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Tarheel Footprints in Health Care

Recognizing unusual and often unsung contributions of individual citizens who have made health care for North Carolinians more accessible and of higher quality

Ann B. Johnson, MSW: A Leader in Healthy Aging

Few, if any, will be able to match the energy and commitment Ann B. Johnson continues to exhibit after nearly a half century of service to older adults. Ms. Johnson, 88, remains a dynamic force in North Carolina, guiding policy for the best interests of older adults. The *Ann Johnson Institute for Senior Center Management*, named in her honor, epitomizes a career advocating for older adults and senior centers. Initiated in 2001, the Institute provides critical training to senior center personnel in management skills, upgrading credentials, and enhancing the senior center management profession.

Ann's commitment to others began long before migrating to North Carolina. During World War II, she became the first female member of the Boilermakers Union. Welding in a shipyard, she learned to read blueprints, to rivet, to run the metal lathe, and trained other women in the art of welding. After the war, Ann earned her Master's Degree in Social Work.

Ann was the executive director of the Durham Coordinating Council for Senior Citizens where she pioneered the development of senior centers and adult day care programs for 23 years. She started the first senior center in public housing in North Carolina in 1968 and the first adult day care program in the Southeastern US in 1973.

Among her numerous distinctions is being the first recipient of the George L. Maddox Award in 1990, for excellence in developing and implementing creative programs for older adults. Ms. Johnson served on the Governor's Advisory Council on Aging under 4 governors, and has been chair of the Council since 1997. Ann represented North Carolina at 4 White House Conferences on Aging. In 2004, she was honored by the North Carolina Division of Aging and Aging Services for advocacy and dedication to the field. Ann contributed actively to Orange County's first Master Aging Plan for 2000 and the 2007 Orange County Master Aging Plan. As an advisor to Duke's Leadership in an Aging Society Program, Ms. Johnson was instrumental in the creation of the Senior Leadership Enhancement Program, which encourages leadership development in older adults emerging as statewide leaders.

Ms. Johnson served on the Board of Directors of the National Council on Aging (NCOA) for 8 years. As chair of NCOA's National Institute of Senior Centers, she championed standards for senior centers and the creation of the National Institute of Health Promotion. In 1997, she received the prestigious Geneva Mathiasen Award, honoring major contributions to NCOA and its programs. In 1998, she received a Founders' Award from the National Institute of Senior Centers.

Included in her many honors and awards is the Order of the Long Leaf Pine, President of the North Carolina Coalition on Aging, the North Carolina Senior Citizens Association, Friends of the Chapel Hill Senior Center, Outstanding Volunteer in Aging Award by the Southeastern Association of Area Agencies on Aging, and the Southern Gerontological Society's Lifetime Achievement Award.

Reflecting on healthy aging today, Ms. Johnson remarks that older adults need a voice in regards to their own healthy aging process and that decisions made should include the older adults' preferences. She believes healthy aging is a learning process in which one comes to understand dependence on others. Remaining active and engaged, Ann continues advocacy roles across the state. Thank you, Ms. Johnson, for being a leader and a voice in aging.

I would like to thank the North Carolina Institute on Aging and Ms. Sandra Crawford Leak for their contributions on Ms. Johnson.

Contributed by Janice I. Wassel, PhD
Director of the UNC Greensboro Gerontology Program at the University of North Carolina at Greensboro

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The Prevalence of Community-Acquired Methicillin-Resistant *Staphylococcus Aureus* (CA-MRSA) in Skin Abscesses Presenting to the Pediatric Emergency Department

David Magilner, MD, MSPH; Marielle Moses Byerly, MD; David M. Cline, MD

Abstract

Background: *Community-acquired methicillin resistant* Staphylococcus aureus *(CA-MRSA) infections have been increasing. The most common of these infections present as skin abscesses. The objectives of this study were to prospectively determine the prevalence of CA-MRSA in abscesses in the population of a pediatric emergency department, to determine antibiotic sensitivity patterns of the CA-MRSA isolates, and to describe the patient population that presented with skin abscesses.*

Methods: *We conducted a prospective study of children under the age of 18 years who presented to our pediatric emergency department with a skin abscess that required incision and drainage. Pus from these abscesses was sent for culture to determine the causative agent, and antibiotic sensitivities were reported. Characteristics of the patient population that presented with these abscesses were examined.*

Results: *Sixty-eight patients were enrolled over an 18-month period. Of these, 60 (88%) had cultures positive for* Staphylococcus aureus (S. Aureus). *Of these 60 patients, 51 (85%) were identified as CA-MRSA by their resistance patterns. All of the CA-MRSA isolates were sensitive to trimethoprim/sulfamethoxisole; 6 (10%) were either resistant or intermittently resistant to clindamycin.*

Limitations: *The study was conducted on a convenience sample of patients and enrolled a relatively small number of patients.*

Conclusions: *CA-MRSA is responsible for the vast majority of skin abscesses presenting to the pediatric emergency department. CA-MRSA isolates are likely to be sensitive to trimethoprim/sulfamethoxisole or clindamycin, although there is some resistance to clindamycin.*

Key Words: *Skin abscess; CA-MRSA;* Staphylococcus aureus

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a well-known public health problem that emerged shortly after the introduction of methicillin, nafcillin, and oxacillin antibiotics. Until the 1990s, however, most resistant isolates arose in hospitalized patients or in patients who had health care-related risk factors. More recently, strains distinct from the nosocomial pathogen began to appear in the community and cause infections in young, otherwise healthy patients without identifiable risk factors.[1]

These community-acquired MRSA (CA-MRSA) strains have unique clinical and microbiological characteristics that distinguish them from the traditional hospital-based organisms.[2] In fact, CA-MRSA appears to be more closely related to methicillin-susceptible *Staphylococcus aureus* (MSSA). Genetic studies have revealed that CA-MRSA isolates most likely arose from acquisition of a staphylococcal cassette chromosome (SCC) *mec* type IV element by MSSA strains in the community.[3] SCC*mec* is the mobile genetic element that carries the gene encoding the altered penicillin binding protein that confers methicillin resistance. In children, the presence of risk factors predisposing to methicillin resistance was found to be the same for CA-MRSA and MSSA infections.[4]

Methicillin sensitive *S. Aureus*, hospital acquired MRSA (HA-MRSA), and CA-MRSA can all cause severe and invasive infections. However, CA-MRSA tends to be a more aggressive organism. It is associated with more frequent serious complications[5] and can cause sepsis, bone and joint infections, and even death.[6,7] It often carries the Panton Valentine Leukocidin

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(PVL) virulence factor, which is associated with epidemic furunculosis and severe necrotizing pneumonia.[3] Despite its pathologic potential, however, most (~70%) infections caused by CA-MRSA are skin and soft tissue infections.[8]

Community-acquired MRSA is a growing problem in the United States. In areas where prevalence is high, it must be considered a potential cause for infection and treated accordingly. When not treated properly, it has the potential to cause serious disease. The suspicion of CA-MRSA infection should lead the clinician to prescribe specific antibiotics and consider hospital admission when appropriate. The primary goal of this investigation was to prospectively determine the prevalence of CA-MRSA in drained abscesses in our pediatric emergency department population. The secondary goal was to provide descriptive statistics regarding the patient population that presented with CA-MRSA abscesses.

Methods

The study emergency department is a tertiary care pediatric emergency department in a small urban community in central North Carolina. The department sees approximately 27,000 patients under the age of 18 annually. Approximately 85% of these patients are estimated to come from the city and surrounding suburbs and 15% from rural communities. Approximately 20% of patients who present to the department are Hispanic and 40% are African American. The study design was a case series. The enrollment period was April 2005 through September 2006. Children under the age of 18 years who presented with a skin abscess that was determined by the attending physician to require incision and drainage in the department were included in the study. Exclusion criteria included previous known MRSA infection or hospitalization within the past month. In order to determine the number of patients that were missed during the enrollment period, we conducted a chart review for the 18-month study period to find patients who had abscesses drained in the emergency department but were not enrolled in the study. We searched medical records using the ICD-9 procedure code for abscess incision and drainage. Sixty-eight out of 140 eligible patients (49%) were enrolled. (See Figure 1.)

Material obtained from the abscess was sent to the hospital's laboratory for microbiologic culture and antibiotic sensitivity determination. Using the agar dilution technique, organisms were identified and reported as "resistant," "susceptible," or of "intermediate" resistance to specific antibiotics based on mean inhibitory concentration (MIC) standards of the Clinical and Laboratory Standards Institute. The MicroScan Automated System (Behring, Sacramento, CA) was used for the identification and susceptibility testing of *Staphylococcus aureus* species. If isolates were initially found to be resistant to erythromycin, inducible macrolide–lincosamide–streptogramin resistance testing was done (the disk diffusion or "D-test") to look for inducible resistance to clindamycin.

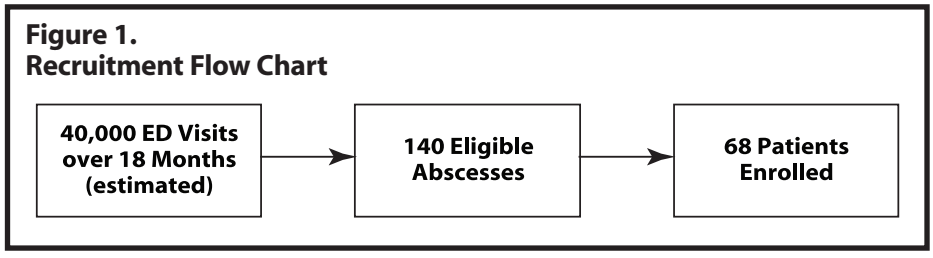
Approval for this study was obtained from the institutional review board of the Wake Forest University School of Medicine. Because this was an observational study, the institutional review board waived the requirement for informed consent.

For each patient enrolled in the study, a questionnaire was completed by the enrolling physician that included the following data: patient age, race, length of symptoms before presentation, presence and degree of fever, abscess size, and which, if any, antibiotics were prescribed.

Data were analyzed by Dr. David Cline and Rebecca Neiberg, MS, from the institution's department of biostatistics using SAS 8.0 (SAS, Cary, NC). SAS procedures utilized were the frequency function for categorical variables and the means functions for continuous variables. All statistical analyses were descriptive.

Results

Sixty-eight patients were enrolled in an 18-month period. Characteristics of the enrolled patients are shown in Table 1. The mean age of enrolled patients was 7 years, with a range from 2 weeks to 17 years old. Forty of 68 (59%) enrolled patients were African American, 16 (24%) were white, and 12 (17%) were of other races. Abscess and symptom characteristics are shown in Table 2. The mean duration of symptoms at the time of presentation was 4 days, with a range from 1 to 21 days. Twenty of 68 (29%) patients had fever at the time of presentation. Among patients under the age of 5, 22 of 30 (72%) had fever; of patients 5 years of age or older, 4 of 38 (11%) had fever. The mean abscess size was 3.9 cm, with a range from 1 to 14 cm. The enrolled population did not differ significantly from the non-enrolled population regarding the age or race of the patients. The mean age of the non-enrolled patients was 6.4 years, and 52% were African American, which did not differ from the enrolled population using the Student's t-test and the chi-square test, respectively. Other data (duration of symptoms, abscess size, volume of pus drained) were not consistently available for the non-enrolled patients.



Regarding abscess management, 34 of 68 (50%) were packed with gauze at the emergency department visit. Fifty-eight of 68 (85%) of patients received antibiotics. Of these, 24 of 58 (41%) received clindamycin and 22 of 58 (38%) received trimethoprim/sulfamethoxisole. Other antibiotics prescribed included cephalexin and doxycycline.

Table 1.
Demographics of Enrolled Patients

Variable (N=68)	Percent
Race	
African American	59
White	24
Other	17
Age	
<1	15
1-4	29
>4	56

Table 2.
Clinical Characteristics and Treatment

Variable (N=68)	Percent
Symptom Duration, d	
<3	33
3-7	56
>7	11
Abscess Size, cm	
<4	40
>4	60
Presence of Fever	
Yes	29
No	71
Abscess Packing	
Yes	50
No	50
Antibiotic Prescription Given	
Yes	85
No	15

Isolated organisms and their characteristics are shown in Table 3. Sixty of 68 (88%) of the isolates grown from the incised abscesses were *Staphylococcus aureus*. Others isolates included proteus, bacteroides, and strep species, and there was no bacterial growth in 4 cases. Fifty-one of 60 (85%) of the *Staphylococcus aureus* isolates were resistant to oxicillin and therefore characterized as CA-MRSA. Of these, 54 of 60 (90%) were sensitive to clindamycin (this includes only those isolates that were "D-test" negative) and 60 of 60 (100%) were sensitive to trimethoprim/sulfamethoxisole. Two isolates were initially found to be sensitive to clindamycin but were D-test positive and therefore identified as clindamycin resistant.

Table 3.
Characteristics of Isolated Organisms

Organisms (N=68)	Percent
Staphylococcus aureus	**88 (60/68)**
MSSA	15 (9/60)
MRSA	85 (51/60)
Clindamycin sensitive	90 (46/51)
Trimethoptim/sulfamethoxizole sensitive	100 (51/51)
Other Organism	**6**
No Growth	**6**

Discussion

Since its emergence, CA-MRSA has become increasingly prevalent and particularly important in the pediatric population. One study cites up to a 20-fold increase in the frequency of CA-MRSA infections in children since 1988.[9] A 14-year study at Driscoll Children's Hospital found that the number of CA-MRSA cases ranged from 0 to 9 per year from 1990 through 1999 and then increased exponentially from 36 in 2000 to 459 in 2003.[10] There have been reports of clusters and outbreaks among children in daycare centers, competitive athletes, homeless youth, Native Americans, men who have sex with men, jail inmates, and military recruits.[11] With increasing awareness of CA-MRSA, it is possible that detection bias has played a role in the reporting of its increasing prevalence.

With this recent increase in prevalence and because of its potential virulence, it is becoming increasingly important to recognize CA-MRSA as a possible cause of infection. In addition, there should be a change in the empiric therapy of infections suspected to be caused by *S. aureus* because of the unique antibiotic susceptibilities of community-acquired infections. It is resistant to most of the commonly used beta lactams, including cephalosporins, but it is usually susceptible to clindamycin, trimethoprim/sulfamethoxisole, rifampin, vancomycin, tetracyclines, and sometimes erythromycin and fluoroquinolones. Inducible macrolide–lincosamide–streptogramin resistance (the "D-test") is possible in a subset of CA-MRSA, however, and could be problematic when clindamycin is used.[8]

Not all infections require antibiotics. In fact, one study examined the management and outcome of children with skin and soft tissue abscesses.[12] They found that incision and drainage of CA-MRSA abscesses less than 5 cm in size was effective without adjunctive antibiotic treatment, but a lesion greater that 5 cm in size was a strong predictor of a need for hospitalization. Similarly, Sattler and colleagues found that many CA-MRSA infections resolved despite treatment with antibiotics to which the organism was not susceptible.[4] This suggests that antibiotics may be less critical in less serious infections or in immunocompetent hosts.

The present study shows a large prevalence of CA-MRSA in skin abscesses in the pediatric population presenting to an urban emergency department in central North Carolina. Of 68 patients with drained abscesses, 88% had infection with CA-MRSA. Although antibiotics were prescribed in the majority of cases, it is not clear that this is a necessary practice, and in fact this practice may further increase antibiotic resistance. Given the high prevalence of CA-MRSA in our study population, if empiric antibiotics are prescribed for an abscess in the pediatric population, they should be tailored to cover CA-MRSA infection. Currently CA-MRSA infections show favorable resistance patterns to clindamycin and trimethoprim/sufamethoxisole in our hospital population. Clinicians should remain aware of resistance patterns in their communities. We did not have any Group A streptococcus isolates in our study population. This organism is known to cause invasive skin disease, and empiric treatment with trimethoprim/sulfamethoxisole would not cover this organism.

This study was a case series conducted on a convenience sample of patients. As in all such studies, selection bias is a possibility. It is possible that the patients chosen to participate in the study had abscess features such as size, location, or duration of symptoms, which were different from those patients who were excluded, therefore biasing the results. It is also true that there are likely many patients in the community with CA-MRSA skin infections who do not present to the emergency department for care, which may have led us to underestimate the prevalence of the infection in the community.

In addition, it is possible that some of the isolates that we considered to represent CA-MRSA were actually hospital-acquired. Although we excluded patients who had been hospitalized in the month prior to presentation, it is possible that some of our patients had contact with hospitals or hospitalized patients. Our rate of CA-MRSA may be biased upwards by including patients who may have been hospitalized in the last year. We did not quantify the number of patients who were excluded from our study for this reason. It is also possible that we should have excluded patients who may have been hospitalized prior to our one-month exclusion period. The study was also conducted on a relatively small number of children.

Because of our sampling strategy, data that we collected could not identify risk factors that increased the likelihood that a specific skin infection was caused by CA-MRSA. We did not specifically ask about known close contacts with skin infections. We also did not collect data on abscess location, and it is possible that certain locations may indicate an increased likelihood of CA-MRSA infection. Because we did not collect detailed statistics regarding the general population presenting to the emergency department during the study period, we were unable to analyze how our study population differed from this general population. CA-MRSA caused infection across all age and racial groups, and in any given patient with an abscess, CA-MRSA was overwhelmingly likely to be the causative agent.

Further areas of study might include randomized controlled trials of the use of antibiotics after drainage of abscesses as well as randomized trials to determine whether packing abscesses with gauze improves outcome. **NCMJ**

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Business Policies Affecting Secondhand Smoke Exposure

Siobhan E. Colgan, MPH; Bron Skinner, PhD; Caroline Mage; Adam O. Goldstein, MD, MPH; Kathryn Kramer, PhD; Julea Steiner, MPH; Ann H. Staples, CHES

Abstract

Background: *Despite recent legislative and voluntary policy changes, a significant number of workplaces, recreational venues, and public facilities do not offer the public full protection from secondhand smoke exposure. The current study assessed smoking policies, attitudes toward smoke-free policies, and support for policy change among business owners and managers of businesses open to the public in North Carolina.*

Methods: *Business owners and managers were interviewed over the phone. Businesses included all airports, arcades, malls, bowling alleys, and arenas (seating more than 500) in the state as well as a random sample of grocery and convenience stores.*

Results: *A 100% smoke-free policy was reported in 53% of businesses, ranging from 12% in bowling alleys to 97% in arenas. A large majority of business owners and managers understand the health risks of secondhand smoke exposure (82% - 89%) and support restrictions on smoking in their businesses (84% - 91%). Barriers to voluntary policy change included the lack of legal requirement (39%) and fear of the loss of business (53%).*

Limitations: *This study used self-report data from business owners and managers; the accuracy of the business smoking policy, customer and employee exposure time, and number of complaints may vary across respondents. It is also possible some participants were influenced by factors of social desirability of responses.*

Conclusions: *Continued progress in establishing 100% smoke-free indoor environments may depend on successful advocacy in instituting legislation mandating the elimination of secondhand smoke in all public places. Advocacy efforts should include education around addressing economic concerns of businesses.*

Key Words: *tobacco; policy; smoking; public places; employee*

Scientific research conclusively shows that exposure to secondhand smoke causes cardiovascular disease, respiratory illness, and lung cancer.[1-4] The 2006 Surgeon General's Report on secondhand smoke exposure concluded that it causes short and long term risks, that no safe level of exposure to tobacco smoke exist, and that secondhand smoke exposure should be eliminated in all public places.[5]

Public health policy objectives related to eliminating secondhand smoke exposure include increasing to 100% the public and private workplaces that have policies prohibiting or restricting smoking, reducing the proportion of nonsmokers exposed to secondhand smoke, and establishing laws prohibiting smoking in public places including restaurants, schools, daycares, public transportation, and retail stores.[6] The Centers

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for Disease Control and Prevention (CDC) has provided national recommendations for establishing comprehensive tobacco policy, including state programs and legislation.[5]

Despite these priorities, workplace exposure to secondhand smoke is not regulated at the national level but instead by states, local communities, and voluntary policy change. In 1999, only 70% of indoor workplaces were covered by workplace policies on smoking.[7] Actual exposure among employees is affected by both workers' compliance with policies and exposure through designated indoor smoking areas. Employees working at sites with designated smoking areas have 2.9 times the odds of being exposed to secondhand smoke and 1.7 times greater exposure time than smoke-free worksites; employees at worksites with no restrictions on smoking have even more exposure with 10.3 times the odds of being exposed to secondhand smoke at work and 6.3 times greater duration of exposure.[8] Service and blue-collar workers, especially males, are less likely to report a smoke-free workplace (61.2% and 55.6%, respectively) than white-collar workers.[9]

In the absence of national legislation, some states have taken the lead in establishing smoke-free policies in public places. As of January 1, 2008, comprehensive state laws have been passed eliminating smoking in workplaces (18 states plus Washington, DC), restaurants (24 states plus Washington, DC), and bars (18 states plus Washington, DC); several additional states have enacted policies not yet in effect, and hundreds of local municipalities have enacted 100% smoke-free policies in some or all of these venues.[10] Despite this progress, 12 states have preemptive state laws prohibiting local smoke-free regulations and preventing strong state legislation from being passed.[10] Such laws continue to present considerable barriers to broad policy change at the state level.

As of 2006, North Carolina had a preemptive law preventing 100% smoke-free policies from being enacted. Currently a minority of North Carolina's population is covered by any mandated smoke-free workplace law.[10] North Carolina and other states with economic and agricultural dependence on tobacco have historically remained behind the rest of the nation with respect to worker protection,[7] and support for statewide smoke-free indoor air regulations has also been weaker in these states. For instance, a CDC report assessing policies and attitudes towards a ban on smoking in restaurants in 20 states found North Carolina to have the lowest level of support for policy change.[11]

Advocates have worked with employees, business owners, and managers to promote voluntary policy changes and the need to overturn preemption. Advocacy efforts in North Carolina have shown some progress. Although North Carolina ranks 35th nationally in the proportion of employees with a smoke-free workplace, the proportion of employees working under voluntary smoke-free policies in North Carolina doubled between 1992 and 2002.[9] North Carolina has also shown significant progress in establishing tobacco-free schools. Efforts of tobacco control coalitions, working in concert with local school districts, have resulted in over three-quarters of school districts voluntarily becoming smoke-free in the last 10 years. While successful voluntary policy changes clearly occur, both through advocacy and spontaneous decisions, this strategy has drawbacks from a public policy perspective as it is time-intensive, inefficient, and may not ultimately convince many establishments to eliminate secondhand smoke exposure for employees or visitors.

Two public policy questions relating to secondhand smoke have received insufficient attention in the scientific literature: (1) what kinds of voluntary advocacy are supported by businesses? and (2) what is the willingness of owners and managers of businesses in states with preemptive clean indoor air laws to consider overturning preemption and passing more comprehensive smoke-free laws?

North Carolina provides an ideal environment in which to address these questions. It is a tobacco-producing state that currently mandates little protection against secondhand smoke exposure, has preemptive language in its state law that limits local communities' ability to pass a stronger state law, and has relied heavily on voluntary policy change in the absence of legislation. A statewide study was conducted in North Carolina of employer beliefs and opinions about tobacco policy and secondhand smoke exposure as they relate to effective strategies for policy change. The data from this study provide insight into employer attitudes toward smoke-free policies and their support for policy change at a range of venues in North Carolina.

Methods

Sample

The sample for this study was North Carolina businesses that serve a high volume of customers and which thereby have a large potential for public exposure to secondhand smoke. The venues included malls, grocery stores, convenience stores, arenas, arcades, bowling alleys, and airports.

Searches for these businesses were undertaken by identifying web-based versions of a variety of phone books providing listings throughout the state. All arcades, malls, arenas, bowling alleys, and airports that could be identified in North Carolina were included. Due to the large number of convenience stores and grocery stores, a random sample of 75 of each type was selected from statewide listings.

Questionnaire

Business owners and managers participated in a telephone survey assessing smoking policies, perceptions of indoor air quality, beliefs about secondhand smoke exposure and health risks, personal exposure at work, and prompts and barriers to the adoption of smoke-free policies. Survey questions required open-ended, scale, or categorized responses. Questions regarding characteristics of the business were predominantly open-ended (e.g., number of patrons served, percentage of customers who smoke). A 4-point scale was used to assess air quality and compliance with policy, and health effects of smoking were assessed using "strongly agree, agree, disagree, or strongly disagree" responses. Forced choice responses categories were used to assess the businesses' smoking policy (100% smoke-free, no restrictions on smoking, or some limitations). Limitations included having separate smoking areas (whether or not they

were separately ventilated or enclosed) and having designated smoke-free days or times (seen only in bowling alleys). Prompts and barriers to adopting a 100% smoke-free policy were assessed through both open-ended (e.g. "what one reason would prompt your businesses to adopt a 100% smoke-free policy?") and yes/no categorized responses (e.g. "would [patron petitions, complaints] influence adoption of a 100% smoke-free policy?").

Interviews

Interviews took place via telephone during May and June, 2006. Only owners, managers, and assistant managers of the businesses were considered eligible to participate. Research assistants contacted businesses by phone a minimum of 10 times in attempts to reach an owner or manager. After contact was made, the study was briefly explained and consent to participate requested. The interviews lasted approximately 3-10 minutes depending upon the smoking policy of the business (the interview was shorter if the business was 100% smoke-free).

