereby requiring fewer costly healthcare interventions. The model engages **obstetrical providers** as Pregnancy Medical Homes and **local health departments** as providers of OBCM services. Pregnancy Care Management services are provided by nurses and social workers from local public health departments and are embedded in the private provider offices as well as health department maternity clinics to support the medical team and the patient in carrying out the medical care plan and addressing social determinants of health.
- **Maternal Mortality Review (MMR)** legislation became effective December 2015. The nine-member MMR committee has been appointed, and the full review began in September 2016. The committee's work has been driven by recommendations from the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) to reduce maternal mortality in North Carolina and throughout the country by encouraging the establishment of multidisciplinary maternal death reviews, resulting in the development of recommendations for the prevention of future deaths. Reviews have been completed for the 2014 calendar year and will be completed for 2015 in September 2018. A report is being developed to include and overview of the review process and potential recommendations for improvement.
- **DHHS' Division of Social Services (DSS), Division of Public Health (DPH), Division of Mental Health, Developmental Disabilities and Substance Abuse Services (DMH/DD/SAS),** along with the **NC Hospital Association** and other stakeholders, have developed statewide policies and procedures effective August 1, 2017, in response to the Comprehensive Addiction and Recovery Act (CARA) of 2016 that amended provisions of the Child Abuse Prevention and Treatment Act (CAPTA) that are pertinent to infants with prenatal substance exposure. Health care providers involved in the delivery and care of infants affected by substance abuse, withdrawal symptoms, or Fetal Alcohol Spectrum Disorder are required to notify the county child welfare agency upon identification based on DHHS definitions. Child welfare will go through intake procedures, develop a **Plan of**

Safe Care referral to the **Care Coordination for Children (CC4C) program** to provide the infant and family with supportive voluntary services. Safety will continue to be assessed through established procedures with **child welfare agencies**, but not all families will require child welfare intervention. In North Carolina, the intent in developing the required policies and procedures has been to support the infant and mother and to increase access to treatment for all women with substance use disorders and their children (not to penalize the mother or family).

- The **Care Coordination for Children (CC4C)** program is a population health care management program that is a partnership between **Division of Medical Assistance, Division of Public Health** and **Community Care of North Carolina (CCNC).** CC4C serves children, birth to age 5, with certain at-risk conditions, such as adverse life events or toxic stress (including foster care or out of home placement, neonatal exposure to substances or parental substance abuse, maternal depression or parental mental health concerns, domestic violence or abuse/neglect, homelessness), children discharged from the neonatal intensive care unit, or children with special health care needs. The program focuses on connection to the medical home and medical care (when appropriate), barriers to care, social determinants of health, (such as food insecurity and poverty), increasing resiliency and empowerment of the family, specialized assessment and screening to measure the needs and strengths of the family and build upon those identified needs and strengths, and referral and linkage to services.
- **State Genetics and Newborn Screening** and **Newborn Hearing Screening programs** have provided services to infants who are at risk for certain birth defects and genetic conditions. This has included congenital heart disorders, hearing loss, cystic fibrosis, sickle cell, and metabolic and other genetic disorders that put infants at risk for physical, emotional, social and cognitive or developmental disabilities. Genetic and hearing screening, diagnosis and intervention improve the quality of life and decrease infant morbidity and mortality. State and local partners in this effort have included the **State Laboratory of Public Health, public and private hospitals, medical centers, medical specialists, local health departments, midwives** and **private audiologists** across the state.
- The N.C. General Assembly expanded the **DHHS' Newborn Screening program** in 2015 to include screening for Severe Combined Immunodeficiency (SCID), and 2018 legislation expanded testing to include Pompe disease, Mucopolysaccharidosis type 1 (MPS-1) and X-linked Adrenoleukodystrophy (X-ALD). State and local partners in these efforts have included **nonprofit agencies, hospitals** and **universities** across the state.
- The **DPH Children and Youth Branch** has implemented evidence-based family strengthening initiatives including **Nurse-Family Partnership (NFP) home visiting, Healthy Families America home visiting, and Triple P (Positive Parenting Program).** Triple P Online is available to all parents in North Carolina for both young children and

teens. In addition, there are **Parents as Teachers, Child First, Family Connects and Early Head Start Home Based Option** home visiting sites in North Carolina. Contact your local health department or local **Smart Start Partnership** for more information about options in your community.

- The **N.C. Infant-Toddler Program (ITP)** through the **Early Intervention Branch** has provided services and supports for families and their infants and toddlers to age 3 with developmental disabilities or delays and certain established conditions. Services are provided in home and community settings to support the ability of parents and caregivers to help their children grow and develop.
- The **Nutrition Services Branch** has administered the **Special Supplemental Nutrition Program for Women, Infants and Children (WIC)** serving all 100 counties. WIC has been shown to yield better birth outcomes, increase breastfeeding rates, increase key nutrients in the diet, and help ensure adequate growth and development. The North Carolina WIC program transitioned to **Electronic Benefit Transfer** or **eWIC,** with statewide implementation completed in May 2018.
- **DPH and DMH/DD/SAS** partner to support a **Perinatal Substance Use Specialist** whose focus is to ensure that pregnant and parenting women with a substance use disorder have access to substance use services available in our state. This includes statewide provider technical assistance and training; maintenance of a weekly listing of residential services available for pregnant women and women with dependent children; and maintaining an updated database of prevention, intervention, and treatment services.

What Medical Providers Can Do

- Promote assessment, counseling and referral for preconception health issues such as reproductive life planning, health goals and healthy weight.
- Provide **17P treatment (Hydroxyprogesterone Caproate)** to pregnant women who have had a prior preterm birth.
- Screen all pregnant and postpartum women for domestic violence, alcohol and substance use and refer for services as indicated.
- Notify child welfare agency upon identification of an infant affected by substance abuse, withdrawal symptoms or Fetal Alcohol Spectrum Disorder.
- Refer patients to WIC as appropriate.
- Promote breastfeeding through education and support.
- Promote delivery at a minimum of 39 weeks by eliminating early elective deliveries.
- Provide education on safe sleep practices including 1) back-to-sleep, 2) eliminating tobacco exposure, 3) eliminating bed sharing and 4) crib safety.

- Assess, counsel and refer pregnant and postpartum women for tobacco use using the 5 A's Method (ask, advise, assess, assist and arrange).
- Refer high-risk patients to case management and home-based visiting programs.
- Screen all pregnant and postpartum women for domestic violence, alcohol and substance use and refer for services as indicated.
- Call 1-800-688-4232 to reach the Perinatal Substance Use Specialist.

Sexually Transmitted Disease and Unintended Pregnancy Healthy NC 2020 Objective

- *Decrease the percentage of pregnancies that are unintended*
- *Reduce the rate of new HIV infection diagnoses (per 100,000 population)*

Unintended Pregnancy

DPH has addressed unintended pregnancies through the following programs:

- **Teen Pregnancy Prevention Initiatives** have sought to prevent teen pregnancies by implementing evidence-based strategies and providing education and information on how to access health care services to teenagers as well as help current teenage parents prevent another unintended pregnancy. Services have been provided by **local health departments, community-based organizations, universities, schools** and **local social services offices.** Two federal grants are providing important additional funding for high-need, low-resourced communities to provide programs.
- Other Teen Pregnancy Prevention Initiatives partners have been **DHHS' Division of Social Services, SHIFT NC (Sexual Health Initiative for Teens;** formerly the Adolescent Pregnancy Prevention Campaign of North Carolina, or APPCNC**)** and **East Carolina University.**
- **DPH's Family Planning** program has provided family planning services and preventive care to low-income women and men by funding **local health departments**. The aim has been to decrease the number of unintended pregnancies and decrease the health problems associated with unintended pregnancies. State and local public health partners in this effort have included **DHHS' Divisions of Medical Assistance and Social Services** and **local social services offices.**
- **DPH's Women's and Children's Health Section** has continued to partner with **DHHS' Division of Medical Assistance (DMA)** and **Community Care of North Carolina (CCNC)** to prevent unintended pregnancy and has been involved in the **Association of State and Territorial Health Officials (ASTHO) Increasing Access to Contraception Learning Community** to promote the full range of contraception, including long-acting

reversible contraception (LARC). DMA has worked to improve the reimbursement rates for some of the methods and has begun work on immediate postpartum insertion in addition to other ongoing efforts.

- **DPH** and **DMA** have also partnered to join the **Centers for Disease Control and Prevention's (CDC) 6|18 Initiative,** which prioritizes six high-burden health conditions with 18 evidence-based interventions. North Carolina has selected three priority areas, one of which is to prevent unintended pregnancy (along with prevent and control diabetes and reduce tobacco use).
- The **Children and Youth Branch's Maternal, Infant and Early Childhood Home Visiting (MIECHV) Program** provides family strengthening services in 13 counties in North Carolina through **Nurse-Family Partnership** (Buncombe, Columbus, Edgecombe, Gaston, Halifax, Hertford, Nash, Northampton and Robeson) and **Healthy Families America** (Burke, Durham, Mitchell and Yancey) **home visiting programs.** A targeted program outcome has been for women to reduce subsequent pregnancies within one year of a child's birth. The program report for October 2014–September 2015 indicated that 90 percent of women did not become pregnant again within one year of the child's birth. The most recent report for October 2016–September 2017 has indicated that 93 percent of women did not become pregnant again within one year of the child's birth.
- The **DPH Children and Youth Branch's Innovative Approaches: Improving Systems of Care for Children and Youth with Special Health Care Needs** initiative is working to incorporate sexual awareness resources for individuals with developmental disabilities. These efforts address the Healthy People 2020 Goal of reducing the proportion of people with disabilities who report physical or program barriers to local health and wellness programs.

What Medical Providers Can Do

- For teen pregnancy prevention, ensure:
  - Teens are informed of all contraceptive and reproductive health services available, including long acting reversible contraception (LARC), and a referral is provided for any contraceptive or reproductive health services that are not available at the specific health center.
  - Teens' contraceptive and reproductive health needs are assessed at every visit.
  - Promotion of **"Dual-protection"**: using a condom for Sexually Transmitted Infections and HIV prevention, and another effective birth control method for additional pregnancy prevention at the same time.
- For family planning services:

- Provide counseling and education to assure that patients can choose their best contraceptive method for their individual circumstances. Use the tiered approach to contraceptive counseling by presenting the most effective methods before the less effective methods, with shared decision making.
- Ask each family planning patient one question about their reproductive life plan: "**Would you like to become pregnant in the next 12 months?"** Based on the answer, contraceptive options and other important health considerations can then be discussed.

♦ Learn about the availability of home visiting and parenting programs in a patient's community and actively refer families to them.

