Future Clinician Leaders College

Compendium of White Papers 2022: Leadership in Practice

North Carolina Medical Society
Leadership in Medicine

Developing the Healthcare Leaders of Tomorrow

Compendium of White Papers 2022

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Note: This compendium of white papers contains the final leadership & advocacy projects for students enrolled in the Future Clinician Leaders College Program 2021-2022.

North Carolina Medical Society
Leadership in Medicine

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INTRODUCTION

We are proud to share this compendium of the 2022 Future Clinician Leaders College cohort! This year celebrates our third cohort and every year, the program develops further based on the valuable feedback provided by these astounding future leaders.

The need to develop leadership among clinicians continues to be a crucial aspect of medical education and beyond today. Not only leadership as individuals but also in terms of context and working across professions and boundaries as well as being part of the greater conversation around health care at the societal level. In short, the need for clinicians to be leaders in healthcare continues to be a pressing need and the Future Clinician Leaders College provides a truly interprofessional and interinstitutional program where students learn, connect, and build a network for their continuous career paths. The importance of building a network and feel connected to peers and colleagues is further vital to address stress and burnout. Together with the leadership philosophy to build self-aware leaders that lead in line with their core values and authenticity, we intentionally build a platform for resilience and attention to the need to take care of each other as fellow clinicians facing many challenges in a demanding context.

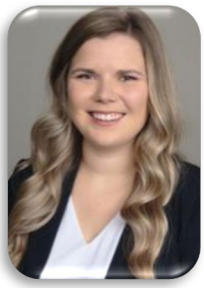
Together with self-awareness and authenticity that provide the platform, the pillars of the program centers around the four "Ps" of clinician leadership, allowing students to learn crucial aspects to the day -to day practice such as understanding how to lead Patients to change in the clinic; leading Peers as mentors in the classroom, leading Providers in interprofessional healthcare teams, and leading Policy change as healthcare advocates. To further build on the everyday aspect of leadership in clinical practice, this year's students were teamed up with a practice within the state. Together with the teams at the different practices, students discussed and identified a practical challenge to address. This opportunity to learn in parallel with theoretical discussions in the classroom, allowed students a very direct, and very impactful understanding of the context of health care and the many additional aspects of leading a day-to-day practice that come to play.

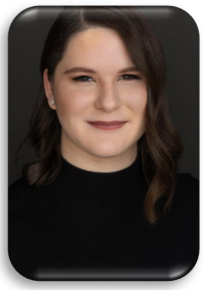
We are beyond grateful to the five practices that so generously and willingly embarked on the projects together with the students. A sincere thank you to Sentara Albemarle Medical Center in Elizabeth City, Paviol Dermatology in Charlotte, Robeson Pediatrics in Lumberton, Appalachian Community Health Centers in Asheville and Carteret Healthcare in Morehead City.

Enhancing Health Literacy: Development of Video and Print Education Materials for Paviol Dermatology

By Samantha Moyer, Alix Theodossiou, Mallory Steward, Tamriage Martin, Savannah Waldrop, and Tyra Girdwood





Problem Statement

Dr. Scott Paviol's new dermatology clinic, located in Charlotte, North Carolina, needs electronic print and video educational material to provide his patients with pre-visit and post-visit guidance to both better prepare them for their visit and remind them of their aftercare instructions to allow for a more efficient visit experience. He has noted that his patients often have similar questions and concerns before visits, as well as frequently call the clinic for reminders after visits take place. This can be cumbersome to both him and his ancillary staff who are faced with these interactions daily. He also notes that as there are a variety of private dermatology practices already prominent in the Charlotte area, having an ingenuous approach to care that is patient-focused may help promote his new clinic amongst the bustling metro and surrounding area.

Dr. Paviol feels that having a private, patient-centered part of his website dedicated to education would maximize patient care and satisfaction. He hopes that the education provided will be both easy to read by patients, as well as pre-emptively answer common questions prior to the visit taking place. This proactive guidance will help quell some anxieties brought on before office procedures occur, allowing the patient to feel more prepared for their encounter. He hopes that his in-clinic face-to-face time will then be more productive, and maybe even allow him to serve more patients each day. It would also be a space his patients would be able to visit after their appointment to review post visit or operative instructions whenever they need a reminder.

Background and Introduction

Health literacy is defined as "people's ability to obtain, process, communicate, and understand basic health information and services."[1] Only 12% of Americans have been reported to have the skills needed to navigate the U.S. healthcare system and to act on health-related information presented by medical providers.[1] Patients who have poor knowledge about their medical conditions, treatment plans, or medical forms are at risk for medication errors, low utilization of preventative services, increased use of unnecessary emergency visits or hospital admissions, and overall higher healthcare costs.[1,2] Health literacy is an important issue at the healthcare system level in which standardized

policies for the distribution and discussion of medical information to patients is needed.[1] An important health literacy intervention that can be quickly implemented across healthcare sites is the development of clear, easy to understand, and accessible patient education materials.

Patient education is a vital component of quality and individualized care. It promotes an interactive learning process that is designed to support and enable patients to manage their care and optimize their health and well-being. Outpatient settings, such as visits to the dermatologist, can cause patients to experience a variety of emotions such as feeling hopeful, uncomfortable, or even intimidated when they don't know what to expect. Dr. Paviol recognizes the need to provide his patients with easy access to supplemental resources in order to help them make informed decisions, alleviate fears, and provide realistic expectations to prepare patients before and after their visits.

Findings and Impact

After discussing with Dr. Paviol about health literacy needs in his practice, key topics were identified that could benefit from improved health literacy materials. The key topics included: (1) what to expect during a skin biopsy, (2) what is a skin check, (3) acne treatment, (4) acne follow-up, (5) pre-appointment to-do's, (6) what to expect during a Botox appointment, (7) Botox follow-up, (8) what to expect during a filler appointment, (9) filler follow-up, (10) what to expect during an excision, and (11) surgical excision follow-up.

For each key topic, our team developed 4-5 questions that patients might ask Dr. Paviol about the topic. Then, we met with Dr. Paviol at his practice and recorded a brief video (two minutes or less) of Dr. Paviol discussing each topic. After reviewing each video, we transcribed the information and developed clear, brief, written education on each topic. The written education included pictures and simple bulleted or numbered information to appeal to patients with various reading levels. Both the video and written materials were created for Dr. Paviol to send to his patients (via a secure patient portal on his practice's website) so that they could understand what to expect prior to their appointments, and so they could have access to important reminders following their appointment.

Proposed Solutions

To enhance health literacy among patients across the United States, healthcare practices should implement health literacy universal precautions.[2] According to the Agency for Healthcare Research and Quality, health literacy universal precautions help to: (1) simplify communication and reduce miscommunication between patients and providers, (2) allow for easier navigation of the healthcare system, and (3) support self-care management among patients.[2] Four key areas that can be improved through the use of health literacy universal precautions include spoken communication, written communication, self-management and empowerment, and supportive systems.[2]

By preemptively creating a space for current and future patients to access key and commonly asked information, electronic and video health material allows individual patients to better understand the global perspective of what to expect related to their individualized treatment. Video health material adds a personalized touch and when used in conjunction with electronic written material provides a robust patient experience efficiently on their terms. This further empowers patients to think about

their own questions and better prepares them for initial or follow-up visits with questions, concerns, while laying a basic foundation of what to expect at a visit regarding certain conditions.

Table 1. Key Strategies to Improve Health Literacy: Spoken and Written Communication[2]

Spoken Communication	Written Communication
(1) Greet patient warmly, make eye contact, listen carefully; consider the patient's culture and beliefs	(1) Assess the readability of education materials (e.g., Fry formula, SMOG, and Flesch Reading Ease)
(2) Use plain language and the patient's words, slow down while talking	(2) Education materials should be written at the 5th or 6th grade level
(3) Limit and repeat content, be specific and concrete	(3) Assess how understandable the education materials are (e.g., AHRQ's Patient Education Materials Assessment Tool)
(4) Show graphics, demonstrate, allow for patient participation and questions	(4) Consider alternatives to written materials (e.g., videos)
(5) Apply the teach-back method	(5) For any handouts: circle or highlight important points, personalize, use teach-back method, and emphasize importance during follow-ups
(6) Follow-up with patients; improve telephone access at the clinic or practice	(6) Review signs in the clinic or practice (i.e., are they visible and easy to read?)
(7) Brown-bag method: Review medications with patients when they come in for an appointment	(7) Offer everyone help with understanding medical forms; use the waiting room to display/educate on important topics

Note. As recommended by the Agency for Healthcare Research and Quality.