Analysis

Data was entered and checked by 2 researchers. All statistical analyses were conducted by authors Colgan and Goldstein using SPSS 12.0 (SPSS Inc., Chicago, IL). Analyses included frequency tabulation for all variables, bivariate and chi-square analysis for categorical variables, and bivariate logistic regression analysis for select outcome variables. The project received approval by the institutional review board at the University of North Carolina at Chapel Hill School of Medicine.

Results

Sample Characteristics

Sampling strategies yielded 455 possible business contacts. From this initial pool, 73 were eliminated because they were duplicate listings or were out of business. In another 51 businesses, contact was never made with the owner or manager despite a minimum of 10 attempts. Of the 331 businesses with whom contact with an owner or manager was made, 237 agreed to participate (71.6% response). Of those interviewed, 13 businesses were excluded when an initial screening question determined the business was predominantly outdoors (e.g. an outdoor mini-golf course with a game room might have been listed under 'arcades'). This left a final sample of 224 businesses included in the analyses. (See Table 1.)

The final sample included 57 bowling alleys (25.4%), 35 grocery stores (15.6%), 35 malls (15.6%), 33 convenience stores (14.7%), 31 arenas (13.8%), 21 arcades (9.4%), and 12 airports (5.4%). Of the 224 respondents, 77.6% were managers, 15.7% owners, and 6.7% had other position titles. Respondents had a mean age of 44.6 years, and the majority were male (59.7%). Across all venues, 23.5% of respondents were smokers, although among respondents in convenience stores 45.5% were smokers. (See Table 2.) Across all venues, the average number of customers per week was 22,390, ranging from 15 (an arcade) to 500,000 (an airport). The businesses were in operation for an average of 25.8 years. Respondents were also asked to estimate the percent of their customers who are under the age of 18. The mean was 26.5%, ranging from 10.6% in airports to 54.7% in arcades.

Table 1.
Response Rate

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Initial listing of businesses	14	84	38	114	75	75	55	**455**
Unable to contact	–	17	3	10	5	9	7	**51**
Manager duplicate	–	6	2	21	–	–	–	**29**
Out of business	–	20	–	8	5	8	3	**44**
Total (unable to contact, duplicates, and out of business)	0	43	5	39	10	17	10	**124**
Consent to participate requested	14	41	33	75	65	58	45	**331**
Refused to participate	2	11	1	18	31	23	8	**94**
Agreed to participate	12	30	32	57	34	35	37	**237**
Outdoor business	0	9	1	0	1	0	2	**13**
Final sample	12	21	31	57	33	35	35	**224**

Table 2.
Description of Venues and Respondents

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Number (% of sample)	12 (5.4%)	21 (9.4%)	31 (13.8%)	57 (25.4%)	33 (14.7%)	35 (15.6%)	35 (15.6%)	**224 (100%)**
Customers Per Week								
Mean	61,090	3,856	9,594	1,484	2,280	9,246	110,254	**22,390**
Median	2,500	700	3,750	1,000	1,450	8,000	85,000	**2,000**
Range	50-500,000	15-55,000	500-60,000	63-6,000	50-7,000	450-20,000	450-384,615	**15-500,000**
Customers under 18	10.6%	54.7%	16.8%	27.2%	22.2%	22.8%	27.3%	**26.5%**
Years in business (mean)	44.0	10.3	36.5	24.8	17.8	23.7	27.4	**25.8**
Smoking Status of Respondents								
Nonsmokers	75%	76.2%	93.5%	73.2%	54.5%	76.5%	88.2%	**76.5%**
Smokers	25%	23.8%	6.5%	27.8%	45.5%	23.5%	11.8%	**23.5%**

Smoking Policies

A summary of indoor smoking policies for each type of venue is presented in Table 3. A 100% smoke-free policy was reported in just over half of the businesses (52.9%), with the highest rates in arenas (96.7%) and arcades (85.7%) and the lowest in bowling alleys (12.3%). Bowling alleys and convenience stores were significantly more likely to report no limitations on smoking compared to other establishments (χ^2 = 20.9, p < 0.001). Alternatively, malls, arenas, and arcades were significantly more likely to report 100% smoke-free policies than other venues (χ^2 = 49.4, p < 0.001). In logistic regression analysis, having a 100% smoke-free policy was significantly associated with the business having a higher percentage of customers under the age of 18 (OR = 1.02, p = 0.02). For each percentage point increase in clientele under the age of 18, the odds of having a smoke-free policy increases by 0.02, or 2% (e.g., as the percent of customers under 18 increases from 20% to 30%, the odds of the business having a 100% smoke-free policy increases by approximately 20%).

Perceptions of Indoor Air Quality

When asked about their perceptions of the quality of the indoor air at their facility, only 44.5% of respondents rated the indoor air quality at their establishment as "excellent." The remainder of respondents (those rating the air quality as good, fair, or poor) were asked to report the main source of poor air quality. The single largest source of poor air quality reported was tobacco, mentioned by 39.1% of respondents; other sources of poor air quality include poor ventilation, dust, and other air pollutants.

Venues with a 100% smoke-free policy were significantly more likely to rate their indoor air quality as excellent (χ^2 = 12.95, p < 0.001). Likewise, venues that allowed any indoor smoking were significantly more likely to name tobacco as the main sources of poor indoor air quality (χ^2 = 32.09, p < 0.001). Bowling alleys were significantly more likely than other venues to name tobacco as the main source of poor indoor air quality (χ^2 = 17.3, p < 0.001).

Table 3.
Smoking Policies

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Smoking Policy	**n=12**	**n=21**	**n=30**[a]	**n=57**	**n=33**	**n=35**	**n=35**	**n=223**
100% smoke-free	41.7%	85.7%b	96.7%[b]	12.3%	51.5%	51.4%	68.6%[b]	**118 (52.9)**
Some limits	58.3%	0%	3.3%	56.1%	15.2%	31.4%	25.7%	**65 (29.1%)**
No limits	0%	14.3%	0%	31.6%[c]	33.3%[c]	17.1%	5.7%	**40 (17.9%)**

a One respondent answered "don't know" to whether there was a smoking policy, although the venue was *not* smoke-free.
b χ^2 =49.4, p<0.001; Malls, arenas, and arcades compared to all others.
c χ^2 =20.9, p<0.001; Bowling alleys and convenience stores compared to all others.

Employee Exposure and Complaints

For the sub-sample of businesses that allowed smoking (n = 105), respondents were asked about their personal exposure to tobacco smoke during a typical day at work, including exposure from customers and coworkers. Across all venues, respondents estimated that 40.1% of their customers smoke. (See Table 4.) For employees working in these businesses, the majority reported being around 6 or more smokers per day (45.6%) and being exposed to secondhand smoke for one hour or more per day (63.2%). Among venues that allowed smoking, bowling alleys and arcades reported the highest percentages of customers smoking, the highest number of people smoking around employees per day, and the longest durations of exposure.

Respondents reported that customer complaints by nonsmokers occurred at least once a month 20.2% of the time. Bowling alleys were significantly more likely than other venues to report customer complaints once a month or more ($\chi^2 = 17.6$, $p < 0.001$).

Beliefs about Secondhand Smoke and Restrictions

Across all venues, a high level of general agreement was found with the statements that secondhand smoke may cause lung cancer (89.6% agreed), and that secondhand smoke may cause heart disease (82.0% agreed). Respondents also addressed beliefs about whether exposure to secondhand smoke should be restricted in public places. Overall 91.2% agreed that exposure to secondhand smoke should be restricted, and 83.8% believed that their customers would support restrictions on secondhand smoke exposure.

Factors Influencing Policy Change

Owners or managers in businesses that were not 100% smoke-free (n = 105) were also asked about factors that would influence adoption of a 100% smoke-free policy, as well as barriers to creating such a policy. When asked in an open-ended question for one reason that would prompt the business to adopt a smoke-free policy, the single greatest response was a legal regulation or requirement (39.1%). An additional 20.7% of respondents responded to this question by saying that they would not change. Other reasons included customer requests or complaints (9.8%), assurance that the business would not lose customers (8.7%), and the improved health of everyone (6.5%). Respondents were also asked which specific strategies

Table 4.
Venues Allowing Smoking: Percent, Number of Customers who Smoke, Exposure Time, and Frequency of Complaints[a]

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Frequency of complaints	**n=7**	**n=3**	**n=2**	**n=50**	**n=16**	**n=17**	**n=11**	**n=106**
Almost never	85.6%	100%	100%	50%	87.5%	82.4%	90.9%	**74 (69.8%)**
Once a month or more	14.3%	0%	0%	50%[b]	12.5%	17.6%	9.1%	**32 (30.2%)**
Percent of customers who smoke (mean)	15.2%	50.7%	[c]	45.9%	38.7%	37.0%	19.7%	**40.1%**
Smokers per day	**n=7**	**n=3**	**n=2**	**n=49[d]**	**n=15[d]**	**n=16[d]**	**n=11**	**n=103[d]**
None	85.7%	0%	50.0%	10.2%	6.7%	12.5%	63.6%	**22 (21.4%)**
1-5	14.3%	33.3%	50.0%	28.6%	46.7%	37.5%	36.4%	**34 (33.0%)**
More than 5	0%	66.7%	0%	61.2%	46.7%	50.0%	0%	**47 (45.6%)**
Exposure time per day	**n=7**	**n=3**	**n=2**	**n=50**	**n=16**	**n=17**	**n=11**	**n=106**
None	42.9%	0%	50.0%	10.0%	0%	5.9%	54.5%	**16 (15.1%)**
1-59 minutes	42.9%	33.3%	0%	2.0%	37.5%	52.9%	27.3%	**23 (21.7%)**
1 hour or more	14.3%	66.7%	50.0%	88.0%	62.5%	41.2%	18.2%	**67 (63.2%)**

a This table excludes businesses that were 100% smoke-free.
b $\chi^2 = 17.6$, $p<0.001$; Bowling alleys compared to other venues.
c The respondents in the 2 arenas that allowed smoking answered "don't know" to this question.
d Differences in sample size due to 3 respondents answering "don't know" to this question.

would influence a change to a smoke-free policy. Agreement was highest for "petition from patrons" (20.5%), "positive recognition in the community" (20.1%), and "patron complaints" (19.2%).

The majority of owners and managers cited economic reasons as the main barrier to becoming smoke-free. Over half of respondents (53%) were concerned about losing business from customers who smoke. Less frequently mentioned barriers included identification with North Carolina's tobacco heritage (7%) and the need to allow business tenants (7%) or corporate leadership (7%) to decide smoking policies.

Discussion

It is clear that there is a shifting landscape with respect to exposure to secondhand smoke in public places across the US. Issues related to secondhand smoke exposure are being addressed through changes in public opinion and policy, which in turn are increasingly informed and supported by research on the health effects of environmental tobacco exposure.[11] The World Health Organization (WHO) has developed the world's first public health treaty, the Framework Convention on Tobacco Control (FCTC), which calls for international adoption of comprehensive tobacco control legislation.[12] National policies restricting public exposure have increasingly been implemented across the globe, and the pace of the adoption of smoke-free policies has also increased substantially in the US.

Given that the science is compelling and that an increasing number of states in the US are adopting comprehensive smoke-free policies, questions arise as to whether the continued promotion of voluntary policy change should occur in states that have not yet adopted comprehensive policies. States with existing preemptive smoke-free indoor air laws, such as North Carolina, face specific challenges and barriers in repealing such laws and in passing new state laws.

Clearly policy successes have occurred through voluntary adoption of smoke-free policies. Arenas in North Carolina, for example, are virtually all smoke-free (96.7%), as are most arcades (85.7%). However, establishments like airports, grocery stores, convenience stores, and bowling alleys still pose significant risks and high levels of involuntary exposure for both patrons and employees. For example, only slightly more than 40% of the airports in North Carolina report being completely smoke-free, yet they experience extremely high levels of public traffic. Although 100% smoke-free policies were associated with larger numbers of clientele under age 18, many venues with high numbers of adolescent customers lack protection. Grocery stores, convenience stores, and bowling alleys are venues where youth frequently visit and may be employed, yet show the least amount of progress in restricting exposure.

Our data show that owners and managers in businesses that allow smoking continue to raise economic concerns that they will experience decreased revenues if they eliminate smoking. While such arguments have been completely discredited in the scientific literature,[13,14] the fact that many owners still cite such fears demonstrates the limits of science, insufficient communication of those data, or both. It may be that voluntary changes are less likely to be implemented in these types of venues than would a statewide call to action. Statewide legislation appears potentially more acceptable to these establishments since such legislation would affect all business, reducing concerns about a shifting customer base due to smoking policy. Education aimed at addressing business owners' fears about potential loss of business is another avenue for advocacy and intervention.

This report also suggests a need to focus workplace smoking cessation resources on disparate rates of tobacco use among certain blue-collar workers. Our data show much higher rates of smoking (45% smokers) among owners or managers in convenience stores where rates of smoke-free policies were lowest, while respondents from arenas and malls with high rates of smoke-free policies reported much lower rates of smoking (6.5% and 11.8%, respectively). Smoke-free workplace policies have been shown to reduce the prevalence of smoking among employees.[15]

Because knowledge about lung cancer and heart disease risks associated with secondhand smoke exposure is very high among employees, public health advocates should not dedicate significant energy on educational campaigns alone. Knowledge of health effects is not sufficient to motivate many remaining establishments go smoke-free. Ironically, even the belief among most businesses that the majority of their customers would support restrictions on smoking at their businesses and personal belief that exposure to tobacco should be restricted does not appear to translate into smoke-free policy adoption.

Although the presence of the tobacco industry in states such as North Carolina may have some influence in policy change, the data in the current study show that tobacco heritage and production are only marginally influencing businesses' opinions and beliefs about policy change. North Carolina's historic association with tobacco may not be a significant barrier to policy change today from the perspective of local businesses.

Limitations

Data in the current study may be limited by the subjective nature of the survey. The accuracy of respondents' knowledge on topics such as the number of customers who smoke in their establishment, daily exposure time, and percent of customers under age 18 likely varies across respondents and should be considered owners' and managers' "best estimates." Also, recruitment using online telephone listings may have excluded some smaller or rural businesses without a business listing in the online telephone book. In addition, some survey responses may be biased due to declining social acceptability of smoking and increased knowledge of health risks. The Surgeon General's report on the health risks of secondhand smoke exposure was released after the collection of the current data (June, 2006).[5] It is possible that knowledge about this report would have positively influenced endorsement of smoke-free policies in local businesses or increased respondents' perceptions of health as a more salient factor for policy change. These concerns are partly addressed by the findings that knowledge of health risks associated with secondhand smoke within our sample was already high, and

the economic concerns identified by respondents are not directly related to increased knowledge of the public health risks of secondhand smoke exposure.

Although the current study did not include restaurants and bars, it provides new knowledge about venues less frequently studied. It included venues with large numbers of people congregating, high proportions of youth clientele, and potential for wide public exposure to secondhand smoke. These are also venues toward which efforts are currently being directed to encourage voluntary policy change in North Carolina. The results therefore have considerable implications with respect to future policy and program changes, including increasing state advocacy, lobbying, coalition building, education, and outreach. For statewide policy considerations, large business groups such as those represented in this study are important segments of the community to examine in order to understand the most fruitful ways in which to direct energies for the betterment of the overall public health.

Conclusions

This study suggests that broader approaches may be needed to enact policy changes, and it identifies new potential strategies for advocacy. Business owners and managers suggested that a statewide law or other legal requirement would be the most critical factor for them to make their businesses smoke-free. In addition, a statewide law would provide some measure of economic security for these businesses; fears about losing the portion of the customer base who smoke are alleviated when all businesses are subject to the same regulations. Educational advocacy efforts may also focus on dispelling the perceptions that negative economic effects are associated with adoption of smoke-free polices. Avenues for consumer advocacy include positive support of smoke-free policies and businesses as well as petitions and complaints against secondhand smoke exposure. Overall these results provide evidence for increased mobilization of patrons and communities, targeted education for businesses, and a renewed focus on broad legislative change. As more states pass comprehensive smoke-free laws, states like North Carolina without such laws will become a minority. North Carolina appears ready to implement statewide legislation to assure a higher standard of protection from the health hazards of secondhand tobacco smoke for youth and adults, employees and patrons. **NCMJ**

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Inclusive Health:
North Carolina's High Risk Pool Begins Coverage January 1, 2009

Mark Holmes, PhD

On January 1, 2009, North Carolina will begin to offer a high risk health insurance pool for the first time. This represents a major development in the medical landscape of North Carolina as thousands of North Carolinians will now have access to more affordable coverage. The North Carolina Health Insurance Risk Pool, Inc. will offer three plans under the brand name of Inclusive Health, with enrollment beginning in October 2008.

"On January 1, 2009, North Carolina will begin to offer a high risk health insurance pool...thousands of North Carolinians will now have access to more affordable coverage."

The Pool was established by the 2007 North Carolina General Assembly with widespread support from the North Carolina Medical Society and North Carolina Hospital Association as well as a priority recommendation by the North Carolina Institute of Medicine's Covering the Uninsured Task Force in 2006. It is designed primarily for individuals with medical conditions that cause them to face higher health insurance premiums in the individual market. Eligible individuals will pay premiums at 175% of an average of the individual insurance market rate. For many individuals who have been deemed high risk, this rate level will be considerably less than they would face from commercial plans. This is because individuals will pay far less than their expected medical costs, with the difference being funded by several sources, including the state. Health care providers who treat people covered under the Pool are also helping to subsidize the difference between premiums paid and actual costs, since the law limits their payment to Medicare rates.

Three different plans are available with varying degrees of cost-sharing. Benefits are generally comparable to those existing in the private market, with a maternity rider available for one plan and covered under the other two. Pharmaceuticals are generally covered, with some high cost medications (such as biologicals) facing inside limits of $100,000. Consistent with most other risk pools across the country, the lifetime maximum benefit is $1 million.

There are multiple ways individuals can qualify, with many people qualifying due to a pre-existing medical condition. This group includes those paying premiums higher than the rate offered under a similar individual insurance plan, those denied coverage, or those with certain serious medical conditions. The second group of potential Inclusive Health enrollees are federally qualified HIPAA eligibles who have continuous coverage under other plans. The third and final group are individuals eligible for the Health Care Tax Credit under the Trade Adjustment Act due to the employment impacts of international trade. Among other exclusions, people eligible for Medicare or Medicaid are not eligible for Inclusive Health. The Inclusive Health website (http://www.inclusivehealth.org) outlines the details of eligibility.

As North Carolina health care providers, there are two ways you can help ensure that as many people as are eligible receive coverage from this plan. First, make sure that you are signed up through MedCost as a participating Inclusive Health provider. This means that you have executed and returned the MedCost amendment that was originally issued in early August laying out the terms, conditions, and reimbursement under Inclusive Health.

Second, if you know of someone who may be eligible, refer them to the Inclusive Health website at http://www.inclusivehealth.org or have them call the call center at 866.665.2117. Flyers are also available at the website for you to post in your office, hospital, or clinic, or to hand out to potentially eligible persons. **NCMJ**

INCLUSIVE HEALTH

Insuring Individuals with Medical Conditions

POLICY FORUM

Healthy Aging in North Carolina

COMMENTARIES

"Considering that the average adult over age 65 has at least 3 chronic health conditions, our aging population will likely present great challenges for health care and long-term services and supports. A heightened emphasis on health promotion is critical."

INTRODUCTION

Policy Forum:
Healthy Aging in North Carolina

Aging is an inevitable part of the lifecycle. What is not inevitable, however, is that aging must equate to declining health. Healthy aging encompasses many different things and the authors of this issue of the *North Carolina Medical Journal* explore its definitions and determinants. Healthy aging is more than physical health; it is mental and emotional health as well. It involves social engagement and an active and healthy lifestyle.

As we grow older our health and life circumstances will certainly change. With these changes come new challenges and new opportunities. Challenges older adults sometimes face include lack of adequate health and social services or access to those services. Seniors may also face barriers in terms of transportation or financial hardship. Aging bodies may be less able to exercise or be more prone to disease. These are issues that we must address head-on in order to help create an atmosphere where increasing age does not have to mean declining quality of life. Instead, aging can bring about a stage of life filled with tremendous opportunity and growth. Retirement may lead to increased time for being involved in activities, and staying engaged with social networks, through family, friends, religious affiliations, volunteer opportunities, or civic organizations. Older adults may find new and enjoyable ways to keep their bodies and minds active.

Now more than ever, North Carolina must be prepared for the demographic shifts that we will experience in the coming years. The aging baby boomers, coupled with the "longevity revolution," practically guarantee us that the older adult population will markedly increase in the years to come. As a state, we need to ensure that their needs are met. We need to ensure that there are enough geriatric specialists to support the health care needs of the aging population. We need to ensure that Medicare benefits remain a robust and reliable source of health insurance coverage for all older adults. We need to consider our surroundings and how they may change due to the aging population. But perhaps most importantly, we need to encourage people of all ages to commit to a healthy lifestyle and to share that lifestyle with their community and their family. Healthy habits that are established earlier in life will help ensure successful healthy aging. By defining healthy aging as a lifelong process, we can help forge a new definition of an older adult as someone who is active, engaged, and enjoying their good health.

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Healthy Aging in North Carolina

Janice I. Wassel, PhD

The "longevity revolution" is here. Regardless of whether any North Carolinians born today will live to the 120 to 150 years projected by Dr. Robert Butler at the International Longevity Center,[1] North Carolina's current older population is nevertheless growing in size and in age. By 2030, North Carolina's older adult population (aged 65 and older) will more than double to over 2 million and the very old population (aged 85 and older) will increase 150% to about 250,000.[2] Life expectancy, or the number of years the average person can expect to live, has been increasing, especially at older ages. For example, in 1990 an individual aged 75 could expect to live another 10.9 years, but in 2005 that projection grew to another 12 years.[3] But are those added years healthy years? What can be done to ensure that North Carolinians age healthily?

What is Healthy Aging?

Healthy aging is more than the absence of disease or disability in old age; it is a lifestyle responsibility shared by the individual, community, and state. Seeking to define healthy aging, an increasing number of committees and research groups use some variant of the West Virginia Rural Healthy Aging Network's definition: "Healthy aging is the development and maintenance of optimal mental, social, and physical well-being and function in older adults. This will most likely be achieved when communities are safe, promote health and well-being, and use health services and community programs to prevent or minimize disease."[4]

Healthy aging as a construct enhances the concept of successful aging popularized by Rowe and Kahn's 1987 article.[5] In that article, they contended disease tainted what was normal aging, and it was possible to age *disease free* with little, if any, cognitive decline. Modified in 1998, their enhanced definition of successful aging included 3 criteria: (1) absence of disease, disability, and risk factors; (2) maintaining physical and mental functioning; and (3) active engagement in life both with other people and in productive activities.[6] The limitation of this model necessitated older adults simultaneously must meet all 3 criteria, thus defining many aging people as unsuccessful. Moreover, the influence of past life course events and the social and structural factors influencing individuals' health and lives were excluded. Critics note this "all-or-nothing" model results in unintended consequences such as discouraging older adults and others to change behaviors, limiting health care, labeling and blaming those not fitting the successful aging model, and creating an ideal which may be unattainable by many adults.[7]

"The multidimensional concept of healthy aging includes the older adults' physical and cognitive health status, social engagement, and environmental and life course factors."

A Life Course Framework of Healthy Aging

The multidimensional concept of healthy aging includes the older adults' physical and cognitive health status, social engagement, and environmental and life course factors. As an active process, one can enter at any point across the life course and the process may be modified as needed. Healthy aging is not only the individual's responsibility but that of multiple stakeholders. Health research over the past few decades has become attentive to the relationship that social status, socioeconomic inequalities, gender differences, stress, environmental factors, and the political economy have on health outcomes.[8] Health is shaped by the time period in which one is born and these

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influences throughout the life course; thus, at any point in time there may be a convergence of the current and the past. Familiar to health measures grounded in research and best practices, health care workers and practitioners may neglect to factor in earlier disadvantages when considering an older adult. Osteoporosis, for example, does not begin in old age but with nutrition as a child. As such, concerns regarding healthy aging must be addressed across the life course.

The life course framework has been very influential in social gerontology, emphasizing the interaction of period (historical events), an individual's decisions, and the effect these decisions have on middle and older age outcomes.[9] It is a framework that lends itself to the understanding of how those with improved sanitation and nutrition, better health care, acceptable living arrangements, and higher education throughout their lives have had better health outcomes.[8] Those without such conditions may have poorer health outcomes due to factors beyond their control.

Who is aging more healthfully? Is it a 60-something rural North Carolinian grandmother who never attended college and works in a service job, has had limited access to heath care, is raising grandchildren, and cooks as taught by her mother but is overweight with hypertension? Is it the highly educated, world traveled 60-something professor who has had health insurance for 30 plus years, enjoys the best quality of foods and red wine but is also overweight with hypertension? Perhaps neither! But factoring in life course experiences and resources available in the community when recommending healthier aging lifestyles will almost certainly result in better health care outcomes.