Sexually Transmitted Disease — HIV Prevention

Significant advances and new recommendations have occurred in both the treatment and prevention of HIV (human immunodeficiency virus) infection in recent years. It is now recommended for all patients to begin medication immediately after diagnosis with the goal of HIV viral suppression, because those who are virally suppressed are extremely unlikely to transmit the virus to others. **Pre-Exposure Prophylaxis (PrEP)** has become a critical prevention tool: giving medication to HIV-negative individuals who are at high risk for HIV acquisition can prevent infection. High-risk individuals include those who have multiple sexual partners, are sharing injection equipment, or are in a sexual relationship with an HIV-positive person who is not virally suppressed.

♦ As of January 1, 2018, the states HIV Control Measures were modernized and updated to reflect current scientific knowledge regarding HIV transmission. Control measures now reflect the overwhelming evidence that individuals with durable HIV viral load suppression cannot sexually transmit the infection. Control measures now state that people who are living with HIV who are in care, adherent to their provider's treatment plan and have been virally suppressed for at least 6 months are no longer legally required to inform future sexual partners of their HIV status or wear condoms with sexual intercourse. This change to the HIV control measures is founded in science and provides a strong incentive for persons living with HIV to remain engaged in care for the protection of their health and that of their intimate partners.

♦ As of December 31, 2016, the number of persons living with HIV in North Carolina was 34,187.[35]

- In 2016, 1,399 new diagnoses of HIV were reported in the adult and adolescent population. This is a slight increase from 2015, where 1,334 persons were newly diagnosed with HIV. [35]

- Young men, and, specifically, young men who have sex with men (MSM) of color, have the highest rates of HIV diagnosis. People between 20 and 29 years old comprised 43 percent of the newly diagnosed population. [35]
- While the rate of new HIV diagnosis is 16 per 100,000 for the state, the estimated rate of HIV for gay, bisexual, and other men who have sex with men (MSM) is 768 per 100,000, and the estimated rate for young MSM (<30 years old) is 1,434 per 100,000. [35]

♦ N.C. DHHS receives HIV viral load information for all persons living with HIV in North Carolina who are receiving laboratory services. These reports enable DHHS to identify patients that may have fallen out of care over time.

- When people have been determined to be out of care, a variety of attempts are made to contact them, return them to care and discuss **PrEP** for their sexual partners.

What Medical Providers Can Do

♦ Review CDC guidelines related to **PrEP** at https://www.cdc.gov/hiv/basics/prep.html.

♦ Provide HIV testing for all patients between the ages of 13–64 at least once regardless of stated risk factors for infection.

♦ Obtain training to provide culturally competent care to MSM and transgender people.

♦ Screen high-risk individuals for HIV infection at least once per year and refer HIV-negative individuals for **PrEP** services.

♦ Refer all persons living with HIV to care.

Substance Abuse
Healthy NC 2020 Objectives

❖ *Reduce the percentage of high school students who had alcohol on one or more of the past 30 days*

❖ *Reduce the percentage of traffic crashes that are alcohol-related*

❖ *Reduce the percentage of individuals aged 12 years and older reporting any illicit drug use in the past 30 days*

♦ The **DPH Forensic Tests for Alcohol Branch** has worked to reduce deaths, injuries and health care costs related to impaired driving in North Carolina.

- The Branch has delivered comprehensive alcohol and drug training for **law enforcement officers** and **court personnel** to improve their ability to detect, apprehend and prosecute impaired drivers.

- The Branch has provided and maintained 406 evidential breath alcohol testing instruments statewide, used in training law enforcement officers and located at 182 stations and seven mobile breath testing sites.
- The Branch has received funding for one new **Breath Alcohol Testing (BAT) Mobile Unit**, upgraded with the latest technology and safety equipment. **BAT Mobile Units** are used at Driving While Impaired (DWI) checking stations to deter impaired driving and promote the belief that DWI enforcement is likely to occur anywhere in the state at any time. A total of seven **BAT coordinators** have worked in assigned regions, participating in checking stations and building relationships and increasing support of the program within the community.
- In addition to participating in checking stations, **BAT coordinators** have continued to provide educational programs for **community groups and schools**, stressing the dangers of drinking and driving.
- Additional state and local public health partners in these efforts have included the **N.C. Department of Public Safety/State Highway Patrol, N.C. Department of Transportation Division of Motor Vehicles/Governors Highway Safety Program, local law enforcement agencies and local health departments** across the state.

- **DPH's Injury and Violence Prevention Branch** has monitored injury and violence trends in the state, including events associated with excessive alcohol use and prescription and drug overdose.
- The **N.C. Department of Transportation** has revised its five-year state highway safety plan. The plan includes updated impaired driving goals. The **Injury and Violence Prevention Branch** has been an active participant in the development of the plan and its impaired driving goals.
- The **North Carolina Controlled Substance Reporting System (CSRS)** transitioned to a new platform in September of 2018. The new system is available at https://northcarolina.pmpaware.net.
- **DPH's Children and Youth Branch** has funded 31 **School Health Centers** which provide primary and preventive medical care for adolescents. Imbedded in this care has been adolescent risk assessments with follow-up counseling and/or referral to reduce the students' risk for health problems caused by underage drinking, smoking, inadequate physical activity, dietary habits and overweight, intentional/unintentional injuries and unsafe reproductive health behaviors.
  - School nurses provide services to children with mental and behavioral health issues and make referrals when indicated, including to **Local Management Entities - Managed Care Organizations (LMEs/MCOs).**
  - The 2016-17 school year survey indicated 1,275 students received direct service from school nurse related to drug abuse.

Additionally, LME/MCOs provide care coordination for Medicaid and uninsured youth transitioning back to school from out of home behavioral health settings. LME/MCOs System of Care coordinators also work with schools to improve student access to behavioral health services.

What Medical Providers Can Do

- Continue in their vital role in assessing patients for alcohol use and encouraging them to drink in moderation and to be safe when drinking.
- Encourage patients to always use front and rear seatbelts in all motor vehicles.
- Help establish and promote safe opioid prescribing guidelines by attending existing training for providers who prescribe controlled substances.
- Encourage and promote registration in and use of the **N.C. Controlled Substance Reporting System (CSRS)**.
- Promote policies in their practices that create a comprehensive overdose prescription model (such as universal CSRS use, knowledge of treatment options and Emergency Department policies).
- Assess patients for overdose risk from all types of medications and drugs.

Mental Health
Healthy NC 2020 Objectives

- *Reduce the suicide rate (per 100,000 population)*
- *Decrease the average number of poor mental health days among adults in the past 30 days*
- *Reduce the rate of mental health-related visits to emergency departments (per 10,000 population)*

In 2015, suicide was the second leading cause of injury death.[36] **DPH's Injury and Violence Prevention Branch** has worked to reduce the rate of suicide in the state. The Branch:

- Developed the **2015 N.C. Suicide Prevention Plan** to empower all North Carolinians with the knowledge of actions they can take to prevent suicide.
- Created the **"It's OK 2 Ask"** campaign and website to promote suicide prevention trainings and crisis resources for youth suicide.
- Gathered comprehensive data on suicide by maintaining the **North Carolina Violent Death Reporting System (NC-VDRS).**

- Co-organized and led a cohort of 10 interdisciplinary teams through **Injury Free N.C. Academy** trainings to increase their capacity to plan, implement and evaluate suicide prevention strategies in their communities.
- Provided guidance to the **N.C. Child Fatality Task Force** that supported proposed mandated suicide awareness education of school staff with direct student contact.

To date, more than 36,370 citizens of North Carolina have been trained in **Mental Health First Aid (MHFA)** and more than 530 MHFA instructors have been trained since fall 2013. North Carolina leads the Southeast in the number of individuals trained and is ranked 7th nationally. The **DHHS' Division of Mental Health, Developmental Disabilities, and Substance Abuse Services (DMH/DD/SAS)** is currently in the planning phase to pilot MHFA for the higher education community and is planning to collaborate with the **N.C. Department of Public Instruction** to train staff within the public schools. The **DPH Children and Youth Branch School Health Unit** has trained a large cadre of **Youth Mental Health First Aid** trainers that now provide services.

What Medical Providers Can Do

- Screen patients for depression and/or other mental illnesses.
- Monitor patients' history and use of alcohol or drugs.
- Ask about family history of suicide or violence.
- Ask about patients' risk of suicide and access to lethal means, then make appropriate referrals when necessary.
- Assess the patient's medications and consequent vulnerability to depression.
- Educate staff, patients and family members about the signs and symptoms of suicide.
- Encourage staff, patients and family members to complete evidence-based suicide awareness education and early intervention training.

Oral Health
Healthy NC 2020 Objectives

- *Increase the percentage of children aged 1–5 years enrolled in Medicaid who received any dental service during the previous 12 months*
- *Decrease the average number of decayed, missing or filled teeth among kindergartners*
- *Decrease the percentage of adults who have had permanent teeth removed due to tooth decay or gum disease*

- **DPH's Oral Health Section (OHS)** has early childhood medical-dental collaborations focused on preventing dental caries and finding dental homes for Medicaid-insured children.
  - **Into the Mouths of Babes** supports **medical providers** offering preventive oral health services. OHS hygienists can train medical providers to offer these reimbursable procedures.
  - **Carolina Dental Home** links **pediatric medical providers** with dental offices able to become dental homes for referred children. OHS hygienists can assist in establishing these medical-dental referral networks.
- The OHS has collaborated with the **DPH Children and Youth Branch School Health Unit**, to provide dental screening for at-risk school age children. When children are found to have dental needs, they are referred for care.
  - With the assistance of **school nurses**, approximately 89 percent of children referred to school nurses for assistance secured dental care. More than 500 students received dental care in 2016-17 because of OHS screening and school nursing following through to assist families in receiving care.[37]
- The OHS has convened a **Perinatal Oral Health Task Force** to address dental needs in North Carolina's pregnant population. In the fall of 2018, the Task Force will launch **Oral Health Care During Pregnancy: North Carolina Collaborative Practice Framework** for primary care and dental providers.
- The OHS has a **Special Care Dentistry program** which focuses on improving the oral health of institutionalized adults to include those with intellectual and developmental disabilities and the frail elderly.

What Medical Providers Can Do

- Encourage your patients to make oral health a priority as it is intimately related to overall health.
- Ask pregnant women and parents about their oral health and the oral health of their children.
- Refer patients needing oral treatment to partnering dentists or dental clinics in your community.