Conclusion

The creation of the 11 videos and handouts are just one small step towards increasing the health literacy and satisfaction of Dr. Paviol's patients. Once launched, Dr. Paviol can assess the understanding of his patients during their visits. He can continue to adjust content, wording, and length to continually improve them for the needs of his community. Also, as they are succinct and simply designed, they can be easily reproduced for future topics he may wish to add in the future.

By keeping our patients at the forefront of all we do as future providers, we will continue to allow healthcare delivery to evolve and improve. Giving our patients the tools needed to take their care into their own hands and the empowerment to understand their diagnoses, medications, procedures, and options to the fullest extent is a vital step in this evolution. We hope that small interventions like our education materials project will help bridge the gap in health literacy and empower the members of Dr. Paviol's dermatology practice as well as the Charlotte community.

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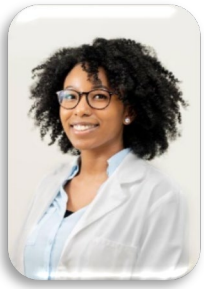
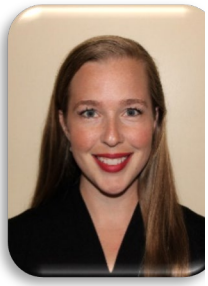
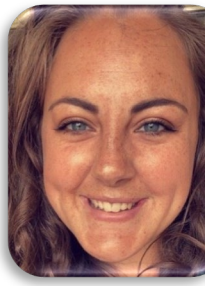
Obesity within Robeson Pediatrics: A Single Practice Approach to Addressing a Lifelong Epidemic

By Akhil Adla, Lierra Barrett, Emily Campbell, Sarah Carpenter, William Echols and Caroline Hall





Problem Statement

One of the most challenging healthcare issues affecting populations across the world and even more so in the US is obesity. Rates of obesity correlate with lower availability of financial and educational resources, particularly in rural and indigenous communities. Obesity is a complex problem influenced by genetics, socioeconomic status, built environment, employment, and social networks. Though obesity can occur for many reasons, its basis occurs when caloric input exceeds caloric output. These excess calories are converted to body fat; over time this excess can lead to weight gain and ultimately obesity.

Ideally, pediatric practices, particularly those that serve rural and indigenous populations, would have access to additional services needed to reduce the rate and decrease the progression and comorbidities of obesity. Furthermore, pediatric practices in these communities would and should be resourced to respond to this ever-important need.

Located within Robeson County, North Carolina is one such practice– Robeson Pediatrics. Robeson County is one of the largest counties in the state by land area and is home to the seat of the Lumbee Indian Tribe. Robeson County is uniquely diverse, as it is in the ten percent of counties nationwide considered majority-minority. However, Robeson County has nearly a twenty-seven percent poverty rate.[14] As a consequence of limited resources to address the unique challenges posed by childhood obesity in the community, Robeson Pediatrics faces a great challenge in managing the health of its pediatric patients. In this white paper, we aim to describe these unique challenges facing Robeson Pediatrics in responding to the childhood obesity epidemic in the community and propose a creative education solution.

Background and Introduction

Rates of childhood obesity have significantly increased in the United States over the past three decades with childhood obesity rates tripling in the U.S. during this time. [1] The COVID-19 pandemic has only worsened the problem due to its education, financial, and social impacts. In a study involving 432,302 children aged 2-19 body mass index (BMI) during the pandemic increased at approximately double the rate compared to before the pandemic. [2] Numerous factors are likely to blame. Many households experienced financial difficulties as employment statuses changed during the pandemic. Students became virtual learners for an extended time which directly resulted in decreased social interaction and increased screen usage. Physical education became difficult to translate from school to the home environment. This left many students void of the normal physical activity they would have normally received through school attendance. In addition, this challenge was complicated by the limited or non-existent access to school-provided meals. Which in turn created additional financial hardships for many families, especially those most vulnerable. Furthermore, the stress of the pandemic increased consumption by families because of stress eating. These are certainly not the only problems felt due to the COVID-19 pandemic with the full reach of its wake to still be felt.

Childhood obesity is not just a pediatric problem. Obesity in childhood has immediate negative impacts on a child's health but can also negatively impact their long-term health as an adult. 3 Studies have found that children who are overweight or obese are more likely to suffer from psychological stress such as lower self-esteem, depression, or anxiety. [3] Research demonstrates these children are more likely to develop serious medical conditions including type 2 diabetes, high blood pressure, and bone or joint-related illnesses.[3]

A report published by the NC Department of Health demonstrates that Robeson County has double the rate of deaths due to diabetes compared to the state average of North Carolina. [4] Obese children and adolescents are much more likely than their non-obese peers to become obese adults. Adulthood obesity increases the risk for numerous adverse health outcomes such as strokes, heart disease, dementia, and liver disease. [3] Nearly every chronic disease rate for Robeson County published in the previously noted report, including cerebrovascular and ischemic disease rates, are far greater than the

Table 1: Data retrieved from the Open Data Network powered by the Robert Wood Johnson Foundation [6]

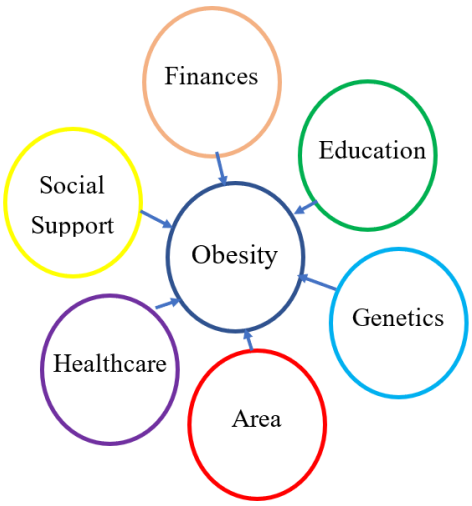
national and NC averages.[5] Robeson County's obesity in 2015 was nearly 39.5%, a sharp contrast to 29% for NC in the same year. [6]

	North Carolina	Robeson County, NC
Access to Exercise Opportunities Rate	75.80%	35.90%
Adult Obesity Rate	29.00%	39.50%
Adult Smoking Rate	20.20%	25.60%
Percent of Traffic Deaths Involving Alcohol Impairment	32.80%	33.80%
Excessive Drinking Rate	13.20%	8.50%
Physical Inactivity Rate	24.90%	34.80%
Sexually Transmitted Infections Rate	0.52%	0.84%

Many factors contribute to the development and risk for childhood obesity, including diet, lack of exercise, socioeconomic status, neighborhood, social networks, genetics, illness, and medications.

Although we could not address all the factors impacting obesity, we wanted to address factors that were attainable based on conditions in Robeson County. After speaking with our community partner, Dr. Lowry at Robeson Pediatrics, our solution to improving health outcomes in Robeson County was to provide an effective and affordable means of reducing obesity rates by increasing opportunities for physical activity and working to improve the nutritional quality of the foods available at her patients' homes.

Figure 1: Obesity is a complex health and social challenge that requires a multifaceted approach.



Findings and Impact

The link between diet, exercise, and disease cannot be ignored. The foods we eat and the amount of exercise we partake in are two risk factors that can be modified to prevent this negative cause-and-effect relationship. Although many people are aware that a healthy diet and active lifestyle are beneficial to their wellbeing, it is not always attainable given the challenges in everyday life. Many factors can hinder someone's ability to adhere to a healthy lifestyle such as the ones shown in the diagram above. Two topics to highlight are the social and physical environment that people live in. Social factors include community participation and socioeconomic status. Physical factors include access to healthy food options and neighborhood structure. [7] In 2019,

31.5% of the Robeson County population lived in poverty at 100% of the Federal Poverty Level compared to 13.06% in the state of NC. [8] Furthermore, the median household income in 2019 was approximately $34,000 compared to $65,000 in the US. [9] Many families in Robeson County work multiple jobs to achieve the county median household income and as mentioned earlier, children are spending more time indoors on their devices opposed to partaking in physical activity within their community. When financial stress and lack of time are elements in daily life, meals that are nutritious and cooked at home are not easily accessible and can take a backseat to cheaper fast-food options.

