

The Epidemic of Overweight and Obesity: A Challenge to Medicine, Public Health and Public Policy

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The National Institutes of Health (NIH) and National Heart Lung and Blood Institute (NHLBI) define adult overweight as a body mass index (BMI) between 25 and 29.9, and adult obesity as a BMI greater than 30.¹ By those definitions, the United States is in the midst of a dramatic obesity/overweight epidemic with data being quoted from a variety of perspectives and timeframes. North Carolina is representative of national trends, with the Behavioral Risk Factor Surveillance System (BRFSS) reporting 52.3% of adults as overweight or obese in 1995 and 62.6% in 2005.² The prevalence of overweight amongst children (6-11 years) and adolescents (12-19 years) rose from 11% to 19% and 11% to 17%, respectively, between the 1988-1994 and 2003-2004 National Health and Nutrition Examination Surveys (NHANES).³

In this issue of the *North Carolina Medical Journal*, staff of the NC State Center for Health Statistics have provided recent data on the extent of the overweight and obesity epidemic in our population,⁴ along with data on trends in the behaviors of youth putting them at risk of these conditions.

Some critics argue that not everyone who has a BMI >25 is overweight, that the health and economic impacts of overweight/obesity are greatly exaggerated,⁵ and/or that all the hype about the obesity epidemic is a ploy by the weight-loss industry, pharmaceutical companies and some researchers to create business.⁶ Actually, their arguments have some validity, which suggests several caveats as the reader "digests" the following diverse compendium of well-reasoned articles by a distinguished set of authors.

First, the critical issue is control of obesity's comorbid conditions, not weight per se. A singular focus on weight or BMI misdirects both clinician and patient regarding the importance of lean versus fat body composition or distribution of fat. BMI is a correlate, though not a direct measure of body fat and fat distribution. Rather, weight/BMI should be considered a vital sign, giving the practitioner an objective, but non-specific metric that relates to potential underlying conditions.

Two commentaries in this special issue of the *North Carolina Medical Journal* offer specific advice to clinicians

regarding how discussion of overweight and obesity can be handled in the context of conventional clinical encounters with patients with or at-risk for these conditions. The first of these by Dr. Donald Hensrud of the Mayo Clinic in Minnesota outlines a broad, but specific, approach to how these issues may be addressed as part of clinical practice routine.⁷ The second, a sidebar commentary by Dr. Suzanne Lazorick of the NC Division of Public Health, gives further illustrations of how BMI and other related measures can be integrated with normal practice procedures.⁸

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The underlying conditions of importance include diabetes, hyperlipidemia, hypertension, coronary artery disease, osteoarthritis, obstructive sleep apnea, gall bladder disease, asthma, depression, and some cancers (e.g., colon and breast).

Simply removing body fat by abdominal liposuction will not significantly improve metabolic parameters such as insulin

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sensitivity and lipid concentrations.⁹ More recent evidence suggests visceral fat has a far greater impact on obesity-related metabolic disease.

Second, lifestyle change, not weight loss, is critical. Enduring weight loss requires sustained behavioral change, with or without pharmacologic support. It is those lifestyle changes—lower and improved caloric intake and increased physical activity—that impact obesity comorbidities. Multiple authors note that loss of as little as 5-10% of body weight through lifestyle changes improves metabolic parameters of diabetes and cardiac risk factors.^{10,11}

Third, successful treatments of obesity-related conditions will require a different medical paradigm than is in place now. Given the need for ongoing support for lifestyle changes, obesity should be considered a chronic condition, followed by clinicians using an integrated, multidisciplinary Chronic Care Model.¹² The model is described in more detail later, and presumes involvement of the patient, the clinical team, decision support and information systems, and the community.

Fourth, prevention rather than treatment is the preferred method to deal with obesity-related conditions. It is much easier to maintain a healthy weight (and lifestyle) than it is to remediate unhealthy eating and sedentary habits. For this reason, a key focus should be prevention and treatment of childhood obesity. The complexity of prevention-oriented initiatives addressing the problem of overweight and obesity are described more fully by Jennifer Hastings and her colleagues from NC Prevention Partners in this issue of the *North Carolina Medical Journal*¹³ and by Drs. Leah Devlin and Marcus Plescia of the NC Division of Public Health.¹⁴ Dr. Alice Ammerman and colleagues from the UNC Center for Health Promotion and Disease Prevention describe the extent and the problems of addressing the epidemic of obesity among NC's racial and ethnically diverse population.¹⁵

Impact

Caveats given, North Carolina is in the midst of an epidemic of obesity-related conditions. Mirroring the 53% increase in obesity over the last 10 years, the self-reported prevalence (BRFSS-NC) of diabetes, elevated cholesterol, and hypertension has increased 89%, 52% and 41%, respectively, over the last ten years (see Figure 1). Notably, obesity is more prevalent in

eastern North Carolina over the last four years (see Figure 2), and the rate is increasing more quickly than in the rest of the state. If comorbid conditions follow the rates of obesity, then one may assume they are more prevalent down east.