Infectious Disease and Foodborne Illness Healthy NC 2020 Objective

- *Increase the percentage of children aged 19–35 months who receive the recommended vaccines*

Immunizations

- The goal of **DPH's N.C. Immunization Branch (NCIB)** activities has been to reduce and ultimately eliminate vaccine preventable diseases by increasing and maintaining high immunization coverage levels. The NCIB has tracked trends in disease over time, monitored progress towards disease reduction and elimination goals, and served to educate healthcare providers and North Carolinians on appropriate and timely immunization.
- The NCIB works in conjunction with the federal vaccine supply program, called the **Vaccines for Children (VFC) Program**, to provide vaccines free of cost to health care providers across NC.
- The NCIB has collaborated with **immunization partners in the public and private sectors** to promote evidence-based strategies proven reliable to increase immunization coverage levels and decrease morbidity and mortality.
    - The NCIB has conducted provider quality assurance and improvement visits to train and educate **medical providers and their staff** to implement changes to improve immunization coverage in their practices using a continuous quality improvement program known as **AFIX (Assessment, Feedback, Incentive, eXchange)**.
        - **AFIX** serves to assist and support health care providers by identifying low immunization rates and determining opportunities for improving immunization delivery practices.
    - The National Immunization Survey (NIS) conducted by CDC's National Center for Immunization and Respiratory Diseases evaluates vaccine coverage among children 19–35 months who have received the combined seven-dose vaccine series (4:3:1:3*:3:1:4) that is recommended by the **Advisory Committee on Immunization Practices (ACIP).**
    - The most recent NIS national coverage report indicated the national average was 70.7 percent and North Carolina's average was 77.8 percent.[38,39]
    - The role of NCIB has been to oversee quality assurance of all immunization-related activities conducted by providers. Emphasis has been placed on populations at highest risk for under-immunization and disease.
    - **School nurses** have worked with schools, parents and providers to assure that students are compliant with immunization laws and regulations and enter school healthy and ready to learn.
- Immunization information systems (IIS) or registries are confidential, population-based, computerized systems that record and consolidate immunization doses administered by participating providers to individuals residing within a geographic area.
    - The **N.C. Immunization Registry (NCIR)** is a secure, web-based immunization system that serves as a clinical tool at the point of contact for medical providers to

determine appropriate client vaccinations as well as an official certificate of immunization for all ages. The **NCIR** supports the NCIB in vaccine management for ordering, distribution and accountability of federally purchased vaccine.

- By providing complete and accurate information on which to base vaccination decisions, registries have been key tools for increasing and sustaining high vaccination coverage.
- By consolidating vaccination records of children from multiple health-care providers, registries can identify children who are due or overdue for vaccinations, generate reminder recall notices to ensure that children are vaccinated appropriately, and identify provider sites and geographic areas with low or lagging vaccination coverage levels. In addition to these efforts, the **NCIR** has been utilized for continuous assessment of immunization coverage levels and to assist in identifying vulnerable populations to prevent disease routinely and during outbreak situations.
- By 2 years of age, over 20 percent of the children in the United States typically have seen more than one healthcare provider, resulting in scattered paper/electronic medical records.[40]
- The **NCIR** has replaced handwritten charting and electronic health record documentation for many providers administering immunizations in North Carolina. Through the **NCIR**, immunization providers may access recorded immunizations administered in North Carolina, regardless of where the immunizations were given.
- The **NCIR** has promoted vaccine safety in public and private provider offices and streamlines the process of reporting vaccine adverse events when they occur.

♦ **Meaningful Use (MU)** is defined as using certified Electronic Health Records (EHR) technology in a meaningful manner (for example electronic prescribing) and ensuring the certified EHR technology is connected in a manner that provides for the electronic exchange of health information to improve the quality of care of patients.

- The NCIB has worked with **Provider EHR Vendors, Organization's Hubs and the North Carolina Health Information Exchange Authority (HIEA)**, to facilitate MU between the NCIR using web service applications.
- NCIB maintains a Local Implementation Guide to delineate data exchange standards to maintain the quality of IIS data.
- NCIB has onboarded providers through the NC HIEA and directly through the vendor hub to facilitate MU.

What Medical Providers Can Do

- Establish and maintain a practice-wide commitment to communicating effectively about vaccines and maintaining high vaccination rates.
- Follow and keep staff up to date with current Advisory Committee on Immunization Practices (ACIP) recommendations for vaccinating children and adolescents.
- Make a strong recommendation to parents and supplement with vaccine educational materials.
- Maintain complete and up to date patient immunization records and utilize reminder recall systems to decrease missed opportunities.
- Implement systems to evaluate patient vaccination status at each visit.
- Participate in Childhood and Adolescent AFIX visits from the N.C. Immunization Branch.
- Give parents a copy of the immunization record every time you vaccinate.
- Become a NCIR user.

Hepatitis A

- Hepatitis A vaccine has been one of the remarkable success stories of public health. Hepatitis A vaccines were first licensed in 1995, and the number of people for whom vaccine is recommended has gradually expanded since that time. Two doses of hepatitis A vaccine administered at least six months apart are currently recommended as a routine immunization for all children beginning at 12 months of age. Hepatitis A vaccine is also recommended for high-risk groups such as international travelers, men who have sex with men, and illegal drug users.
    - Despite this success, hepatitis A is still a major public health problem. It is one of the most frequently reported infectious diseases nationally and has a major economic impact because of the cost required for identifying contacts and providing Post Exposure Prophylaxis, as well as hospital cost and the time an affected person is unable to work. As of mid-2018, North Carolina is experiencing an outbreak of hepatitis A primarily among men who have sex with men, persons who use drugs, and persons who are experiencing homelessness.
    - Multiple states are investigating outbreaks of hepatitis A that have occurred primarily in persons who are homeless, persons who use drugs, men who have sex with men (MSM) and their close, direct contacts. Since January 2017, nearly 2,500 cases have been reported to the Centers for Disease Control and Prevention (CDC), including at least 826 hospitalizations and 37 deaths. The mode of transmission in these outbreaks is suspected to be person-to-person; no common source has been identified.

- The **DPH Communicable Disease Branch** has addressed these challenges by:
  - Issuing a Program Alert in November 2017 to local health departments
  - Convening a cross-branch workgroup to identify hepatitis A prevention strategies
  - Coordinating additional specimen collection for hepatitis A genotyping in suspect cases
  - Providing guidance to local health departments for implementing outbreak prevention strategies
  - Coordinating efforts with **DHHS' DMH/DD/SAS and Division of State Operated Healthcare Facilities** to identify at-risk individuals and provide hepatitis A vaccine and education.

What Medical Providers Can Do

- Consider hepatitis A as a diagnosis in anyone with jaundice and clinically compatible symptoms.
- Encourage persons who have been exposed recently to Hepatitis A Virus and who have not been vaccinated to be administered one dose of single-antigen hepatitis A vaccine or immune globulin (IG) as soon as possible, within 2 weeks after exposure.
- Consider saving serum samples for additional testing to assist public health officials in the investigation of transmission (confirmation of antibody test, HAV RNA test, genotyping, and sequencing). Contact the public health department for assistance with submitting specimens for molecular characterization.
- Ensure all persons diagnosed with hepatitis A are reported to the health department in a timely manner.
- Encourage hepatitis A vaccination for homeless individuals in areas where hepatitis A outbreaks are occurring.
- Encourage hepatitis A vaccination for persons who report drug use or travel to areas of high endemicity, as well as to other groups recommended by CDC.

Chronic Disease
Healthy NC 2020 Objectives

- *Reduce the cardiovascular disease mortality rate (per 100,000 population)*
- *Decrease the percentage of adults with diabetes*
- *Reduce the colorectal cancer mortality rate (per 100,000 population)*

Cardiovascular Disease

- The **DPH Community and Clinical Connections for Prevention and Health Branch (CCCPH)** has utilized a multipronged approach to address heart disease and stroke that encompasses policy, system and environmental changes. This approach has been guided by several programs including the legislatively appointed **Justus-Warren Heart Disease and Stroke Prevention Task Force (JWTF)** and the **CDC's** funded State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health. The CCCPH has continued to partner with other stakeholders on shared cardiovascular goals and objectives.
- In 2017, the **DPH Community and Clinical Connections for Prevention and Health Branch (CCCPH)** launched a hypertension management program called ***Know It, Control It.***
    - This 16-week program is designed to help people self-monitor their blood pressure and make healthy lifestyle changes to control high blood pressure. Staff trained as blood pressure coaches teach this program using evidence-based strategies to manage cardiovascular disease. These strategies include self-measured blood pressure monitoring with additional support and team-based care.
    - Participants, with the help of the **blood pressure coaches**, use a free online blood pressure tracking tool created by the **American Heart Association (AHA)** called the ***Check, Change, Control*** tracker to log and track their blood pressure readings. Tracking, along with health coaching from a **blood pressure coach**, has been proven to result in better management of blood pressure. The program is offered in **community settings including senior centers, faith- based organizations, local health departments and pharmacies**. **Healthcare providers** who refer their patients to this program can also access their patients' self-measured blood pressure readings through the AHA Disease's ***Check, Change, Control*** tracker.
    - Since the launch of the program in June 2017, there have been over 2,500 readings representing 367 program participants. Of those with more than one reading, 206 or 78.2%, have on average lowered their systolic blood pressure by 3 points and lowered their diastolic blood pressure by 1 point.
- In 2017, the **Justus-Warren Heart Disease and Stroke Prevention Task Force** adopted its Action Agenda which outlines recommendations for legislative action. The Task Force voted to endorse increased funding for tobacco cessation services and for tobacco prevention programs, to endorse the funding request to expand Healthy Corner Stores and to endorse Care4Carolina's efforts to close the health insurance gap. The Task Force also voted to support efforts to assure coverage of all cardiovascular-related U.S. Preventive Services Task Force A and B preventive services for all Medicaid enrollees and to support a funding request to offer the Expanded Food and Nutrition Education Program to all N.C. counties.

Diabetes

What Medical Providers Can Do

- Use a multi-disciplinary team-based care approach to improve cardiovascular health of patients whereby team members provide support, share responsibilities and complement the activities of the primary care provider.
- Refer patients with newly diagnosed hypertension or whose hypertension is uncontrolled to a ***Know It Control It*** program. To find a program location near you and for physician referrals, go to bloodpressure@communityclinicalconnections.com.
- Discuss weight, nutrition and physical activity with each patient. Counsel patients on smoking cessation.