Research has shown that physical activity in group settings leads to higher participation. A Canadian study that implemented a dance program for economically disadvantaged adolescent children found that the children and parents self-reported improvements in their psychological and physical health and motivated them to make healthier choices surrounding food. [10] In addition, increased levels of physical activity in children have been shown to improve overall health and longevity including decreasing type 2 diabetes mellitus and cardiovascular disease. According to a review conducted by Wyszynska, Ring-Dimitriou, Thivel, et al., "results from a meta-analysis of 22 studies found that the risk of all-cause mortality was lower in subjects with a higher level of physical activity. It has been suggested that 2.5 hours of moderate physical activity per week compared with no activity was related to a reduction in mortality risk of 19%, whereas 7 hours a week reduced mortality risk by 24%."[11]

Through our multifaceted approach to addressing caloric intake and ways to improve calorie expenditure, we believe that the proposed solutions can bring about meaningful reductions in future obesity rates for Robeson County, NC.

Proposed Solutions

Even with improved longevity, quality of life has been compromised due to chronic diseases. That is abundantly apparent in Robeson County, NC where chronic disease rates are among the highest in the nation. Fundamentally, obesity is driven by prolonged periods of caloric intake that are higher than the number of calories expended. In Robeson County, environmental factors such as lack of opportunities for physical activity and healthy foods make nutritionally poor but calorically dense diets more prominent.

Our approach was multifaceted:

1-Address caloric expenditure: providing a safe exercise program through a partnership with Girls on the Run, a 501 (c) (3) nonprofit organization committed to fostering physical and emotional health in elementary-aged girls. Headquartered in Charlotte, NC, Girls on the Run is an established entity with a mission to strengthen third through eighth-grade girls' social, emotional, physical, and behavioral skills through a curriculum with a strong emphasis on running. With nearly 12,000 locations across North America, Girls on the Run has demonstrated not only a strong record of success but also a drive to be inclusive. Due to the rural nature of Robeson County, a vast majority of recreation occurs either through the schools or through county-sponsored recreation leagues. Robeson County is a desert for recreation and exercise programs such as Girls on the Run. Girls on the Run Coastal Region has partnered with the YMCA of Southeastern North Carolina. This partnership will allow the Girls on the

Run program in Robeson County to be accessible to all. To address the membership fee to Girls on the Run, we plan to use existing community support programs, such as the Kiwanis of which Dr. Lowry is an active member, to aid with financial assistance. As this is a new program for Robeson County it was decided to focus primarily on a specific age demographic to ensure success before implementing a larger expansion of similar programs such as Stride the male counterpart.

2- Make meal planning simpler: The economic indicators and feedback from Dr. Lowry brought forth the stark economic realities facing many of the families in Robeson County. We found through our conversations with Dr. Lowry that meal prep was done by the eldest child in the family or extended family. Our goal was to equip these stakeholders with nutrient-dense meal plans that were conscientious of cost and time. Meal prep templates are simplistic yet informative as we desired our template to be read by not only parents but also by age-appropriate children to prepare meals. Furthermore, we prominently placed the time and cost per serving to entice people to give meal prepping a try. We focused on creating meals for less than six dollars a person to make our meals competitive with cheaper fast-food options. Value per serving is essential for families on a budget and time constraints.

Figure 2: Meal sheets designed to provide quick and healthy recipes for Robeson Pediatric patient families.

In a recent French study, meal planning was noted to be associated with improved diet quality and adherence to nutritional guidelines. Most importantly, it was associated with decreased obesity.[12] Diet and physical activity are two essential components of healthy living. A CDC report titled Promoted Healthy Eating and Physical Activity for a Healthier Nation identified "poor diet and physical inactivity cause 310,000 to 580,000 deaths per year".[13]

Conclusion

This project allowed the opportunity to address the important issue of pediatric obesity in Robeson County, North Carolina. We were partnered with Dr. Lowry of Robeson Pediatrics. As an active and involved physician in her community, she was able to provide data, direction, and contacts for other members of the community. It was decided as a team that to best approach pediatric obesity, the issues of affordable nutrition and physical activity needed to be addressed. A series of affordable and nutritious meal options were developed to be utilized by the Robeson Pediatrics website, available to both patients and caregivers. It was decided that each meal should be under six dollars per serving (to compete with fast food) and be of appropriate nutritional quality. Using the previous experience of group members, it was decided that the program "Girls on the Run" through the YMCA would be an excellent approach to addressing physical activity. This program would allow for girls at a specific Robeson County Public School (depending on point of contact) to have a fun and safe after-school activity that resulted in a 5k race at the end of the series. Due to the nature of this program, this also allows for potential expansion to other school-based Girls on The Run teams or the male counterpart, Stride.

This project served as an ever-important reminder that the future of healthcare in North Carolina, the Southeast, and the whole United States of America relies on teams of different backgrounds and perspectives to work cohesively and efficiently to improve patient care, experience, and outcomes. Over the course of this project, through a series of small and large group events, individual leadership styles were enhanced through an understanding of the duality of a leader. Members cultivated the ability to discern when to truly lead a group versus when to be an active member, the flexibility required of leadership, and the understanding that different leadership styles have situation-dependent efficacy.

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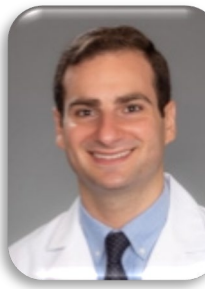
Addressing Chronic Disease Management and Barriers to Healthcare Access in the Communities Served by Sentara Albemarle Medical Center

By Ali Eakes, Kaitlyn Rodriguez, Kay Burrows, Manuel Hazim, Meredith Lamb and Trandon Jefferson



Problem Statement

The Sentara Albemarle Medical Center covers residents in Camden, Currituck, Gates, Pasquotank, and Perquimans counties. Access to physicians and dentists is up to 10x less than the state average, across all counties. Deaths due to heart disease and rates of adults with diabetes are higher in each of the 5 counties compared to the state average, while rates of obesity are higher in 4 of the 5 counties compared to the state average.

Background and Introduction

As of 2022, it is estimated that 537 million adults have diabetes worldwide[1]. Approximately 130 million adults in the United States alone are living with diabetes or prediabetes and the US accounted for 966 billion dollars in health expenditure secondary to diabetes[2].

In addition to diabetes, heart disease continues to affect many individuals worldwide. In the United States, nearly half of the adult population (116 million individuals) have hypertension[3]. The prevalence of high blood pressure is higher in certain geographical locations in the United States. In particular, the Southeastern United States has some of the highest prevalence of hypertension in adults 20 and older according to self-reported patient data from the CDC in 2017[2].

Fortunately, many chronic diseases such as Type 2 diabetes and hypertension can be prevented through healthy food choices, weight loss, and an increase in physical activity.

To further understand the impact of chronic diseases such as diabetes and heart disease on a coastal North Carolina community, the authors paired with the Sentara Albemarle Medical Center. that serves northeastern North Carolina. According to their 2019 community health needs assessment, rates of heart disease, obesity, and diabetes were higher in most of the counties compared to the state average, indicating a massive need in these counties for health intervention and solutions.

The Medical Center further outlined the top three priority health problems in 2019 that were undercovered, as 1) lifestyle and healthy behaviors, 2) access to healthcare, and 3) chronic disease management, including mental health. Four of the five counties that the Sentara Albemarle Medical Center serves have significantly lower rates of access to primary care providers, compared to North Carolina as a whole. Gates county rates were the lowest with 8.6 providers per 100,000 population, with the North Carolina average being 71 providers per 100,000. This suggests that one of the main causes of these high rates of chronic diseases in these populations is due to the lack of access to proper healthcare and resources. Although there is a massive need for an increase in the number of healthcare providers in each of the five counties, there are additional factors affecting the overall wellbeing and quality of life of the residents. When residents were surveyed on what they considered to be the top community issues affecting their overall quality of life, low income/poverty was most often the #1 ranked issue. This indicates that the issue is not just access, but rather, access to *affordable* healthcare options.