This increase in obesity-related chronic illness creates a significant burden for North Carolina primary care practitioners because care for chronic illness requires more time and practice resources than treatment of acute illnesses, especially if the conditions are not well controlled. Ostbye, et.al.¹⁶ estimated that a 2,500-patient primary care practice caring for 10 chronic diseases (seven of ten related to obesity) per national practice guidelines would require 3.5 hours a day if the conditions were well controlled. If the chronic conditions were not well controlled, then the estimated time increased by a factor of 3, or 10.6 hours a day. Add to the practicing physician's day another 7.4

Figure 1.
North Carolina BRFSS 1995-2005 Obesity and Related Comorbidities

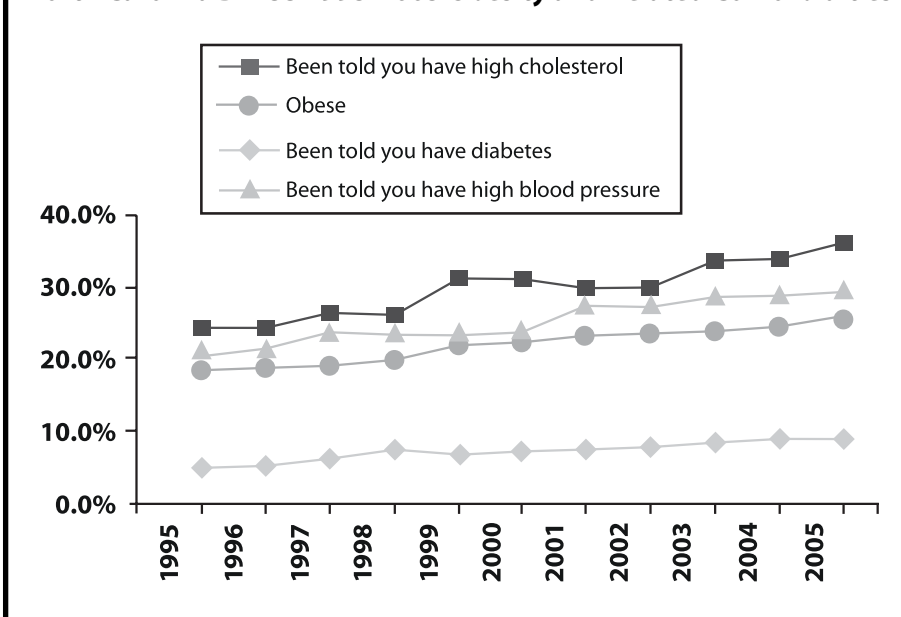
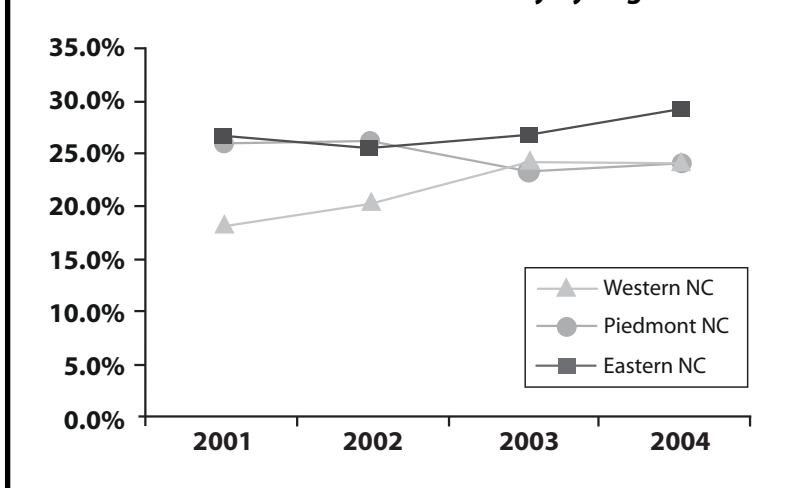


Figure 2.
North Carolina BRFSS 2001-2004 Obesity by Region



hours a day to deliver nationally accepted (and recommended by the US Preventive Services Task Force) preventive care guidelines,¹⁷ and the primary care practice would need to stay open 18 hours per day, not including any acute care visits.