- The **DPH Community and Clinical Connections for Prevention and Health Branch (CCCPH)** has facilitated diabetes prevention and management using a systematic approach that increases access to behavior management education and supports quality care for people who are at risk of and who have diabetes.
  - Since January 1, 2017, two additional **Diabetes Self-Management Education and Support sites** have joined the state's **American Diabetes Association (ADA)** recognized umbrella. Many of these sites can serve insured, uninsured and underinsured persons with diabetes. To see all sites in North Carolina that are recognized by the ADA or accredited by the American Association of Diabetes Educators, visit diabetesnc.com
  - In April 2017, Medicare became a payor for **Diabetes Prevention Programs (DPP)**. In May 2017, the **American Medical Association** released a draft set of quality measures that govern testing for diabetes and referral to DPP. To learn more about prediabetes and DPP visit diabetesfreenc.com and click on the *For Health Professionals* link.
  - Since 2016, the **North Carolina Office of Minority Health and Health Disparities (NC OMHHD)** has worked with the **Community and Clinical Connections for Prevention and Health Branch (CCCPH)** to administer the **North Carolina Minority Diabetes Prevention Program (NC MDPP).** NC MDPP is a statewide effort between **local health departments, local health care providers and community organizations** across North Carolina to keep people with prediabetes from developing type 2 diabetes and other health problems, such as stroke and heart disease. Each region works with multi-county collaboratives that engage, screen, and deliver the CDC lifestyle classes to its minority and at-risk communities.

- To increase access to diabetes screening opportunities, the **N.C. Office on Disability and Health** in the **DPH Children and Youth Branch** has worked with **child health nurses, pediatricians and dental professionals** to increase the accessibility of health care facilities, including local health departments. Improvements made have included purchase of more accessible exam tables and scales, as well as other simple environmental changes to promote access to care. Effective communication strategies for people with disabilities is being incorporated into accessibility reviews and the **N.C. Office on Disability and Health** is providing more comprehensive training for interested medical professionals.
- The **School Nursing Program** in the **DPH Children and Youth Branch** has monitored and reported compliance with The Care of Students with Diabetes Act (2009 legislation). All public schools, including charter schools, have been required to provide diabetes care training to school staff when they have students with diabetes enrolled. **School nurses** also have provided Individual Health Plans for students with diabetes to assure they receive appropriate diabetes management while in school and in collaboration with their medical home.
    - For diabetic students who have received School Nurse Case Management (an evidence-informed model of school nursing case management), 85 percent have demonstrated improved ability to self-administer insulin, 73 percent have had improved HgA1C, 67 percent have shown improved grades and 71 percent have had a decrease in school absences (2016–2017 School Health Services Report).[41]

What Medical Providers Can Do

- Increase referrals to the evidence-based **Diabetes Self-Management programs** and the **Diabetes Prevention Lifestyle programs** that are available across the state (contact the N.C. Division of Public Health for a list of referral sites).
- Conduct diabetes screenings for people who are 40 and older and who are overweight or obese, and for women who have had gestational diabetes.
- Conduct an internal accessibility assessment of your office to ensure easy access to screening and treatment service for people with disabilities.
- Become active on your **local School Health Advisory Council** to advance school health services and healthy school environments.

Colorectal Cancer

- The **N.C. Colorectal Cancer Roundtable (NC CRCRT)** is a statewide coalition of public, private and voluntary organizations and individuals dedicated to reducing the incidence of, and mortality from, colorectal cancer (CRC) in North Carolina, through coordinated leadership, strategic planning and advocacy. The **NC CRCRT steering**

committee is composed of individuals, organizations, medical professionals and state agencies. The roundtable has over 100 members, supporting the national goal of reaching the 80 percent by 2018 and beyond for colorectal cancer screenings.

- Colorectal cancer (CRC) is one of six cancers that has been and will continue to be the focus of the **North Carolina Comprehensive Cancer Control Plan 2014-2020**. Consensus has been that, to prevent cancer, we must change behaviors around the risks of cancer through education and the adoption of healthy policies at home, work and in the community. **DHHS** has led this effort by pledging to support the goal of having 80 percent of adults aged 50 and older screened for CRC by 2018 and beyond.
  - Three **task groups (Provider, System and Policy Improvement (PSPI); Public Education and Outreach; and Access to Care)** have formed to move the initiative forward in North Carolina. Health disparities have been incorporated into the work of each task group. The **PSPI Task Group** connects **primary care physicians and gastroenterologists** to consider screening options, billing/coding/reimbursement, how to reach uninsured populations, and patient navigation. They are developing a strategy for the state to have appropriate resources for colorectal cancer screening and treatment of uninsured populations.
  - The **Public Education and Outreach Task Group** works to identify stakeholders in targeted areas and train them to provide educational information and conduct community initiatives around increasing colon cancer screening rates through educational awareness events.
  - The **Access to Care Task Group** recognizes that there are many barriers for both uninsured and insured patients across North Carolina. This group brings together interested stakeholders across the state to identify these barriers and come up with solutions.
  - Leaders from **Medicaid, Blue Cross Blue Shield of North Carolina, Community Care of North Carolina, Area Health Education Centers, American Cancer Society, University of North Carolina at Chapel Hill, N.C. State Health Plan, N.C. Community Health Center Association, N.C. Society of Gastroenterologists, health systems, local health departments and others** are included in this effort.
- In November 2017, the NC Comprehensive Cancer Control Program officially released ***Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer***. Serving as a companion piece to the 2014-2020 N.C. Cancer Plan, the document focuses on six priority cancers: colorectal, lung, female breast, prostate, cervical, and melanoma skin cancer. It provides clear direction on where these priority cancers are concentrated highest, what demographic groups are most affected by them, and what partners can do to combat these cancers in their communities. Physicians can use this document to help combat cancer in their communities.[42] Potential uses include: using relevant data to identify specific cancers needing addressed in their county or region; assisting in incorporating county or region specific data into

community health assessments or grant applications; increasing age-appropriate recommendations for screenings among cancers of particular concern in their county or region; and working with partners to develop program plans utilizing evidence-based interventions included within the document.

What Medical Providers Can Do

- Help support this effort through collaborative efforts in the medical community to raise awareness, increase provider and public education, and seek funding and in-kind services for colorectal cancer screenings and follow-up treatment.
- Adopt the goal of reaching 80 percent Screened for Colorectal Cancer by 2018 and beyond.
- Increase partnerships with health systems and community-based organizations to help promote and support prevention, early detection and access to care.

Other Key or Emerging Health Issues

Hepatitis B and C Virus

- Hepatitis B and C viruses (HBV and HCV) are blood-borne viruses transmitted through injection drug use. Although infection can be acute and self-limiting, approximately 75 percent to 85 percent of HCV-infected individuals develop chronic disease. A five-fold increase in acute HCV and a 40% increase in acute HBV have been seen in North Carolina since 2010.[43,44]
  - Based on CDC national prevalence projections and United States census data, the **DPH Communicable Disease Branch (CDB)** has estimated that 110,000 people (range: 80,000–150,000 people) in North Carolina are living with chronic HCV infection.[44]
  - Nearly 50% of individuals are unaware of their HCV infection and have not received needed care and treatment.[44]
- North Carolina continues to update and deploy its campaign to address HCV, **N.C. Hepatitis C: Test, Link, Cure (TLC).** The campaign was launched to combat the acute hepatitis C and injection drug use epidemics.
  - **N.C. Hepatitis C: Test, Link, Cure (TLC)** aims to establish new partnerships with **health care providers and stakeholders** in the state with a focus on hepatitis C screening, prevention education, and linkage to care and treatment.
  - Activities are implemented through **local health departments, community-based organizations, substance use disorder treatment centers, and federally qualified**

health centers in the western and southeast coastal regions of the state. With the placement of **bridge counselors** to aid in linkage to care and the ongoing efforts to educate **primary care physicians** to provide treatment to cure for HCV, the program has now expanded statewide.

- Starting May 1, 2017, hepatitis C testing for high-risk uninsured individuals has been made available to all **84 local health departments.** Testing is available through the Communicable Disease Branch in close collaboration with the **State Laboratory for Public Health (SLPH).**
- Since January of 2018, chronic hepatitis C infection has been reportable by law by electronic laboratory reporting methods. Over time this will provide local health departments and the state with the ability to assess population prevalence of this disease.

- As of July 11, 2016, North Carolina law has allowed for the legal establishment of hypodermic syringe and needle exchange programs. These programs have been critical tools in addressing the health of people who use injecting drugs and in reducing the transmission of hepatitis C and HIV.
  - Twenty **Syringe Exchange Programs** are currently registered in the state, providing access to services in over 24 counties.
- To further address HBV and HCV, the **DPH Communicable Disease Branch** has partnered with the **State Laboratory of Public Health, local health departments, Duke University and The University of North Carolina at Chapel Hill** to:
  - Assure that screening and treatment are performed according to national standards.
  - Develop best-practice treatment algorithms and referral networks across North Carolina.
  - Establish the **Carolina's Hepatitis Academic Mentorship Program (CHAMP),** with **Duke University** and the **University of North Carolina at Chapel Hill,** which will allow providers to network with content experts from academic centers to build a hepatitis C provider care network in their region.
  - Increase health care provider understanding of current HCV testing and linkage to care recommendations through continuing medical education initiatives.
  - Increase screening and surveillance for populations at risk for HCV infection.
  - Increase public knowledge of current testing recommendations through public outreach campaigns.
  - Establish collaborations to build resource networks for drug user health.
  - Discuss growing concern of perinatal hepatitis C infection.

What Medical Providers Can Do

- Review CDC guidelines for HCV testing, diagnosis and management at www.cdc.gov/hepatitis/hcv/hcvfaq.htm.
- Provide one-time HCV testing for adults born during 1945–1965 without prior ascertainment of HCV risk.
- Provide HCV testing to pregnant women who exhibit elevated risk for hepatitis C infection.
- Assess patients for vaccination for hepatitis A and B.
- For infected patients, provide a brief alcohol and injecting drug use screening and intervention, as clinically indicated, followed by referral to appropriate care and treatment services for virus infection and related conditions, and to appropriate behavioral treatment and support, including syringe services programs as needed.

Congenital Syphilis Infection

In 2017, primary and secondary syphilis cases among women increased slightly from 2.1 to 2.5 cases per 100,000. Congenital syphilis has continued to increase from 18 cases (including 1 stillbirth) in 2016 to 23 cases in 2017 (19 cases per 100,000 live births).[45] During quarterly congenital syphilis case review meetings, the effectiveness of North Carolina's screening guidance is clear. For pregnant women without prenatal care and pregnant women who become infected with syphilis during pregnancy, screening at delivery is a critical last opportunity for detection and intervention for the mother and infant.

- **DPH's Sexually Transmitted Diseases (STD) Prevention** activities have supported the prevention of congenital syphilis by increasing awareness, rapidly identifying infected women and assuring they and their sexual partners receive appropriate treatment.
- The following are **DPH's Communicable Disease Branch (CDB)** activities that have addressed the increase in congenital syphilis infections. The Branch:
  - Conducts a quarterly review of all congenital syphilis cases to identify gaps in public health that are contributing to increased morbidity.
  - Made personal contact with **providers and local health department staff** to ensure that missed opportunities for prevention are recognized.
  - Released a statewide provider memorandum to increase awareness of the rise in congenital syphilis cases and outline specific actions that providers should take to prevent congenital syphilis infections.