This issue of the *North Carolina Medical Journal* focuses on the multidimensional concept of healthy aging. Together, the articles have an important message for health care providers, the community, and the older adult: "We all need to work together and share the responsibility to increase the quality of life for all North Carolinians."

Leading the Way: North Carolina's Roadmap for Healthy Aging

Dennis Streets, director of the Division of Aging and Adult Services, Dr. Leah Devlin, state health director and director of the the Division of Public Health, and Dr. Tiffany Shubert, a research scientist at the Institute on Aging at the University of North Carolina at Chapel Hill, introduce us to the partnering of state, county, and other agencies in producing county-level health information specific to older adults. This information will be used in the development and implementation of health promotion programs specific to each county's need. As they correctly note, the increasing popularity of North Carolina as a retirement destination coupled with the natural increase of the our older adult population has the potential to strain services and budgets unless health is addressed proactively and collaboratively through organized efforts. *The North Carolina Roadmap for Healthy Aging* leads these efforts. The sidebar commentary by Erin Russell, also of the Division of Aging and Adult Services, provides unique examples of successful community-level initiatives directed at increasing healthy lifestyles. Encouraging use of community-level programs by health care providers will improve the health of both the community and the individual.

Responding to the high rate of chronic health conditions in North Carolina's older adults, primary care physicians may have little time to study and work with the rest of the aging population. Many voice challenges ahead with the growth of our current older adult population and the aging of the boomers. But rather than being naysayers, the authors in this issue of the *Journal* present positive measures that individuals, communities, and the state are doing to improve the health of older adults in North Carolina. Optimistic in her commentary on the future of older adults, Bonnie Cramer, chair of the AARP Board of Directors, directs our attention to AARP's proactive role in leading change for 50 years. She illustrates how she and others will continue to work together to build healthy communities.

Guiding Healthy Aging

Few physicians specialize in geriatrics. In 2007, the American Medical Association reported only 2,848 active primary care geriatric specialists. As a result, the ratio of geriatric specialist to the population is 1 for every 104,700 people. To provide some context, for each family medicine/general practice primary care specialist, there are 3,000 people or a ratio of 1 to 3,000. But the population is aging and physicians are treating greater and greater numbers of older adults. In 2005, 98% of medical schools included some geriatrics education within a required course.[10] However, a review of the geriatric competencies for current medical students proposed by the 2007 Geriatrics Consensus Conference finds no reference to healthy aging, only pathologies.[11] Associating aging with disease and not including healthy aging should be a cause for concern among physicians caring for older adults.

Duke University Medical Center's Dr. Mitchell Heflin focuses on the heterogeneity of older adults and the decisions practitioners face when screening and determining preventive options to encourage healthy aging. Dr. Heflin introduces a range of preventive primary, secondary, and tertiary measures, with application for use from the well to the frail older adult.

For many older North Carolinians and their families, the fear of aging with Alzheimer's disease or related memory disorder is real. A 64% increase in Alzheimer's disease alone (mild, moderate, and severe) is projected in the 20-year period of 2000 to 2020 for North Carolina's older adults.[12] Dr. Kathleen Hayden of the Bryan Alzheimer's Disease Research Center discusses recent studies that suggest the healthy lifestyle of good diet, exercise, and cognitive "workouts" may do more than lower cardiovascular risk; they may prevent or delay the onset of functional and cognitive decline.

Educating Leaders in the Profession

Collectively, all the authors in this issue of the *Journal* address the impact that aging boomers will have on the future health of North Carolina. Preparing for this aging population

means educating North Carolina's leaders in the profession. Dr. Irene Hamrick from the East Carolina University Medical School, and Drs. Laurie Kennedy-Malone and Beth Barba, both of the University of North Carolina at Greensboro School of Nursing, discuss the need to make geriatric medical training and gerontological nursing more attractive to a specialized workforce. At a time when the demand is increasing, participation and funding in geriatric fellowship programs has declined. Examining geriatric medical programs across the state, the authors provide an excellent overview of educational opportunities available and propose productive models that infuse gerontology and geriatrics into established curriculum to expand geriatric training. Going beyond traditional medical and nursing schools, Sandra Crawford Leak, of the Gerontology Program at the University of North Carolina at Greensboro, and Dr. Jim Mitchell, director of the East Carolina University Center on Aging discuss current innovative gerontology educational initiatives in North Carolina directed to the student and current service provider populations.

Population- and Individual-Level Challenges to Healthy Aging

North Carolina's population has become increasing racially and ethnically diverse. Resources have become gradually more stretched attempting to meet the needs of immigrants, especially older immigrants, while continuing to meet the needs the native-born minority older adults. These 2 populations share common themes of barriers to services and financial difficulties. Both, on average, experience poorer health than the rest of North Carolinas population. Sarah Lowman and Rebecca Hunter, of the Center for Aging and Health at the University of North Carolina at Chapel Hill School of Medicine, together with Swarna Reddy, from the North Carolina Division on Aging and Adult Services, discuss the new diversity within North Carolina's population and issues facing health care practitioners who work with older immigrants. Kathryn Lanier, an ombudsman at the North Carolina Division on Aging and Adult Services, provides the reader examples of successful outreach programs designed to empower and encourage community and individual responses to minorities and immigrant health care education and outreach.

Communities and the state have developed and continue to develop programs that educate and promote lifestyles leading to better health outcomes at older ages, but it is the individual who must act. Lack of exercise and poor nutritional habits plague older adults. Nearly two-thirds of those aged 50 and older are either overweight or obese. Incidence of diabetes continues to rise at all ages. The combination of these factors is reducing quality of life and draining health care resources. Dr. Martha Taylor, from the University of North Carolina at Greensboro's Department of Nutrition, Burgin Ross, a Triad area nutritionist, and Carinthia Cherry, also of the University of North Carolina at Greensboro, present current and successful intervention programs established at universities, in communities, and by the state aimed at combating the dual problem of obesity and diabetes—a condition now termed "diabesity." Also critical to combating diabesity and increasing quality of life is exercise. As a lifestyle behavior, exercise and weight loss, independently and together, increase positive outcomes at all ages. Understanding healthy exercise at older ages is therefore important. But according to Dr. William Karper, an associate professor in exercise and sport science at the University of North Carolina at Greensboro, social barriers exist to initiating a physical activity program. When encouraging an exercise regime to an older adult, physicians should consider recommending community-level resources such as neighborhood, social club, or faith-based groups, in addition to local health clubs. The positive role that physical activity participation in North Carolina Senior Games has for older adults is discussed in a sidebar by Brad Allen, president of the North Carolina Senior Games and an enthusiastic supporter of the games. With a 25-year history, the Senior Games continue to provide older adults with the opportunity to participate competitively in athletic events and, by expanding its wellness mission to year-round programs, continues to encourage and model healthy aging lifestyles.

Healthy Environments, Healthy Choices, Healthy Aging

Uncommon to discussions of healthy aging is attention to workplace, institutional, and home environments. However, adapting the environment for older adults' needs should be a healthy aging priority, due to the fact that over one-third of adults aged 65 and over have reported falling, and falls are the leading cause of injury death for adults aged 65 and over in the United States.[13] Candace Roberts, an assistant professor in interior design at Western Carolina State University, introduces the reader to public and private space modifications that will help these spaces become more amenable to an aging society. Ellen Schneider, of the University of North Carolina Institute on Aging, brings our attention to community-level evidence-based falls prevention programs as well as the role that the newly established North Carolina Falls Prevention Coalition is playing in providing education and resources around falls prevention to health care practitioners, policy makers, and the community.

Dr. Ronald Manheimer, executive director for the North Carolina Center for Creative Retirement at the University of North Carolina at Asheville, offers a unique perspective for the physician planning for future retirement. Noting the investment, commitment, and stress physicians experience during their careers, transitioning to a healthy retirement may be especially difficult. Dr. Manheimer recommends not only planning financially for retirement but also offers creative retirement options that would allow the physician to remain healthfully engaged. While written for the physician, we should all consider his recommendations.

Achieving Healthy Aging for all North Carolinians

Gains in health outcomes for older adults in the past few decades have been substantial. Not only are older adults living longer, but the years added are healthier years. However, negative

perceptions of older adults and aging continue to reinforce long-standing stereotypes. Dr. Gordon DeFriese, professor emeritus at the University of North Carolina at Chapel Hill and Dr. Carol Hogue, retired associate dean of the University of North Carolina at Chapel Hill School of Nursing, illustrate the continued difficulty in "sensitizing" service providers and the public to view older adults as healthy, productive, independent people. An issue for our society will be the acceptance of older adults who are healthy and those who are not. Healthy older adults challenge current norms and expectations of society of the aging population.

Healthy aging necessitates changes in health care delivery systems for North Carolinians of all ages. There is more to healthy aging than simply living longer. As people age, they want their added years to be productive and active, both physically and mentally. Older adults want to be independent, which includes financial independence. Critical as health is to the older individual, healthy aging is critical to cost savings for families and society. The goal of healthy aging becomes shared by many stakeholders: the individual, the health care provider, the family, and the community.

Understanding the complex role that life course factors have on health and aging amplifies the critical need for all North Carolinians to have health care access, proper nutrition, physical activity, and education at all ages. This issue of the *North Carolina Medical Journal* has illustrated only some of the many ongoing health care initiatives here in North Carolina that are directed at improving the health of our older adults. Natural aging and the attraction of North Carolina to retirees offers much potential: the potential to use the creative resources of older adults for the state's good and the potential to promote healthy lifestyles across the life course at the individual, community, or state level. Unaddressed, the aging of North Carolina offers the potential to deplete valuable resources devoted to preventable health problems. The people of North Carolina need to remain committed to healthy aging as an achievable goal. **NCMJ**

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North Carolina's Roadmap for Healthy Aging

Dennis Streets, MPH, MAT, LNHA; Leah Devlin, DDS, MPH; Tiffany E. Shubert, PhD, MPT

In 2030, when all of the baby boomers will be 65 or older, more than 1 in 6 (17.5%) of North Carolinians will be in this age group.[1] Those aged 65 and older will number about 2.2 million in 2030, more than double the 1.1 million today.[1] North Carolina ranked 6th nationally in the increase in the number of persons aged 65 or older between July 2006 and July 2007.[1] In 2006, 28 of North Carolina's 100 counties had more people age 60 and older than those aged 17 and younger; by 2030 this scenario is expected to expand to include 75 counties.[1] Factoring into this demographic shift are increased life expectancy, the aging of boomers, and retiree migration. North Carolina has become a popular retirement destination, ranking third among all states in the net migration of retirees.[2] Considering that the average adult over age 65 has at least 3 chronic health conditions,[2] our aging population will likely present great challenges for health care and long-term services and supports. A heightened emphasis on health promotion is critical.

The North Carolina Divisions of Aging and Adult Services (DAAS) and Public Health (DPH) began to envision a *North Carolina Roadmap for Healthy Aging* in 2006 and have worked side-by-side since then to design and promote this *Roadmap* to help ensure that each and every older adult in the state has local access to health promotion programs. In collaboration with the Institute on Aging (IOA) at the University of North Carolina at Chapel Hill, these divisions are developing the *Roadmap* as a guide to provide direction and concrete strategies for programming in health promotion, disease prevention, and chronic disease self-management.

This collective effort has come none too soon, as the state is already seeing an increase in the prevalence of chronic disease and an increased demand for services for older adults. The 2003-2006 Behavioral Risk Factor Surveillance System (BRFSS) reported that over 50% of North Carolinians aged 65 and older have been diagnosed with arthritis and 23% with diabetes mellitus.[3] Approximately 22% have had a heart attack or stroke, and 45% are classified as disabled.[3] The 19% of those aged 65 or older who are of a racial minority are at an even higher risk for these chronic conditions and are at a higher risk of dying from them. If appropriate programs and services are not undertaken now, these numbers will dramatically increase and the demands on services and providers will be overwhelming and costly. There will also be a significant lost opportunity to realize the economic and social value of an active and healthy older population.

To meet this older adult "perfect storm," DPH and DAAS, in partnership with the IOA, have focused on pooling resources to expand health promotion programming statewide, particularly programming based on evidence generated from scientific studies and published in peer-reviewed journals. A Healthy Aging Coalition (HAC), created in 2005 and composed of over 25 public and private organizations from across the state, has served as an excellent vehicle to assist with these efforts. The HAC serves to foster optimal health and well-being of older adults through statewide partnerships, to increase public awareness of the evidence base for health promotion and prevention in aging, and to disseminate knowledge to foster effective evidence-based health promotion (EBHP).

"Together we are making a public policy statement that aging is lifelong in nature and that optimal aging requires a personal and societal commitment."

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Our 2 divisions applied for and received a Senior Opportunity Grant from the National Association of Chronic Disease Directors (NACCD) in 2006 to assist with initial development of the *Roadmap*. Our vision was to expand health promotion programming and, in particular, EBHP, in a systemic and coordinated way throughout the state. In reality, the *Roadmap* has evolved to focus efforts on providing community providers with the training and tools to (1) identify their target population, (2) choose the appropriate evidence-based or best practice programs for delivery, and (3) partner with other groups to maintain and expand programming. Through the *Roadmap* project, participating agencies have developed policies and received and awarded grants to further support EBHP for older adults.

Key to the development of the *Roadmap* has been the interagency partnership between our 2 state divisions that was formalized in a written Memorandum of Agreement (MOA) in February 2007. Although DPH and DAAS had a long history of working together on various other projects, the actual agreement established a solid foundation and sense of commitment for a coordinated effort to expand health promotion programming throughout the state. It enabled each division to identify and make maximum use of its specific capacities, resources, and partnerships around common goals. The divisions intend to expand the MOA this year to include the IOA.

Because this formal partnership is unique, the National Council on Aging (NCOA) has referenced it as a successful model for other states. Example outcomes include the interagency application to the US Administration on Aging (AOA) for an Evidence-Based Disease Prevention Grant in 2007; the current interagency effort with the IOA and the Carolina Geriatric Education Center (CGEC) to develop a North Carolina Falls Prevention Coalition (discussed on page 404 of this issue of the *Journal*); and the successful funding of another Senior Opportunity Grant application in 2008. In addition to promoting the adoption of the *Roadmap* by community and health care providers, this latter grant will also (1) provide technical assistance and resources to promote EBHP to 29 counties that have not yet participated (largely rural), (2) permit the development of an EBHP website, and (3) develop a plan for future oral health initiatives for our older adults. North Carolina's efforts are consistent with emerging national initiatives that offer new funding sources to support collaborations to address healthy aging. In particular, over the past decade we have seen the development and support of more EBHP initiatives.

Before becoming recognized as EBHP, a program must demonstrate improved health outcomes when tested in multiple areas with different groups. Both the Centers for Disease Control and Prevention (CDC) and the NCOA are strongly supporting the dissemination of these programs to improve the health of older adults. North Carolina is committed to delivering these programs to different venues in the state and has targeted specific areas that are more rural as well as those areas with greater numbers of minorities who are typically underserved. The aforementioned AOA grant is supporting dissemination of

Communities Responding to an Aging Society

Erin Russell, MS

Healthy aging means more than just an older person having a clean bill of health. It includes access to care as well as opportunities for social engagement. Communities across North Carolina are responding to the growing older adult population with innovative programs designed to promote healthy aging. Below are 3 examples of such programs that are aimed at improving the quality of life of seniors across the state.

North Carolina Senior Farmers Market Nutrition Program

Farmers markets across North Carolina provide fresh and local produce as well as social stimulation. This is why the Division of Aging and Adult Services has joined with farmers markets across the state in offering the North Carolina Senior Farmers Market Nutrition Program (SFMNP). The goal of the SFMNP is to improve the nutritional status of older adult participants through the availability of fresh fruits and vegetables while also bolstering the use of local farmers markets. Currently about 3,000 low-income participants at congregate nutrition sites[a] in 19 counties redeem the coupons they are issued for use at 21 authorized farmers markets to obtain locally grown fruits and vegetables. Participating farmers markets include 3 state-operated markets and 18 smaller, community-based markets in both urban and rural areas of the state. Approximately 900 farmers are currently authorized to participate in the program. In August 2008, North Carolina received additional funding from the US Department of Agriculture for the 2008 SFMNP and additional coupons have been distributed.

For more information on the Senior Farmers Market Nutrition Program or to obtain a list of authorized markets, contact Audrey Edmisten at the North Carolina Division of Aging and Adult Services at audrey.edmisten (at) ncmail.net.

Walk Wise, Drive Smart Program

The Walk Wise, Drive Smart Program is designed to enhance awareness of issues and improve conditions related to safe and enjoyable walking. The program is the result of a collaborative effort between the Council on Aging for Henderson County and several community and statewide organizations. It is funded by the

a Congregate nutrition is a service where a meal (typically lunch), offering one-third of the recommended daily dietary allowance, is provided in a group setting such as a senior center. This service targets those 60 years old and above.

the "Chronic Disease Self-Management Program" (CDSMP) to 46 counties over a 3-year period. This program (titled "Living Healthy" in North Carolina) provides information and teaches practical skills on managing chronic health problems. The CDSMP helps give participants the confidence and motivation they need to manage the challenges of living with a chronic health condition. This program is proven to strengthen physical activity, healthy behaviors, and overall health. The objective of implementing CDSMP in North Carolina is to reduce the risk and occurrence of disease and disability among the growing number of adults aged 60 and older.

By the end of the grant, 1,512 individuals will have completed the program, and 250 lay instructors and 54 master trainers will be ready to continue to deliver the program and expand it throughout the state. In addition to CDSMP, our collaboration is supporting the dissemination and implementation of 3 other EBHP initiatives throughout North Carolina that target individuals with arthritis. The Arthritis Foundation Exercise Program and Aquatics Program are proven to improve activity levels and functional mobility for individuals with arthritis. DAAS and DPH are currently collaborating with the UNC Thurston Arthritis Center and the IOA to assess "Walk with Ease," which also targets individuals with arthritis. Within the next year, both divisions will also be supporting the delivery of "Matter of Balance" to improve balance confidence and decrease falls. Past collaborations with several University of North Carolina campuses and other research institutions and community providers have resulted in offering other EBHP promising practices to promote fitness and improve physical activity (such as the "Fit and Strong" program).

While North Carolina has focused its efforts on these specific EBHPs because of their proven benefit to the older adult population, delivering an EBHP can be a daunting task. These programs typically require trained staff and the purchase of course materials. Through the *Roadmap* and its related offerings, providers can identify organizations in their community that are offering these types of programs. Other providers may want to collaborate to pool resources to pay for trainers and resources, thus expanding the reach of these programs. By applying for grants to establish programs like CDSMP and receiving the second Senior Opportunity Grant (i.e., *Roadmap*) funding, we are establishing an infrastructure to maximize the effect of our collective efforts and resources at the state and local levels.

The long-term goal of our 2 divisions is to improve the quality of life for all older North Carolinians and to minimize the burden on health and long-term care systems through effective health promotion programming. However, it is important to acknowledge the difficulty of achieving this vision because aging well is not only about health. It is also about such matters as having access to transportation, food, and housing, as well as about one's overall economic status and supportive environment.

The bigger picture of aging is addressed in North Carolina's *State Aging Services Plan*. Every 4 years DAAS uses this *Plan* to report on the status of seniors, offer objectives, and recommend actions to the General Assembly and the Administration on Aging. This *Plan* represents the collaborative work of older adults and advocates, regional and community planners, and service providers, both public and private. The *2007–2011 State Aging Services Plan* examined many of the needs and wishes of current and future older adults and discussed ways to make our communities more responsive and supportive, not only to our aging population but also to North Carolinians in general. Like a steadily rising tide, baby boomers are entering the years where they are beginning to need and qualify for aging services and programs.

The *2007–2011 Plan* was developed within the framework of the Livable and Senior-Friendly Communities Initiative, which was introduced in the *2003–2007 Plan*. The 40 objectives for the current *Plan* are presented in the 8 components of this initiative: physical and accessible environment, healthy aging, economic security, technology, safety and security, social and cultural opportunity, access and choice in services and supports, and public accountability and responsiveness. This current *Plan* is available on the DAAS website at http://www.ncdhhs.gov/aging/

National Highway Traffic Safety Administration and the Governor's Highway Safety Program. This comprehensive program provides opportunities to learn more about safe walking and driving; has safe walking and driving patrols; is creating safe walking routes in neighborhoods with support from the City of Hendersonville; and sponsors group walking programs.

Other communities across the state are also conducting walkability surveys and audits. Organizations such as the National Center for Bicycling and Walking can assist communities in these efforts.

For more information about Walk Wise, Drive Smart, go to www.walk-wise.org. Also review the Aging Planning Bulletin on this topic at www.ncdhhs.gov/aging/pub/apb5.pdf.

Access Dental Care Program

Individuals with special needs such as older adults in long-term care settings and people with developmental disabilities living in the community can be highly susceptible to rampant tooth decay and gum problems due to general health problems, long-term medication use, and/or inability to clean their own mouths. Overlooked daily oral care and preventive care can result in emergency needs. Access Dental Care is dedicated solely to providing dental services for these populations through mobile dentistry services in 9 counties of the Triad area. This dental care model was given one-time financial support by the 2007 General Assembly.

For more information about the Access Dental Care Program, visit http://www.accessdentalcare.org.

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with links to additional information. The *Plan* and website also include statistical and other supporting documentation that further define the issues facing older North Carolinians and aging baby boomers.

Clearly the aging demographics of North Carolina and concern over the health of older adults have served as a catalyst for our unique and effective state partnership. While state agencies routinely work together and successful partnerships are common, this particular partnership is special and represents what we must continue striving to do in the future. To be successful with our *Roadmap*, we must continue to develop, pool, and leverage our resources. Together we are making a public policy statement that aging is lifelong in nature and that optimal aging requires a personal and societal commitment. We look forward to joining other organizations who are realizing the importance of investing in the aging of our population and, specifically, in strategies to achieve the ultimate destination for our *Roadmap*—a state where all people age well. **NCMJ**

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Creating the Good:
Americans Aged 50 and Older as Agents for Change

Bonnie Cramer, MSW

North Carolina is my heart and my home. During my long career with state government, I've lived my passion for health and human services, long-term care, social work, aging, volunteering, and social activism. Those years prepared me for the opportunity and honor I received earlier this year—becoming chair of the Board of Directors of AARP. The well-known, nonpartisan membership association is the nation's leading organization for Americans aged 50 and older and serves 40 million members. AARP envisions a society where everyone ages with dignity and purpose and fulfills their goals and dreams. This year AARP celebrates 50 years of enhancing the quality of life for all people as they age.

Pessimists might dismiss AARP's vision as wishful thinking. But I know a simple but powerful truth: older Americans from every region, background, culture, race, lifestyle, income, education level, and state across the nation want to be heard. They are raising their voices, joining forces, and taking action to create the kind of world AARP foresees. They want to be a more powerful force for social change.

One of my Board colleagues recently said, "You have a voice, use it! You have ideas, act on them!" She was speaking to a group of teens and twenty-somethings at the World Youth Congress in Quebec, but her words apply to all of us, no matter where we are in life. It is especially important for those of us in the second half of life.

"I know a simple but powerful truth: older Americans from every region, background, culture, race, lifestyle, income, education level, and state across the nation want to be heard."

Americans have a long history of sharing, giving of themselves to help others, and making a difference in their neighborhoods and communities. We are avid volunteers, generous philanthropists, and eager participants in the myriad organizations and causes that contribute to the public good. The urge to serve and to change the world often springs from a youthful intolerance of injustice and grows through adulthood. People are looking for ways to give back, to show appreciation for those who gave them a helping hand, and to make the world a better place for future generations.

The giving spirit endures, but the hope for a better world is faltering. An AARP survey released this summer showed that 55% of adults aged 44 to 79 say their generation will leave the world in worse condition than when they inherited it, compared to 20% who expect it to be in better condition.[1]

This is a sad commentary on the economic state of the nation. Jobs are hard to find; the price of gas, food, and health care are high; the housing market is stalled; the number of people without health insurance or with inadequate health insurance is climbing; and foreclosures and bankruptcies have reached new highs. But looking more closely at the survey numbers reveals that people who volunteer regularly have a more optimistic outlook. They also expect the world to be in poorer shape, but they are less likely than occasional or non-volunteers to expect worse conditions in the future.

Rather than succumbing to helplessness or hopelessness in the face of economic and social challenges, AARP strives to empower members, to demand and work for positive social change, and to help those in need. We know what a potent army this population can be: 73% of older Americans reported volunteering in the past year to help an organization, and an equivalent number—75%—have volunteered on their own.[1] Why do they do it? "Making the community a better place to

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live" is one reason, but they place even greater value on "making a difference by helping others."[1]

As individuals and groups, older Americans seem to know that they *can* make a difference. I chair the AARP Board today, which is a volunteer position, because 50 years ago, one person got angry and said, "Enough!" Her name was Ethel Percy Andrus, founder of AARP. She was a 73-year-old career educator who discovered a former colleague living in a renovated chicken coop. It was the best that the woman could do on her paltry teacher's pension which was stretched to the limit to cover housing, food, and expensive medications for a chronic condition. This was, of course, before Medicare and at a time when older people were viewed as a liability by the insurance world and as a market nobody wanted.