The purpose of this white paper was to understand the health needs of the community in which Sentara Albemarle Medical Center serves and to propose and implement sustainable solutions.

Findings and Impact

The United Way of North Carolina provides referral and information services through NC 211 (4). This service provides information on various resources in the individual's community for various concerns including food insecurity, educational support services, and mental health and substance use disorder (4). This platform was used to identify local resources to address food insecurity, housing support, and community wellness in the various counties supported by Sentara Medical Center. These resources were summarized in a handout (Figure 1a and 1b) that can be distributed to patients and community members to bring awareness to what resources are currently available to address ongoing needs.

This process also provided insight into what resources may be lacking in this community. Specifically, services focused on addressing housing concerns were particularly lacking in these counties. This information can provide a guide for community stakeholders to use when allocating funding and additional resources to address various social determinants of health in this community.

Proposed Solutions

1. To address the lifestyle and health behaviors in the community and improve access to healthcare, we sought to increase connections by providing handouts with community resources for wellness specific to Camden, Currituck, Gates, Pasquotank, and Perquimans Counties. Resources include locations for food, shelter, and overall wellness in each respective region. (Figure 1 a - b)

2. To increase preventative medicine and cancer screening we provided brochures for patients with a breakdown of screening guidelines. The brochure breaks down screening guidelines for the public and for diseases specific to men and women's health. (Figure 2)

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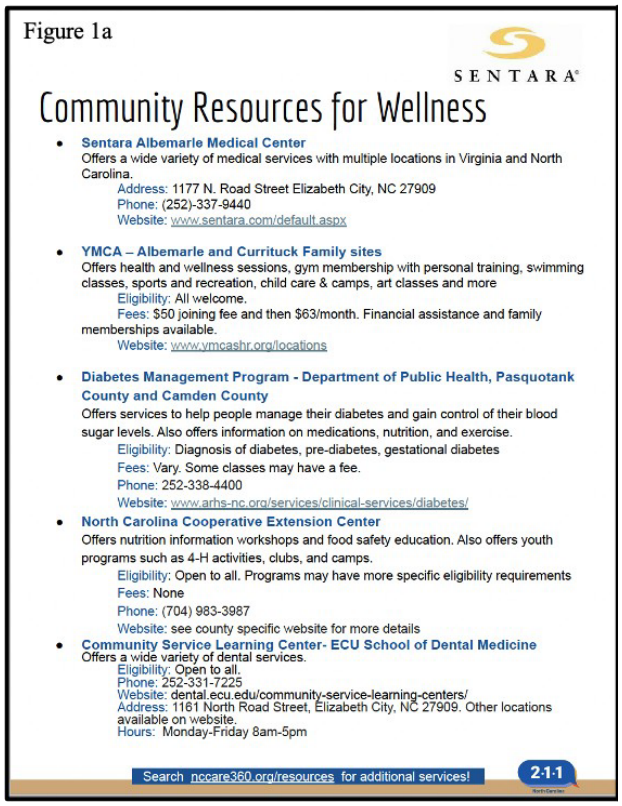
Figure 1a



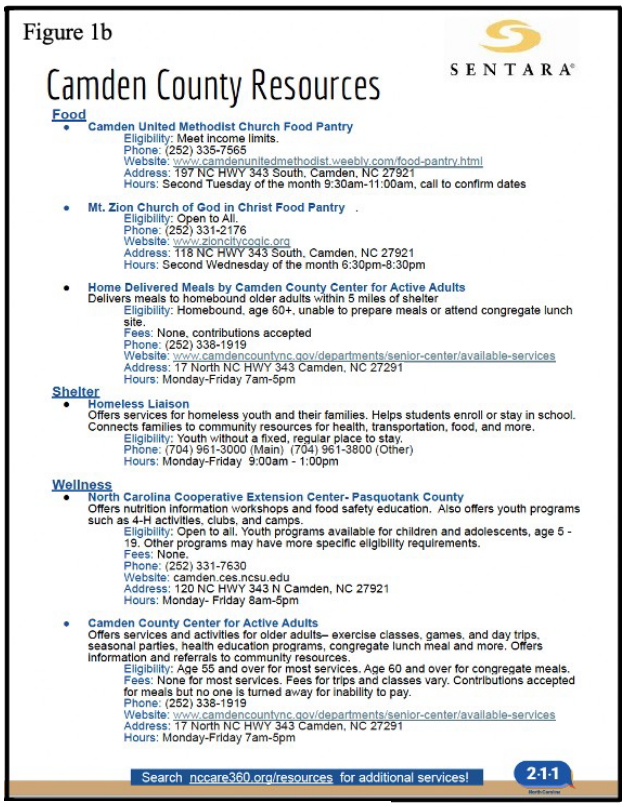
SENTARA

Community Resources for Wellness

- **Sentara Albemarle Medical Center**
  Offers a wide variety of medical services with multiple locations in Virginia and North Carolina.
  Address: 1177 N. Road Street Elizabeth City, NC 27909
  Phone: (252)-337-9440
  Website: www.sentara.com/default.aspx
- **YMCA – Albemarle and Currituck Family sites**
  Offers health and wellness sessions, gym membership with personal training, swimming classes, sports and recreation, child care & camps, art classes and more
  Eligibility: All welcome.
  Fees: $50 joining fee and then $63/month. Financial assistance and family memberships available.
  Website: www.ymcashr.org/locations
- **Diabetes Management Program - Department of Public Health, Pasquotank County and Camden County**
  Offers services to help people manage their diabetes and gain control of their blood sugar levels. Also offers information on medications, nutrition, and exercise.
  Eligibility: Diagnosis of diabetes, pre-diabetes, gestational diabetes
  Fees: Vary. Some classes may have a fee.
  Phone: 252-338-4400
  Website: www.arhs-nc.org/services/clinical-services/diabetes/
- **North Carolina Cooperative Extension Center**
  Offers nutrition information workshops and food safety education. Also offers youth programs such as 4-H activities, clubs, and camps.
  Eligibility: Open to all. Programs may have more specific eligibility requirements
  Fees: None
  Phone: (704) 983-3987
  Website: see county specific website for more details
- **Community Service Learning Center- ECU School of Dental Medicine**
  Offers a wide variety of dental services.
  Eligibility: Open to all.
  Phone: 252-331-7225
  Website: dental.ecu.edu/community-service-learning-centers/
  Address: 1161 North Road Street, Elizabeth City, NC 27909. Other locations available on website.
  Hours: Monday-Friday 8am-5pm

Search nccare360.org/resources for additional services! 2-1-1

Figure 1b



SENTARA

Camden County Resources

Food

- **Camden United Methodist Church Food Pantry**
  Eligibility: Meet income limits.
  Phone: (252) 335-7565
  Website: www.camdenunitedmethodist.weebly.com/food-pantry.html
  Address: 197 NC HWY 343 South, Camden, NC 27921
  Hours: Second Tuesday of the month 9:30am-11:00am, call to confirm dates
- **Mt. Zion Church of God in Christ Food Pantry**
  Eligibility: Open to All.
  Phone: (252) 331-2176
  Website: www.zioncitycogic.org
  Address: 118 NC HWY 343 South, Camden, NC 27921
  Hours: Second Wednesday of the month 6:30pm-8:30pm
- **Home Delivered Meals by Camden County Center for Active Adults**
  Delivers meals to homebound older adults within 5 miles of shelter
  Eligibility: Homebound, age 60+, unable to prepare meals or attend congregate lunch site.
  Fees: None, contributions accepted
  Phone: (252) 338-1919
  Website: www.camdencountync.gov/departments/senior-center/available-services
  Address: 17 North NC HWY 343 Camden, NC 27291
  Hours: Monday-Friday 7am-5pm

Shelter

- **Homeless Liaison**
  Offers services for homeless youth and their families. Helps students enroll or stay in school. Connects families to community resources for health, transportation, food, and more.
  Eligibility: Youth without a fixed, regular place to stay.
  Phone: (704) 961-3000 (Main) (704) 961-3800 (Other)
  Hours: Monday-Friday 9:00am - 1:00pm