Even if practices chose to remain open 24 hours a day, it is abundantly clear that it is difficult to deliver all recommended care for chronic conditions. McGlynn¹⁸ estimates that only 45% of recommended care is provided for diabetes, 49% for hyperlipidemia, 57% for osteoarthritis, 65% for hypertension, and 68% for coronary artery disease.

The quality issue identified by McGlynn is not caused by the obesity epidemic, but it is certainly exacerbated by it. Fortunately, there are sources of assistance for overweight or obese patients to whom physicians can make referrals when needed. These are described by Dr. Kathryn Kolasa and colleagues in this issue of the *North Carolina Medical Journal*.¹⁹

Obesity is a Chronic Condition

The Institute for Healthcare Improvement (IHI) advocates the Chronic Care Model developed by Wagner and colleagues at the Group Health Cooperative of Puget Sound²⁰ as a paradigm for delivering care for chronic conditions including obesity comorbidities (www.ihl.org). This paradigm focuses on productive interactions between a well-informed, highly motivated patient and an integrated, multidisciplinary healthcare team that anticipates patient needs and addresses them not only during individual physician visits, but also at individual or group meetings with other healthcare team members, outbound phone calls, emails, or mailings, and referral to a variety of informational resources.

Obesity treatment requires that the patient be supported in making self-management decisions based on his/her current preferences and readiness to change. The goal is to have the patients assume primary responsibility for their own health and hopefully make healthy clinical and lifestyle choices. The healthcare system should include incentives for patients (and physicians), adequate reimbursement for necessary services, and accurate, accessible, relevant and timely information that the patient and doctor can use to make decisions, and information systems that automatically remind providers and patients what services are needed and when.

The context for interactions between the patient and the healthcare system in the Chronic Care Model is the community, and it plays a significant role in the management of obesity-related conditions. Obesity is impacted by the quantity, quality and cost of food available, marketing and packaging of food, the safety and availability of environments to be physically active, competing priorities for time to be active (e.g., school curriculum, television/video games/internet “tube time”, work and sleep), cultural and faith-based ethnic beliefs regarding body habitus, physical activity and eating behaviors, and regulatory and legislative mandates.

Payors (employers, insurance companies, Medicare and Medicaid) have historically been reluctant to cover treatment of obesity because of controversy regarding evidence that obesity

directly contributes to medical and business costs, the lack of evidence that treatment is effective, and the lack of demonstrable short-term financial return.

The data shown above speak to the impact of obesity (as a marker of sub-optimal nutrition and physical activity) on medical conditions.

The Evidence is Mounting

Fortunately, there is a mounting body of evidence that the Chronic Care Model is effective in managing obesity-related conditions such as diabetes,^{21,22,23} and emerging literature suggests that obesity itself is amenable to treatment.

One well-designed study, for instance, suggests that specific meal replacement as a mechanism to reduce caloric intake was effective in attaining and maintaining modest weight loss over four years.^{24,25} Another systematic review²⁶ recommends dietary, physical activity, and behavioral approaches. And recently, preliminary studies suggest sleep deprivation plays a role in obesity.^{27,28}

In addition, the magnitude of preventable disease attributable to obesity is increasingly well documented.^{29,30} Thompson and Finkelstein estimate that 5% of all medical spending is attributable to obesity, and that the average annual medical spending for obese patients is 26-39% higher than for normal weight adult patients. This is consistent with Blue Cross and Blue Shield of North Carolina data (2003), which showed 32% higher medical expenditures for obese patients.

At issue from a financial perspective is the belief of some employers and insurers that they will not recognize a return on investment for obesity treatment, especially with younger employees/members. As a chronic condition, the medical sequelae of poor nutrition and lack of activity do not become apparent for several years. Some payors are concerned that they may pay for expensive treatment (especially bariatric surgery), only to have the patient leave their employ or plan well before reduced medical expenses are realized.

In this issue of the *North Carolina Medical Journal*, Drs. Eric Finkelstein and Derek Brown of Research Triangle Institute address the reasons why private sector organizations are reluctant to invest in obesity prevention and treatment for their employees.³¹ But, commentaries by Steven Reinemund, CEO of PepsiCo,³² and LuAnn Heinen of the National Business Group on Health,³³ point out the way in which American business and industry have undertaken to address these issues as matters of concern to their consumers and their own employee populations.