Dr. Andrus set out to make a wrong situation right. By the time she finished doggedly canvassing 42 health insurance companies, she found one that could see the vision and wisdom of offering group health insurance to retired teachers. Later the coverage expanded to embrace all retirees, and from these beginnings AARP was born.

Dr. Andrus recognized herself as an empowered person. She valued her own strength, and she also knew that there was strength in numbers. The combination proved explosive. Among older Americans, both numbers and strength are set to detonate again in the very near future.

In the midst of historic global aging, the United States is on the verge of experiencing the largest increase in the 50+ aged population ever. Most of the 78 million-strong baby boomers have already surged into their 50s and early 60s. In 2011, the first boomers turn 65. Along with their predecessors, war heroes from WWII, they are the voice of life experience, of a desire to change the world, and an unwillingness to settle for less than the best. Leading-edge boomers are among those most likely to say they will be increasing the amount of volunteering they do in the next 5 years. Forty-six percent of older boomers say they are at least somewhat likely to increase the amount of time they spend volunteering during the next 5 years, including 29% who are very likely to do so.[1]

Expect them to shake things up. I am convinced that civic and social engagement, regardless of the issues, are central to positive social change. Volunteerism is the key. I've watched it happen again and again. As director of the North Carolina Division of Aging, I helped organize the Senior Tar Heel Legislature. The Legislature is made up of older volunteer representatives, one from each of North Carolina's 100 counties, working hands-on with staff from the Division of Aging and Adult Services. They have been instrumental in achieving state support for home and community care services, such as home-delivered meals, adult day services, and expanded senior centers. They have also been instrumental in the passage of legislation beneficial to older North Carolinians. Recent examples include requiring criminal background checks to be made before hiring direct care workers in health and long-term care facilities, an increase in the Homestead Property Tax exemption, and the enactment of a tax credit for purchase of long-term care insurance.

North Carolina's State Aging Services Plan, which reports on the status of seniors and makes recommendations to the General Assembly, is the collaborative work of older adults and advocates, regional and community planners, and public and private service providers. Older North Carolinians are making significant contributions to the vitality and livability of the state. Likewise, volunteers have been the foundation of AARP for 50 years, living out our mission of enhancing the quality of life for people as they age. Today, more than 9 million people are giving back through AARP, through traditional volunteer programs and other creative opportunities.

Thanks to the voluntary contributions of those older Americans, the world is already a better place. They have:

- Helped people file taxes at no charge through AARP Tax-Aide.
- Helped older people maintain financial independence through AARP's Money Management Program.
- Mentored students and teachers through programs developed by the National Retired Teachers Association, AARP's retired educator community.
- Conducted community safety audits.
- Educated seniors about identity theft and fraud.
- Linked mature employees to meaningful jobs and training.
- Worked to strengthen health and financial security for all Americans through the Divided We Fail initiative, the largest effort in AARP's history.

The most critical factors affecting the ability of older Americans to achieve independence, choice, and control in their lives are health, financial security, supportive services, and livable communities. The examples cited above, both from North Carolina and the nation, not only address each of these factors, but also provide avenues for civic engagement.

Divided We Fail is perhaps AARP's strongest example of civic engagement that empowers older Americans to leave the world better than they found it. This initiative is a broad-based and growing coalition based on 2 fundamental beliefs: that all Americans should have access to affordable, quality health care, and that all Americans should have peace of mind about long-term financial security.

In addition to the founding alliance, a collaboration of strange bedfellows that includes AARP; Business Roundtable, an association of CEOs from America's largest companies; Service Employees International Union (SEIU), the fastest growing union in North America; and the National Federation of Independent Business (NFIB), the nation's leading small business advocacy association, the Divided We Fail coalition has attracted nearly 90 other diverse organizations and associations representing aging, women, faith, ethnicity, lifestyle, health care, the entertainment industry, and other business interests. This broad representation underscores the impact that health care and financial security challenges are having on all families, communities, and generations.

Divided We Fail strikes a chord partly because it offers various levels of engagement. People become more educated

about the urgency of health and financial security concerns; they join rallies during the presidential primaries; they collect pledge signatures from groups and individuals; they send letters to Congress or become e-activists who communicate with elected officials on important issues on a moment's notice; and they contribute personal stories about their health or financial struggles.

Divided We Fail illustrates what can happen when we look beyond traditional approaches to volunteerism to engage more older Americans in service. This will be critical if we expect to expand communities for healthy aging in a meaningful way.

Building livable communities to accommodate an aging population is a moral imperative for a society committed to empowering its people. Ninety percent of Americans aged 50 or older want to remain in their current homes and communities as they age.[2] To do so, however, means that communities must support their evolving needs and be "livable." People of all ages and abilities should have safe, affordable, strategically designed housing options; transportation choices; and opportunities for social and civic engagement.

Currently older volunteers are involved in building livable communities as spokespersons and agents of change, as service providers to drive innovation in the marketplace, and as citizen participants on planning boards, bringing the voice of the 50+ consumer to influence local decision making.

AARP's research indicates that the primary reason people don't volunteer is that no one has asked them. Nearly 7 in 10 non-volunteers have never been asked.[1] AARP is strengthening our capacity to ask. Currently we are targeting 2 new approaches to expand engagement opportunities. First, we are a major sponsor of a new coalition called ServiceNation, which works with more than 100 other groups to solve problems through civic engagement and citizen service. We are also initiating a new online community destination called AARP.org/CreatetheGood to encourage individuals to get involved on their own schedules and according to their own interests. The name "Create the Good" comes from a quote from AARP's founder, Dr. Andrus: "The challenge, to live up to our better selves, to believe well of our fellow men and perhaps by doing so, to help create the good."

Throughout the nation and the world, people aged 50 and older are giving their time, skills, sweat, and creative ability to create a greater good for all. It's never too late to answer the call for service, but the best time to answer is now. **NCMJ**

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One Size Does Not Fit All:
Geriatric Health Maintenance in the 21st Century

Mitchell T. Heflin, MD, MHS

Clinical scenario:

In anticipation of a busy clinic, you are reviewing charts for screening and prevention measures due for the day's patients. As it turns out, 2 of your favorite (and oldest) patients are on the schedule. The first, Mr. G, is an 85-year-old retired school principal with diabetes mellitus, hypertension, and congestive heart failure. He also suffers from osteoarthritis of both knees and severe pain which limits his ability to walk more than a block. He still lives alone but has had difficulty managing his regimen of oral hypoglycemics and cardiovascular drugs in the recent past. His daughter is accompanying him today to discuss his living situation. The second patient, Mr. H, is also 85 years old. His only medical problem is occasional reflux. He smoked a half pack of cigarettes per day until he quit at age 45. He walks a mile daily and volunteers as a driver for the Veteran's Administration. He lives with his wife of 60 years, whose health is similarly quite good. They enjoy traveling to visit their children and grandchildren at the coast every few weeks.

At first, with their shared age and gender, you attempt to apply the same screening and prevention template to each of these patients. However, you realize that they are 2 very different people with very different levels of health and, in all probability, very different goals of care. "Should I develop 2 separate templates?" you wonder.

Mr. G and Mr. H offer 2 dramatically different portraits of aging. Mr. G's profile is quite familiar. Older adults, as a population, are afflicted with high rates of chronic diseases such as hypertension, diabetes, and osteoarthritis. These conditions not only limit life expectancy but result in increasing rates of disability and dependence in the last years of life. Mr. H, on the other hand, embodies the term "successful aging." He has managed to avoid the ravages of chronic disease and still enjoys an active and independent life. The contrast of these 2 cases captures the heterogeneity of aging in the US today. While the average 85-year-old male now has a median life expectancy of about 5 years, the healthiest quartile can expect to live an average of 8 more years. The frailest group, on the other hand, has a median survival of less than 3 years.[1] (See Figure 1.) As a result, health care providers and systems must modify parameters by which they offer screening and prevention services to better reflect the *individual's* health and preferences.

The United States Preventive Services Task Force (USPSTF) recommendation regarding prostate cancer screening (PSA) provide a recent illustration of these issues.[2] The authors of the recommendation concluded that patients over age 75 should not be offered PSA as a screen for prostate cancer. According to the report, those with a decade or less of life remaining stood little chance of benefiting from screen-detected prostate cancer treatment. An online editorial rebutted that this recommendation discounted the 12-15 year life expectancy of the healthiest quartile of 75 year olds.[3] This real life debate raises the issues highlighted in our case scenarios—given the heterogeneity of the aging population, what is a reasonable approach to determining which screening and prevention measures to offer older adults?

"…health care providers and systems must modify parameters by which they offer screening and prevention services to better reflect the individual's health and preferences."

In gauging a patient's candidacy for available preventive measures, clinicians should consider a few basic issues about both the measure and the patient:

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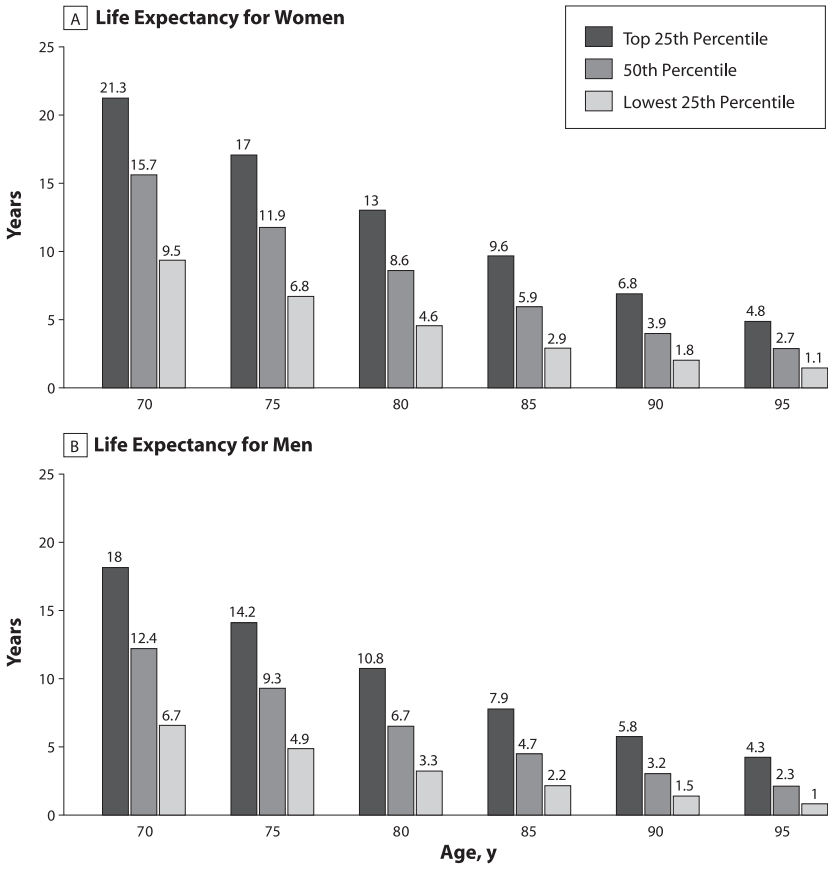
Figure 1.
Upper, Middle, and Lower Quartiles of Life Expectancy for Women and Men at Selected Ages



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placed by the patient on prolonging life and his or her willingness to undergo invasive procedures and accept side effects of treatment.

Given the complexity of these decisions, providers should seek reliable, concise, and, when possible, evidence-based resources to guide decisions. The USPSTF guidelines continue to provide key insights about the performance of particular tests and the evidence to support their use.[4] The Task Force has added more specific language on the impact of aging on decisions related to screening and prevention as well as reports on age-associated conditions such as dementia and osteoporosis. This may be the most efficient and appropriate resource for the healthiest quartile of older adults—those like Mr. H. On the other hand, the Assessing Care of Vulnerable Elders (ACOVE) project identifies quality indicators in the care of older adults including recommendations for routine health maintenance.[5] Experts serving as authors for the ACOVE project have critically evaluated the evidence supporting these quality indicators. As indicated by its title, this series of reports focuses more on those issues affecting the frail elderly like Mr. G.

In this commentary, I will offer a brief overview of a range of measures and, using our clinical scenario, cite examples of how these issues might be addressed. Of course, a complete review of this topic is beyond the scope of this article. Readers may consult a variety of references for more detailed information on this subject.[4,6,7]

1. ***What is the potential benefit of this measure for my patient and is he or she likely to survive long enough to benefit?***
   Despite a dearth of clinical trial data in older patients, clinicians need to weigh the expected time-to-benefit, the risk of developing the target disease in the patient's lifetime, and the individual's estimated life expectancy. Both patient and provider should have a general sense of these parameters before making decisions.
2. ***What are the potential harms of the measure?***
   Clinicians often overlook adverse effects associated with seemingly routine tests or procedures. Potential harms include false positive results leading to unnecessary interventions and anxiety, overdiagnosis (finding and treating a disease that otherwise would not have affected the patient's life), physical discomfort or injury, and cost.
3. ***How does the patient's preference and quality of life impact this decision?***
   In addition to changes in survival associated with screening and prevention, consideration must be given to the value

Primary Prevention

Primary prevention aims to avert the development of a specific disease process. Most or all of the available measures in this category offer some potential benefit for all but the frailest elderly. This group of interventions focuses on preventing common problems associated with aging, including cardiovascular events, infections, and the non-specific ravages of immobility and inactivity.

Exercise benefits people of all ages and may decrease all cause morbidity and increase lifespan.[8] The multiple benefits of regular exercise in the elderly include improved conditioning, reduction in cardiovascular disease and stroke, reduced likelihood of falls and related injuries, and reduced rates of functional decline/

limitations.[9,10] Current guidelines endorse a graduated or stepwise introduction of physical activity to improve safety and adherence and construction of an individualized activity plan.

High quality evidence demonstrates that smoking cessation significantly reduces the risk for coronary heart disease, various cancers, and chronic obstructive pulmonary disease.[11] Alcohol use in the elderly may negatively impact function and cognition as well as general health.[5] Healthy or frail, older adults need to be counseled to reduce or cease alcohol intake and tobacco use.

Vaccinations represent an extremely powerful advance for the health and well-being of older adults. Tetanus, influenza, pneumococcus, and herpes zoster are all significant causes of morbidity and, in some cases, mortality of both healthy and frail elderly. Use of vaccinations in older persons to prevent or attenuate disease from each pathogen is endorsed by the USPSTF, ACOVE, and the Advisory Committee on Immunization Practices (ACIP).[5]

USPSTF guidelines "strongly recommend" that clinicians discuss aspirin chemoprevention in adults who are at increased risk for cardiovascular disease (5-year risk of ≥3%).[4] However, the risks of gastrointestinal bleeding with low-dose aspirin in older adults are well documented and should be evaluated prior to initiating aspirin therapy.[12]

Mr. G and Mr. H both deserve an offer of most of the primary preventive measures described here. Each would benefit from an individualized exercise program, although Mr. G would need to start at a much lower level of monitored activity accounting for his multiple comorbidities and limitations in mobility. Aspirin chemoprevention requires more thought. Barring a contraindication, Mr. G deserves a daily aspirin due to his existing heart disease and a very high, short-term risk of cardiovascular events. Mr. H, on the other hand, will want to weigh the benefits and risks of daily aspirin given his lack of a history of coronary artery disease and more moderate cardiovascular risk.

Secondary Prevention

Secondary prevention focuses on early detection and treatment of asymptomatic disease. These measures present more complex decision-making challenges for patients and their providers. While modern medicine offers many measures to remove or repair disease, consideration must be given to the potential harms associated with the test or treatment and to the likelihood that the frail older adult will survive long enough to experience a real benefit.

Colorectal, breast, and cervical cancer screening may reduce cancer-specific mortality in older adults.[1,13] A variety of levels of evidence support screening for colorectal cancer with different methods, including annual fecal occult blood testing and endoscopic examination. However, flexible sigmoidoscopy and, in particular, colonoscopy carry increased risk of perforation and bleeding in the elderly.[14] Current recommendations from the USPSTF suggest offering colorectal cancer screening to individuals who have at least 5 years to live.[15] Prospective controlled trials of screening mammography for breast cancer enrolling women up to age 74 demonstrate a reduction in breast cancer mortality

Health and the Aging Brain

Kathleen M. Hayden, PhD

For years researchers have known that a healthy diet and exercise play a role in the prevention of heart disease and cancer. Over the last decade an accumulating body of evidence has shown that cardiovascular risk factors in midlife also affect the risk of dementia in late life.[1-3] It should follow that a healthy diet and exercise, behaviors that may prevent or delay heart disease, may prevent or delay the onset of dementia as well. Recently, animal studies, clinical trials, and imaging studies have added insights into the possibility of preventing or delaying the onset of dementia.

Diet has been shown in several studies to have an effect on the risk of Alzheimer's disease (AD). A diet that has a high caloric intake[4] or is high in fats[5] increases the risk, while diets rich in antioxidants[6-8] and omega-3 fatty acids have been shown to be beneficial. For instance, several cohort studies have found that regular fish consumption can decrease the risk of AD.[8-13] Individual supplemental nutrients have been studied, but most researchers agree that dietary sources of nutrients are preferred. In support of this notion, an investigation of whole diet concluded that individuals who adhere more closely to a Mediterranean style diet have a reduced risk of disease.[14] Conversely, obesity has been linked to an increased risk of AD in several studies.[15-17]

Exercise has been shown to offer protection against or assistance in controlling vascular risk factors, such as cardiovascular disease, diabetes, and hypertension. Moreover, exercise enhances synaptic plasticity and is neuroprotective.[18] Observational studies in humans have shown reduced risk of AD in those who engage in regular physical exercise.[19-21] Furthermore, a recent report demonstrated cross-sectionally that cardiorespiratory fitness was associated with a reduced level of brain atrophy.[22] There are few data from clinical trials available as yet, but several that are underway aim to understand more fully the relationships between exercise, mild cognitive impairment, and dementia.

Cognitive stimulation has also been shown to reduce the risk of cognitive decline. Education is well-established as a protective factor against dementia.[23] Occupations that require more complex cognitive processes are also somewhat protective.[24,25] Finally, in later life, those who engage in cognitively stimulating activities or social activities are less likely to suffer cognitive decline or dementia.[23,26] Few clinical trials have confirmed these associations, although one trial, the ACTIVE study,[27] sought to study the effects of

among screened versus unscreened women.[16,17] Guidelines are vague on breast cancer screening for older women, but the American Geriatric Society (AGS) recommends offering screening every 1 to 2 years for women with a life expectancy of at least 4 years.[18] Most recommendations now indicate that cervical cancer screening with Pap smears may be discontinued for women who have had at least 3 normal Pap smears over the preceding 10 years and are older than 65 years. Screening may also be stopped among those who have had a hysterectomy for a benign indication.[19,20] Those with persistent or reemerging risk factors, including no prior screening, should continue to be offered screening.

Several modifiable targets exist for patients at risk for vascular disease. Hypertension treatment trials in older adults have consistently demonstrated significantly decreased all-cause mortality, cardiovascular events, stroke, and chronic kidney disease.[21] Recognized authorities in the field recommend periodic testing of blood pressure with intervals ranging from 1 to 2 years.[22] Concern has been raised in the past about the risks of aggressive treatment of hypertension in older adults, including hypotension, falls, and death.[23] The benefits of treatment, however, are likely to outweigh risks provided that care is taken to avoid complications. Due to a higher overall annual risk of coronary heart disease, older adults stand to benefit from lipid reduction if life expectancy warrants. Lipid lowering therapy clearly benefits older adults at high risk of coronary events. The benefit of primary prevention for low-risk older adults remains unclear.[24] Screening for abdominal aortic aneurysm with a one-time abdominal ultrasound examination has been shown to decrease aneurysm-related deaths and all-cause mortality in men with a history of smoking.[25]

The prevalence of osteoporosis in the elderly is high and increases the risk of fractures of the spine and extremities. The USPSTF recommends that all women aged 65 and older (and those over 60 with risk factors) undergo screening routinely with bone densitometry.[26] Questions remain about how frequently and for how long women should be screened. The USPSTF also recently recommended individualized assessments in older men to gauge risk factors for osteoporosis, including for those over age 70.[27]

Both men might be considered candidates for identification and treatment of blood pressure problems. Likewise, identification of osteoporosis and fracture risk is also key to both their continued function and independence. Many would argue that lipid lowering would continue to be a key measure for Mr. G given prior events, but little evidence informs the exact time-to-benefit and when to stop lipid lowering therapy. While Mr. G would clearly not be a candidate for colorectal cancer screening, Mr. H, depending on preference, may well qualify.

Tertiary Prevention

Tertiary prevention identifies established conditions to prevent further morbidity or functional decline. Practitioners seeing older adults must be prepared to screen for a range of nonspecific symptoms or conditions that can either signify a lurking disease or herald a decline in health. The so-called "geriatric syndromes"

cognitive interventions in older adults over time. The study had 4 arms: memory training, reasoning training, processing speed training, and a control group. Participants in the treatment group showed less functional and cognitive decline at a 5-year follow-up evaluation than those in the control group. As far as which cognitively stimulating activity is best, it is reasonable to consider that the activity that is most enjoyable is the one more likely to be consistently practiced, whether that is reading, book clubs, Sudoku, crossword puzzles, or some other activity.

Taken together, diet, exercise, and cognitive stimulation are promising targets for interventions to prevent or delay the onset of disease. Because the data to support these conclusions are still under active investigation, definitive recommendations cannot be made. However, it is doubtful that improving one's diet, becoming more physically fit, and engaging in socially and cognitively stimulating activities are risky prescriptions. They are much more likely to improve quality of life than not.

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can affect any older adult but more often will signal a change in status of a frail elder.

Impairment in activities of daily living is associated with an increased risk of falls, depression, institutionalization, and death in the affected elder.[28] Collecting a functional history, including the basic and instrumental activities of daily living, allows the clinician to focus on key problems and potential threats to that person's independence and safety. Likewise, the high prevalence of cognitive and mood disorders among older adults justifies early identification to preserve function and address safety, behavioral, and caregiver issues. Recent reviews highlight the effectiveness of several dementia screening tools for dementia and depression.[29,30] Providers should also regularly inquire about the occurrence of recent falls in older patients. For patients who report falling, basic assessment should include review of circumstances of the fall(s), measure of orthostatic vital signs, visual acuity testing, cognitive evaluation, gait and balance assessment, and review of medications.[31] Indeed, the average older adult in the US takes 3-5 prescription medications. Use of multiple medications increases the risk for drug-drug interactions and associated adverse drug events. Evidence-based recommendations on medication management, evaluated by ACOVE authors, include maintaining an up-to-date list and assessing for benefit, interactions, adherence, and affordability. Medications commonly associated with adverse events deserve special attention, including warfarin, NSAIDs, antihypertensives, insulin/hypoglycemics, and psychotropics.[32]

Other screening measures supported as ACOVE quality indicators include questionnaires about hearing loss and audiometry, regular ophthalmologic exams, serial weights and inquiry about appetite for nutritional status, and questions about urinary incontinence with targeted history and physical examination to identify specific causes. Clinicians should also ask about driving and firearms (particularly among demented patients and their caregivers), watch for signs of elder abuse or neglect, and inquire about home safety including adequate fire prevention and detection measures.

As noted above, Mr. G easily qualifies as a vulnerable elder. His visit(s) would ideally include assessments of function, cognition, mood, and balance. In addition, his medications need careful review and concerns addressed about his personal safety in living alone. While a busy practitioner working alone may, in theory, be capable of performing these assessments, he or she may benefit from asking other members of the team to perform specific tasks (e.g., Functional Assessment, Mini-Mental State Exam, and others). If problems or concerns persist, referral to a clinic specializing in geriatric care may be warranted. Mr. H presents a different challenge. He appears vigorously healthy, yet he remains at risk for many of the same late life challenges. In his case, a brief written survey that inquires about any concerns about mobility, mood, memory, and medications may be most efficient. In addition, the well elder should fill out a home safety checklist.

The heterogeneity of health and ability among older adults has resulted in differences in their life expectancy and expectations for their lives. In determining appropriate screening and prevention measures for this population, providers should consider the benefits and risks of the measure itself and the well-being and preferences of the individual patient. For the frail patient with limited life expectancy, certain measures that require a longer time-to-benefit period or entail more significant risk, like cancer screening, may not be appropriate. On the other hand, inquiries that enhance safety and prevent functional decline, like assessments of gait and balance or medications, may greatly benefit this patient. For the well elder, screening and prevention includes issues relevant to younger adult patients (e.g. cancer screening) as well as brief screens for other common late life problems. Indeed, one size (or form) does not fit all for older adults in the 21st century. **NCMJ**

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Providing Health Care to Aging North Carolinians:
Educational Initiatives in Geriatrics

Irene M. Hamrick, MD; Laurie Kennedy-Malone, PhD, APRN-BC, FAANP; Beth E. Barba, PhD, RN, FAGHE, FAAN

Between the years 2000 and 2030 the number of baby boomers over 65 in the United States will almost double, and their percentage of the population will increase from 12% to 20%.[1] The older population in North Carolina will more than double, with the number of North Carolinians over 65 increasing by 121%, and the population over age 85 increasing by 144%.[2] Concurrently, the total population of North Carolina will increase by about 50%.[3] This older population will live longer and have less disability than those in previous generations but will suffer with more chronic diseases, particularly Alzheimer's and diseases associated with obesity, such as diabetes, arthritis, and cancer. Currently, more than three-quarters of adults over age 65 suffer from at least one chronic medical condition that requires management, and 20% have 5 or more chronic conditions.[4] This article will address the problems we will be facing, examine current educational initiatives in geriatric medicine and gerontological nursing, and discuss a rationale for gerontologizing health care education in the future.