- Created a **Congenital Syphilis Fact Sheet** highlighting the issue and prevention steps that should be taken. This factsheet was disseminated to statewide public health partners and is readily available to the public on the Branch's website.[46]
- Delivered multiple presentations for community providers, local health departments and other key stakeholders on the statewide increase in congenital syphilis infections.

What Medical Providers Can Do

- Screen all pregnant women for syphilis, per the North Carolina Administrative Code 10A NCAC 41A .0204—at first prenatal visit, between 28–30 weeks gestation, and at delivery, regardless of reported risk factors.
- Ensure the mother's syphilis serologic status is known prior to discharging the newborn from the hospital.
- Ensure all sexual partners of female syphilis patients are evaluated and empirically treated for syphilis.
- Assess the sexual health and risk behaviors of ALL pregnant women at every medical visit to identify women who would benefit from more frequent screening than is required by NCAC 41A .0204.
- All patients diagnosed with syphilis should be evaluated for ocular involvement. Treat all pregnant females diagnosed with syphilis rapidly and per the CDC STD Treatment Guidelines.

Antimicrobial Resistance and Stewardship

Antimicrobial resistance is recognized as a growing concern globally and in North Carolina. New strains of resistant microorganisms are emerging and spreading, limiting our ability to use existing antibiotics effectively, increasing cost of health care and resulting in morbidity and mortality. CDC estimates that annually in the United States approximately 2 million people are infected with multidrug resistant organisms (MDROs) and at least 23,000 people die because of these infections.[47] Exposure to antibiotics is the most important risk factor for emergence of antimicrobial resistance.

Antimicrobial stewardship refers to judicious use of antibiotics in healthcare. According to CDC, 20–50 percent of all antibiotics prescribed in U.S. acute care hospitals[48] and 30 percent of outpatient antibiotic prescriptions are unnecessary.[49] Evidence suggests that hospital-based programs dedicated to improving antibiotic use, or **Antibiotic Stewardship Programs**, can help avoid misuse of antibiotics and related adverse effects. CDC recommends that these programs contain the following seven core elements: leadership, accountability, drug expertise, implementing recommended actions, tracking antibiotic use, reporting information to providers and educating clinicians.[50] National CDC survey data from 2016 reflects that currently 64

percent of all hospitals in U.S. have stewardship programs with all seven elements.[51] In North Carolina, approximately 79 percent acute care hospitals had stewardship programs, and, according to unpublished more recent data, this number is 91%.

- **DPH's North Carolina Surveillance for Healthcare-Associated and Resistant Pathogens Patient Safety (N.C. SHARPPS) Program** has provided support to **healthcare facilities** in the state to eliminate preventable healthcare related infections including those related to antibiotic use (MDROs and *Clostridium difficile*).
- The **N.C. SHARPPS Program** has collaborated with its partners to create an **Antimicrobial Resistance and Antibiotic Stewardship (ARAS) subcommittee** of the **Healthcare-Associated Infections Advisory Group**. This subcommittee aims to incentivize stewardship program activities in healthcare facilities as well as encourage educational opportunities in antimicrobial stewardship.
- The **N.C. SHARPPS Program** launched the **Stewardship of Antimicrobial Resources (STAR) Partners** initiative in July 2018. This is a recognition and mentorship-based incentive program encouraging acute care hospitals in the state to implement effective stewardship programs.
- The **N.C. SHARPPS Program** has participated in the **CDC campaign Be Antibiotics Aware: Smart Use Best Care formerly GetSmart: Know When Antibiotics Work.** This campaign is focused on creating public and provider awareness regarding inappropriate antibiotic use. Through this initiative since 2016, **N.C. SHARPPS** has conducted four educational sessions and three exhibits detailing antibiotic stewardship to healthcare professionals and has disseminated over 2,200 **GetSmart and Be Antibiotics Aware** educational materials to the public and healthcare providers.
- The **N.C. SHARPPS Program** conducted 18 months of sentinel surveillance and analyzed data to better understand the burden of Carbapenem Resistant Enterobacteriaceae (CRE) in North Carolina. Surveillance in a subset of hospitals has continued. Results from surveillance and an evaluation of the surveillance system are being used to guide recommendations for surveillance, reporting and antimicrobial resistance prevention activities in North Carolina. Carbapenemase producing CRE will become reportable in N.C. October 1, 2018.

What Medical Providers Can Do

- Follow evidence-based guidelines for antibiotic use for common infections and avoid unnecessary antibiotic use.
- Optimize dosing and use the shortest effective duration of antibiotic therapy. Document indication, dose and duration on all orders.
- Review antibiotic use in the past 48–72 hours and reassess for de-escalation.

- Reduce use of antibiotics associated with an elevated risk of *Clostridium difficile,* for example clindamycin and fluoroquinolones.
- Educate patients about antimicrobial resistance and appropriate antibiotic use.
- Carefully evaluate reported penicillin allergies and reconcile when possible, and when not reconcilable consider penicillin skin testing when appropriate.

Child Maltreatment Prevention

- **DPH's Children and Youth Branch Triple P (Positive Parenting Program**) has been implemented statewide to provide coverage for all 100 counties in North Carolina. In addition, **Triple P Online** (a set of eight modules for parents of younger children and a set of six modules for parents of teens), which recently includes a Spanish version), is available to all parents in North Carolina.
  - **Triple P** has developed a multi-level preventive intervention system of strategies to invoke personal responsibility in families.
  - **Triple P** has drawn on social learning, cognitive-behavior and development theory, as well as researching risk and protective factors associated with the development of social and behavioral problems in children.
  - As of December 2017, a total of 3,349 practitioners had been trained to deliver in **Triple P**, serving 48,684 caregivers and impacting 79,264 children.
- **DPH's Women's and Children's Health Section** has worked with various organizations and communities to raise awareness and commitment to promote safe, stable, nurturing relationships and environments and build support for and implementation of evidence-based trauma-informed policies and programs to prevent children maltreatment.
  - In collaboration with various organization, the **DPH Women's and Children's Health Section** has worked toward implementation of the collective statewide strategic plan for preventing child maltreatment and securing child and family well-being developed by the **2014 N.C. Institute of Medicine Essentials for Childhood Task Force**.
- **DPH's Injury and Violence Prevention Branch,** in collaboration with the Women's and Children's Health Section co-organized and is leading a cohort of five **interdisciplinary teams** through **Injury Free N.C. Academy** trainings to increase their capacity to implement and evaluate evidence-based strategies which address shared risk and protective factors across multiple forms of violence (including child maltreatment) in their communities.
- Multiple DHHS divisions are collaborating on the development of the **DHHS Early Childhood Action Plan** to address child maltreatment prevention in our state.

What Medical Providers Can Do

- Promote **Triple P** and **Triple P Online** for parents of children and adolescents who present with behavioral health problems. Parents can be directed to the North Carolina **Triple P for Parents website** at https://www.triplep-parenting.net/nc-en/triple-p/.
- Train staff to provide **Triple P** as part of your client services.
- Screen for psychosocial risk and protective factors to identify children and families at greater risk for child maltreatment and those who may need additional resources as outlined by ***Bright Futures***. Facilitate referrals to services when appropriate.
- Provide anticipatory guidance about developmental stages that may be stressful or serve as a trigger for child maltreatment.
- Encourage parents to use effective discipline techniques.
- Recognize signs and symptoms of maltreatment and report suspected maltreatment to local social services.

Disaster Preparedness for Access and Functional Needs Populations

- **DPH's Public Health Preparedness and Response Branch** has worked with l**ocal health departments** on community-wide planning for disasters caused by many hazards including extreme weather, communicable disease outbreaks and contaminating incidents such as chemical spills. A person's **personal health care provider** is an important part of that planning. People with chronic medical illnesses are frequently the most vulnerable when natural disasters strike, especially those who are medically fragile, require personal assistance or use power dependent medical devices. Having a **personal medical plan** can be one of the many important resources in maintaining health and preventing acute and preventing acute and long-term deterioration in health status.

What Medical Providers Can Do

- For people with chronic illnesses who live or work in vulnerable locations:
  - Discuss plans with patients about medical service continuity and medication needs should there be an evacuation. Include resources such as readync.org and https://emergency.cdc.gov/preparedness/index.asp
  - Discuss plans with medical service providers and durable medical good providers that your practice works most frequently with on what contingency plans are in place in a disaster.
- For people with power dependent medical devices:
  - Discuss plans with patients and caregivers on how to work with power companies and medical service providers should there be power outages.
  - Discuss plans with medical service providers that your practice works most frequently with on what contingency plans are in place.
- Within your practice, discuss your plans with staff for continuity of patient care in a local disaster.

Proposed or Planned Steps

North Carolina has prepared to take additional steps toward continuing to improve the health of our citizens. The programs highlighted in this report are ongoing and will be continued in efforts to meet the state's **Healthy NC 2020** objectives.

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Appendix A: Healthy North Carolina 2020 Objectives Compared to North Carolina Goals* and the United States

*The State Goal is the Healthy North Carolina 2020 target as established in 2011

	North Carolina Baseline	North Carolina Current	Status	State Goal	United States
Tobacco Use					
Decrease the percentage of adults who are current smokers	21.8% (2011)	17.9% (2016)	Improving	13.0%	17.1% (2016)
Decrease the percentage of high school students reporting current use of any tobacco product	25.8% (2009)	28.8% (2017)	Little or no detectable change	15.0%	19.6% (2017)
Decrease the percentage of people exposed to secondhand smoke in the workplace in the past seven days	9.2% (2011)	7.7% (2016)	Little or no detectable change	0%	Not available
Physical Activity and Nutrition					
Increase the percentage of high school students who are neither overweight nor obese	72.0% (2009)	69.1% (2017)	Little or no detectable change	79.2%	69.6% (2017)
Increase the percentage of adults meeting CDC Aerobic Recommendations	46.8% (2011)	48.1% (2015)	Little or no detectable change	60.6%	50.7% (2015)
Increase the percentage of adults who consume fruit one or more times per day.	59.2% (2011)	56.7% (2015)	Little or no detectable change	69.7%	60.3% (2015)
Increase the percentage of adults who consume vegetables one or more times per day.	78.1% (2011)	78.4% (2015)	Little or no detectable change	84.7%	77.9% (2015)
Injury and Violence					
Reduce the unintentional poisoning mortality rate (per 100,000 population)	11.0 (2008)	18.5 (2016)	Getting worse	9.9	18.2 (2016)
Reduce the unintentional falls mortality rate (per 100,000 population)	8.1 (2008)	10.8 (2016)	Getting worse	5.3	9.1 (2016)
Reduce the homicide rate (per 100,000 population)	7.5 (2008)	7.5 (2016)	Little or no detectable change	6.7	6.2 (2016)
Maternal and Infant Health					
Reduce the infant mortality racial disparity between whites and African Americans	2.45 (2008)	2.68 (2016)	Getting worse	1.92	2.45 (2016)
Reduce the infant mortality rate (per 1,000 live births)	8.2 (2008)	7.2 (2016)	Improving	6.3	5.9 (2016)
Reduce the percentage of women who smoke during pregnancy	10.9% (2011)	8.9% (2016)	Improving	6.8%	7.2% (2016)
Sexually Transmitted Disease and Unintended Pregnancy					
Decrease the percentage of pregnancies that are unintended	34.7% (2012)	32.2% (2016)	Little or no detectable change	31.2%	Not available
Reduce the percentage of positive results among individuals aged 15 to 24 tested for chlamydia	9.7% (2009)	11.1% (2016)	Getting worse	8.7%	Not available
Reduce the rate of new HIV infection diagnoses (per 100,000 population)	24.7 (2008)	13.9 (2016)	**Target met**	22.2	12.3 (2016)