Wellness

- **North Carolina Cooperative Extension Center- Pasquotank County**
  Offers nutrition information workshops and food safety education. Also offers youth programs such as 4-H activities, clubs, and camps.
  Eligibility: Open to all. Youth programs available for children and adolescents, age 5 - 19. Other programs may have more specific eligibility requirements.
  Fees: None.
  Phone: (252) 331-7630
  Website: camden.ces.ncsu.edu
  Address: 120 NC HWY 343 N Camden, NC 27921
  Hours: Monday- Friday 8am-5pm
- **Camden County Center for Active Adults**
  Offers services and activities for older adults– exercise classes, games, and day trips, seasonal parties, health education programs, congregate lunch meal and more. Offers information and referrals to community resources.
  Eligibility: Age 55 and over for most services. Age 60 and over for congregate meals.
  Fees: None for most services. Fees for trips and classes vary. Contributions accepted for meals but no one is turned away for inability to pay.
  Phone: (252) 338-1919
  Website: www.camdencountync.gov/departments/senior-center/available-services
  Address: 17 North NC HWY 343 Camden, NC 27291
  Hours: Monday-Friday 7am-5pm

Search nccare360.org/resources for additional services! 2-1-1

Figure 1a: A handout representing a compilation of community resources for wellness available in the Sentara Medical Center area. Figure 1b: An example of country-specific resources to address holistic health including food, shelter, and wellness.

Are you up to date on all your health screenings?

Personal Health Screening Guidelines

SENTARA®

	Screening	Purpose	20-29	30-39	40-49	50-59	60+
General	Cholesterol, LDL, HDL, and Triglycerides	Identify people at risk for coronary artery disease	Every 5 years depending on level	Every 1-3 years depending on level		Annually	
	General Physical Exam	Detect conditions before symptoms develop	Every 2-3 years			Annually	
	Immunizations	Create immunity against a particular disease	Diphtheria-Tetanus every 10 years. Influenza annually. Pneumococcal once after age 65 unless you have diabetes, cancer, heart, lung, kidney, or liver disease, or smoke cigarettes (get it now).				
	Colonoscopy	Detect cancers and growths (polyps) on the inside wall of the colon before they become cancerous		Baseline test at age 45 (unless you have family history) then every 5-10 years		Every 5-10 years	Every 5-10 years until age 75
	Hemoccult	Detect blood in stool to screen for various diseases				Annually	Annually until age 75
	General Eye Exam	Detect hidden disease processes in the eye or body as a whole	At least every two years				Annually
	Dental Exam	Detect disease and maintain health in the oral cavity	Every 6 months				
Women	Mammography	Detect cancer and precancerous changes		Discuss with your doctor. Consider if you have a strong family history of breast cancer.		Every 2 years	Every 2 years until age 75
	Pap Smear	Detect abnormal cells that may become cancerous	Every 3 years, starting age 21	Every 3 years (Pap alone) or every 5 years (Pap + HPV test) until age 65			
	Bone Density Screening	Detect osteoporosis and bone thinning				Consider DXA scan if family history of osteoporosis	DXA scan at age 65 or older
Men	Prostate Specific Antigen	Detect prostate cancer in the earliest stages				Discuss with your doctor	

Figure 2: A brochure breaking down health screening guidelines stratified by different ages and gender-specific groups.

Conclusion

Like many medically underserved regions in the country, the community that Sentara Albemarle serves struggles with connecting its citizens with the health care resources they need to manage and prevent chronic disease. This project set out to identify areas for improvement in Sentara Albemarle's communication with the population it serves, organize and distribute information on community resources, and help the community take a step in the direction of wellness. Through our Personal Health Screening Guidelines brochure, we've provided a quick and easy way for community members to check if they are up-to-date on preventative health measures. Additionally, the Community Resources for Wellness information packet creates a simple and straightforward way to share county-specific resources to community members in need of assistance, addressing health challenges from the source.

The two aides are already in use by social workers at Sentara Albemarle. Vice President and Chief Medical Officer Dr. Donald Bowling shares, "this allows the Integrated care managers to give the patients an easy to read resource that connects patients with community resources to help them manage their chronic disease. By mentioning 211 on each page it also helps make patients aware that there are additional resources a phone call away to help address socioeconomic determinants of health that may not be included in the flyer." By organizing and sharing these aides, we hope to have created lasting change in the way that Sentara Albemarle interacts with the community it serves.

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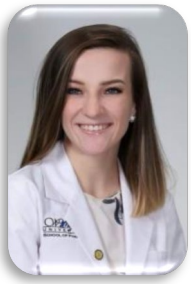
The Role of Social Determinants of Health in The Access to Healthy Dietary Options

By Shawn Armstrong, Lauren Autry, Ankita Mishra, Madison Redwine and Sesalie Rhinehart







Problem Statement

The Appalachian Community Health Centers, located in Asheville, NC and its surrounding areas, is attempting to improve the health of its community by integrating a Mediterranean-based diet. The Mediterranean diet has shown success in slowing both development and progression of chronic illnesses such as type 2 diabetes mellitus and primary hypertension, however, providers with the Appalachian Community Health Centers have struggled with adherence to this diet, which they attribute to a lack of resources and transportation options available to their patients. While there are likely many other barriers to the success of the Mediterranean diet within this community our project focused on the effects poverty, food insecurity, and transportation have on the execution of such dietary changes. This decision was made with the leadership of the Appalachian Community Health Centers, who have noted their most frequent barriers to adherence to be the cost of the ingredients and difficulties with transportation in the city of Asheville, NC. Thus, our ultimate goal was to assist in making these items more accessible and affordable to their patient population.

According to the US census, as of 2020, 13.3% of the city of Asheville fell below the poverty line. Economic instability such as this often leads to an inability to obtain food, especially food high in nutrients that we know to be essential for our overall health. Additionally, poverty has a profound effect on one's transportation options. Several of the patients of Appalachian Community Health Centers are without a personal car and many are without shelter. This means that they must rely on public transportation to attend their healthcare appointments, and to obtain their food and groceries. Unfortunately, current public transportation in Asheville, NC does not meet the increasing demand of an ever-growing city with increasing rates of poverty.

Therefore, our FCLC team was tasked with researching low-cost food pantries that both stock foods consistent with the Mediterranean diet and are located along major public transportation lines.

Background & Significance

To provide a realistic solution to barriers faced by the patients of Appalachian Community Health Centers, it is essential to understand the role Social Determinants of Health (SDOH) play in their ability to access the components of a Mediterranean diet. The Mediterranean diet is based on the traditional foods that people used to eat in countries bordering the Mediterranean Sea, including France, Spain, Greece, and Italy. Research has shown that it significantly reduces cardiovascular disease and overall mortality by promoting heart health, maintaining healthy blood sugar levels, and protecting brain function.

The illustration (Figure 1) breaks down the ideal frequency of consumption for each food group. Much of the diet is centered around the consumption of vegetables, fruit, nuts, seeds, legumes, potatoes, whole grains, herbs, spices, fish, seafood, and extra virgin olive oil. Poultry, eggs, cheese, and yogurt are to be consumed in moderation, and individuals are encouraged to infrequently consume red meat, sugar-sweetened beverages, processed meat, refined grains, refined oils, and other highly processed foods.

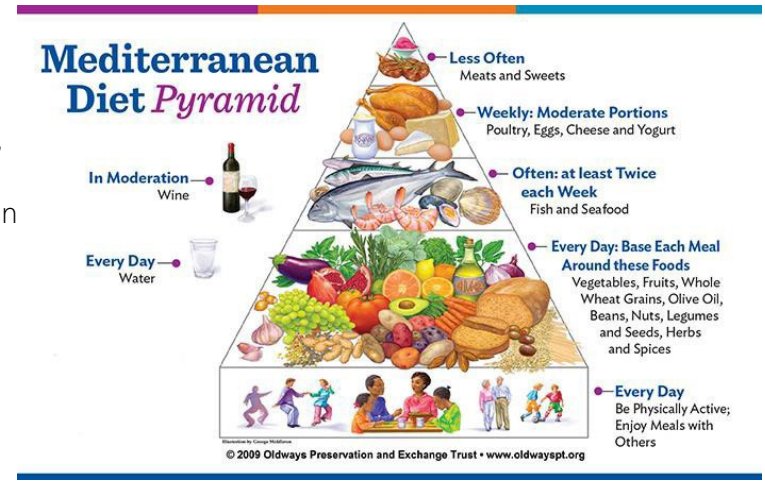


Figure 1: Mediterranean Diet Pyramid

Unfortunately, for many people in Asheville, and the greater nation, this diet is not as simple as a pyramid proposes. Several national and global organizations have developed frameworks to understand social determinants of health (SDOH) and their role in health outcomes. The Center for Disease Control (CDC) defines SDOH by encompassing five essential pillars. These are economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context (see below).