With this projected staggering increase in the number of patients over 65, North Carolina faces several challenges in providing even adequate health care for the elderly:

- The current shortage of geriatric providers will worsen in the coming years.
- Health care providers receive insufficient training in geriatric care.
- Reimbursement is inadequate for geriatric providers to attract sufficient new providers and caregivers into the field.

This year's Institute of Medicine of the National Academies (IOM) report *Retooling for an Aging America: Building the Health Care Workforce* calls for a dramatic increase in the number of gerontological and geriatric providers in order that the needs of the older population are addressed comprehensively, services are provided efficiently, and older patients are encouraged to be active partners in their own care. The report found that less than 1% of physician assistants, nurses, and pharmacists either specialize or are certified in geriatrics. Only 4% of social workers, one-third of the number currently needed, specialize in geriatrics.[4]

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Geriatric Medical Training

Geriatric education on all levels is severely lacking and needs to be drastically revised. While 89% of medical schools began requiring geriatrics exposure in 2000, that exposure is not quantified, often brief, and much too late in their students'

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training. According to a 2001 study, only 45% of graduates perceived their geriatric coverage as adequate, two-thirds of graduates felt adequately prepared for geriatric acute care, and only half felt adequately prepared for long-term care.[5] Only about half of family medicine and internal medicine graduating residents felt prepared to care for elderly patients.[5] Currently none of the residency review committee requirements state a minimal time of exposure for geriatric training, and only family medicine requires exposure in all settings, including nursing home and home visits.

According to the Alliance for Aging Research, the United States will need about 37,000 geriatricians in 2030.[6] In 2007, there were 7,128 certified geriatricians and 1,596 certified geriatric psychiatrists in the US.[4] North Carolina has 3.6 geriatricians per 100,000 patients, slightly less than the national average of 3.8. One estimate predicts an increase of geriatricians of less than 10% by 2030, while others predict a decline due to fewer physicians recertifying and a decreased interest in fellowship programs.[4] The fill rate of geriatric fellowship programs has declined over the past years and is currently at 58%.[7] Several intrinsic factors appear to contribute to this shortage:

- Emotionally and physically demanding working conditions.
- Misgivings about working with older patients.
- Challenges presented with multiple medications and comorbidities.

However, the most important factor of all is likely the financial disadvantages of working in geriatrics. Geriatricians must tolerate lower reimbursement through Medicare than private carriers. This is due to a low proportion of well-paying procedures in the practice and more time required to care for complex patients. The National Institute of Medicine suggests pay enhancements for practitioners (not only physicians) with certification of special expertise in geriatrics.[4]

The fee-for-service Medicare program provides fragmented care and precludes an interdisciplinary approach by paying for only one visit per day. However, several interdisciplinary programs going by various acronyms—PACE, IMPACT, PROSPECT, and HELP—have shown improved care to beneficiaries while often saving Medicare money. In May 2007, United States Senators Blanche Lincoln and Susan Collins cosponsored a bill for the Geriatric Assessment and Chronic Care Coordination Act (GACCCA). It proposes to cover a comprehensive geriatric assessment with a plan to keep the patient healthy and provide coordination of care for individuals with multiple chronic conditions, including dementia.[8]

Currently the 4 medical schools in North Carolina and the Asheville Family Medicine program offer geriatric fellowships. East Carolina University's (ECU) Family Medicine and Internal Medicine residency programs require a month rotation in geriatrics. The family medicine program also requires a 2-year longitudinal program in nursing home and home care. For medical students, ECU uses standardized patients to teach geriatric skills in 5 sessions during the second year and requires 3 days of clinical experience during the third year. Duke requires 5 geriatric symposium days in the first year. Wake Forest has integrated geriatric knowledge

Significance of Post Baccalaureate Training in Gerontology in Promoting Healthy Aging

Sandra Crawford Leak, MHA

A hopeful factor in communities' capacities to promote healthy aging among older adults is the increasing number of professionals who have post baccalaureate training in gerontology or geriatrics. In broad terms, gerontology is the study of the aging process, and geriatrics is the health care specialty related to the diseases and conditions associated with the aging process. In practice, the 2 disciplines overlap and a growing emphasis is being placed by both on how to encourage people to age successfully and stay as healthy as possible over the life course.

Given a recent wave of infusing gerontological content into a wide range of graduate curricula, professionals across a number of disciplines are more and more likely to have specific training related to promoting healthy behaviors in midlife and older adults. Frequently, such curricula also address how the community context can encourage such behaviors.

Examples of how gerontological training can influence healthy aging include:

- The medical school applicant who takes a graduate level course in health and aging and becomes interested in consumer activation for health promotion in future practice.
- The pharmacy student who pursues a concurrent post baccalaureate certificate in gerontology and interns with a "brown-bag" program to do medication safety checks.
- The registered nurse whose subsequent training in gerontological nursing leads her to develop a falls prevention program for older adults in the public health department in her community.
- The registered dietician who is a consultant to retirement communities and returns to school part-time for an MS in gerontology and goes on to teach undergraduate students about the nutritional aspects of aging.
- A group of physical therapy students with interests in older adults who become champions of "walkable" communities after a joint project on community infrastructure.

in the basic science courses of the first 2 years and, with funding from the Donald W. Reynolds Foundation, is working on an expanded curriculum which would include 11 clinical days for the third year. All 4 North Carolina medical schools offer a geriatric elective in the fourth year.

Gerontological Nurses

Older adults already constitute up to 62.5% of a nurse's caseload. Older adults comprise 50% of hospital patients, 85% of home care patients, and over 90% of nursing home patients.[9] Yet most nurses have limited preparation in the principles of geriatric nursing care because few undergraduate nursing education programs included this content until recent national initiatives supported gerontological curriculum enhancements. These efforts include publication of national standards, curriculum materials, faculty development, and awards for innovative educational strategies.[9]

Gerontological nurse practitioners (GNPs) are advanced practice nurses with specialized nursing education in the diagnosis, treatment, and management of acute and chronic conditions often found among older adults. Employed in a variety of practice sites including ambulatory care clinics, long-term care facilities, and acute and sub-acute hospitals, GNPs collaborate with other members of the health care team to manage the health care needs of older adults.[10] Despite the demand for gerontological nurse practitioners, their overall numbers remain low nationwide with only 3% of all advanced practice nurses specializing in gerontology.[11] Nurses interested in advanced practice nursing in North Carolina are fortunate that 2 of the state's schools of nursing have graduate-level programs that lead to preparation as gerontological nurse practitioners. Duke University and the University of North Carolina at Greensboro have long-established programs that have been successful in recruiting and graduating nurse practitioners prepared to care for the rapidly growing older adult population in our state and in the nation.

Educational Funding for Geriatric Medical and Nursing Education

There are a number of programs including the National Health Services Corps that have a long history of successfully recruiting providers into shortage areas with a loan forgiveness program. To address the shortage of geriatricians, South Carolina has instituted a geriatric loan forgiveness program. It can forgive $35,000 of student loan debt incurred during medical school for each year of specialized fellowship training in geriatric medicine if the physician establishes a practice in South Carolina and stays for at least 5 years. The program was started in 2005 and has increased medical students' interest in fellowship programs at the University of South Carolina Medical School and the Medical University of South Carolina in Charleston.[12] Whether these programs will be able to sustain interest in geriatrics and increase the total number of geriatricians—or draw providers from other areas—remains to be seen.

- The family medicine physician who, because of a geriatric rotation in medical school, has an understanding of the health benefits of recognizing and addressing caregiver stress.

Gerontological training opportunities for these and other professionals who are in the position to promote healthy aging are expanding in colleges and universities across North Carolina.

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Recognizing the need to increase the number of advanced practice nurses prepared to care for our nation's older adults, the William Randolph Hearst Foundation in 2001 established endowments for scholarships for nurses pursuing careers as gerontological nurse practitioners. The University of North Carolina at Greensboro was one of 5 schools of nursing in the United States to receive this funding.[13] In addition to supporting gerontological nurse education curriculum initiatives for advanced practice nurses, the John A. Hartford Foundation awarded the American Association of Colleges of Nurses (AACN) a grant of $2.23 million in 2001 to establish the Creating Careers Program. Twenty-three schools of nursing across the country received funding to award scholarships to advanced practice gerontological nursing. Duke University School of Nursing was one of the recipients of this scholarship program. Availability of these scholarships have afforded students the opportunity to complete their programs of study full-time, allowing them to more rapidly enter the workforce.[14] Information and applications for additional scholarship opportunities from individual schools of nursing generally are available to applying students on the school of nursing websites. Nurses pursuing a graduate degree may apply for the North Carolina Master Nurse Scholars Program scholarships which provide funding to nurses for full- or part-time study if they are committed to remaining in North Carolina following graduation.[15]

In March, California Senator Barbara Boxer submitted a bill to establish a federal loan forgiveness program of $35,000 annually for 2 years of service and an additional $40,000 annually for years 3 and 4. In addition to physicians, this program will include nurse practitioners, physician assistants, clinical nurse specialists, social workers, and psychologists who complete specialty training in geriatrics.[16]

Another option to address the need for geriatricians is to entice geriatric providers to stay in the field or attract retiring medical professionals into geriatrics. In 2015, more than 50% of the workforce in the United States will be over 40.[17] With an aging workforce we will need to consider creative solutions such as flexible work hours to allow for caregiving and innovative lateral entry programs that build on the existing knowledge of a mature health care workforce.

The Geriatric Academic Career Award has been instrumental in the development of academic geriatricians and fostering

geriatric education. This Title VII-funded program provides financial incentives to junior geriatric faculty and is renewable for 3 years. However, its funding was cut in 2006 and although resumed in 2007, it was flat-funded for 2008-2009. This allowed continuing support for prior recipients but did not provide funding for new applicants.[18]

Infusing Geriatrics and Gerontology Throughout the Curriculum

Even with maximum support, it is unlikely that 37,000 geriatricians will be educated by 2030. It is therefore important to educate the current medical provider workforce in principles of geriatric medicine. This needs to be accomplished through drastic curriculum revisions, career-long demonstration of geriatric competence, and increases in the number of faculty teaching geriatrics. Educational settings must be expanded beyond the hospital to patients' homes, clinics, assisted living facilities, and nursing homes.[4]

Medical student education must include a structured, prolonged, and required experience in geriatrics. Residency training must include geriatric training for all but pediatricians and should be, at minimum, 6 months for primary care residencies. The Donald W. Reynolds Foundation and John A. Hartford Foundation have granted millions of dollars and have advanced geriatric training tremendously. However, without regulatory mandates for minimal training in medical school, non-primary care residencies and fellowships, and more extensive training in primary care residencies, less compelling agendas will capture curriculum time and money.

The National Council of State Boards of Nursing has spearheaded a growing movement in nursing education to emphasize the care of an aging population. With substantial support from the John A. Hartford Foundation, the Health Resources and Services Administration, and others, schools of nursing have made considerable strides in strengthening geriatric competence in baccalaureate graduates.[9] A successful model for gerontological curricular enhancement includes developing a core group of interested faculty who consider geriatrics to be essential in all courses, using available national standards and teaching resources, and strengthening links with community agencies that share a commitment to high quality nursing care for elderly patients.[19]

Many nurse practitioners who care for older adults also lack specialized training in geriatrics. Nurse practitioner faculty who teach in non-gerontological nurse practitioner programs are encouraged to use the American Association of Colleges of Nursing and the John A. Hartford Foundation Geriatrics Nursing Initiatives *Nurse Practitioner and Clinical Nurse Specialist Competencies for Older Adult Care* as a guide to integrate gerontological nursing content into the curriculum.[11,20] Designating specific hours of clinical preparation in settings across the continuum of care for older adults, assigning specific readings, and determining clinical competency of the non-gerontological nurse practitioner will help ensure that all nurse practitioners have a foundation in gerontological care.[11,21,22]

North Carolina Gerontology Consortium Continuing Education Initiative

Jim Mitchell, PhD

Supported by the North Carolina General Assembly, the Institute on Aging of the University of North Carolina system was established in the mid 1990s. Its statewide advisory committee endorsed the development of a comprehensive educational program to strengthen university-based credentialing programs in gerontology and to develop a coordinated continuing education initiative for those in the workforce serving older adults. The committee endorsed the formation of a North Carolina Gerontology Consortium, approved by the University of North Carolina General Administration in May 2003, which would serve as the delivery mechanism for the proposed comprehensive educational program. The 11-campus Consortium (UNC Asheville, Chapel Hill, Charlotte, Greensboro, Pembroke, and Wilmington; Appalachian State University; East Carolina University; North Carolina State University, including NC Cooperative Extension; Western Carolina University; and Winston-Salem State University) has coordinated the web-based delivery of 18 graduate-level gerontology courses. The courses are shared among member institutions, enhancing curricular flexibility for credentialing programs and graduate students.

Drawing from the experience of web-based graduate course delivery and in partnership with the North Carolina Division of Aging and Adult Services, the Consortium is embarking upon a continuing education initiative targeting the nonclinical workforce providing community-based services to older adults. With funding from the University of North Carolina General Administration, a pilot project is underway to solicit topics for continuing education from those employed through the network of services supported by federal and state Home and Community Care Block Grant appropriations. This large segment of the workforce providing supportive services to older adults is overlooked by the clinical continuing education network. The topics will drive formation of web-based continuing education modules to be delivered through the Institute on Aging and North Carolina Division of Aging and Adult Services websites. Those completing the modules will receive a certificate of completion by the University of North Carolina Gerontology Consortium. Following consumer evaluation, the modules will be delivered nationally through partnership with the Association for Gerontology in Higher Education.

Interdisciplinary Training in Geriatrics

Interdisciplinary training for health care professionals should begin prior to professionals entering the workforce. It is essential for graduates in the health care field and some of the social science disciplines to understand one another's role and the importance of collaboration to ensure delivery of adequate health care. While it is often difficult for students and faculty of different disciplines to schedule classes or clinical rotations at the same time, universities could consider conducting health fairs in the community for vulnerable populations where students and faculty from different programs collaborate to provide prevention screenings and health promotion information. This would allow students a first-hand opportunity to appreciate the specialized knowledge and skills set that each discipline is known for as well as refer health fair participants to their colleagues.

The National Institute of Medicine proposes a 3-pronged approach to improve the ability of the health care workforce to care for older Americans:

- Enhance the competence of all individuals in the delivery of geriatric care.
- Increase the recruitment and retention of geriatric specialists and caregivers.
- Redesign models of care and broaden provider and patient roles to achieve greater flexibility.

The redesign of models of care includes a more efficient utilization of and interaction among the interdisciplinary team. This enhances the role of direct care workers, including personal care aides, nursing aides, home care aides, and others. These people have the closest contact with elderly patients, providing vital information for geriatrics providers, and yet they are only required to have a minimum of 75 hours of training by federal mandate, and only a few states have higher requirements. The IOM report suggests increasing the minimum training requirement for certified nurse aides and home health aides to 120 hours and requiring demonstration of competence in the care of older adults for certification. While longer training is crucial, the increased requirement may deter many from entering the field of geriatrics, further exacerbating the current shortage of geriatric aides. A potential solution would be a concomitant increase in pay compared to aides with less training and without geriatric certification.

The Program for All-Inclusive Care in the Elderly (PACE) is an interdisciplinary team approach to care and is funded by Medicare. One remarkable result of this program has been a very low 12% turnover of direct-care workers (aides) in these programs compared to the approximately 100% turnover in most settings. This was achieved through financial support, additional training, and career advancement opportunities.[23] Family and friends provide the largest proportion of the care for older adults. Adequate training opportunities also need to be provided in the community to optimize care, prevent burnout, and facilitate understanding and support.

North Carolina would benefit from adopting multiple strategies to address the looming crisis in geriatric care. Some of these include:

- Expand geriatric training in all health care and social science fields.
- Provide funding for developing and/or sustaining creative educational programs that prepare geriatric health care professionals.
- Establish scholarships for health care professionals seeking a career in gerontological health care.
- Increase public awareness and support for caregivers of elderly.
- Increase reimbursement of geriatric health care providers to alleviate the critical shortage.

Perhaps one of the saving graces and best-selling points for a career in geriatrics is that, despite the low pay and myriad other frustrations, geriatricians have the highest job satisfaction of all specialties.[24] North Carolina will be depending on us to get this word out. **NCMJ**

The University of North Carolina Gerontology Consortium represents the largest multi-campus organizational entity of its type in the state university system. It offers an opportunity to efficiently share expertise and instructional resources across campuses to better serve the needs of college and university students, formal and informal care providers, and citizens as we negotiate a response to the aging of North Carolina's population.

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Immigrant Elders:
New Challenges for North Carolina

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Many new immigrants have arrived in North Carolina in recent decades, changing the face of aging. Among the emerging populations are Latinos, South Asians, Chinese, Vietnamese, Hmong, Africans, and immigrants from Burma and the former Soviet Union. Many of these new residents are older adults. Language barriers and other factors keep them from accessing and navigating resources that other older adults may take for granted. Disparities in health status are real for some, while others experience diminished quality of life due to social isolation or loss of meaningful personal or professional roles in their new homeland. Some have suffered persecution, war, or other trauma in their native countries, increasing the risk of psychological stress or other health conditions. In short, the myriad challenges faced by all older adults are amplified for immigrant elders. Moreover, the health, human service, and aging services communities are ill prepared to respond to the needs of these vulnerable populations. It is time to prepare for the new challenges ahead.

Background

For years, the demographics of North Carolina have been shifting toward greater immigrant diversity. In 2006, the state ranked 15th in the nation for number of admitted foreign immigrants.[1] US Census estimates indicate that Latinos in North Carolina increased by 138,654 between 2000 and 2004, a gain of nearly 37%. The state has experienced an increase of over 25% in the Asian immigrant population during the same years.[2] Additionally, there are more than 10,000 documented immigrants from the former Soviet Union, and nearly twice as many from former Warsaw Pact countries, living in North Carolina today.[3] Many new immigrants are settling in urban areas, but rural and medically underserved parts of the state have experienced demographic changes as well.[4]

Demographic data most likely underestimate the state's foreign-born population. In large part this is due to issues of documentation and some immigrants not wanting to be counted for fear of legal consequences. Also, information about older immigrants is unreliable and difficult to ascertain. We have learned from recent work in one county that local churches report higher numbers of Latino older adults in their congregations than would be expected from official figures. Finally, limited information exists about the needs of aging immigrants and the resources available to them. Without sound data, organizations may be reluctant to provide programs or have difficulty securing

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start-up funds to develop responsive initiatives, even in the face of need.

Access to health care is an issue for some immigrant populations, but little is known about utilization of care among immigrant elders. One study suggests that the foreign-born are less likely than native-born individuals to receive timely care. The length of time a person lives in the United States is positively associated with utilization of health care services,[5] and naturalized citizens may receive different care than non-citizen immigrants. For example, many non-citizen immigrants experience more barriers to accessing and utilizing ambulatory and emergency care, even when insured, than do citizens.[6]

Lessons from Immigrant Elders and Their Communities

Some local researchers and practitioners have taken note of the need for work in this area. We recently conducted a qualitative research study to document the perceived needs, attitudes about aging, health beliefs, and utilization of health care services among Hmong, Latino, and Russian-speaking immigrant elders in North Carolina. The study was carried out in the spirit of community-based participatory research, an approach that guides researchers and communities to share equitable power and control throughout the research process.

While there are many different ways to think about aging well, most theories underscore the importance of physical and emotional health, security, and engagement with activities and people who bring meaning and support to life.[7] Our findings fit within this model of successful aging and indicate that individuals, families, and societies influence the aging experience.

We found that physical and emotional health is influenced by a number of factors. Some immigrant elders are at risk for specific health conditions such as depression and post-traumatic stress disorder, as a result of their previous life experiences or high levels of current psychological stress. Many use preventive health services infrequently, if at all, and experience barriers to health care, such as lack of transportation and medical interpreters, distrust of providers and the health care system, cost of care, and in some cases, fear about disclosing immigration status. Low health literacy and lack of familiarity with recommendations and services are additional problems. Also, many immigrant elders are not aware of community-based programs and services available to them and their caregivers.

Insecurities are common among the older immigrants we interviewed. Like other older adults, they are uncertain about the future, question their value to society, and fear losing their independence and becoming burdens to others. Also, financial fears are prevalent. Many receive benefits from the state (SSI and Medicare) but face a discontinuation of these benefits if they fail to become naturalized citizens within 7 years of immigration. In addition to stress about naturalization, many believe they are too old to learn new skills and a new language.

The majority of older immigrants we interviewed experience social isolation. Other than caring for grandchildren, they reported lacking meaningful roles in their communities.

Eliminating Health Disparities among Native-Born Minority Older Adults

Kathryn A. Lanier, MS

Older adults who are members of minority groups or other traditionally underserved populations face many of the same barriers as immigrant elders, including access to services, lack of information, and financial hardships. Many of the health disparities that minority elders encounter begin early in life and influence health status over the course of the lifespan. Several of the key diseases that affect adults in mid to late life such as high blood pressure, stroke, heart disease, diabetes, and certain cancers affect minority communities disproportionately. We know through clinical research these diseases affect minority populations earlier and more dramatically. The reasons why the effects are so much more substantial are the foundation of several studies currently being conducted around the country.[1] Unfortunately, these diseases are often discovered later in the diagnosis process and the "window" of opportunity for minimally invasive techniques are often lost due to timing.

In many cases the lack of medical insurance, distance to health care providers, and/or limited finances to purchase necessary medicines make it extremely difficult for older adults to attain and/or maintain their desired quality of life. Elimination of these disparities has gained national attention and in recent years there have been important education and awareness campaigns such as Closing the Health Gap and Take a Loved One to the Doctor Day.[2] The use of multimedia has been very beneficial in publicizing information about health issues to various ethnic communities. The importance of utilizing ethnic media, particularly television and radio, cannot be overlooked and probably serves as one of the strongest vehicles of communication next to personal one-on-one contact. The second most important method of conveying information is through the training of peer health coaches and advisors and other trusted individuals in the respective communities to serve as lay health officials. These "health ambassadors" can be members of the clergy, community activists, or even business owners. It is crucial to know who is well thought of and respected in the community because these are the individuals who can provide entrée to the affected populations. In order to be effective, providers must venture beyond the methods they are most familiar with in terms of outreach and treatment. This requires a willingness to engage ethnic communities on both a professional

Limited social outlets outside of religious organizations, lack of job opportunities, and reliance on others for transportation and interpretation contribute to isolation and purposelessness.

Older immigrants also demonstrate notable strengths, including spiritual conviction, a sense of community that is linked to their involvement in religion, and remarkable resilience in the face of continuing life challenges. Many maintain close relationships with family and engage family members in decision making. They are happy to be residents of North Carolina and strive for social integration, civic commitment, and United States citizenship.

Society has a vital role in ensuring successful aging, and some local organizations are doing just that. Our work included interviews with selected community service and health care organizations, through which we learned that some immigrant service organizations assist older adults in bridging the gap between health care providers and community services, while programs organized by the aging services system can reduce isolation and provide instrumental and social support. For example, we observed diverse populations utilizing multicultural literacy and health promotion programs at the Shamrock Senior Center in Charlotte.

Implications and Next Steps

For Practitioners

Health care providers

Based on our findings, we recommend that providers work to mitigate the fear and distrust that often exists between immigrants and all levels of the health care system. That includes striving for greater cultural sensitivity and improved patient-provider communication. Attention to health literacy issues is important and it is imperative that the health care community encourage and facilitate the training of interpreters in medical concepts and terminology.

Aging services

There is a need for aging programs and services to assure adequate outreach to immigrant communities and to develop, design, and deliver culturally appropriate programs, including those for older adults with limited English proficiency. Aging service providers can strengthen this response by partnering with organizations that represent immigrant groups and with other health and human service providers, as well as learning from other communities that are more experienced in this area. Our research has shown that senior centers are not the only place that house programs for seniors; libraries, churches, and other faith-based programs have developed and disseminated services as well.

For Communities

Communities can make a dramatic difference in the lives of their immigrant elders by creating opportunities for them to be involved through engagement in the arts, public service, employment, and religious organizations. Immigrant service organizations are strong advocates and should be involved in level and a personal level through, for example, participation in health/educational fairs, cultural events, religions observances, and political functions.