	North Carolina Baseline	North Carolina Current		State Goal	United States
Substance Abuse					
Reduce the percentage of high school students who had alcohol on one or more of the past 30 days	35.0% (2009)	26.5% (2017)	Improving	26.4%	29.8% (2017)
Reduce the percentage of traffic crashes that are alcohol-related	5.7% (2008)	4.2% (2016)	**Target met**	4.7%	Not available
Reduce the percentage of individuals aged 12 years and older reporting any illicit drug use in the past 30 days	7.8% (2007–08)	9.9% (2015–16)	Little or no detectable change	6.6%	10.4% (2015–16)
Mental Health					
Reduce the suicide rate (per 100,000 population)	12.4 (2008)	13.0 (2016)	Little or no detectable change	8.3	13.5 (2016)
Decrease the average number of poor mental health days among adults in the past 30 days	3.7 (2011)	3.8 (2016)	Little or no detectable change	2.8	Not available
Reduce the rate of mental health-related visits to emergency departments (per 10,000 population)	92.0 (2008)	103.3 (2014)	Getting worse	82.8	Not available
Oral Health					
Increase the percentage of children aged 1–5 years enrolled in Medicaid who received any dental service during the previous 12 months	46.9% (2008)	60.4% (2016)	**Target met**	56.4%	46.5% (2016)
Decrease the average number of decayed, missing or filled teeth among kindergartners	1.5 (2008–09)	1.6 (2015-16)	Little or no detectable change	1.1	Not available
Decrease the percentage of adults who have had permanent teeth removed due to tooth decay or gum disease	48.3% (2012)	47.6% (2016)	Little or no detectable change	38.4%	43.4% (2016)
Environmental Health					
Increase the percentage of air monitor sites meeting the current ozone standard of 0.075 ppm	62.5% (2007–09)	100% (2014–16)	**Target met**	100%	Not available
Increase the percentage of the population being served by community water systems (CWS) with no maximum contaminant level violations (among persons on CWS)	92.2% (2009)	96.3% (2016)	**Target met**	95.0%	91% (2016)
Reduce the mortality rate from work-related injuries (per 100,000 equivalent full-time workers)	3.9 (2008)	3.7 (2016)	Little or no detectable change	3.5	3.6 (2016)
Infectious Disease and Foodborne Illness					
Increase the percentage of children aged 19–35 months who receive the recommended vaccines	77.3% (2007)	77.8% (2016)	Little or no detectable change	91.3%	73.8% (2016)
Reduce the pneumonia and influenza mortality rate (per 100,000 population)	19.5 (2008)	16.5 (2016)	Improving	13.5	13.5 (2016)
Decrease the average number of risk factor violations per inspection	2.8 (2014)	3.0 (2017)	Little or no detectable change	2.6	Not available

	North Carolina Baseline	North Carolina Current	Status	State Goal	United States
Social Determinants of Health					
Decrease the percentage of individuals living in poverty	16.9% (2009)	15.4% (2016)	Improving	12.5%	14.0% (2016)
Increase the four-year high school graduation rate	71.8% (2008–09)	86.5% (2016–17)	Improving	94.6%	84.0% (2015-16)
Decrease the percentage of people spending more than 30 percent of their income on rental housing	41.8% (2008)	46.9% (2016)	Getting worse	36.1%	49.7% (2016)
Chronic Disease					
Reduce the cardiovascular disease mortality rate (per 100,000 population)	256.6 (2008)	214.1 (2016)	Improving	161.5	218.2 (2016)
Decrease the percentage of adults with diabetes	10.9% (2011)	11.3% (2016)	Little or no detectable change	8.6%	10.5% (2016)
Reduce the colorectal cancer mortality rate (per 100,000 population)	15.7 (2008)	13.2 (2016)	Improving	10.1	13.7 (2016)
Cross-cutting					
Increase average life expectancy (years)	77.5 (2008)	78.0 (2016)	Improving	79.5	78.6 (2016)
Increase the percentage of adults reporting good, very good or excellent health	80.4% (2011)	81.7% (2016)	Little or no detectable change	90.1%	83.3% (2016)
Reduce the percentage of non-elderly uninsured individuals (aged less than 65 years)	20.4% (2009)	12.2% (2016)	Improving	8.0%	10.1% (2016)
Increase the percentage of adults who are neither overweight nor obese	34.9% (2011)	33.1% (2016)	Little or no detectable change	38.1%	34.8% (2016)

Appendix B: Additional County/Regional Data for Selected Healthy North Carolina 2020 Objectives

Note: All data tables in Appendix B are the most recent available as of June 13, 2018

North Carolina Resident Adults Who Are Current Smokers by Region – BRFSS Survey Results, 2016

State Goal: 13.0%

	Percentage	C.I. (95%)*
State Total	**17.9**	**16.7-19.2**
North Carolina Association of Local Health Directors Regions		
Region 1 and 2	18.5	15.1-22.4
Region 3	18.7	15.0-23.0
Region 4	17.4	14.9-20.3
Region 5	18.4	15.2-22.1
Region 6	18.9	15.2-23.3
Region 7	14.6	11.8-17.9
Region 8	20.4	16.6-24.7
Region 9	18.3	14.3-23.0
Region 10	20.1	16.6-24.0
Area Health Education Center Regions (AHEC)		
Mountain AHEC	18.9	15.1-23.3
Northwest	19.3	16.3-22.7
Charlotte	16.5	13.8-19.5
Greensboro	20.2	16.4-24.6
Southern Regional	20.1	16.5-24.4
Southeast	17.5	13.2-22.8
Wake	13.1	10.6-16.0
Area L and Eastern	21.0	18.1-24.2

Current smoking prevalence represents the percent of survey respondents who report that they currently smoke "every day" or "most days" and have smoked at least 100 cigarettes in their lifetime. * C.I. (95%) = Confidence Interval (at 95% probability level).

A complete list of counties included in each region is provided at the end of Appendix B.

Data Source: Behavioral Risk Factor Surveillance System, State Center for Health Statistics.

North Carolina Resident Women Smoking During Pregnancy, 2016
State Goal: 6.8%

	Percentage
State Total	**8.9**
Alamance	10.2
Alexander	16.9
Alleghany	15.8
Anson	18.0
Ashe	21.1
Avery	20.1
Beaufort	12.8
Bertie	9.5
Bladen	16.5
Brunswick	17.7
Buncombe	8.0
Burke	17.2
Cabarrus	7.1
Caldwell	18.4
Camden	11.1
Carteret	15.9
Caswell	18.2
Catawba	13.2
Chatham	5.6
Cherokee	27.6
Chowan	11.5
Clay	31.7
Cleveland	18.8
Columbus	19.9
Craven	9.6
Cumberland	8.0
Currituck	10.7
Dare	10.0
Davidson	15.7
Davie	10.5
Duplin	9.2
Durham	3.5
Edgecombe	13.1
Forsyth	6.3
Franklin	9.7
Gaston	16.5
Gates	9.9
Graham	23.8
Granville	13.7
Greene	13.5
Guilford	5.3
Halifax	15.0
Harnett	8.0
Haywood	17.7
Henderson	10.5
Hertford	10.8
Hoke	8.4
Hyde	12.8
Iredell	10.8
Jackson	20.4
Johnston	4.5
Jones	20.5
Lee	12.2
Lenoir	16.7
Lincoln	16.2
McDowell	19.6
Macon	19.5
Madison	18.4
Martin	17.3
Mecklenburg	3.2
Mitchell	28.4
Montgomery	16.2
Moore	11.7
Nash	12.8
New Hanover	7.2
Northampton	11.5
Onslow	7.8
Orange	4.3
Pamlico	16.3
Pasquotank	10.0
Pender	11.5
Perquimans	18.0
Person	13.2
Pitt	8.9
Polk	10.0
Randolph	14.6
Richmond	23.2
Robeson	17.7
Rockingham	14.5
Rowan	15.6
Rutherford	20.5
Sampson	8.5
Scotland	18.7
Stanly	13.3
Stokes	19.7
Surry	17.7
Swain	24.3
Transylvania	18.6
Tyrrell	7.8
Union	5.8
Vance	13.8
Wake	2.3
Warren	9.0
Washington	8.7
Watauga	9.0
Wayne	9.4
Wilkes	18.8
Wilson	9.5
Yadkin	18.1
Yancey	12.3

Data Source: Vital Statistics, State Center for Health Statistics.

North Carolina Resident Adults Who Are Overweight or Obese* by Region - BRFSS Survey Results, 2016

State Goal: 38.1%

	Percentage	C.I. (95%)**
State Total	**66.9**	**65.4-68.3**
North Carolina Association of Local Health Directors Regions		
Region 1 and 2	68.1	64.1-71.9
Region 3	67.7	63.1-72.0
Region 4	64.2	60.8-67.6
Region 5	66.2	61.9-70.2
Region 6	73.0	68.1-77.4
Region 7	64.5	60.3-68.4
Region 8	68.9	64.2-73.3
Region 9	71.1	64.9-76.6
Region 10	69.2	64.6-73.5
Area Health Education Center Regions (AHEC) Regions		
Mountain AHEC	66.2	61.8-70.3
Northwest	67.2	63.4-70.8
Charlotte	64.8	61.0-68.4
Greensboro	68.3	63.5-72.6
Southern Regional	72.8	68.1-77.1
Southeast	72.7	66.8-77.8
Wake	63.3	59.4-67.1
Area L and Eastern	67.3	63.5-70.8

* Body mass index is computed as weight in kilograms divided by height in meters squared :(kg/m2). Underweight=BMI less than 18.5, Recommended Range=BMI 18.5 to 24.9, Overweight=BMI 25.0 to 29.9 and Obese=BMI 30 or greater.