More recent and sophisticated economic models³⁴ confirm that time required to break even and possibly realize a financial benefit of bariatric surgery is considerable, estimated at five years. Strategies to mitigate the prolonged return on investment time, though, may include incentives to use centers of excellence for bariatric surgery, employee cost sharing, and incentives to retain the patient with the employer or insurance plan after surgical intervention. Further evolution of economic models will help influence payor coverage decisions for treatment of obesity. Of note, Medicare recognized obesity as a condition (eligible for

reimbursement) in 2003, and began limited coverage for bariatric surgery in 2006. In this issue of the *North Carolina Medical Journal*, Dr. Walter Pories of East Carolina University's Brody School of Medicine, one of the pioneers in bariatric surgery in the U.S., offers a detailed overview of current progress and efficacy in this mode of treatment for morbid obesity.³⁵

The key to ongoing reimbursement for the treatment of obesity will be the results of studies and pilot programs currently being launched. A variety of stakeholders are involved in these efforts, including the Centers for Disease Control and Prevention, the North Carolina Health and Wellness Trust Fund, the State of North Carolina, public school systems, private insurers and foundations, and employers. We are fortunate to be able to include in this issue of the *North Carolina Medical Journal* descriptions of programs addressing the childhood obesity epidemic by Paula Hudson Collins of the NC Department of Public Instruction³⁶ and Lt. Governor Beverly Perdue on behalf of the NC Health and Wellness Trust Fund Commission.³⁷

The physician's role in combating the obesity epidemic is multi-faceted and critical. As the most trusted source of medical information, the doctor can identify, assess, and make recommendations for prevention and treatment of obesity and obesity-related conditions. Efforts by Blue Cross and Blue Shield of North Carolina to give physicians (and their patients) access to the best medical and behavioral therapies for addressing the problem of overweight and obesity are described in this issue of the *North Carolina Medical Journal* by Blue Cross and Blue Shield Senior Vice President Robert Harris.³⁸

Within a Chronic Care Model, he/she may not provide direct behavioral counseling or nutritional advice, but extends medical legitimacy to other healthcare team members (nurses, nutritionists, trainers, counselors, community programs, on-line programs, health plan programs, etc.). The primary care practitioner helps coordinate and direct care, especially if the patient has (and many patients do have!) multiple chronic conditions. The physician should seek multiple communication channels to work with patients, including printed materials, referral to on-line resources, group sessions, inbound and outbound phone lines, and e-mail. The practice should keep patient registries for chronic conditions, automate care reminders, and track clinical performance.

A proactive physician may work outside the office setting,

collaborating with the school system, faith-based or community organizations, or government-sponsored programs.

Of no small importance, physicians can model healthy behaviors, including demonstrating healthy nutrition in the office, being physically active in a public manner, and maintaining a healthy weight. Modeling health behaviors not only increases physician credibility with patients, but provides insight into the practicalities and options being recommended to the patient.

Finally, physicians can serve as potential advocates for public policy change, planning for active communities, and changes to employer-based programs. The more evidence-based the advocacy, the more powerful it is.

Since obesity is as much of a social issue as it is a medical issue, the role of stakeholders outside the healthcare system cannot be underestimated. Several North Carolina initiatives are described in this issue of the *North Carolina Medical Journal*, and are excellent examples of the multi-pronged approach that is needed to stem the rising tide of obesity as a population health issue. Among these are programs supported across North Carolina by The Duke Endowment³⁹ and the Kate B. Reynolds Charitable Trust,⁴⁰ the NC Health and Wellness Trust Fund Commission, and the national program of the Robert Wood Johnson Foundation based in Chapel Hill known as "Active Living by Design."⁴¹ Since the backgrounds and needs of North Carolinians are unique (as they are in any state), and there does not appear to be any approach that has demonstrated superior results, it is highly appropriate that multiple initiatives be undertaken. What is critical, however, is to coordinate separate efforts as much as possible, and to carefully document outcomes so that we know where best to invest resources going forward.

Federal assistance for combating obesity is directed primarily through the Federal Trade Commission (marketing and advertising, particularly to children and adolescents), and the Food and Drug Administration (food labeling).⁴² The Federal Trade Commission is mired in technical complications in identifying and regulating advertising to children,⁴³ while the Food and Drug Administration has had somewhat more success in promoting food labeling. We in North Carolina must recognize that federal efforts are but one more piece of an extensive medical/social/economic puzzle. **NCMedJ**

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