The key concept to embrace is the need to meet people where they are, which means understanding the person in a holistic manner. The knowledge needed to serve may begin with meeting them physically in their communities or the settings they are most comfortable. The practitioner has to be aware of the older adults' views about health, sickness, and disease from both a personal and cultural frame of reference. They need to have some degree of understanding that they are not just treating the individual; in many instances they are treating the entire family, literally and figuratively. The elder's role in family dynamics may be pivotal, not only to their own well-being, but also in terms of how well the rest of the family functions. It is important to know how the older adult copes with his or her chronic or acute health care issues because it is going to have a significant impact on their treatment, compliance, and recovery.

Last, but certainly not least, is the psychological aspect of eliminating health disparities. This requires acknowledging past inequities and, in some instances, actual harm that occurred due to lack of service provision. The perception of being treated differently, not being heard, or having one's belief system disrespected have played a major role in the gaps that exist between older adults of various racial and ethnic backgrounds. Mental health issues, most notably depression, are treatable and yet have often times been overlooked as a key to overall well-being among minorities.

These issues can and are being addressed in North Carolina and, with continued effort and perseverance, we will narrow the gaps that currently exist. The measures that are being taken now are necessary because of our country's dramatically changing demographics. It is important to remember that eliminating disparities must be an ongoing effort from the dawn to sunset of life if we are going to be a society that cares for all of its citizens equally.

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providing input to issues and decisions that will affect the communities they serve.

For Planners and Policy Makers

It is clear that we need better in-depth demographic information for our state. In addition to improved data on foreign-born elders, more information is needed about specific racial and ethnic subpopulations. After all, not all people who are classified as "Asian/Pacific Islander" by our institutions are from the same background; many originate from different countries, speak different languages, have different national histories, and are accustomed to varying types of health care. Also, many older immigrants from the former Soviet Union fall within the white population majority, yet their experiences with health care in the United States may differ dramatically from the native-born white population. For example, their health care utilization in this country may be influenced by culturally specific beliefs about care, lack of familiarity with the role of primary care providers, too few programs designed to address their mental health needs, and language barriers.[8] Thus, it is crucial that health disparities work and census data continue to provide insight into ethnic and racial complexities.

In addition, we must incorporate health literacy and aging training into health affairs curricula and develop opportunities for continuing education on this topic. Finally, it is necessary to examine critically our immigration and naturalization policies, housing strategies, and health service delivery systems, and to work with immigrant and aging service organizations to bring about positive change wherever possible.

For many years in North Carolina, we have avoided focusing on the needs of older immigrants. We have believed that "there are not many of them here" or "the responsibility to do this work belongs to someone else." However, the facts suggest that we can no longer ignore these communities. It is time to acknowledge their presence and devise strategies to ensure that, like other older residents, immigrants will age with opportunity, dignity, health, and well-being. **NCMJ**

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Obesity in Older Adults:
A Challenge for North Carolina Health Care Professionals and Policy Makers

Martha L. Taylor, PhD, RD, LDN, FADA; Burgin Ross, MS, RD, LDN; Carinthia A. Cherry, MS

Improvements in health care have contributed to an exponential increase in life expectancy and have influenced growth of the older adult population. This increase is accompanied by a similar rise in the occurrence of age- and nutrition-associated diseases, including obesity, cardiovascular disease, and diabetes.[1] As emphasized in *Healthy People 2010*, the burden of these chronic conditions is a public health concern that warrants closer examination of not only their cause but also their prevention and subsequent improved quality of life.[2] The World Health Organization reports 605 million people (20%) worldwide are currently over 60 years old, and population estimates suggest that in the year 2025 this number will have reached 1.2 billion, or 29%.[3] These data highlight older adults as a distinctive group with specific health concerns that will continue to demand attention as the population ages.

The prevalence of obesity has dramatically increased in both North Carolina and the US over the past decade. (See Figure 1.) One in 4 adults in North Carolina are obese today, with 62% of those aged 50 years and older being designated as overweight or obese. For older adults in North Carolina, heart disease is the number one cause of death, followed by cancer, stroke, and chronic lung disease.[4] In 2006, diabetes was the 7th leading cause of death in North Carolina (4th for African Americans).[5] Obesity is linked to increased risk of other diseases, including cardiovascular disease, hypertension, and diabetes. According to the NHANES III study, 86% of Americans aged 65 or older have a minimum of one nutrition-related risk factor for development of cardiovascular disease. Obesity is one of the characteristics of metabolic syndrome, along with elevated blood lipids, impaired glucose tolerance, and hypertension.[6] Obesity is "predictive of disability" in older Americans.[7] A 2003 report found 46% of older North Carolinians reporting at least one disability, with smoking, obesity, and lack of exercise identified as "key risk factors."[8]

Obesity and diabetes are major public health problems in North Carolina and affect all socioeconomic population groups. Significant increases in both conditions have occurred over the past decade. These 2 conditions are linked as obesity is a major risk factor for type 2 diabetes mellitus, as well as for heart disease, hypertension, and stroke. A new term, *diabesity*, has been coined by Francine Kaufman, MD, to highlight the clinical relationships between obesity and diabetes. As noted in the recent report on the burden of diabetes in North Carolina by the North Carolina Division of Public Health, "North Carolina urgently needs important environmental changes to promote healthy eating, regular physical activity, and healthy weight maintenance in order to help reduce diabesity and prevent type 2 diabetes."[5] (See Figure 2.)

"One in 4 adults in North Carolina are obese today, with 62% of those aged 50 years and older being designated as overweight or obese."

The population of North Carolina is aging at a rate that exceeds other states. In 2003, North Carolina was 10th in the US in the number of residents aged 50 years and older (28% of

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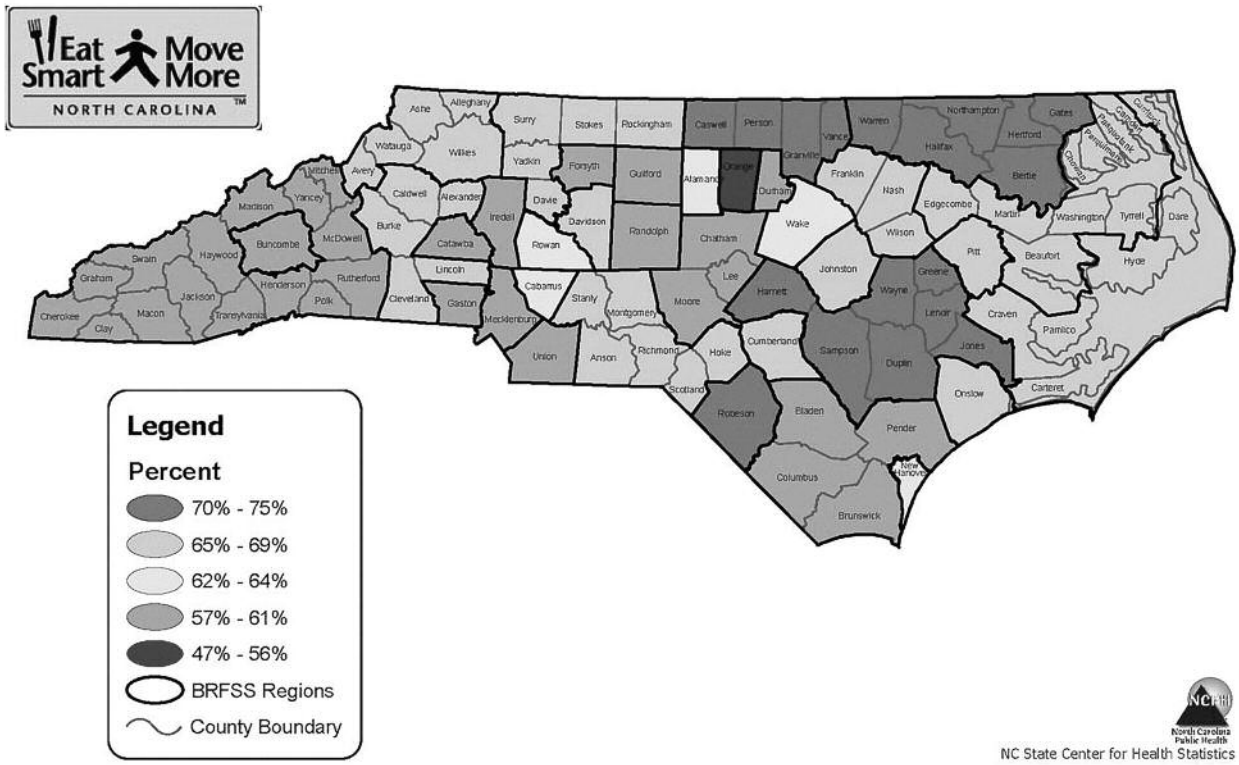
Figure 1.
Percentage of North Carolina Adults Who are Overweight or Obese (BMI* ≥25)



Body mass index is computed as weight in kilograms divided by height in meters squared: (kg/m^2).
BMI is an intermediate variable used in defining overweight and obesity. Underweight=BMI less than 18.5, Recommended Range=BMI 18.5 to 24.9, Overweight=BMI 25.0 to 29.9 and Obese=BMI greater than 30.0
Source: 2006 NC Behavioral Risk Factor Surveillance System (BRFSS)

the population, or 2.3 million). By 2030, an estimated 35% of North Carolinians will be 50 years and older.[8] Older adults in North Carolina have high rates of both obesity and diabetes, and as the numbers of older adults continues to increase over the next 2 decades, an increased prevalence of these conditions will present significant challenges for individuals, families, and health care providers.[5]

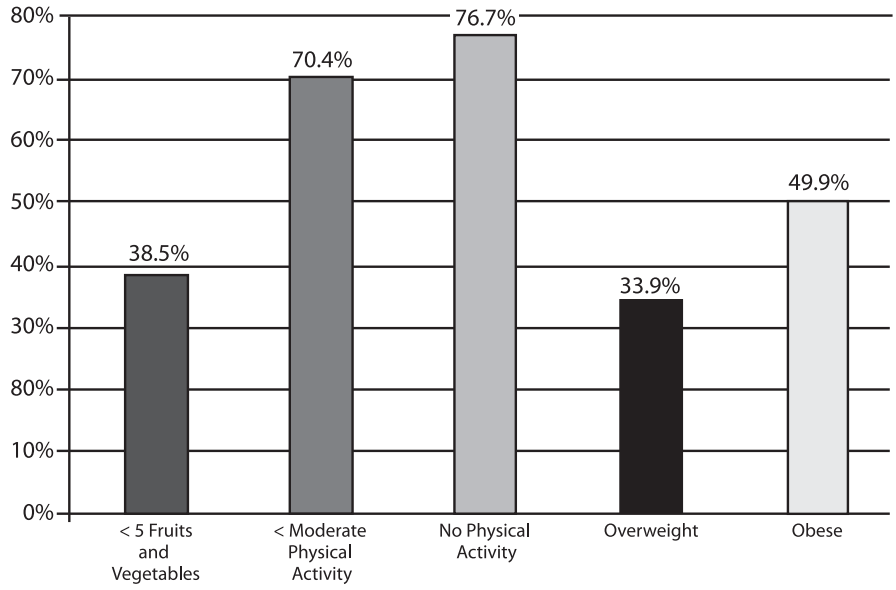
Aging brings about specific physiological changes in the human body, including loss of lean body mass, along with an increase in adipose (fat) tissue. Physical limitations contribute to poor exercise habits. Changes in mental acuity may impact the ability to engage in either exercise or medical nutrition therapy consistently. Limitations in income and transportation may be barriers to purchasing healthy foods and beverages.[9]

Good nutritional practices (healthful eating) are important to successful aging. Nutrition as a primary prevention strategy promotes health and helps maintain functional fitness (ability to lead an active and healthy life). For secondary and tertiary prevention, medical nutrition therapy is an effective component of chronic disease risk and disease management (slowing disease progression and reducing symptoms). Hence, effective prevention or management of chronic diseases or conditions can assist in providing healthful, enjoyable, and productive years for older adults.[10] The Centers for Disease Control and Prevention acknowledge that a combination of the practices of healthful eating, being physically active, and not using tobacco products is beneficial in helping avoid aging-related deterioration.[11]

Hunger and food insecurity[a] may result from limited income, transportation difficulties, or limited functional capability. Regardless of cause, the impact on the elderly is significant. Food insecurity occurs to a greater degree among African American, Hispanic, and Native American populations. Food insecurity is also more common in those who live alone. Poor intake of micronutrients can occur with obesity. Older adults who do not consume a nutrient dense diet are more likely to be deficient in fiber, calcium, vitamin D, vitamin B12, iron, and zinc.[9] Nutritional professionals working with elderly clients in any setting must be alert to the possibility of micronutrient

a Food insecurity is the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in a socially acceptable manner.[12]

Figure 2.
Prevalence of Non-Healthy Conditions in People with Diabetes: Lack of Physical Activity, Not Eating Enough Vegetables/Fruits, and Overweight/Obesity, North Carolina, 2005



Source: 2005 NC Behavioral Risk Factor Surveillance System (BRFSS)

inadequacies, particularly when fat and total calories are restricted as part of appropriate medical nutrition therapy.

Lifestyles to support healthy aging must include healthful eating practices and regular physical activity as well as consideration of environmental components which can either present barriers or provide avenues to help develop and maintain healthy lifestyle behaviors. Early promotion and maintenance of healthy lifestyles are needed to help assure that as our population ages, people can live independently and as disability- and disease-free as possible.[1,3]

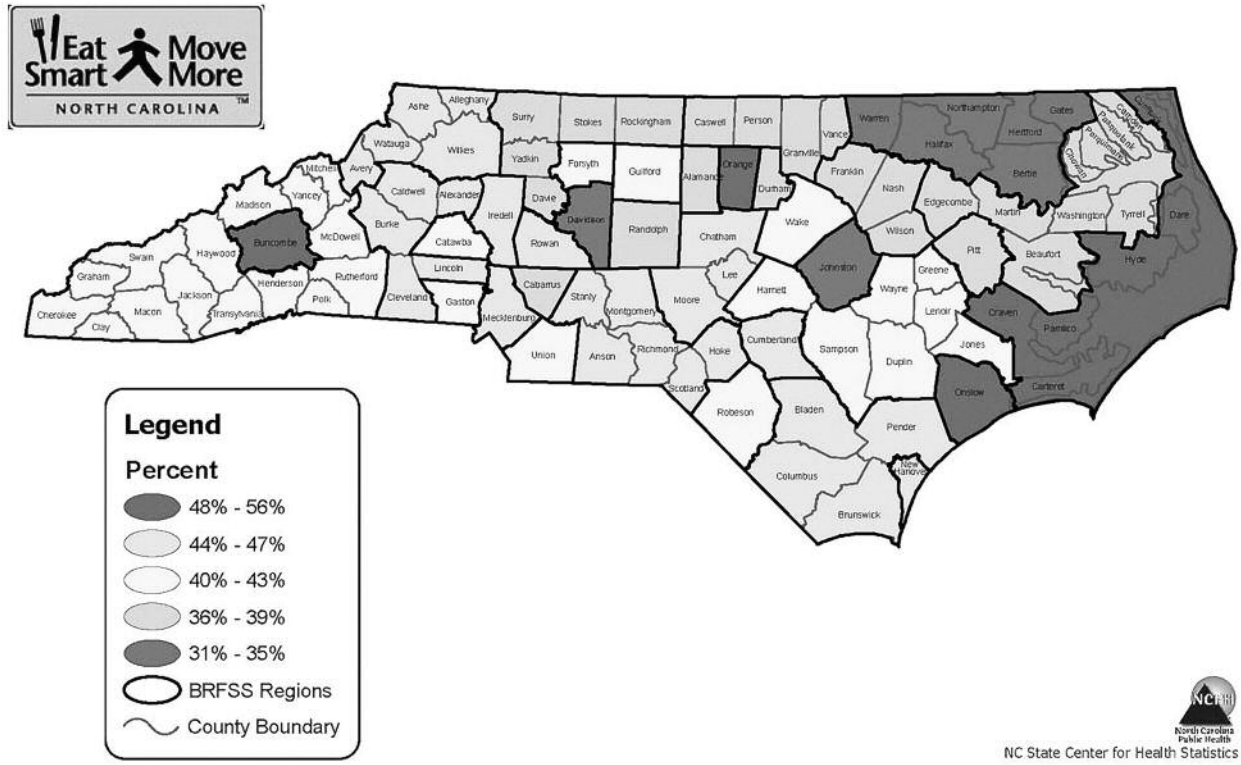
The North Carolina State Center for Health Statistics conducts annual Behavioral Risk Factor Surveillance System (BRFSS) surveys to better identify the health practices and needs of the people of North Carolina. The 2007 BRFSS includes questions about specific dietary practices and physical activity. Results of this latest survey indicate that only 21.6% of 14,580 respondents reported consuming the recommended 5 or more servings of fruits and vegetables per day. Additionally, when asked to report their level of physical activity, only 44% of 13,951 respondents met the recommendations for physical activity, with 14.3% reporting being physically inactive. (Note: the recommended level of physical activity used for the survey is defined as doing moderate physical activity for 30 or more minutes per day, 5 days or more per week or doing vigorous physical activity 20 minutes or more per day, 3 or more days per week).[13] (See Figure 3.)

Under the leadership of several state agencies, North Carolina has implemented a number of community intervention programs designed to improve the eating practices and physical activity of all North Carolinians. These programs aim to reduce rates of overweight and obesity and help reduce the development of type 2 diabetes and other co-morbidities of overweight/obesity such as hypertension and heart disease. Many state and private universities are involved in these efforts to better understand the multifaceted components of obesity and its related chronic diseases so that more effective intervention strategies can be developed for targeted populations, such as older adults. Faculty and students from these universities help design and implement community-based nutrition and health research projects in partnership with a variety of community agencies. The goal of all of these efforts is to improve the health and well-being of the people of North Carolina.

The most recent North Carolina Aging Services Plan for 2007-2011 is evidence of the state's commitment to healthy aging through management of chronic diseases as well as prevention programs that emphasize healthy eating and increased physical activity.[14] The state of North Carolina also hosts an annual conference on aging, which brings together government agencies, educators, and service providers for purposes of education and networking.[15] Among other programs in North Carolina that have a focus on improving health and wellness for seniors are Eat Smart/Move More, Prevention Partners, the annual North Carolina Senior Games, and the "Living Healthy" program. Eat Smart/Move More includes things such as monthly newsletters, recipes, a BMI calculator, and exercise guide. The Area Agencies on Aging work in conjunction with local providers to offer health screening, exercise, and nutritional education to seniors in their communities. North Carolina also is working to encourage the development of "Livable and Senior Friendly Communities" as a part of the State Aging Plan. Livable communities are communities that include parks, sidewalks, and pedestrian-friendly areas to encourage walking, and the building of key shopping areas such as grocery stores and medical centers so that citizens can easily walk to services.[12]

Access to healthful food and water, nutrition services, and other preventive health services can help many older adults remain independent and actively engaged in their respective communities. Others will need more support. Providing appropriate, culturally sensitive food and nutrition services, physical activities, and health and supportive care for our increasingly diverse population of older adults is necessary at the national, state, and local level.[10] Further, coordination and

Figure 3.
Percentage of North Carolina Adults Meeting Physical Activity Recommendations*



*Moderate physical activity for 30 minutes or more per day, 5 or more days per week or vigorus physical activity for 20 or more minutes per day, 3 or more days per week.
Source: 2005 NC Behavioral Risk Factor Surveillance System (BRFSS)

integration of food and nutrition services into health and other supportive service systems will enable independence, functional ability, chronic disease management, and quality of life for all Americans. Research models developed to try to better understand the etiology of obesity that focus solely on altering personal choices have not resulted in successful interventions for obesity prevention or treatment. Any long-term solution to the current obesity epidemic must address diet, physical activity, and environmental components that may interfere with healthy lifestyles.[3] **NCMJ**

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Keeping Active, Living Longer

William B. Karper, EdD

By now, nearly everyone knows that most Americans, including older adults, are not engaging in enough physical activity to benefit their health or fitness. This is especially troubling for older people because of age-related physical and mental decline. The potential for a decline in the health of the nation has become a major concern for federal and state public health agencies, and health professionals need to be aware of the wealth of scientific research that supports numerous health and fitness benefits associated with being physically active. Sometime in late 2008, the US Department of Health and Human Services (DHHS) will release a document entitled "Physical Activity Guidelines for Americans." As a result of a presidential initiative and priority by Secretary Leavitt, a 13-member advisory committee was formed, was supported by over 30 consultants, and these national guidelines were developed. The advisory committee has recently released a well-referenced report which summarizes and reviews the science that relates physical activity to numerous health outcomes.[1] Below is important information from the report.

Health Effects of Physical Activity

Strong evidence indicates that men and women who are more active have lower rates of all-cause mortality, coronary heart disease, high blood pressure, stroke, type 2 diabetes, metabolic syndrome, colon cancer, breast cancer, and depression. Strong evidence also supports the fact that more active men and women have a higher level of aerobic and muscle fitness, healthier body mass and composition, enhanced bone health, and a biomarker profile favorable for preventing cardiovascular disease and type 2 diabetes. Additionally, there is modest evidence showing that physically active older adults have better sleep quality and health-related quality of life compared to their less active peers. Strong evidence also indicates that being physically active is associated with higher levels of functional health, a lower risk of falling, and better cognitive function. Finally, strong evidence supports that physically active overweight and obese people experience numerous health benefits similar to people with normal weight. Therefore, adults of all sizes and shapes stand a good chance of gaining health and fitness benefits from being physically active.[1]

Selecting Appropriate Physical Activity

Specific patterns of physical activity have been connected with better health and fitness. Data from numerous studies evaluating different benefits in different types of people generally support engagement in 30-60 minutes of moderate to vigorous physical activity 5 or more days each week. A lower risk of type 2 diabetes in older adults has been observed at 30 minutes of moderate to vigorous physical activity 5 days per week. Lower rates of colon and breast cancer and the prevention of unhealthy weight gain or significant weight loss by physical activity alone is associated with 3-5 hours of moderate to vigorous physical activity per week. It is important to know that different aerobic activities and different intensities can be combined to achieve a positive effect. Also, some activity is better than none, additional activity

"Data support that being physically active positively affects the health of younger and older adults in numerous ways. Elderly people should be strongly encouraged to develop a habit of exercising most days of the week."

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confers additional benefits, the more vigorous the activity the better, and accumulating smaller daily bouts of activity is acceptable.[1] Probably one of the safest, least injury producing, and pleasurable physical activities for many older people is walking. Tudor-Locke and colleagues report that taking 3,000-4,000 steps each day at 100 steps per minute, stepping for at least 10 minutes at a time, and taking steps above and beyond a person's minimal level of daily physical activity is in line with public health guidelines.[2]

In addition to aerobic activity, progressive muscle strengthening exercises that work all of the major muscle groups should be completed 2 or more days each week. Minimally, one set of 8-12 repetitions of an exercise for each muscle group should be performed. The last repetition for each exercise should cause volitional fatigue. Naturally, people with a lower exercise capacity need to use a lower absolute intensity and amount of weight for each exercise, but they should still do 8-12 repetitions of each exercise until reaching fatigue to reap positive outcomes.[1]

For older adults at risk of falling, strong evidence supports that regular exercise can reduce falls by 30%. In this regard, the recommendation is to engage in balance training 3 times per week along with moderate intensity muscle strengthening exercises for 30 minutes per session. Also, walking 2 or more times per week for 30 minutes is encouraged. There is some evidence that tai chi exercise can reduce falls. However, it is interesting that no evidence is presented in the report that planned physical activity reduces falls in older adults who are not at risk of falling.[1]

Getting Help With Physical Activity Needs

This author has been told by many older adults that they would like to become more physically active, but they do not know how to get started or fear getting started alone. Older adults with sufficient financial resources can hire a personal fitness trainer or join a local health club or YMCA/YWCA where someone on staff should be able to plan and supervise physical activity for them. Some elder residential facilities also have fitness personnel on staff and have a schedule of dry-land and aquatic exercise programs. Additionally, some people can go to municipal senior centers or faith-based programs where exercise instruction and physical activity opportunities are sometimes provided.

In North Carolina, there may be a unique and additional possibility because of the many state and private universities and colleges that are spread throughout the state. Many of these schools house exercise science/kinesiology departments, and in all of those departments, there are fitness personnel. Because these people teach about health, performance, and fitness everyday, they are likely to be familiar with the pending federal report and have practical fitness training experience in the field. Loosely organized smaller older adult neighborhood, social club, and faith-based groups or tightly organized larger older adult communities and faith-based groups could invite a faculty or staff member from one of these many institutions to visit with them and help them get started with a group exercise program while addressing individual concerns. In some instances,

The North Carolina Senior Games: Celebrating 25 Years of Healthy Aging!

Brad Allen, MA

The time-tested adage that "Time flies when you're having fun" has proved accurate in many facets of life, but when you add "fitness," "fellowship," "friends," and "family"—all benefits ascribed to the North Carolina Senior Games program by its participants—it's no wonder that a quarter-century has flown by in the history of the largest senior Olympic-style program in the United States.

From a start with 3 Local Senior Games in 1983, all 100 of North Carolina's counties are now served through 54 Local Senior Games, devoted to serving persons 55 years of age and older with year-round programs providing health education, exercise classes, athletic events, SilverArts, cheerleading, and the SilverStriders walking program.