** C.I. (95%) = Confidence Interval (at 95% probability level).

A complete list of counties included in each region is provided at the end of Appendix B.

Data Source: Behavioral Risk Factor Surveillance System, State Center for Health Stati

North Carolina Resident Adults Reporting Good, Very Good or Excellent Health by Region -BRFSS Survey Results, 2016

State Goal: 90.1%

	Percentage	C.I. (95%)**
State Total	**81.7**	**80.5-82.8**
North Carolina Association of Local Health Directors Regions		
Region 1 and 2	81.1	78.1-83.8
Region 3	76.1	71.6-80.1
Region 4	85.6	83.1-87.8
Region 5	84.4	80.8-87.4
Region 6	74.7	70.4-78.5
Region 7	84.3	81.1-87.0
Region 8	77.0	72.9-80.6
Region 9	76.5	71.5-80.9
Region 10	80.6	76.6-84.0
Area Health Education Center Regions (AHEC) Regions		
Mountain AHEC	80.2	76.9-83.2
Northwest	79.5	76.2-82.4
Charlotte	86.0	83.2-88.4
Greensboro	84.1	80.2-87.3
Southern Regional	73.5	69.4-77.3
Southeast	74.5	68.9-79.4
Wake	85.5	82.3-88.1
Area L and Eastern	80.3	77.4-82.8

* C.I. (95%) = Confidence Interval (at 95% probability level).

A complete list of counties included in each region is provided at the end of Appendix B.

Data Source: Behavioral Risk Factor Surveillance System, State Center for Health Statistics.

North Carolina Resident Infant Mortality Rate (per 1,000 Live Births) by County, 2012–2016
State Goal: 6.3

Residence	Infant Deaths	Infant Mortality Rate
State Total	**4,332**	**7.2**
Alamance	79	8.8
Alexander	11	6.2
Alleghany	1	2.1*
Anson	17	13.7
Ashe	8	7.0*
Avery	6	8.5*
Beaufort	28	11.9
Bertie	14	15.8
Bladen	19	10.7
Brunswick	33	6.4
Buncombe	84	6.4
Burke	28	6.4
Cabarrus	68	5.7
Caldwell	33	8.2
Camden	0	0.0*
Carteret	22	7.3
Caswell	4	3.9*
Catawba	52	6.0
Chatham	34	10.9
Cherokee	9	8.1*
Chowan	5	7.0*
Clay	2	4.6*
Cleveland	47	8.8
Columbus	29	9.4
Craven	52	6.9
Cumberland	259	9.3
Currituck	6	4.8*
Dare	7	4.0*
Davidson	70	8.1
Davie	10	5.1
Duplin	31	8.3
Durham	151	7.0
Edgecombe	32	10.3
Forsyth	186	8.3
Franklin	29	8.5
Gaston	98	7.8
Gates	3	5.5*
Graham	1	2.3*
Granville	23	8.2
Greene	7	6.7*
Guilford	248	8.1
Halifax	31	10.8
Harnett	76	8.2
Haywood	24	8.4
Henderson	30	5.6
Hertford	22	19.0
Hoke	26	5.6
Hyde	2	8.6*
Iredell	72	7.9
Jackson	15	7.8
Johnston	74	6.6
Jones	1	2.2*
Lee	29	7.4
Lenoir	25	7.6
Lincoln	19	4.9
McDowell	16	7.0
Macon	12	7.0
Madison	8	7.9*
Martin	7	5.8*
Mecklenburg	446	6.2
Mitchell	1	1.4*
Montgomery	15	9.6
Moore	25	4.8
Nash	46	8.6
New Hanover	47	4.2
Northampton	10	10.8
Onslow	152	7.2
Orange	29	4.8
Pamlico	6	13.3*
Pasquotank	15	6.1
Pender	24	7.8
Perquimans	2	3.2*
Person	15	7.4
Pitt	121	11.4
Polk	4	5.6*
Randolph	61	7.6
Richmond	24	9.1
Robeson	98	10.7
Rockingham	47	10
Rowan	59	7.5
Rutherford	23	6.9
Sampson	25	5.9
Scotland	22	9.8
Stanly	24	7.2
Stokes	12	6.1
Surry	21	5.6
Swain	7	7.1*
Transylvania	7	5.2*
Tyrrell	2	9.4*
Union	63	5.3
Vance	21	7.5
Wake	353	5.6
Warren	10	10.9
Washington	5	8.0*
Watauga	7	3.9*
Wayne	54	6.4
Wilkes	31	9.0
Wilson	45	9.5
Yadkin	15	7.8
Yancey	3	3.6*

* Note: Rates based on less than 10 deaths are unreliable and should be interpreted with caution.

Data Source: Vital Statistics, State Center for Health Statistics.

North Carolina Resident Infant Mortality Racial Disparity between Whites and African Americans by Region, 2012–2016

State Goal: 1.92

	White, Non-Hispanic		African American, Non-Hispanic		
Residence	Infant Deaths	Death Rate	Infant Deaths	Death Rate	Disparity Ratio
State Total	**1,800**	**5.4**	**1,864**	**13.0**	**2.41**
Area Health Education Centers (AHEC) Regions					
Area L	97	6.0	50	14.2	2.37
Charlotte	119	5.8	78	14.9	2.57
Eastern	399	4.4	490	12.9	2.93
Greensboro	81	7.8	112	17.2	2.21
Mountain	391	5.0	502	11.3	2.26
Northwest	342	6.1	251	16.2	2.66
Southeast	107	5.8	180	13.9	2.40
Southern Regional	134	5.6	70	11.9	2.13
Wake	130	6.4	131	11.8	1.84
North Carolina Association of Local Health Directors Regions					
Region 1	139	5.9	66	11.8	2.00
Region 2	280	4.7	465	11.3	2.40
Region 3	198	6.3	139	16.7	2.65
Region 4	211	5.8	154	16.4	2.83
Region 5	88	7.0	131	15.9	2.27
Region 6	166	5.6	142	12.2	2.18
Region 7	102	5.9	73	13.1	2.22
Region 8	183	6.3	210	13.5	2.14
Region 9	202	5.1	139	13.9	2.73
Region 10	231	4.2	345	12.5	2.98
Perinatal Health Regions					
1: Western	177	5.8	27	13.8	2.38
2: Northwestern	483	6.2	347	13.4	2.16
3: Southwestern	269	4.3	383	12.0	2.79
4. Northeastern	306	4.5	404	12.7	2.82
5: Southeastern	271	5.8	316	13.3	2.29
6: Eastern	294	6.0	387	13.9	2.32

Note: Rates based on less than 10 deaths for Non-Hispanic Whites or Non-Hispanic African Americans are unreliable and should be interpreted with caution.

A complete list of counties included in each region is provided at the end of Appendix B.

Data Source: Vital Statistics, State Center for Health Statistics.

North Carolina Resident Pneumonia and Influenza Mortality Rate (per 100,000 Population) by County, 2012–2016
State Goal: 13.5

Residence	Age-Adjusted* Death Rate
State Total	**17.8**
Alamance	15.8
Alexander	18.0
Alleghany	**
Anson	23.2
Ashe	21.8
Avery	26.7
Beaufort	11.8
Bertie	**
Bladen	12.8
Brunswick	11.2
Buncombe	16.4
Burke	21.1
Cabarrus	23.8
Caldwell	26.2
Camden	**
Carteret	15.0
Caswell	24.0
Catawba	22.5
Chatham	10.8
Cherokee	14.2
Chowan	**
Clay	**
Cleveland	29.0
Columbus	16.5
Craven	16.1
Cumberland	20.9
Currituck	87.9
Dare	44.0
Davidson	21.2
Davie	23.3
Duplin	15.1
Durham	13.6
Edgecombe	16.5
Forsyth	20.4
Franklin	17.6
Gaston	28.8
Gates	**
Graham	**
Granville	12.4
Greene	**
Guilford	15.7
Halifax	19.0
Harnett	15.2
Haywood	20.2
Henderson	16.8
Hertford	15.2
Hoke	19.0
Hyde	**
Iredell	23.1
Jackson	14.5
Johnston	15.9
Jones	**
Lee	16.3
Lenoir	18.4
Lincoln	18.2
McDowell	19.8
Macon	15.5
Madison	20.6
Martin	14.0
Mecklenburg	14.7
Mitchell	18.2
Montgomery	22.8
Moore	11.1
Nash	22.3
New Hanover	11.2
Northampton	13.9
Onslow	15.0
Orange	10.6
Pamlico	**
Pasquotank	18.8
Pender	12.5
Perquimans	23.1
Person	21.2
Pitt	10.8
Polk	17.7
Randolph	18.7
Richmond	15.2
Robeson	16.6
Rockingham	31.4
Rowan	34.5
Rutherford	15.1
Sampson	16.2
Scotland	14.3
Stanly	23.6
Stokes	23.9
Surry	24.7
Swain	23.6
Transylvania	14.0
Tyrrell	**
Union	18.8
Vance	31.9
Wake	10.4
Warren	22.8
Washington	**
Watauga	13.9
Wayne	13.3
Wilkes	33.1
Wilson	18.9
Yadkin	28.1
Yancey	20.3

* An age-adjusted death rate is a death rate that controls for the effects of differences in population age distributions.

** Death rates with a small number of deaths in the numerator (<20) are statistically unstable and should be interpreted with caution.

Data Source: Vital Statistics, State Center for Health Statistics.

North Carolina Alcohol-Related Traffic Crashes by County of Crash, 2016

State Goal: 4.7%

County	Percentage
State Total	**4.2**
Alamance	4.5
Alexander	5.4
Alleghany	5.5
Anson	5.8
Ashe	5.1
Avery	2.5
Beaufort	5.2
Bertie	6.4
Bladen	6.2
Brunswick	5.1
Buncombe	4.3
Burke	4.8
Cabarrus	3.5
Caldwell	3.9
Camden	4.9
Carteret	6.1
Caswell	9.0
Catawba	4.1
Chatham	4.9
Cherokee	4.6
Chowan	8.6
Clay	2.3
Cleveland	3.9
Columbus	4.7
Craven	5.5
Cumberland	3.4
Currituck	7.5
Dare	8.2
Davidson	5.0
Davie	5.2
Duplin	4.6
Durham	2.5
Edgecombe	6.4
Forsyth	3.8
Franklin	8.0
Gaston	4.2
Gates	5.7
Graham	3.8
Granville	5.1
Greene	5.0
Guilford	4.3
Halifax	5.9
Harnett	5.6
Haywood	5.9
Henderson	5.0
Hertford	6.0
Hoke	5.6
Hyde	3.4
Iredell	4.2
Jackson	6.0
Johnston	5.9
Jones	5.8
Lee	4.2
Lenoir	5.6
Lincoln	4.6
McDowell	4.8
Macon	5.1
Madison	3.7
Martin	5.5
Mecklenburg	3.2
Mitchell	2.9
Montgomery	4.7
Moore	3.7
Nash	5.8
New Hanover	4.5
Northampton	5.8
Onslow	6.3
Orange	4.2
Pamlico	5.7
Pasquotank	4.6
Pender	5.0
Perquimans	6.5
Person	6.6
Pitt	3.5
Polk	5.3
Randolph	4.3
Richmond	5.2
Robeson	5.5
Rockingham	5.5
Rowan	4.3
Rutherford	3.6
Sampson	5.0
Scotland	6.5
Stanly	4.2
Stokes	7.0
Surry	4.7
Swain	5.1
Transylvania	5.8
Tyrrell	3.7
Union	3.8
Vance	4.0
Wake	3.3
Warren	6.1
Washington	5.1
Watauga	5.3
Wayne	5.8
Wilkes	4.5
Wilson	4.4
Yadkin	6.2
Yancey	5.4

Data Source: Highway Safety Research Center, University of North Carolina at Chapel Hill.