Figure 2. The 5 pillars of the social determinants of health. Reproduced from the CDC.

While all these items are intertwined, *economic stability* and *neighborhood and built environment* stand out as core barriers to the Mediterranean diet in the rural communities of Asheville, NC. Multiple food items encouraged by the Mediterranean diet are often not available in the food deserts of the less affluent areas of town, and if they are, many of them are not affordable. Additionally, if the affordable pantries are outside of walking-distance, many patients are left to navigate public transportation, which not only may be difficult to follow, but also may not always be affordable. With this baseline knowledge, we decided to further investigate these SDOH to create a plausible solution for the patients of Appalachian Community Health Centers.

Currently, the poverty rate in the United States is 11.4%. This percentage steadily increases when examining North Carolina and Asheville specifically, who have rates of 12.9% and 13.3% respectively. Further, the 2021 National Alliance to End Homelessness report found that 17 out of every 100,000, or 0.017% of the population, are unsheltered. However, in Asheville, 527 out of their population of 92,328 are unsheltered. Thus, their overall rate of homelessness is 0.57%, a percentage much higher than that of the overall country. With such staggering rates of economic disadvantage, many of these patients are often left with few, accessible, affordable, and healthy dietary options, leaving them at an increased risk of many disease states.

In 2020, The United States Department of Agriculture (USDA) reported food insecurity rates in the United States to be around 10.5%. However, North Carolina's food insecurity rate is at 15.4%, with a higher concentration in rural areas. The USDA defines food insecurity as "a household-level economic and social condition of limited or uncertain access to adequate food." Further classifications include "low food security" and "very low food security." Low food security is defined by a decreased variety and quality of food that is available to an individual. Very low food security is when the lack of food begins to impact eating patterns, most commonly in the form of skipping meals.

Food security is critical to maintain the health of an individual, and without it, there is an increase in the likelihood of the development of chronic illness and poor health outcomes. Food security is an incredibly complex issue that requires a broad investigation of the many factors that may hinder the ability of a household or individual from obtaining access to adequate sustenance. One of those factors that our FCLC team further investigated was that of transportation.

A high percentage of the patients of Appalachian Community Health Centers fall into the unsheltered population of Asheville, NC. Therefore, their meal options are often further limited to the proximity of public transportation lines. Upon investigation, The Asheville Rides Transit (ART) reportedly operates 18 bus lines, with a $1 fee per ride. ART reports that "routes and stops may vary," from day to day, something that has the potential to have a major effect on low- income individuals attempting to reach their food pantry or medical

provider. Further, with the poverty that many patients face both inside and outside of Asheville, NC, a couple of dollars have the potential to impact the quantity and quality of food accessible for purchase.

Inaugurating food pantries and free meal sites only scrapes the surface of the problem if these sites are not within the reach of those who need them the most.

Impact on North Carolina

To summarize, as of 2020, within North Carolina, 1,503,050 people qualify as food insecure, and 9,280 people qualify as unsheltered/homeless. While homelessness has decreased by about 3,000 persons since 2010 in North Carolina, it has been stagnant for a number of years. As the cost of living continues to rise and minimum wage remains stagnant, we can expect both the food insecure and homeless populations to continue to rise. Additionally, public transportation is often overlooked, resulting in an increased difficulty of travel to resources for these already vulnerable groups.

The financial burden of homelessness has not yet been quantified in terms of cost to the North Carolina healthcare sector; however, almost 30% of all emergency room visits are made by persons without housing nationwide. These individuals, on average, spend three nights in the hospital totaling nearly $9,000/stay. Moreover, 80% of emergency room visits are for illnesses that can be addressed in primary care settings. Unfortunately, if the state of NC does not prioritize caring for the needs of these vulnerable populations on the front end, these numbers will continue to climb.

Solutions

Many studies have displayed the disproportionate effects that these social factors have on rural and urban communities both in NC and nationwide. As healthcare workers, we have a unique perspective and platform that government officials are willing to listen to. Thus, it is important that healthcare leaders use their voices to advocate for the preventative care of the economically disadvantaged, both for the improvement of their quality of life and for the overall function of our healthcare system. People's lives are at stake and it is inappropriate to ignore the facts, statistics and suffering patients that are before our eyes.

On a smaller scale, to improve the health of their patients, Appalachian Community Health Centers charged our group with creating a solution to the instability of nutrition and transportation in the greater Asheville community. We approached this complex task by creating a comprehensive reference of food pantries, aligned with the most efficient public transportation option to each location. Healthy food is notoriously expensive; however, our written resource aims to direct patients towards locations where they can access affordable ingredients closely aligned with the Mediterranean diet.

By creating this resource, we hope to not only provide a reference for individuals in the community but to illuminate areas of the community that are deserted by the transportation system. Through adding stops on bus schedules, Buncombe County can reach more individuals in need of transport to healthcare and food sites. Our solution is a mitigating step; however, community governments must work to develop and fund resources that target this growing local and national crisis.

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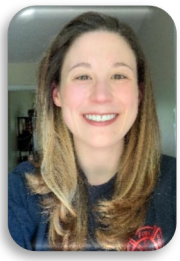
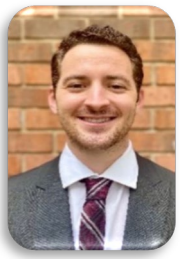
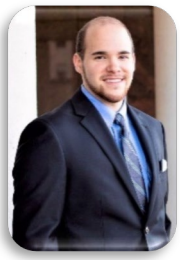
Insights into Smoking Cessation Visit No-Shows at Carteret Health Care Morehead City, NC.

By Regan Cronin, Alexandra George, Austin Graydon, Alexandria Marshall, Paula Patel, and Logan Webb





Problem Statement

Cigarette smoking imposes a tremendous burden on human health and is a leading preventable cause of death in the United States. Smoking has been found to have significant impacts on nearly every major organ and has been identified as a causative agent of heart disease, stroke, chronic respiratory disease, and a multitude of cancers. Additionally, it impacts the lives of non-smokers through exposure to secondhand smoke. Smoking contributes to billions of dollars in medical expenses annually[1]. A recent study showed that there is increased prevalence of smokers in rural areas[2].

In North Carolina, it is estimated that 16.5% of adults currently smoke. Of those individuals, nearly half attempted to quit smoking for one or more days in 2019[3]. While smoking cessation efforts in urban areas report marginal success, these same strategies yield little if any reduction in smoking prevalence when applied to rural areas[2]. Given this disparity, it is crucial to amplify rural voices facing the challenge of smoking cessation to better understand the unique barriers posed to this population. By further characterizing these barriers, programs that work in this realm can better target their resources to fit rural populations' distinct needs.

Carteret Health Care is the local hospital system serving the rural coastal area of Morehead City, North Carolina. Providers at Carteret Health Care had noticed an increase in missed appointments intended to address smoking cessation. To learn more about factors contributing to these "no-shows", team members contacted patients in an effort to determine the barriers patients faced in their smoking cessation journey. Team members interviewed patients who had expressed an interest in smoking cessation but had ultimately not attended their subsequent appointments surrounding this chief concern. Through these conversations, we aim to generate a framework for solutions that identify and target these barriers to smoking cessation.

Background and Introduction

A review of the literature was conducted to help summarize what is already known regarding smoking cessation in this setting, the methods most frequently attempted and common strategies employed, as well as what remains unknown. All articles agree that priority populations for smoking cessation include pregnant women and people with cardiovascular disease[4–6]. In two articles, both published in 2020, researchers discussed a variety of alternative nonpharmacological methods, including hypnotherapy, acupuncture, and sheer willpower[4,6]. They also discussed pharmacotherapeutics such as nicotine replacement therapy (NRT), bupropion, and varenicline[4,6].