With over 60,000 program participants each year, North Carolina's Senior Games remain a model for the nation, with the largest number of Local Games and the most diverse program in the country with workshops, clinics, an unsurpassed arts program, year-round training, and special events. The Local Senior Games also serve as qualifiers to the annual State Finals competition, and, every 2 years, the State Final winners can advance to the National Senior Olympics.

The North Carolina Senior Games (NCSG) has always strived to reach individuals using a holistic approach, enriching not only physical activity, but enhancing mental, social, and emotional health as well. Rita Roy is the director of Pitt County Community Schools and Recreation and has been a part of the Greenville-Pitt Senior Games for 24 years. She also serves as the tournament director of the State Finals 3-on-3 basketball tournament, on the NCSG Sports Management Team, on the Facilities Committee at State Finals, and as a cochair of the SilverArts. According to Roy, empowering older citizens through Senior Games helps engage seniors so that they "are not only healthy adults taking care of themselves longer…they are citizens participating in our economy, they are the base of so many volunteer programs, and they are examples to follow. The growth I have witnessed has not been just about numbers, but about quality. The quality I have witnessed has not been just in programs, but in lifestyles."

Researchers at North Carolina State University have analyzed health behaviors of Senior Games participants in our state, most recently in 2006. In this telephone

students majoring in exercise science/kinesiology from those departments may welcome the chance for hands-on experience in helping a group of elderly people with their group or individual physical activity needs.

Keeping Safe

In general, engagement in moderate physical activity is very safe for almost everyone. However, paying attention to a few things may increase safety. It is important to warm up the body prior to exercising and to gradually cool down when finishing activity. Avoiding abrupt changes in activity intensity may lessen the possibility of injury and cardiovascular events. It is best for older adults to stay away from any physical activity which places joints in deep flexion or hyperextension. It may also be prudent for older adults to only exercise up to the point where the pain begins, never pushing or forcing through pain except when under the direction of a licensed physician, physician extender, or physical therapist. In regards to discomfort during physical activity, any unusual symptoms or new pain should be reported to a physician or physician extender immediately, and all physical activity should be stopped pending medical advice. It is best to avoid physical activity outdoors on days when temperatures are extreme or when air quality is bad and to always drink water when thirsty during exercise. Finally, it is sensible for sedentary older people with diagnosed medical conditions or who have been told they are at risk for developing certain conditions to check with their physicians or physician extenders before beginning new physical activity or before progressing from moderate to very vigorous activity. Examples of medical conditions which often call for medical advice prior to becoming physically active or prior to increasing the intensity of physical activity are cardiovascular or cerebrovascular diseases, type 1 or type 2 diabetes, osteopenia/osteoporosis, rheumatological disorders, and pulmonary diseases.

Data support that being physically active positively affects the health of younger and older adults in numerous ways. Elderly people should be strongly encouraged to develop a habit of exercising most days of the week. In almost all cases, moderate activity is safe and can be done almost anywhere or anytime, either alone or with others. Also, it can be done at no expense and usually requires no special clothes or footwear. **NCMJ**

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survey, they discovered that 78% of Senior Games respondents rated their present health as "excellent" or "very good," in sharp contrast to 43% of the 55-64 year olds and 32% of the 65+ year olds who described themselves in those terms. In addition, over 95% of Senior Games participants would recommend participating to their friends and family. Over 75% said that training and preparation for Senior Games are part of their regular weekly activity. And once folks get involved in Senior Games, they stay involved. Retention is high…88% have never thought about stopping![a]

Sylvia Starks, a participant in the Region K Senior Games, summed up the impact of the program upon herself and her family in this manner; "I won my first medal in the Senior Games at the age of 65 and it changed my life. Now I work hard everyday to train and to spread the word about the Senior Games. Recently, 4 generations of my family completed a cycling event together. Senior Games is about wellness for everyone… it is our mission to stay healthy together!"

Younger family members aren't the only "non-seniors" that benefit from involvement with Senior Games. Across the state, colleges and universities encourage students to volunteer with Local Games and at State Finals. A rich history of partnership with North Carolina State University, University of North Carolina at Chapel Hill, East Carolina University, University of North Carolina at Pembroke, Western Carolina University, University of North Carolina at Wilmington, and many other institutions of higher learning have enabled students to witness firsthand the positive benefits of healthy aging. By partnering with NCSG, these young people have volunteered their time, witnessed the impressive accomplishments of older artists, and conducted research on the positive role that Senior Games plays in participants' lives.

Though 25 years have passed, the mission of NCSG remains as vital today as it was in the very beginning—perhaps even more so! With so many dedicated individuals working hard to create and implement outstanding Senior Games programs and to ensure the longevity of a quality State Finals, a quarter-century is only the beginning. As Toby Thorpe, director of Albemarle Parks and Recreation and a longtime State Finals event manager said, "the greatest benefit of the Senior Games program is that a healthy example set by today's seniors will perpetuate itself in years to come." For more information about the North Carolina Senior Games, please visit www.ncseniorgames.org.

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a Information based on a 2006 survey of 1,000 North Carolina Local Senior Games participants. See www.ncseniorgames.org for more information.

Designing Spaces for Healthy Aging

Candace A. Roberts, MS, ASID

Aging is changing the American demographic landscape at an unprecedented pace as this generation lives longer and healthier lives than those that came before. The elderly population (aged 65 and older) numbered 37.3 million in 2006. In 2019 the baby boomer generation will number 75 million.[2] The number of older Americans will grow to 1 in 5 by the year 2030, up from 1 in 8 in 1994.[1] In North Carolina it is projected that by 2030, 75 of the 100 counties in the state will have more people over the age of 60 than under the age of 17.[3]

Considering this rising number of older adults, how the built environment affects the health and well-being of the elderly should be understood. This includes the workplace, institutions, and home. The workplace must be considered because many boomers will work well into retirement. The home must be considered because an American Association of Retired Persons (AARP) report found that 71% of Americans age 45 and older say they want to remain in their current residence as long as possible.[4] Interestingly, 70% of older adults actually do spend the rest of their lives in the home they lived in at age 65.[5]

Accommodating the restrictions and activities of all age groups in how we construct buildings, pathways and landscapes is called Universal Design (UD). These techniques can be adapted into seamless, integrated, noninstitutional forms, ensuring that both the aging boomer and older adult will consider its use as a support for their independence and successful healthy aging.

The Americans with Disabilities Act (ADA), signed into law in 1992, moved the public one step towards independence by prohibiting discrimination against disabled persons and removing barriers that limit full access and participation in society.[6] This law mandated that commercial businesses and institutions comply with means of egress and space planning that allow those with disabilities to maneuver with ease. This legislation prompted the addition of items such as ramps, wide doors, grab rails, elevators, Braille signage, and larger bathrooms with varied sink heights in public and commercial buildings.

ADA and Commercial Space: Vision, Lighting, and Healing

As we age, certain physiological changes take place that differ in degree from individual to individual. Physiological changes include the loss of vision, hearing, strength, flexibility, and mobility. Environmental Gerontology studies the older person's relationship with their environment.[7] This research into one's surroundings does not look at a snapshot in time, but rather looks at behaviors, emotional responses, and successful adaptations over a period of time. Designing spaces with these physiological changes in mind will allow older adults to continue to work in their area of choice and to age-in-place at home, both of which add to their quality of life.

"Designing spaces with… physiological changes in mind will allow older adults to continue to work in their area of choice and to age-in-place at home, both of which add to their quality of life."

To appreciate the need for such environmental changes, it is important to look at the sensory losses that confront many older adults. Vision changes include the yellowing of the lens, weakening of the muscle controllers, cornea opacity, cornea crazing, and flattening of the lens, a condition known as farsightedness. In viewing color, a loss of the sensitivity to the

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intensity of color occurs. Other losses include a reduction in seeing the color blue and other cool colors, loss in ability to distinguish related colors, and loss of ability to discriminate fine detail or closely related distances such as curbs and steps.[8] As color is perceived differently by an older adult, one solution for interior space is to choose warmer colors and visual contrasts in color value (darkness or lightness of a color) between floors, doorways, furniture, and walls. This will allow an older adult to more easily see furniture, doorways, and walls and successfully navigate space. Adequate contrast increases depth perception by providing proximal cues to object location.

Older adults also experience a one-third reduction in the amount of absorbed light that enters the eye, compared to a 20-year old. This reduction is due to the thickening of the lens, which also creates glare.[8] To compensate for this reduction, the general lighting in interior spaces should be indirect lighting (such as cove or sconce) and direct lighting for specific tasks (such as lamps and fluorescent strips under cabinets). Interior lighting can be strategically placed to reduce shadowing. Control of natural light can be achieved with the use of blinds, shades, and draperies. Glare can be problematic for older adults, therefore transition and light adjustment from outside to the inside of buildings is also a consideration in design. Entrances to buildings should be designed to gradually reduce the amount of light to facilitate the user's transition. Glare reduction can also be achieved with the use of materials; for example, counter and floor surfaces with a matte or honed finish should be used instead of a polished or glossy finish.

Ergonomics: Strength, Flexibility, and Mobility

Beyond vision changes, older adults also experience a decline in muscle strength, flexibility, and mobility due to a loss of strength in the lower extremities. Additional changes include reduced ability to bend the knee at an acute angle. Older adults can also experience early onset of discomfort when seated due to tissue loss over the ischial tuberosities. As a result in this loss in strength, some older adults may be unable to stand for any length of time. Due to a greater reliance upon arm strength needed to lift one's center of gravity from the seated position and to stabilize the body between the standing to sitting transition, furniture with arms should be provided. Additionally, space underneath the front of a chair is needed for an older person to have room to gain momentum to rise from the seated position.[9] It is not uncommon for some older adults to also experience a transition to a shuffling gait, early morning or end of day tremor, and loss in grip strength (palm) and tip prehension strength (fingers). Not surprisingly, such changes along with chronic cardiac or pulmonary diseases can cause older adults to fatigue quickly.[9] To ease any difficulties in performing tasks, D-shaped cabinet and drawer pulls, drawers on glides, utensils with good grips, and a bench to rest upon on long ramps are excellent solutions.

Ergonomic considerations are important in commercial settings such as banks, hotels, restaurants, and offices. For instance, the ability to visually communicate with and complete transactions with a teller or to check in at a hotel requires a lower counter for the seated patron.

As baby boomers work longer their changing needs will impact the design of workplace environments. By 2016, workers aged 65 and over are expected to account for 6.1% of the total workforce, a sharp increase from 3.6% in 2006.[10] Environments that can be easily changed to fit each user with respect to ergonomics may include items such as adjustable seating, keyboard trays, and desks that raise and lower for sitting or standing. Flexibility is the key to accommodating different users of all ages and abilities.

Hearing

Hearing loss begins around the age of 40 and frequently includes prebycusis (loss particularly in the higher frequencies) and loss in distinguishing low-volume sound.[8] Older people have less ability to discern conversation, especially in areas with background noise. To help minimize the effect of these changes, the environmental properties can be changed to control and absorb noise by utilizing the addition of pleasant and controllable music, the use of acoustic materials for walls and floors, and the installation of baffles in ceilings. Sound control can also be a problem in office environments, and the use of a sound masking system to buffer the typical office noises helps with this issue.

Safety

Safety is a consideration, and use of flooring material, such as carpet, has been shown to be preferential over hard-surface flooring (vinyl) in environments for the elderly. These materials enable older adults to walk more efficiently and feel more confident and secure.[11] Other design considerations for safety include radius edges on furniture and counter tops as well as large text on egress directions and restaurant menus. To prevent tripping, it is important to manage wires related to portable electronics, use additional railings on sloped walkways, and select lights that turn on when you approach a porch or enter a house.

Universal Design and Home Modifications

Universal Design (UD), also known as barrier-free design, has emerged as a means to further independence for everyone: young and old, tall and short, people of all sizes and shapes. As defined by Ron Mace, "Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design."[12] Mace contends that the purpose of UD is to simplify life for people of all abilities and ages by making products, communications, and the built environment more usable by as many people as possible with little or no expense.[12]

"Advocates for housing modifications have long argued that environments, not people, are 'disabled,' and that independence-promoting environments improve the level of functional ability."[4] UD and home modifications can assist the elderly already

experiencing some of the above problems with aging-in-place and can also be an asset to boomers thinking ahead. Safety is a prime consideration; the National Centers for Disease Control and Prevention (CDC) suggests that "one-third of home accidents could be prevented by structural modification and repair.[13] Home modification bolsters the chances that older people will retain independence injury-free, stay in their homes, and remain active much longer in their own communities."[14]

Home safety is best addressed in all spaces and passageways, beginning at the entrance to the dwelling. The house should include at least one no-step level entry and a door with a side-light window or view with abundant light to illuminate visitors. The house should also include an accessible half-bath or full-bath on the main level for family and guests. In the bathroom a wall-hung telephone within reach of the floor provides extra safety in the event of a fall, while a night light can help prevent falls. Other bathroom features that offer safety and accessibility may include a roll-in shower, a roll-under sink, or a sink that adapts for seated use. To increase safety when bathing and toileting, include a hand-held shower head on a slide, an adjustable shower seat, and grab bars in the shower and around the tub and toilet. A non-slip, low maintenance floor reduces fall risk in the bathroom, an area where falls most often occur.

Typical UD features in a kitchen include a side-by-side refrigerator/freezer, raised or drawer-style dishwasher, counter-height microwave, and a flat cooktop with front controls. Stoves should have an open space underneath for use by a seated person, and it is useful to have a separate comfort height wall oven. Varied counter heights offer options for dealing with tasks when sitting or standing.

For new construction, it makes sense to plan ahead for home modifications by adding blocking in walls around the toilet and shower, hallway, and stairs so that grab bars or railings can be added as needed. Builders should also provide programmable thermostats, raised electrical outlets, lowered rocker light switches, as well as radius or beveled corners on counters, furniture, and walls. Washer and dryer units should be raised and have front load and controls. Lever door handles should be used instead of traditional door knobs. Doorways should be 36 inches wide, and hallways should measure 42 inches in width. Stairways pose great risk for falls which can be reduced by adding railings on both sides and plenty of light for navigation. Additionally, new technology can assist children of older adults a way to monitor parents using home security motion detectors strategically placed in the house that log daily activities in an unobtrusive way, providing a way to check without cameras.

America continues to age and typical physiological changes occur in most people of middle-age and beyond. These changes, including vision, hearing, strength, and mobility, take place at different ages and different rates. Whether an older adult is at home, in the workplace, or shopping in a mall, compensation for aging can be successfully handled through environmental design. Such modifications allow an older adult to navigate and perform in the built environment independently. Maintaining this independence is one key to healthy aging. **NCMJ**

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Addressing the Public Health Issue of Older Adult Falls

Ellen Caylor Schneider, MBA

Falls are not an inevitable part of getting older, and many, if not most, are preventable. As the leading cause of both fatal and nonfatal injuries for older adults, falls are one of the most common and significant health issues facing people age 65 and older.[1] In the United States, more than 1 in 3 people in this age group fall each year. As people age, the issue becomes even more prevalent; in 2001, the rates of fall injuries for adults aged 85 and older were 4 to 5 times that of adults 65 to 69.[2]

In 2006, over 177,000 North Carolinians 65 and older reported a fall, and one-third sustained an injury.[3] Falls are the leading cause of emergency department injury visits for older adults in our state and in the nation,[4,5] and in 2006, accounted for 27% of all injury-related emergency department visits in North Carolina.[4]

Fall-related injuries create a significant financial burden for our nation's health care system, recently accounting for 6% of all medical expenditures for persons age 65 and older.[6] In 2000, the estimated direct medical care cost for fall-related injuries among older adults in the United States was $19 billion.[7] With baby boomers eventually swelling the older adult population and an overall increased life expectancy, this number may reach over $32 billion by 2020.[6]

Fall-related injuries are also costly in quality of life issues such as the potential loss of independence, decreased mobility, and, in some cases, early admission to a nursing home. The fear of falling can cause people to limit their activities, which can actually increase the risk of falling by leading to reduced mobility and physical fitness.[8]

Fall risk factors are either modifiable or non-modifiable. Modifiable fall risk factors include muscle weakness, gait and balance problems, poor vision, use of 4 or more medications or any inappropriate or psychoactive medications, and home and environmental hazards.[3] Non-modifiable risk factors include older age, being female, and a past history of falls.[1] The more risk factors that are present, the greater the risk of falling.[1,3,6]

A systematic meta-analysis of randomized controlled trials of interventions to prevent falls has shown that multifactorial falls risk assessment and management programs are effective in reducing the risks and rate of falling.[9] Based on the indicators in the Assessing Care of Vulnerable Elders (ACOVE)-1 model, Chang and Ganz have developed an evidence-based approach for health practitioners to detect, evaluate, and intervene for falls and mobility disorders.[9] If a patient has reported 2 or more falls in the past 12 months or a fall with an injury, the practitioner uses a fall and risk factor evaluation flowchart to assess next steps for the patient such as an exercise program, medications review, environmental modifications, or a syncope evaluation.

Medicare has recognized the importance of screening for falls by including it as part of the Physician Quality Reporting Initiative. Through this program, physicians, physical therapists, and other health care providers can earn a bonus of 1.5% of their total Medicare charges if they routinely screen and report on their patients' risk of falling.[10,11] Additionally, the Centers for Disease Control (CDC) and Centers for Medicare and Medicaid Services (CMS) developed a V code for health care providers to use to identify older adults who have fallen or are at risk of falling. The code, V15.88, indicates that an older adult may benefit from a fall risk evaluation and management of fall risk(s).[12] More detailed information about the falls V code is available at www.mnfallsprevention.org/professional/reimbursement.html.

"As the leading cause of both fatal and nonfatal injuries for older adults, falls are one of the most common and significant health issues facing people age 65 and older."

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Evidence-based falls prevention programs offered in the community are also available to address modifiable risk factors. Information about several community-based evidence-based falls prevention programs can be found at www.cdc.gov/ncipc/duip/preventadultfalls.htm or www.healthyagingprograms.org.

As the population of the United States and of North Carolina ages, the impact of fall-related injuries will increase dramatically unless we take steps now to address the issue. One step towards addressing the issue is the recent establishment of the North Carolina Falls Prevention Coalition. The Coalition brings together researchers, planners, health care providers, housing specialists, aging services providers, and many others to work together to reduce the number of falls and fall-related injuries for North Carolinians. North Carolina is now one of 20 states operating or developing a falls prevention coalition; our state also has joined the National Falls Free Coalition (www.healthyagingprograms.org/content.asp?sectionid=113), a national effort to address falls prevention.

The North Carolina Falls Prevention Coalition plans to provide falls prevention education to older adults, caregivers, health care professionals, policy makers, and others in the community and to work with health care providers to ensure that older adults are routinely screened for falls. With funding, the Coalition hopes to increase the availability of evidence-based falls prevention interventions and resources. By working together, the North Carolina Falls Prevention Coalition plans to more effectively and systematically address the growing public health issue of older adult falls and fall-related injuries in our state. **NCMJ**

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Creative Retirement:
Beneficial for the Patient—What about the Doctor?

Ronald J. Manheimer, PhD

The term "creative retirement" may sound like just another of the many euphemisms and bits of marketing jargon that have accompanied the longevity revolution and simply a repackaging of the meaning of retirement. In one sense, it is. But in another sense, the capacity to imagine a "fresh map of life"[1] in the years that may follow partial or full withdrawal from a major occupation holds the potential for personal renewal. This can be achieved through redirecting a lifetime of knowledge, skills, and hard-earned wisdom into new fields of endeavor—whether for pay, on a volunteer basis, or simply for personal development.

One way to understand the term creative retirement is by analogy. From architecture and urban planning comes the concept of "adaptive reuse."[2] Turning vintage structures to new uses through modification and enhancement preserves a building's distinct beauty and integrity while giving it new vitality as part of the contemporary scene. Hence, long empty warehouses become condos, an abandoned power station becomes an art museum, and even outdated fire stations become restaurants and coffee houses. This principle of reinterpreting the function of an historical object parallels a person's reassessment of accumulated experience, life goals, and sense of purpose and meaning. Like any creative endeavor, the process is sometimes difficult—and this may be especially true for caregivers such as physicians.

Occupations that help to shape a person's sense of identity, calling, and self-worth are also ones from which it is difficult to disengage. The career of a physician requires extensive education, dedication, long hours, and considerable pressure. Once the letters MD have been added to your name, they remain there permanently. How and why, then, do medical doctors retire and what are the prospects for a creative next stage?

Bill Spinelli, a family practice physician who is part of a large medical group in a suburb of Minneapolis, puts it this way: "I like my stethoscope but hate the management."[3] Spinelli, 57, has researched the average retirement age of the approximately 500 doctors in his practice and that of other groups in the upper Midwest. "By 60, most of them are out," he says. Since the average retirement age in the United States is 63 and since medicine requires a longer investment of time, energy, and money than most careers while yielding considerable rewards in terms of monetary compensation, status, and tangible benefit to others, 60 is a relatively early age for withdrawal.

"…the capacity to imagine a 'fresh map of life' in the years that may follow partial or full withdrawal from a major occupation holds the potential for personal renewal."

"Not only is it early," says Spinelli, "their retirement represents a considerable loss to the profession and to the community." What are the forces compelling physicians to take down their shingles? "The burdens of the electronic environment, patients' demands, and the ever increasing amount of regulations and paperwork," says Spinelli. He is looking at these factors because Spinelli is embarking on a study funded by the Bush Foundation to better understand how doctors might be encouraged to remain longer in the medical field while finding ways to reactivate the idealism that attracted them to their calling in the first place. His own goal is to reduce the time he spends handling administrative matters and increase his opportunities for civic activism through teaching, mentoring at-risk youth, participating in free clinics, and through international medical work.

Spinelli's goal sounds like "adaptive reuse" in action. But does this model work for everyone?

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Marty Worthington,[a] a 64-year old gastroenterologist practicing in a medium-size medical group in California that he helped to found is also considering retirement—albeit, reluctantly. Over the last few years, following a mountain biking accident that partially damaged his right hand, Worthington has noticed a decline in his dexterity at conducting certain medical procedures. He has also become aware that in comparison to his younger colleagues, he lags behind in mastering the new database that has been brought into the practice. His colleagues assure him that he is well-appreciated by patients because of his caring bedside manner. Let an assistant deal with the database, they admonish. But the doctor has arrived at a different conclusion. "It's time to go," he says. The trouble is Worthington has few outside interests, his best friends are work-related, and he feels at a complete loss as to what he would do next.

Marty Worthington's decision may be described as an act of "moral obligation."[4] He recognizes that it is in the best interest of his patients that he step back to allow someone with a greater level of skill to carry on. He has been offered a form of compensation familiar in many clinical settings—an administrative post. But this is not enticing to him. Searching around and talking with other people in his situation, he has discovered several possibilities that hold some creative promise.

His list includes participating in a free medical clinic with flexible hours and initial training to familiarize him with current protocols for hypertension management and treatment of type 2 diabetes—chronic health problems somewhat distant from the work he has concentrated on for the past several decades. Working part-time at the clinic seems like a way to keep a hand in medicine and give back to his community, he says. The experience would also give him something to talk about at parties. Instead of answering the typical "What do you do?" with, "I'm retired," he can talk about the new patients and colleagues he's meeting as well as about the situation of the uninsured.

He's also learned about a Lifelong Learning Institute[b] connected with his local university. There he could sign up for noncredit courses taught by other retirees who do so on a volunteer basis. He's seen a catalog of courses that run from foreign languages to quantum mechanics. Exploring new learning options seems like a way to both discover new interests as well as meet interesting people—the latter valuable to Marty as a way to compensate for diminished workplace friendships. He could even teach something if he felt like it or possibly be a mentor in the premed program.

Another option is to segue into an "encore career,"[5] a vocation through which he might make good use of his medical training and research skills while adapting them to another field. Marty thinks he might like to become a high school biology teacher or teach part-time as an adjunct member of the faculty at the university. He's even considered going for an MBA and becoming a consultant for hospitals.

Physicians like Spinelli and Worthington would do well to follow these pathways to creative retirement since research on healthy aging points strongly to intellectual stimulation and social participation as key factors in both delaying the onset of dementia,[6] ameliorating depression triggered by isolation and inactivity,[7] staying cognitively fit,[8] and experiencing a higher quality of life.[9] Recent studies of retirement, even when controlling for preexisting medical conditions, also point to a correlation between early retirement and mortality rates.[10]

The so-called "new retirement" offers multiple pathways and choices. Doubtless, for physicians who attend to midlife adults, the topic of retirement has likely arisen, in part because of changes in insurance coverage but also in possible association with stress-related ailments. A thoughtful practice manager might put a few helpful books and magazines on how to pursue a creative retirement in the office waiting room.[c] The guy or gal with the stethoscope might also take a peek. **NCMJ**

a Fictitious name used to protect confidentiality.

b For a list of Lifelong Learning Institutes, see http://www.elderhostel.org/EIN/intro.asp.

c For a list of helpful books on retirement, see http://www.unca.edu/ncccr/NewRetirement/RecommendedReadings.pdf.

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Coda: Where Have We Been and Where Are We Going?