North Carolina Resident Cardiovascular Disease Mortality Rate (per 100,000 Population) by County, 2012–2016
State Goal: 161.5

Residence	Age-Adjusted* Death Rate
State Total	**219.7**
Alamance	216.4
Alexander	182.8
Alleghany	191.8
Anson	319.9
Ashe	211.9
Avery	204.4
Beaufort	254.6
Bertie	247.8
Bladen	296.8
Brunswick	215.0
Buncombe	194.9
Burke	246.5
Cabarrus	211.8
Caldwell	254.8
Camden	249.8
Carteret	212.3
Caswell	217.3
Catawba	232.4
Chatham	146.5
Cherokee	256.6
Chowan	254.1
Clay	199.6
Cleveland	279.4
Columbus	352.8
Craven	218.3
Cumberland	251.4
Currituck	250.5
Dare	199.2
Davidson	243.3
Davie	194.8
Duplin	242.6
Durham	182.6
Edgecombe	312.0
Forsyth	202.3
Franklin	225.1
Gaston	249.6
Gates	220.9
Graham	243.0
Granville	199.6
Greene	254.9
Guilford	196.5
Halifax	263.9
Harnett	263.3
Haywood	240.1
Henderson	182.4
Hertford	250.3
Hoke	235.7
Hyde	243.5
Iredell	233.4
Jackson	194.4
Johnston	255.0
Jones	262.3
Lee	229.5
Lenoir	294.7
Lincoln	244.6
McDowell	240.2
Macon	208.5
Madison	238.3
Martin	291.6
Mecklenburg	182.0
Mitchell	218.3
Montgomery	212.6
Moore	183.5
Nash	250.3
New Hanover	219.5
Northampton	245.8
Onslow	220.7
Orange	159.8
Pamlico	218.3
Pasquotank	307.0
Pender	219.9
Perquimans	250.8
Person	229.4
Pitt	234.1
Polk	172.8
Randolph	244.3
Richmond	334.0
Robeson	281.9
Rockingham	255.6
Rowan	250.3
Rutherford	282.3
Sampson	251.1
Scotland	271.1
Stanly	288.4
Stokes	244.1
Surry	227.5
Swain	264.0
Transylvania	166.0
Tyrrell	214.2
Union	209.7
Vance	249.9
Wake	178.5
Warren	246.6
Washington	271.4
Watauga	159.3
Wayne	245.8
Wilkes	213.9
Wilson	233.6
Yadkin	251.2
Yancey	212.4

* An age-adjusted death rate is a death rate that controls for the effects of differences in population age distributions.

Data Source: Vital Statistics, State Center for Health Statistics.

North Carolina Resident Adults with Diabetes by Region – BRFSS Survey Results, 2016

State Goal: 8.6%

	Percentage	C.I. (95%)*
State Total	**11.3**	**10.4-12.2**
North Carolina. Association of Local Health Directors Regions		
Region 1 and 2	11.5	9.3-14.2
Region 3	14.6	11.6-18.2
Region 4	10.3	8.5-12.4
Region 5	9.7	7.5-12.4
Region 6	15.1	12.2-18.7
Region 7	8.1	6.3-10.2
Region 8	13.1	10.6-16.1
Region 9	17.9	14.0-22.6
Region 10	11.6	9.2-14.5
Area Health Education Center Regions (AHEC) Regions		
Mountain AHEC	11.3	9.0-14.2
Northwest	14.1	11.7-16.8
Charlotte	9.6	7.7-11.8
Greensboro	11.4	8.7-14.7
Southern Regional	14.5	11.7-17.7
Southeast	16.5	12.8-21.0
Wake	7.0	5.4- 9.0
Area L and Eastern	11.8	10.0-13.8

Current diabetes prevalence represents the percentage of survey respondents who report "yes" to the survey question: "Has a doctor, nurse, or other health professional EVER told you that you had diabetes?"

* C.I. (95%) = Confidence Interval (at 95% probability level).

A complete list of counties included in each region is provided at the end of Appendix B.

Data Source: Behavioral Risk Factor Surveillance System, State Center for Health Statistics.

North Carolina Life Expectancies at Birth by County of Residence, 2014–2016
State Goal: 79.5

Residence	Life Expectancy at Birth
State Total	**78.0**
Alamance	77.6
Alexander	77.7
Alleghany	77.2
Anson	74.2
Ashe	77.6
Avery	78.6
Beaufort	75.8
Bertie	75.8
Bladen	74.2
Brunswick	78.6
Buncombe	78.8
Burke	76.3
Cabarrus	78.5
Caldwell	75.1
Camden	78.6
Carteret	78.4
Caswell	76.8
Catawba	76.4
Chatham	82.6
Cherokee	76.8
Chowan	77.2
Clay	78.7
Cleveland	74.3
Columbus	74.3
Craven	77.1
Cumberland	76.4
Currituck	78.1
Dare	79.8
Davidson	76.4
Davie	78.0
Duplin	78.1
Durham	80.0
Edgecombe	74.4
Forsyth	78.3
Franklin	78.2
Gaston	75.7
Gates	77.8
Graham	77.9
Granville	78.5
Greene	77.8
Guilford	78.7
Halifax	75.1
Harnett	76.7
Haywood	77.7
Henderson	79.2
Hertford	76.1
Hoke	77.6
Hyde	77.6
Iredell	77.6
Jackson	78.2
Johnston	78.0
Jones	78.5
Lee	77.0
Lenoir	75.2
Lincoln	77.1
McDowell	76.1
Macon	77.8
Madison	77.1
Martin	75.3
Mecklenburg	80.2
Mitchell	76.3
Montgomery	78.2
Moore	79.6
Nash	75.9
New Hanover	79.0
Northampton	75.2
Onslow	77.0
Orange	81.5
Pamlico	76.6
Pasquotank	76.9
Pender	77.3
Perquimans	78.5
Person	76.8
Pitt	78.1
Polk	79.4
Randolph	76.7
Richmond	74.1
Robeson	73.6
Rockingham	75.6
Rowan	75.3
Rutherford	75.3
Sampson	75.3
Scotland	75.2
Stanly	76.3
Stokes	76.5
Surry	76.3
Swain	75.2
Transylvania	80.6
Tyrrell	78.7
Union	79.5
Vance	74.8
Wake	81.5
Warren	76.8
Washington	77.4
Watauga	82.0
Wayne	76.8
Wilkes	76.1
Wilson	77.3
Yadkin	77.0
Yancey	77.9

Life expectancy is the average number of additional years that an infant born between 2014–2016 would be expected to live if current mortality conditions remained constant throughout his or her lifetime.

Data Source: Vital Statistics, State Center for Health Statistics.

North Carolina Regions

North Carolina Association of Local Health Directors Regions:

Region 1: Cherokee, Clay, Graham, Haywood, Jackson, Macon, Swain, Transylvania

Region 2: Buncombe, Burke, Caldwell, Cleveland, Henderson, Madison, Rutherford-Polk-McDowell, Yancey-Mitchell-Avery

Region 3: Davidson, Davie, Forsyth, Stokes, Surry, Watauga-Ashe-Alleghany, Wilkes, Yadkin

Region 4: Alexander, Cabarrus, Catawba, Gaston, Iredell, Lincoln Mecklenburg, Rowan, Stanly, Union

Region 5: Alamance, Caswell, Chatham, Durham, Guilford, Orange, Person, Randolph, Rockingham

Region 6: Anson, Cumberland, Harnett, Hoke, Lee, Montgomery, Moore, Richmond, Scotland

Region 7: Edgecombe, Franklin, Granville-Vance, Halifax, Johnston, Nash, Wake, Warren, Wilson

Region 8: Bladen, Brunswick, Columbus, Duplin, New Hanover, Onslow, Pender, Robeson, Sampson

Region 9: Bertie, Currituck, Dare, Hertford-Gates, Hyde, Martin-Tyrell-Washington, Northampton, Pasquotank-Perquimans-Camden-Chowan

Region 10: Beaufort, Carteret, Craven, Greene, Jones, Lenoir, Pamlico, Pitt, Wayne

Area Health Education Center Regions:

Mountain: Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey

Northwest: Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Iredell, Rowan, Stokes, Surry, Watauga, Wilkes, Yadkin

Charlotte: Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union

Greensboro: Alamance, Caswell, Chatham, Guilford, Montgomery, Orange, Randolph, Rockingham

Southern Regional: Bladen, Cumberland, Harnett, Hoke, Moore, Richmond, Robeson, Sampson, Scotland

Southeast: Brunswick, Columbus, Duplin, Pender, New Hanover

Wake: Durham, Franklin, Granville, Johnston, Lee, Person, Vance, Wake, Warren

Area L: Edgecombe, Halifax, Nash, Northampton, Wilson

Eastern: Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Greene, Hertford, Hyde, Jones, Lenoir, Martin, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne

Perinatal Care Regions:

Region 1 Western: Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey

Region 2 Northwestern: Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Guilford, Iredell, Randolph, Rockingham, Rowan, Stokes, Surry, Watauga, Wilkes, Yadkin

Region 3 Southwestern: Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union

Region 4 Northeastern: Alamance, Caswell, Chatham, Durham, Franklin, Granville, Johnston, Lee, Orange, Person, Vance, Wake, Warren

Region 5 Southeastern: Bladen, Brunswick, Columbus, Cumberland, Harnett, Hoke, Montgomery, Moore, New Hanover, Pender, Richmond, Robeson, Sampson, Scotland

Region 6 Eastern: Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Duplin, Edgecombe, Gates, Greene, Halifax, Hertford, Hyde, Jones, Lenoir, Martin, Nash, Northampton, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne, Wilson