Despite one paper focusing on subjects in Germany and the other in Australia, it is important to note that researchers concluded smoking cessation modalities in both countries were not typically covered by insurance, making access to care more costly for low-income populations[7]. The United States faces similar difficulties, according to the American Lung Association. Basic Medicare and Medicaid will cover some cessation medications, including bupropion, varenicline, and some forms of nicotine replacement therapy, as well as a couple of counseling sessions, but depends on the state the patient resides in and whether or not the patient has this type of health insurance[4].

Two Cochrane Reviews have been published in 2017 and 2019 on "system change" interventions (policies and procedures put in place to identify smokers and refer them for treatment) and utilizing incentives for smoking cessation. The first study found that, although evidence suggests that system change interventions may be effective at increasing "process outcomes", like cessation counseling or referral to smoking cessation appointments, these interventions did not result in an overall increase in smoking cessation rates (although the strength of the evidence is limited)[5]. The Cochrane Review published in 2019 discussed the potential efficacy of incentives in assisting patients to quit smoking. Authors concluded that providing incentives lead to better long-term results in terms of smoking cessation, regardless of the population of people studied[8]. Beyond the provided articles, evidence-based discussions rooted in the United States on smoking cessation were difficult to procure from the PubMed database, suggesting a strong need for further studies describing interventions effective in increasing rates of smoking cessation.

In considering behavior change research and theory, the transtheoretical model of health behavior change sheds some light on the key opportunities to bring about long-term behavior change. The transtheoretical model holds that behavior change occurs over a series of stages. These stages include precontemplation, contemplation, preparation, action, maintenance, and termination[9]. Interventions should be modified to meet the individual where they are to effect progression through these stages. During the precontemplation stage, individuals are not planning to change their behavior in the near future. These patients either have not made the association between their behavior and outcomes on their health or are not motivated by this reality. In the contemplative stage, individuals intend to change their behavior, but have not begun to take the steps to do so. During the preparation stage, individuals began to plan and take direct action to bring about behavior change. Action refers to making these intended changes, and maintenance refers to the ongoing action required to maintain the new behavior[10].

When applied to smoking cessation, patients in the precontemplation stage, for example, may not be aware of the health problems associated with tobacco smoking. They may not be experiencing the outcomes themselves, or they may not know that smoking is contributing to

symptoms like a chronic cough or trouble breathing. In the contemplative stage, individuals have made this connection (or have some other motivation to quit, such as the health of other household members), but do not have a concrete plan of how to stop smoking. In this stage, providers can have an impact by providing instrumental support such as smoking cessation plans or medications to assist patients in this effort. In the preparation stage, patients have decided to quit smoking and may have begun to take steps (such as scheduling an appointment with their provider). Similar to the contemplation stage, this represents another optimal time for providers to intervene to further patients in their journey.

To address the no-shows for smoking cessation appointments at Carteret Health's primary care office, a Carteret Health provider identified patients eligible for referral to a smoking cessation program. The patients signed an opt-in form if they were interested in participating in a structured interview, and their contact information was passed along to team members in a HIPAA-compliant secure document. Team members developed a script of seven questions addressing social determinants of health related to financial, transportation, and social difficulties as well as each patient's desire to pursue smoking cessation. The majority of the questions were asked on a 5-point scale with 1 being strongly disagree, 5 being strongly agree, and 3 being neutral. Additionally, one open-ended question asked every patient to describe in their own words what smoking cessation meant to them. Team members administered the survey via the Doximity smartphone application.

Findings and Impact

Team members were able to interview six patients regarding smoking cessation. All these patients had been referred to the smoking cessation clinic by primary care providers, and some had either not yet scheduled an appointment or did not plan on scheduling an appointment. Most of these individuals best fit into the precontemplation or contemplative stages of behavior change (either they did not recognize or were not motivated by the potential health consequences of their habits, or they were thinking about quitting but had not made concrete steps yet). Although no formal qualitative analysis was conducted from conversations with these patients, investigators took notes on the conversations and a number of common themes began to emerge that could explain why patients did not show up to their smoking cessation appointments. These themes make up an important potential framework for Carteret Health moving forward in potentially addressing no-shows at appointments.

Lack of Interest

Overall, most patients reported that they simply were not interested in pursuing smoking cessation. Some patients reported that smoking was not causing them any health problems at present, and therefore saw no need to quit. At least part of this lack of interest in quitting stems from how patients are evaluating their personal health risk. Experts in the field of environmental risk communication have previously documented a number of factors impacting patients' perception of personal risk. One challenge they've described is that of a time frame – the hazards of smoking (and other environmental exposures) are often presented in terms of "lifetime risk", rather than attaching a specific time frame of years or decades[11]. While the patient may not necessarily experience the effects of COPD or lung cancer at present, they likely will at some unknown time in the future. This time gap

between the occurrence of an exposure and the outcome associated with it can affect patients' risk perception dramatically. Additionally, researchers have previously noted that, in assessing their personal risk, patients are likely to perceive exposures of which they have voluntary control over (e.g./ choosing to smoke a cigarette vs. being exposed to air pollution in a city) as more acceptable ones[12]. Other factors impacting patients' risk perception, and presumably, therefore, their interest in avoiding a harmful exposure like smoking, include their understanding of the hazards that could occur from the exposure, as well as how much of the exposure they receive. In other words, these patients may lack a complete understanding of specifically how diseases associated with smoking may impact them and their families, as well as when.

Positive Social Experience

Beyond a lack of interest, other patients explained that smoking represented a positive experience in their olives. These individuals felt that smoking was an enjoyable activity, and they did not want to stop. Many of these patients also described the social importance of smoking, discussing how various members of their families also smoked, resulting in an environment that would make it difficult for them to avoid the habit

Perceived Ability to Quit on their Own

Many patients believed they would be able to quit smoking on their own (or using "sheer willpower" in terms of the studies described above). These patients felt that they would be able to quit without a medical provider's assistance in developing a strategy, and some had even been successful in quitting for lengths of time on their own in the past. Of note, one patient felt that he could quit on his own if he had access to medications such as bupropion to help with the cravings, however most of these require a prescription from a provider, and therefore the attendance of at least one smoking cessation visit.

Structural Barriers

While some patients may have been interested in a smoking cessation appointment, there were perceived logistical barriers preventing them from pursuing one. Some patients discussed the time burden required in terms of taking time off from their jobs or schooling in order to attend smoking cessation appointments. Others stated it was too expensive to go to a smoking cessation appointment, considering transportation difficulties and having to pay copays each time they went to an appointment. In combination with low motivation initially, these can seem like insurmountable barriers.

Proposed Solutions

In terms of developing a framework to help reduce barriers to attending smoking cessation appointments and consequently reduce the number of no-shows, it is of critical importance to assess where patients fall in their preparedness for smoking cessation, and to employ appropriate interventions for their individual needs. Figure 1 provides an overview of this proposed framework.