Gordon H. DeFriese, PhD; Carol C. Hogue, RN, PhD, FAAN

There are few topics of such social and policy significance for the state of North Carolina as the impending challenge which a rapid increase in the size and diversity of our older adult population will present. Over the coming decade, much of the attention of state and local public sector officials will necessarily be focused on issues related to these socio-demographic changes in our state. In thinking about these issues, there is both "good news" and "not-so-good news."

First, the "Good News"

Over the past 20 years or so, we have become more aware of the fact that in addition to positive changes in life expectancy in our country there have been dramatic changes in the prevalence of physical disabilities as adults enter late life. Scientists who have studied these phenomena at Duke University, such as Kenneth Manton and his colleagues,[1,2] have shown that the prevalence of physical disabilities (particularly those that limit activities of daily living involving mobility) have declined significantly among US older adults.

Another researcher who has studied these same phenomena is James Fries at Stanford University, who has postulated the "compression of morbidity" hypothesis.[3] Fries argues that expansion of the number of years that adults live with few activity-limiting disabilities is occurring faster than increases in overall life expectancy. For this to occur, the age-specific incidence of chronic and disabling conditions must decrease more rapidly than age-specific mortality rates. Because of these trends, the majority of older adults experiencing disabling conditions are experiencing them later in the life cycle and living for most of their lives with few activity-limiting conditions; mortality is occurring more frequently after a shorter period of disability. The result of these trends is improved health, a more positive life experience in one's later years, and potentially lower overall health care costs for individuals and the general society.

Lester Breslow, one of America's leading epidemiologists working in the field of aging, proudly boasts of his 93 years of good health and active professional life, has been arguing for years that the majority of older adults in this country, even in their 70s and beyond, live with few if any disabling conditions and most would rate their own health as either "excellent" or "good." Breslow has argued that we need to change the way in which "aging" is defined and certainly dispel the inappropriate "negative" connotations of chronological age.[4]

"The development of a viable social policy offering support for the intrinsic ideas embedded in the notion of 'healthy aging' will require both new ideas for how to operationalize the programs and social insurance arrangements to support these ideas."

Such a reorientation of our thinking to incorporate these more up-to-date and accurate profiles of America's older adult population is not easily achieved. As recently as August 3, 2008, the *New York Times* included in its Sunday edition an article

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describing the way in which staff of contemporary nursing homes and other residential facilities serving older adults, as well as students in schools of medicine and nursing, had participated in "sensitization" training and exercises in which they simulated the sensory reductions of aging, claiming that this type of training was increasing the empathy of staff of these facilities while improving the quality of care these residents would receive.[5] Letters to the Editor of the *Times* reprinted a week later (Sunday, August 10, 2008)[6] emphasized one of 4 themes:

1) A realistic simulation should also include a set of corollary experiences, e.g., negotiating the health care bureaucracy, dealing with public transportation when going for health care appointments, or the problems of hiring reliable and affordable personal assistants to fill particular service gaps in one's daily routine.
2) *Functional* age is not equivalent to *chronological* age. As chronological age increases, the variability in functional age also increases. Meeting one 85-year old person is not a good basis for generalization to another person of the same chronological age.
3) The major problem faced by older adults in the most senior years is not health or functionality, but instead it is not having enough money to live on. Retirement income adequate for a 65-year old may not be adequate by the time that individual reaches age 85 due to the impact of inflation, decline of the stock market, mandatory minimum distributions from 401(k) plans, and other financial factors.
4) These simulated sensory deprivations associated with advancing age tend to reinforce stereotypes of older adults, making it seem as if there are few older adults without these deprivations in sight, sense/touch, hearing, or other bodily or cognitive functions. The person expressing this type of response to the use of simulations made the suggestion that every example of sensory deprivation should be balanced by an example of a healthy older adult fully active in some sphere of their daily life (e.g., as a volunteer in a local homeless shelter or as a participant in the North Carolina Senior Games). In other words, these physical and cognitive limitations should not be allowed to be defined as "natural consequences of aging;" persons are not disabled because they are old, but they happen to experience these limitations as they happen to be growing older. The terms "healthy aging" or "successful aging" are ones used with the intent of offering a distinctly positive notion of what the older adult years can and should mean for those fortunate enough to live to these ages.

Now for the "Not-So-Good News"

As these letter writers in response to the *New York Times* article have suggested, negative stereotypes of people of advancing chronological age tend to obscure the variability among seniors in terms of both physical and cognitive capacities. These stereotypes often make it seem less productive to invest in programs and opportunities for older adults since people in these age groups may seem less capable of benefiting from such investments or that society could realize fewer gains were these investments made.

It is true that older adults at advanced chronological ages account for the greatest burden of societal expenditures for health and medical care, even though catastrophic medical care expenditures are tending to occur later in life, as Fries has argued.

These demographic trends have the added implication that larger numbers (and proportions) of our population will be living longer after retirement, which means that there will be proportionally fewer persons in the younger age groups who are fully employed. As the so-called "dependency ratio" in our society changes in this direction, there will be even more reluctance to spend valuable public funds on programs and activities that support a growing segment of the population who are no longer contributing to the overall societal economy.

All of this is to say that programs and initiatives that promote the general concept of "healthy aging" and longevity will not always meet with a warm and positive response, at least from those most concerned about the entitlements expected by these populations in health care and in social services among those in these advancing years. The development of a viable social policy offering support for the intrinsic ideas embedded in the notion of "healthy aging" will require both new ideas for how to operationalize the programs and social insurance arrangements to support these ideas. It will also require a substantial effort in affecting a general attitudinal support for greater societal investment in these programs of benefit to our senior citizens.

What is Encompassed by the Terms "Healthy Aging" or "Successful Aging?"

The terms "healthy aging" or "successful aging" are terms that raise questions about both individual and societal preparation for advancing years. On the one hand, these terms suggest the need for "prospective" approaches to aging and make the case for the establishment of health-oriented lifestyle patterns as early as possible (though there is evidence to support the notion that "it is never too late to start, and always too soon to cease" these healthy lifestyle patterns).[7] On the other hand, there is recognition that certain "opportunity structures" in the general society make these personal choices less available as options or offer few incentives for their longer term adoption. In other words, the achievement of the promised benefits of healthy/successful aging will require both *personal* and *societal* efforts to make these goals attainable. In espousing the notion of "healthy or successful aging," we are talking about a national effort to promote more individual responsibility for "healthward" personal decision-making regarding lifestyle, while at the same time encouraging a new concept of societal responsibility to and for our older citizens.

Taking the notion Jim Fries advanced using the concept of the "compression of morbidity" as a framework for thinking about healthy/successful aging seems like a useful starting point

for all of us who are concerned about these issues in North Carolina. Fries has enabled us to see the words "healthy aging" as less a contradiction in terms, and more of a programmatic agenda for how to go about addressing some of the more important health issues of our total population. It's really a simple idea: We want to reduce the total amount of lifetime disability population-wide mainly by postponing, for as long as possible, the onset of specific disabling conditions.

This offers a new way of looking at what has, since the early 1970s, been the major thrust of the health promotion and disease prevention movement in America. We are not just talking about changing lifestyles because of some nonspecific, personal search for a higher quality of life. We are talking about concrete efforts each of us may make to delay or eliminate particular symptoms of disability and activity-limiting disease. We are trying to minimize the number of years people suffer from chronic and potentially disabling diseases and conditions.

Fries is not making the case that efforts to delay the onset of disabling conditions will greatly increase longevity; he is stating that we can expect to significantly reduce overall health care costs while improving the lives of persons living for additional years without the burden of these illnesses. Many have seen Fries' paradigm as the dominant and underlying model of what we now view as the "healthy aging" movement.

So, Where Are We Now? And Where Should We be Headed?

It would be easy to conclude the deliberations represented in this special issue of the *North Carolina Medical Journal* with the admonition that all we have to do is to encourage North Carolinians to follow the latest and most up-to-date advice on diet, exercise, sleep, and other lifestyle choices, all part of what we have come to define as a "healthy lifestyle," and one's prospective health status as an older adult will be improved. However, nothing is quite so simple. It is true that reducing any of the many known risks to positive health (such as smoking, excessive alcohol consumption, sedentary lifestyle, or unsafe driving patterns) will have both personal and societal benefits. But many other factors are important in delaying the onset of debilitating chronic conditions. Pharmacologic therapies for hypertension, diabetes, congestive lung disorders, and heart failure, as well as surgical interventions for the relief of back, knee, and hip pain, and ophthalmologic surgery for cataracts have all reduced the activity-limiting effects of serious health conditions, making them less likely to be defined as disablements.

Healthy aging requires, at a minimum, an attitude that embraces a positive notion of maintaining an active and vigorous lifestyle for as many years as possible. But it also requires a societal effort to assure the accessibility of programs and services that make these goals individually attainable. A societal goal of promoting healthy aging will require the reinvention of new models for the provision of care for persons with various forms of disablement to facilitate the maximum feasible levels of independence, mobility, and other aspects of participation of persons in these age groups.[8] Efforts to assure the availability and accessibility of appropriate and high-quality preventive, diagnostic, and curative professional health care services, without the barrier of lack of insurance, for everyone regardless of age is a necessary component of any effort we may make to assure the health of all of us in our senior years. For that reason, we should no longer define "healthy aging" as a program of activities for seniors alone. These are ideas for everyone, for they require the persistence of a lifetime in the quest for the benefits of good health. **NCMJ**

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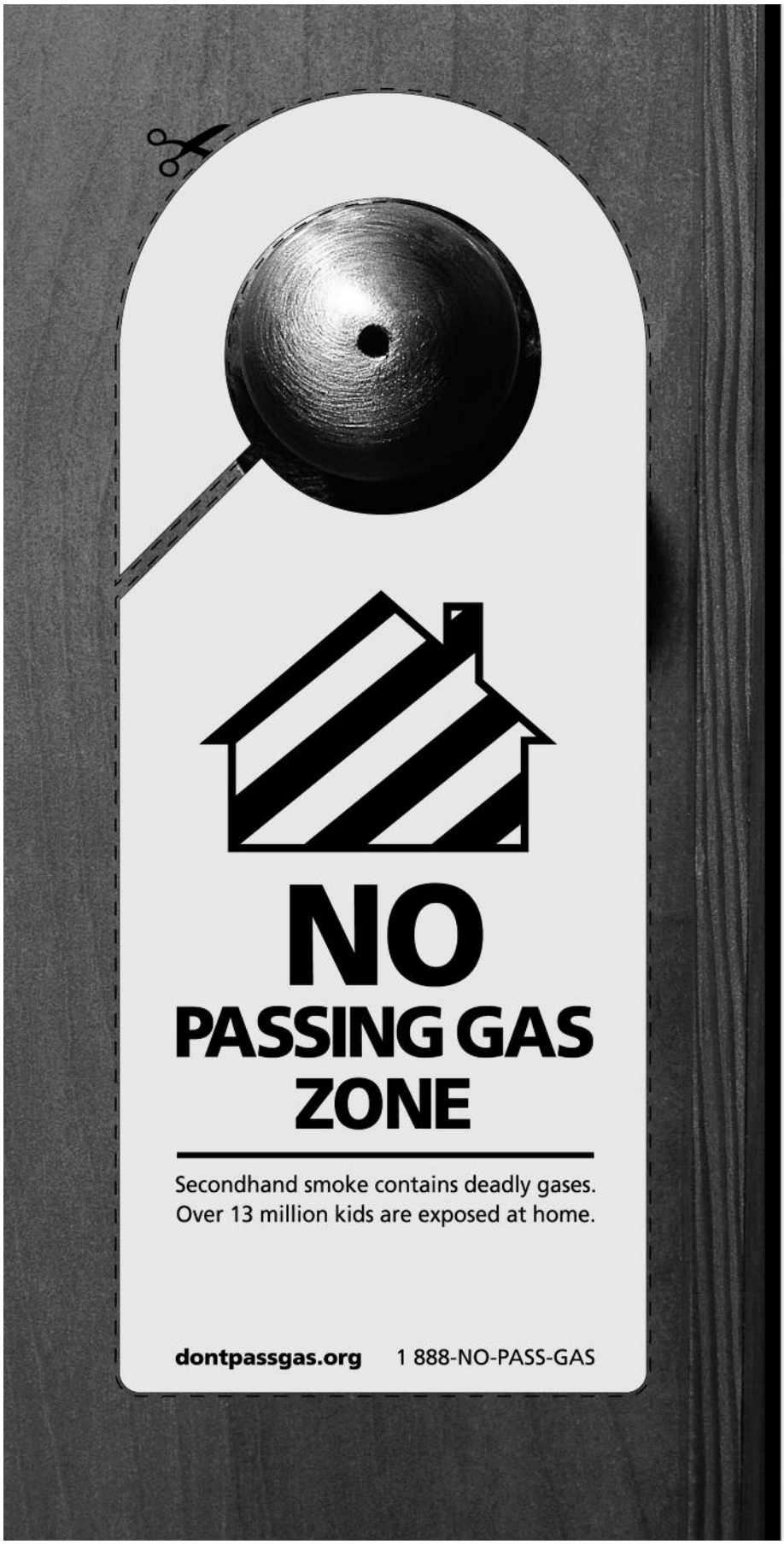

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Running the Numbers

A Periodic Feature to Inform North Carolina Health Care Professionals About Current Topics in Health Statistics

From the State Center for Health Statistics, North Carolina Department of Health and Human Services
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Health Conditions and Use of Health Services Among the Elderly in North Carolina

Healthy aging is an important goal for North Carolina, and some North Carolinians live most of their elderly years without serious health problems. Yet older age is a strong risk factor for many diseases and health conditions, and elderly persons of lower income are more likely to experience a variety of health problems than those with higher incomes.[1] This report presents selected data on the health of older persons in North Carolina.

In 2006, there were 1,077,000 North Carolinians aged 65 and older, representing 12% of the total population of the state. Fifty-nine percent of the older population in 2006 was female, 83% was white, 16% was African American, and less than 1% was American Indian. By the year 2030, the population aged 65 and older is projected to grow to 2,178,000 or 17% of the total population of the state. Seventy percent of all deaths of North Carolina residents are of people aged 65 and older. The leading causes of death among those aged 65 and older are heart disease (25% of deaths), cancer (22%), stroke (7%), chronic lung disease (6%), and Alzheimer's disease (4%).

In 2006, there were nearly 360,000 inpatient hospitalizations of North Carolinians aged 65 and older, representing 37% of all hospitalizations in the state and resulting in hospital charges of $7.9 billion. The top causes of hospitalization among the elderly were cardiovascular and circulatory diseases (27% of hospitalizations), digestive system diseases (10%), respiratory diseases (13%), injuries and poisoning (8%), musculoskeletal diseases (7%), symptoms of ill-defined conditions (6%), and genitourinary diseases (6%).

The North Carolina Behavioral Risk Factor Surveillance System (BRFSS) is a random telephone survey of adults that measures health conditions, risk factors, and use of health care services. All data are self-reported. Table 1 shows 2007 BRFSS data for North Carolinians aged 65 and older for selected health measures, along with comparable data for the United States. The elderly in North Carolina have somewhat poorer health status than the nation on nearly every health measure shown in Table 1. Sixty percent of elderly North Carolinians have high blood pressure, 59% have arthritis, 56% have high cholesterol, and 23% have a height and weight that indicates they are obese. Only 11% report vigorous physical activity 3 or more times per week. On the positive side, almost 70% say that they have ever had a pneumococcal vaccination for pneumonia.

Data from a 2002 study of healthy life expectancy in North Carolina indicated that the percentage of expected remaining years of life lived with perceived health status being only fair or poor usually increases with advancing age: 39% for ages 65-69, 41% for ages 70-74, 43% for ages 75-79, 46% for ages 80-84, and 44% for ages 85 and older.[2] Table 1 shows that the percentage of persons aged 65 and older reporting fair or poor health at the time of the 2007 BRFSS survey was 33%.

Based on 2003-2004 data, North Carolina ranks poorly among the 50 states on several health indicators for the elderly: 42nd in the mean number of physically unhealthy days in the past month, 41st in frequent mental distress, 42nd in complete tooth loss, 37th in obesity, 37th in fruit and vegetable consumption, and 38th in current smoking. North Carolina ranks much better on several health service indicators: 17th on recent mammograms, 16th on colorectal cancer screening, 17th on up-to-date on select preventive services for men, and 14th on recent cholesterol screening.[3]

Falls are the leading cause of injury deaths among older adults, accounting for more than one-third of all unintentional injury deaths in 2006 among the elderly in North Carolina. In 2004, North Carolina's fall death rate

Table 1.
2007 Data from the North Carolina and US BRFSS Surveys: Persons Aged 65 and Older

Health Measure	NC %	US %
Arthritis	59.1	57.0
Consumes fruits and vegetables 5 or more times per day	24.2	28.7
Current smoking	9.9	9.0
Diabetes	20.6	18.5
Ever had a pneumococcal vaccination	69.2	67.3
Have been told by a health professional that they had high blood pressure	60.8	57.9
Have had their blood cholesterol checked and was told that it was high	56.2	53.6
Have health problems that require the use of special equipment	17.9	17.5
History of angina or coronary heart disease	13.2	13.2
History of heart attack or myocardial infarction	13.9	13.2
History of stroke	9.3	8.2
Limited in any activities because of physical, mental, or emotional problems	31.5	31.2
Obese	22.9	23.0
Overweight (not including obese)	40.9	40.8
Reported fair or poor health	33.1	26.5
20+ minutes of vigorous physical activity 3+ days per week	11.0	14.7

among persons age 65 and over was 47.6 per 100,000 population, 21% higher than the national average.[3] Falls are also the most common cause of nonfatal injuries and of hospital admissions for trauma among older adults. Effective interventions may include home assessment and modification; tailored exercise or physical therapy to improve gait, balance, and strength; medication management; education about fall risk factors; referrals to health care providers for treatment of chronic conditions that may contribute to fall risk; and vision assessment and correction.[3]

Health problems are pervasive among the elderly in North Carolina. Other articles in this issue of the *North Carolina Medical Journal* present effective methods for improving the health of our elderly population. Reducing socioeconomic barriers, adopting healthier behaviors, and obtaining regular health screenings can reduce the risk for many chronic diseases, help decrease health disparities, and lower health care costs among the elderly.

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Contributed by Paul A. Buescher, PhD and Kathleen A. Jones-Vessey, MA
State Center for Health Statistics, North Carolina Division of Public Health

Spotlight on the Safety Net

A Community Collaboration
Kimberly Alexander-Bratcher, MPH

Senior PharmAssist

Healthy aging should include informed and proper use of medications. Senior PharmAssist has been helping Durham older adults with that goal for over 14 years. The program grew out of a task force of the Durham County Hospital Corporation that performed a community needs assessment and feasibility study for a pharmaceutical assistance program for senior adults in 1992. The group found financial access to medication for seniors with limited incomes and polypharmacy—the use of multiple, sometimes unnecessary medications—as the major public health issues that needed to be addressed. Senior PharmAssist was created to address those needs and began serving patients in 1994, becoming an independent organization in 1998.

The mission of Senior PharmAssist is to promote healthier living for Durham seniors by helping them obtain and better manage medications and by providing health education, community referral, and advocacy. The program provides seniors with the assistance and information they need to empower themselves to become wiser consumers and active participants in the maintenance of their own well-being, helping older adults lead healthier, more independent lives. This mission is accomplished by providing combined medication access with medication therapy management to ensure that program participants are receiving the medicines they need and avoiding those they don't. In FY 2008 (July 1, 2007 – June 30, 2008), Senior PharmAssist provided one-on-one assistance to 1,082 people, either by direct financial assistance through a prescription card program for Durham seniors with limited means or by helping seniors maximize other sources of medication assistance.

Prior to Medicare Part D, Senior PharmAssist served as a primary payer in providing financial assistance to Durham seniors aged 65 and older. Participants had incomes up to 150% of the federal poverty level, limited cash assets, and no prescription coverage. In late 2003, the Medicare Prescription Drug Improvement and Modernization Act authorized Medicare to provide some medication coverage. In January 2006, Medicare introduced new voluntary benefits projected to save the average beneficiary 37% of drug costs. These programs are often complicated and confusing in their benefit structure and involve significant cost-sharing requirements and diminishing prescription assistance from other sources. In North Carolina, many older adults lost an additional source of medication assistance when NC Senior Care, which had provided an annual $600 drug benefit for seniors up to 250% of the federal poverty guidelines, ceased operations in 2006. In response to these changes, Senior PharmAssist now provides supplemental drug coverage to Durham County residents aged 60 and older who have incomes at or below 200% of the federal poverty guidelines (currently $1,733 per month for single individuals and $2,333 per month for couples) and who have Medicare drug plans but do not qualify for the federal government's full low-income subsidy. The program also helps those aged 60 or older who have no prescription drug coverage but meet the aforementioned guidelines by providing primary coverage for their needed medicines.

Senior PharmAssist participants who receive financial assistance also receive other benefits. Every 6 months they meet with a pharmacist one-on-one for medication therapy management, to review each medication they are taking (including prescription, over-the-counter, and herbal), and to assess whether the participant can properly perform tasks such as drawing up insulin, using an inhaler, and administering eye drops. They also discuss various health promotion strategies and make referrals to other relevant programs, such as medical transportation, home-delivered meals, and senior centers. One of the most important referrals is partial Medicaid, which helps Medicare-eligible individuals pay for their Medicare Part B premium, potentially saving them over $1,000 per year. Senior PharmAssist also has a geriatric formulary—a list of medications that are approved for reimbursement. Program participants can use Senior PharmAssist's prescription card at any Durham pharmacy to pay just $3 for generics and $6 for brand name medications.

Senior PharmAssist is committed to helping its community by serving as a resource for Durham residents with pharmaceutical program applications, medication therapy management, and as a point of access for other community services. The full-time staff includes the executive director, clinical services director, community services director, development and communications director, and prescription assistance coordinator. In addition to the staff and board of directors, volunteers and graduate students (primarily pharmacy students) donated 2,703 hours of their time and expertise to further the mission during the last fiscal year.

Senior PharmAssist follows up with participants through evaluations every 6 months, which demonstrate improved outcomes, including reduced hospitalizations and emergency room visits and high levels of participant satisfaction. These evaluations and other information about the program have been published in the *North Carolina Medical Journal*[1] and the *American Journal of Health System Pharmacy*[2] and have also been presented at the annual meeting of the American Public Health Association. Senior PharmAssist and its staff have also won numerous community, state, and national awards, including most recently, the North Carolina Health and Wellness Trust Fund's Power of Prevention Award for Advocacy and Public Policy. The program is well loved by its participants who say, "you couldn't ask for a better group of people" and "they are just like family."

Senior PharmAssist serves as a success story for healthy aging and is also assisting communities interested in helping their seniors with medications through their manual, "A Guide for Implementing a Community-Based Pharmaceutical Assistance Program." For more information, visit their website www.seniorpharmassist.org.

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Gina Upchurch, RPh, MPH, director of Senior PharmAssist, contributed to this article.

Readers' Forum

Dear Editor:

Congratulations to the *North Carolina Medical Journal* for doing such an outstanding and thorough job of reporting the problem of chronic kidney disease in North Carolina. It is the goal of the National Kidney Foundation of North Carolina to reduce the burden of CKD throughout our state. The scope and effect of this disease takes a tremendous toll on the quality of life of our citizens and places a huge burden on our medical community to treat. There won't be enough nephrologists to treat all the people who will be diagnosed with CKD within the next 10 years. Medicare pays for kidney dialysis and kidney transplants for patients who are under age 65 or are not disabled. No other disease is covered by Medicare in this way—not breast cancer or HIV/AIDS or any of the other diseases we hear about.

The National Kidney Foundation of North Carolina will launch its Kidneyville Cruiser, a 48-foot interactive mobile education and screening unit designed to deliver health and hope to North Carolinians at risk for CKD. Because of the emphasis the North Carolina Institute of Medicine and the *North Carolina Medical Journal* have placed on CKD, we feel now more than ever is the right time to invest our resources in a highly visible, mobile experience that will provide our state with lifesaving screening and education.

For more information about the Kidneyville Cruiser, contact Denise Hockaday, senior vice president of programs at dhockaday (at) nkfnc.org or 800.356.5362.

Leanne Skipper, CEO
National Kidney Foundation of North Carolina

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Blueberries and **red beans,** just a few of the many foods rich in antioxidants, are powerful remedies in the fight against cancer. Research shows that fruits, vegetables, and other low-fat vegetarian foods may help prevent cancer and even improve survival rates. A healthy plant-based diet can lower your cholesterol, increase your energy, and help with weight loss and diabetes. Fill this prescription at your local market and don't forget—you have unlimited refills!

For a *free* nutrition booklet with cancer fighting recipes, call toll-free 1-866-906-WELL or visit *www.CancerProject.org*

real men wear gowns

They're counting on you to be there. For all the big moments. And all the little ones. Don't miss a single one. Many potentially deadly diseases can be treated if you catch them in time. For a complete list of all the tests you need and when you need to get them, visit **ahrq.gov/realmen**. Then go to your doctor and get them. Because real men take care of the people they care about. That's why real men wear gowns.

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There are reasons why two of our partners were selected to the Legal Elite in North Carolina.*

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