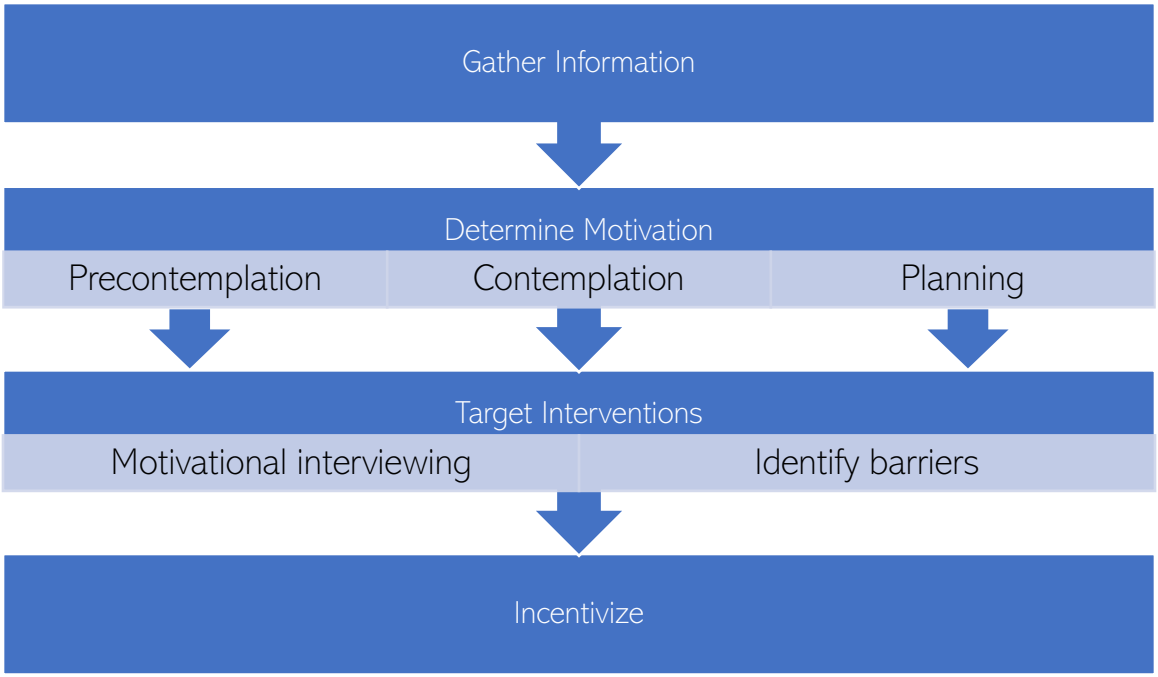


Figure 1: Smoking Cessation Preparedness Framework

Firstly, when initially interviewing the patient, the provider should gather information regarding the patient's perception about quitting, as well as information on any previous attempts to quit. It may also be helpful to discuss triggers that cause the patient to desire a cigarette, as well as the patient's perceived barriers to successfully quitting. Next, the provider should consider the patient's preparedness to quit. Are they able to make the connection between their health and smoking as a negative habit? Is smoking causing any negative impacts on their life at this time? Have they attempted to quit before and relapsed, or have they thought about quitting but felt that it was not achievable due to specific external or internal factors?

For patients who do not feel they are ready to quit smoking, it may be helpful to use motivational interviewing techniques during the initial clinic assessment, particularly for those in the precontemplation stage. Motivational interviewing refers to a "collaborative conversation style [used] to strengthen a person's own motivation and commitment to change"[13]. The basic components of motivational interviewing can be remembered by the mnemonic, OARS:

Open-ended questions
Affirmations
Reflections
Summaries

The clinician should ask the patient open-ended questions to allow the patient to fully express their priorities and thought process. The clinician should respond positively to the patient's thoughts, actions, or ideas that are aligned with the goal of smoking cessation, while not judging or chastising other comments. The clinician should reflect on what the patient is thinking and saying, while expressing empathy and understanding. Finally, the clinician should summarize what they have learned, and use these summaries to guide the patient towards change. Motivational interviewing

may be required to bring patients into the contemplation stage, or to the point where they are considering quitting and gathering evidence to support this decision.

For patients in the contemplation or preparation stage, motivational interviewing may still be appropriate depending on their beliefs, but these stages represent an opportunity to assess for additional barriers preventing the patient from taking steps towards quitting. It is crucial at this point to consider the social determinants of health which may be disproportionately impacting patients and making it more difficult for them to achieve progress. These could include, but are not limited to, a lack of transportation, lack of social support, lack of access to funds or insurance to afford medications, or stigma. Other extenuating circumstances to consider include whether the patient has comorbid depression or anxiety, or historic difficulty with medication adherence (including unpleasant side effects or forgetting to take their medications). Barriers that might prevent patients from attending future smoking cessation appointments, particularly the time commitment, transportation difficulties, and expensive co-pays, should be taken into consideration.

When transportation is a concern for patients, providers should consider scheduling telehealth appointments for follow-up. While frequent follow-up appointments can be helpful for patient support, these can also be associated with considerable co-pays. For patients concerned with affording appointments, there is a free tobacco use quit-line in North Carolina (1-800-QUIT-NOW/1-800-784-8669) which could be a helpful bridge in between visits with the provider. Patients should be educated about the option for medical assistance with quitting, particularly with nicotine replacement therapies or bupropion. Medication adherence has been associated with a two-fold increase in success rates of smoking cessation, and patients in the contemplation or preparation stages are particularly likely to have success with medication adherance[14].

Finally, if clinic funds allow it, incentivizing attendance to smoking cessation appointments for patients in the contemplation or preparation stages may also help to reduce no-shows. Previous studies, for example, have examined whether providing small cash incentives or grocery vouchers improved rates of cessation. It is also important to note that improvement in these rates was seen regardless of high- or low-cash value[8]. In other words, even a small financial incentive could be sufficient in bringing about the desired behavior of appointment attendance.

Each of these solutions may have a place in helping patients and clinicians achieve their goals of smoking cessation. In terms of specifically reducing no-shows to follow-up smoking cessation appointments, it may be appropriate to schedule these follow-ups more judiciously, depending on the kind of support needed and desired for that particular patient. For patients in the precontemplation stage, clinic resources may be better directed through using motivational interviewing at the initial appointment to try and move these patients into the contemplation stage, where they are intrinsically motivated to pursuing smoking cessation. For patients in the contemplation or preparation stage, it could be helpful to identify which of these patients specifically require a follow-up smoking cessation appointment at that time. If these patients feel they can quit on their own, for example, it may be more appropriate to schedule follow-up at normal intervals to check in with them and see if they require any additional assistance. If a patient is specifically interested in medications to assist with cessation, referral to an additional appointment is indicated, and providers should be sure to identify any additional barriers or extenuating circumstances preventing them from attending this follow-up.

Furthermore, it is important to recognize that smoking cessation usually requires multiple attempts. One study found that the average number of attempts before achieving long-term smoking cessation was 30[15]. Patients should be cautioned not to get discouraged and should be

recognized for the positive progress they have made towards their goal. Additionally, it is important to discuss the return to smoking after an attempt to quit as a "relapse" rather than a failure, and to remind patients that this is a normal part of the process.

Conclusion

To reduce no-shows at smoking cessation appointments, it is crucial that providers are judicious about when they refer patients to additional smoking cessation-specific visits. For patients who are not interested in cessation at the time of the visit, motivational interviewing should be used to provide them with information and motivation to quit. For those interested in quitting, clinicians should assess the degree of assistance the patient believes they will need. For patients interested in medications to help with cessation, referral to an additional appointment may be indicated. It is important to identify additional barriers impacting different populations, and to preemptively address these. Finally, incentivization could help bring about the desired behavior change of appointment attendance, clinic resources permitting. It is critical that providers meet patients where they are, and work together to achieve their common goals regarding smoking cessation.

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Appendix

Phone Prompt

***UPDATE: some of these patients are scheduled for appointments, but some are still thinking about it. So before asking them questions, verify if they have made an appointment.

Hello, my name is ***** and I am a graduate student affiliated with Carteret Health. I was given your information from the PA, Brandon Carney. I am calling to gather feedback on patients who were offered an appointment with the smoking cessation team. To start, are you currently scheduled for or interested in a smoking cessation appointment. If not, why?

Are you willing to give me feedback to just a couple of scored questions?

If they say NO: "Ok, thank you very much for your time already. Have a great rest of your day"

Voicemail: Hi I am a student affiliated with Carteret Health. I was given your information from the PA Brandon Carney and was calling to ask you a couple of questions. I'm sorry that we missed you and will try again another day. Thank you. Have a good day.

If they say YES:

Please respond to the following questions as either:

1 - Strongly disagree
2 - Somewhat disagree
3 - Neither Agree/disagree
4 - Somewhat agree
5 - Strongly Agree

1. Lack of transportation is a major reason why I wouldn't make an appointment
2. Financial needs are a major factor for my ability to make smoking cessation appointments (office fees, co-pays, etc.)
3. I am interested in smoking cessation
4. I feel that smoking is of no harm to my health
5. I feel that I can quit smoking at any time without assistance
6. I have a good support system in place to help me quit
7. In your own words, what does smoking cessation mean for you?